Electrical Transient Analyzer Program

Unbalanced 3-Phase Short-Circuit Analysis

IEC Standards

3 Phase Buses: 3 Phase to Ground Fault Current

	Swing	V-Control	Load	Total
Number of Buses:	6	0	14	20

	XFMR2	XFMR3	Reactor	Line/Cable/ Busway	Impedance	Tie PD	Total
Number of Branches:	3	0	0	16	0	0	19

	Synchronous Generator	Power Grid	Synchronous Motor	Induction Machines	Lumped Load	Total
Number of Machines:	1	0	0	0	1	1

System Frequency:	50
Unit System:	Metric
Project Filename:	Ofosu Replication
Output Filename:	C:\ETAP 2401\Ofosu Replication\D_DSC_ISLAND_PV_BESS_3PHG.SC6S

Adjustments

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

Temperature Correction	Apply Adjustments	Individual /Global	Degree C
Transmission Line Resistance:	Yes	Global	20
Cable / Busway Resistance:	Yes	Global	20

Bus Input Data

Bus						Initial Voltage		Generation		Load		Mvar Limits	
ID	Phase	Type	kV	Sub-sys	Ph	%	Ang.	MW	Mvar	MW	Mvar	Max.	Min.
Bus1	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus3	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus4	3Phase	Swing	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus5	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus6	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus7	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus11	3Phase	Swing	0.700	1	A	100.0	-30.0	0	0	0	0	0.000	0.000
					B	100.0	-150.0	0	0	0	0		
					C	100.0	90.0	0	0	0	0		
Bus12	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus13	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus14	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus15	3Phase	Load	11.000	1	A	100.0	30.0	0	0	0	0	0.000	0.000
					B	100.0	-90.0	0	0	0	0		
					C	100.0	150.0	0	0	0	0		
Bus16	3Phase	Load	11.000	1	A	100.0	30.0	0	0	0	0	0.000	0.000
					B	100.0	-90.0	0	0	0	0		
					C	100.0	150.0	0	0	0	0		
Bus17	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus18	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		

Bus						Initial Voltage		Generation		Load		Mvar Limits	
ID	Phase	Type	kV	Sub-sys	Ph	%	Ang.	MW	Mvar	MW	Mvar	Max.	Min.
Bus19	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus20	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus21	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus22	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Bus23	3Phase	Load	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Main Bus	3Phase	Swing	0.400	1	A	100.0	0.0	0	0	0	0	0.000	0.000
					B	100.0	-120.0	0	0	0	0		
					C	100.0	120.0	0	0	0	0		
Total Number of Buses: 20								0.000	0.000	0.000	0.000		

Cable/Busway Input Data

Cable/Busway										
				Length				ohms/1000 m per Conductor		
ID	Phase	Library	Size	Adj. (m)	% Tol.	#/Phase	T (°C)	R	X	Y
Cable2	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable3	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable4	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable5	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable6	3Phase	1.0kV 4/C CU	120	30.0	0.0	1	20	0.155670	0.077668	
Cable7	3Phase	1.0kV 4/C CU	120	30.0	0.0	1	20	0.155670	0.077668	
Cable12	3Phase	1.0kV 4/C CU	240	30.0	0.0	3	20	0.078156	0.077686	
Cable13	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable14	3Phase	1.0kV 4/C CU	240	30.0	0.0	3	20	0.078156	0.077686	
Cable15	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable16	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable17	3Phase	1.0kV 4/C CU	120	30.0	0.0	1	20	0.155670	0.077668	
Cable18	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable19	3Phase	1.0kV 4/C CU	25	30.0	0.0	1	20	0.727542	0.083922	
Cable20	3Phase	1.0kV 4/C CU	120	30.0	0.0	1	20	0.155670	0.077668	

Cable / Busway resistances are listed at the specified temperatures.
Cables longer than 70.00 km are modeled with long line models in the study.

Impedance/Line Input Data

ID	Type	Phase	Length Adj. (m)	Length % Tol.	Operating Temp °C
Line1	Line	3Phase	300.0	0.0	20

Line resistances are listed at the specified temperatures.

Lines longer than 210.00 km are modeled with long line models in the study.

Series Impedance/Shunt Admittance Matrices (Phase Domain)

Line ID	Line ID	Length km	Ph	R (ohm)			X (ohm)			Y (micro-siemens)		
				A	B	C	A	B	C	A	B	C
Line1	Line1	0.300	A	0.11957	0.03220	0.03107	0.15408	0.06644	0.05683	0	0	0
			B	0.03220	0.12191	0.03220	0.06644	0.14701	0.06644	0	0	0
			C	0.03107	0.03220	0.11957	0.05683	0.06644	0.15408	0	0	0

For impedances below center-tap transformers, Phases A, B, and C correspond to (1), (2), and (N) respectively.

2-Winding Transformer Input Data

Transformer		Rating								Z Variation		% Tap Setting		Adjusted		Phase Shift	
ID	Phase	MVA	Prim. kV	Sec. kV	% Z1	% Z0	X1/R1	X0/R0	% Tol.	+ 5%	- 5%	Prim.	Sec.	% Z 1	% Z 0	Type	Angle
ISOLATION TX	3Phase	0.500	0.700	0.400	4.00	4.00	1.50	1.50	0	0	0	0	0	4.0000	4.0000	Dyn	-30.000
STEP DOWN TX	3Phase	0.300	11.000	0.400	4.00	4.00	1.50	1.50	0	0	0	0	0	4.0000	4.0000	Dyn	30.000
STEP UP TX @ GEN	3Phase	0.500	0.400	11.000	4.00	4.00	1.50	1.50	0	0	0	0	0	4.0000	4.0000	YNd	30.000

Branch Connections

CKT/Branch			Connected Bus ID		% Impedance, Pos. Seq., 100 MVAb			
ID	Phase	Type	From Bus	To Bus	R	X	Z	Y
Cable2	3Phase	Cable	Bus1	Bus3	1364.14	157.35	1373.19	
Cable3	3Phase	Cable	Bus1	Bus4	1364.14	157.35	1373.19	
Cable4	3Phase	Cable	Bus6	Bus5	1364.14	157.35	1373.19	
Cable5	3Phase	Cable	Bus6	Bus7	1364.14	157.35	1373.19	
Cable6	3Phase	Cable	Main Bus	Bus1	291.88	145.63	326.19	
Cable7	3Phase	Cable	Main Bus	Bus6	291.88	145.63	326.19	
Cable12	3Phase	Cable	Bus12	Main Bus	48.85	48.55	68.87	
Cable13	3Phase	Cable	Bus13	Main Bus	1364.14	157.35	1373.19	
Cable14	3Phase	Cable	Bus14	Main Bus	48.85	48.55	68.87	
Cable15	3Phase	Cable	Bus19	Bus18	1364.14	157.35	1373.19	
Cable16	3Phase	Cable	Bus19	Bus20	1364.14	157.35	1373.19	
Cable17	3Phase	Cable	Main Bus	Bus19	291.88	145.63	326.19	
Cable18	3Phase	Cable	Bus22	Bus21	1364.14	157.35	1373.19	
Cable19	3Phase	Cable	Bus22	Bus23	1364.14	157.35	1373.19	
Cable20	3Phase	Cable	Main Bus	Bus22	291.88	145.63	326.19	
ISOLATION TX	3Phase	2W XFMR	Bus11	Bus12	443.76	665.64	800.00	
STEP DOWN TX	3Phase	2W XFMR	Bus16	Bus17	739.60	1109.40	1333.33	
STEP UP TX @ GEN SITE	3Phase	2W XFMR	Bus14	Bus15	443.76	665.64	800.00	

Synchronous Generator Input Data

Synchronous Generator		Connected Bus	Rating				% Impedance in Machine Base					
								Xd"				Excitation
ID	Type	ID	MVA	kV	RPM	% PF	R	Adj.	Tol.	R/X	Xd, sat	Type
Gen2	Steam Turbo	Main Bus	0.001	0.400	1500	85.00	5.000	100.00	90.0	0.05	1000.00	Turbine 130%

Total Connected Synchronous Generators (= 1) : 0.001 MVA

Synchronous Generator			Grounding				Impedances (%)			
							Negative Seq		Zero Seq.	
ID	Type	Connected Bus ID	Conn.	Type	Amp	Exciter Type	R2	X2	R0	X0
Gen2	Steam Turbo	Main Bus	Wye	Solid		Turbine 130%	50.00	1000.00	50.00	1000.00

Lumped Load Input Data

	Lumped Load						Motor Loads								
	Rating				% Load		Loading		% Impedance (Machine Base)			Grounding			
Lumped Load ID	kVA	kV	Amp	% PF	MTR	STAT	kW	kvar	R	X"	R/X"	Conn.	Type	Amp	MW/PP
COMMUNITY LOAD	140.0	0.400	202.073	85.00	80	20	119.00	73.75	6.46	15.37	0.42	Delta			0.10

Total Connected Lumped Loads (= 1): 140.0 kVA

SHORT-CIRCUIT REPORT

Fault at Bus: Bus1
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus1	**Total**	3phG, C	0.00	0.00	0.00	1.544	-75.8	1.544	164.2	1.544	44.2
Bus3	Bus1	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Bus4	Bus1	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Main Bus	Bus1	3phG, C	3.34	3.34	3.34	1.480	-75.2	1.480	164.8	1.480	44.8

Fault at Bus: Bus3
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus3	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus1	Bus3	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA1	Bus3	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus4
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus4	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus1	Bus4	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA2	Bus4	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus5
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus5	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus6	Bus5	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA3	Bus5	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus6
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus6	**Total**	3phG, C	0.00	0.00	0.00	1.544	-75.8	1.544	164.2	1.544	44.2
Bus5	Bus6	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Bus7	Bus6	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Main Bus	Bus6	3phG, C	3.34	3.34	3.34	1.480	-75.2	1.480	164.8	1.480	44.8

Fault at Bus: Bus7
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus7	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus6	Bus7	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA4	Bus7	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus11
Fault Type: 3phG

Nominal kV = 0.700
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus11	**Total**	3phG, C	0.00	0.00	0.00	0.846	-106.0	0.846	134.0	0.846	14.0
Bus12	Bus11	3phG, C	6.14	6.14	6.14	0.648	-101.6	0.648	138.4	0.648	18.4
PCS 500KVA	Bus11	3phG, B	0.00	0.00	0.00	0.206	-120.0	0.206	120.0	0.206	0.0

Fault at Bus: Bus12
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus12	**Total**	3phG, C	0.00	0.00	0.00	1.508	-76.0	1.508	164.0	1.508	44.0
Main Bus	Bus12	3phG, C	0.54	0.54	0.54	1.140	-71.3	1.140	168.7	1.140	48.7
Bus11	Bus12	3phG, B	2.07	2.07	2.07	0.383	-90.0	0.383	150.0	0.383	30.0

Fault at Bus: Bus13
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus13	**Total**	3phG, C	0.00	0.00	0.00	1.744	-74.6	1.744	165.4	1.744	45.4
Main Bus	Bus13	3phG, C	16.59	16.59	16.59	1.744	-74.6	1.744	165.4	1.744	45.4

Fault at Bus: Bus14
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus14	**Total**	3phG, C	0.00	0.00	0.00	1.520	-76.1	1.520	163.9	1.520	43.9
Main Bus	Bus14	3phG, B	0.31	0.31	0.31	0.659	-90.0	0.659	150.0	0.659	30.0
Bus15	Bus14	3phG, C	4.85	4.85	4.85	0.894	-65.9	0.894	174.1	0.894	54.1

Fault at Bus: Bus15
Fault Type: 3phG

Nominal kV = 11.000
Voltage c Factor = 1.10

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus15	**Total**	3phG, B	0.00	0.00	0.00	0.061	-46.4	0.061	-166.4	0.061	73.6
Bus16	Bus15	3phG, B	0.07	0.07	0.07	0.036	-36.3	0.036	-156.3	0.036	83.7
Bus14	Bus15	3phG, B	3.99	3.99	3.99	0.027	-60.0	0.027	-180.0	0.027	60.0

Fault at Bus: Bus16
Fault Type: 3phG

Nominal kV = 11.000
Voltage c Factor = 1.10

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus16	**Total**	3phG, A	0.00	0.00	0.00	0.061	-46.5	0.061	-166.5	0.061	73.5
Bus15	Bus16	3phG, A	0.06	0.05	0.05	0.027	-60.0	0.027	-180.0	0.027	60.0
Bus17	Bus16	3phG, B	8.87	8.87	8.87	0.036	-36.3	0.036	-156.3	0.036	83.7

Fault at Bus: Bus17
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus17	**Total**	3phG, A	0.00	0.00	0.00	1.902	-78.0	1.902	162.0	1.902	42.0
Bus16	Bus17	3phG, B	8.33	8.33	8.33	0.922	-90.0	0.922	150.0	0.922	30.0
COMMUNITY LOAD	Bus17	3phG, B	105.00	105.00	105.00	1.018	-67.2	1.018	172.8	1.018	52.8

Fault at Bus: Bus18
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus18	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus19	Bus18	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA5	Bus18	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus19
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus19	**Total**	3phG, C	0.00	0.00	0.00	1.544	-75.8	1.544	164.2	1.544	44.2
Bus18	Bus19	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Bus20	Bus19	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Main Bus	Bus19	3phG, C	3.34	3.34	3.34	1.480	-75.2	1.480	164.8	1.480	44.8

Fault at Bus: Bus20
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus20	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus19	Bus20	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA6	Bus20	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus21
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus21	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus22	Bus21	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA7	Bus21	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Bus22
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus22	**Total**	3phG, C	0.00	0.00	0.00	1.544	-75.8	1.544	164.2	1.544	44.2
Bus21	Bus22	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Bus23	Bus22	3phG, B	0.31	0.31	0.31	0.033	-90.0	0.033	150.0	0.033	30.0
Main Bus	Bus22	3phG, C	3.34	3.34	3.34	1.480	-75.2	1.480	164.8	1.480	44.8

Fault at Bus: Bus23
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus23	**Total**	3phG, C	0.00	0.00	0.00	1.761	-74.4	1.761	165.6	1.761	45.6
Bus22	Bus23	3phG, C	16.45	16.45	16.45	1.729	-74.1	1.729	165.9	1.729	45.9
PVA8	Bus23	3phG, B	0.00	0.00	0.00	0.033	-90.0	0.033	150.0	0.033	30.0

Fault at Bus: Main Bus
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type,	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus	Max If Phase	A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Main Bus	**Total**	3phG, C	0.00	0.00	0.00	1.511	-76.0	1.511	164.0	1.511	44.0
Bus1	Main Bus	3phG, B	0.15	0.15	0.15	0.066	-90.0	0.066	150.0	0.066	30.0
Gen2	Main Bus	3phG, B	105.06	105.06	105.06	0.003	-87.1	0.003	152.9	0.003	32.9
Bus6	Main Bus	3phG, B	0.15	0.15	0.15	0.066	-90.0	0.066	150.0	0.066	30.0
Bus12	Main Bus	3phG, B	0.18	0.18	0.18	0.385	-90.0	0.385	150.0	0.385	30.0
Bus13	Main Bus	3phG, B	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus14	Main Bus	3phG, C	0.43	0.43	0.43	0.891	-65.8	0.891	174.2	0.891	54.2
Bus19	Main Bus	3phG, B	0.15	0.15	0.15	0.066	-90.0	0.066	150.0	0.066	30.0
Bus22	Main Bus	3phG, B	0.15	0.15	0.15	0.066	-90.0	0.066	150.0	0.066	30.0

Short-Circuit Summary Report

Bus		Device			Device Capacity (kA)				Short-Circuit Current (kA)					
ID	kV	ID	Type	Fault Type, Phase	Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus1	0.400	Bus1	Bus	3phG, C					1.544	2.508				0.676
				AG, A					2.129	3.460				2.129
				BG, B					2.130	3.460				2.130
				CG, C					2.129	3.460				2.129
				ABG, B					3.055	4.964				3.055
				BCG, C					3.055	4.964				3.055
				CAG, A					3.055	4.964				3.055
				AB, A					1.455	2.364				1.455
				BC, B					1.455	2.364				1.455
				CA, A					1.455	2.364				1.455
		CB2	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
		CB3	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	

Bus		Device		Fault Type,	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making									
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus3	0.400	Bus3	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus4	0.400	Bus4	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus5	0.400	Bus5	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus6	0.400	Bus6	Bus	3phG, C					1.544	2.508				0.676
				AG, A					2.129	3.460				2.129
				BG, B					2.130	3.460				2.130
				CG, C					2.129	3.460				2.129
				ABG, B					3.055	4.964				3.055
				BCG, C					3.055	4.964				3.055
				CAG, A					3.055	4.964				3.055
				AB, A					1.455	2.364				1.455
				BC, B					1.455	2.364				1.455
				CA, A					1.455	2.364				1.455

Bus		Device			Device Capacity (kA)				Short-Circuit Current (kA)					
ID	kV	ID	Type	Fault Type, Phase	Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB4	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
		CB5	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
Bus7	0.400	Bus7	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus11	0.700	Bus11	Bus	3phG, C					0.846	1.378				0.366
				AG, A					0.000	0.000				0.000
				BG, B					0.000	0.000				0.000
				CG, C					0.000	0.000				0.000
				ABG, A					0.825	1.345				0.825
				BCG, B					0.825	1.345				0.825
				CAG, C					0.825	1.345				0.825
				AB, A					0.825	1.345				0.825
				BC, B					0.825	1.345				0.825
				CA, C					0.825	1.345				0.825

Bus		Device		Fault Type,	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making									
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus12	0.400	Bus12	Bus	3phG, C					1.508	2.473				0.652
				AG, A					2.477	4.064				2.477
				BG, B					2.477	4.064				2.477
				CG, C					2.477	4.063				2.477
				ABG, A					2.717	4.457				2.717
				BCG, B					2.717	4.456				2.717
				CAG, C					2.717	4.457				2.717
				AB, A					1.480	2.428				1.480
				BC, B					1.480	2.428				1.480
				CA, C					1.480	2.428				1.480
		CB19	CB	3phG, C	88.000	42.000	42.064		1.508	2.473	1.129	1.129	0.005	
				AG, A	88.000	42.000	42.064		2.477	4.064	2.477	2.477	0.005	
				BG, B	88.000	42.000	42.064		2.477	4.064	2.477	2.477	0.005	
				CG, C	88.000	42.000	42.064		2.477	4.063	2.477	2.477	0.005	
				ABG, A	88.000	42.000	42.064		2.717	4.457	2.717	2.717	0.005	
				BCG, B	88.000	42.000	42.064		2.717	4.456	2.717	2.717	0.005	
				CAG, C	88.000	42.000	42.064		2.717	4.457	2.717	2.717	0.005	
				AB, A	88.000	42.000	42.064		1.480	2.428	1.480	1.480	0.004	
				BC, B	88.000	42.000	42.064		1.480	2.428	1.480	1.480	0.004	
				CA, C	88.000	42.000	42.064		1.480	2.428	1.480	1.480	0.004	
Bus13	0.400	Bus13	Bus	3phG, C					1.744	2.727				0.792
				AG, A					2.001	3.129				2.001
				BG, B					2.001	3.129				2.001
				CG, C					2.001	3.129				2.001
				ABG, B					2.784	4.353				2.784
				BCG, C					2.784	4.353				2.784
				CAG, A					2.784	4.353				2.784
				AB, B					1.387	2.169				1.387
				BC, B					1.387	2.169				1.387
				CA, A					1.387	2.169				1.387
Bus14	0.400	Bus14	Bus	3phG, C					1.520	2.548				0.659
				AG, A					2.317	3.885				2.317
				BG, B					2.318	3.885				2.318
				CG, C					2.317	3.885				2.317
				ABG, B					2.994	5.018				2.994
				BCG, C					2.994	5.018				2.994
				CAG, A					2.994	5.018				2.994
				AB, A					1.483	2.486				1.483
				BC, B					1.483	2.486				1.483
				CA, A					1.483	2.486				1.483

Bus		Device		Fault Type,	Device Capacity (kA) Making				Short-Circuit Current (kA)					
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus15	11.000	Bus15	Bus	3phG, B					0.061	0.103				0.027
				AG, A					0.091	0.153				0.091
				BG, B					0.091	0.153				0.091
				CG, C					0.091	0.153				0.091
				ABG, A					0.111	0.187				0.111
				BCG, B					0.111	0.187				0.111
				CAG, C					0.111	0.187				0.111
				AB, A					0.054	0.091				0.054
				BC, B					0.054	0.091				0.054
				CA, A					0.054	0.091				0.054
		CB11	CB	3phG, B	40.000	16.000	19.081	10.396	0.061	0.103	0.045	0.045	0.000	
				AG, A	40.000	16.000	19.081	10.396	0.091	0.153	0.091	0.091	0.001	
				BG, B	40.000	16.000	19.081	10.396	0.091	0.153	0.091	0.091	0.001	
				CG, C	40.000	16.000	19.081	10.396	0.091	0.153	0.091	0.091	0.001	
				ABG, A	40.000	16.000	19.081	10.396	0.111	0.187	0.111	0.111	0.001	
				BCG, B	40.000	16.000	19.081	10.396	0.111	0.187	0.111	0.111	0.001	
				CAG, C	40.000	16.000	19.081	10.396	0.111	0.187	0.111	0.111	0.001	
				AB, A	40.000	16.000	19.081	10.396	0.054	0.091	0.054	0.054	0.000	
				BC, B	40.000	16.000	19.081	10.396	0.054	0.091	0.054	0.054	0.000	
				CA, A	40.000	16.000	19.081	10.396	0.054	0.091	0.054	0.055	0.003	
Bus16	11.000	Bus16	Bus	3phG, A					0.061	0.103				0.027
				AG, A					0.091	0.153				0.091
				BG, B					0.091	0.153				0.091
				CG, C					0.091	0.153				0.091
				ABG, A					0.112	0.188				0.112
				BCG, B					0.112	0.188				0.112
				CAG, C					0.112	0.188				0.112
				AB, B					0.054	0.091				0.054
				BC, B					0.054	0.091				0.054
				CA, C					0.054	0.091				0.054
Bus17	0.400	Bus17	Bus	3phG, A					1.902	3.175				0.921
				AG, A					2.424	4.046				2.424
				BG, B					2.424	4.046				2.424
				CG, C					2.424	4.046				2.424
				ABG, A					3.723	6.216				3.723
				BCG, B					3.723	6.216				3.723
				CAG, C					3.723	6.216				3.723
				AB, B					1.489	2.486				1.489
				BC, C					1.489	2.486				1.489
				CA, A					1.489	2.486				1.489

Bus		Device		Fault Type,	Device Capacity (kA) Making				Short-Circuit Current (kA)					
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB12	CB	3phG, A	56.000	42.000	42.064		1.902	3.175	1.389	1.389	0.009	
				AG, A	56.000	42.000	42.064		2.424	4.046	2.424	2.424	0.015	
				BG, B	56.000	42.000	42.064		2.424	4.046	2.424	2.424	0.015	
				CG, C	56.000	42.000	42.064		2.424	4.046	2.424	2.424	0.015	
				ABG, A	56.000	42.000	42.064		3.723	6.216	3.723	3.723	0.010	
				BCG, B	56.000	42.000	42.064		3.723	6.216	3.723	3.723	0.010	
				CAG, C	56.000	42.000	42.064		3.723	6.216	3.723	3.723	0.010	
				AB, B	56.000	42.000	42.064		1.489	2.486	1.489	1.490	0.041	
				BC, C	56.000	42.000	42.064		1.489	2.486	1.489	1.490	0.041	
				CA, A	56.000	42.000	42.064		1.489	2.486	1.489	1.490	0.041	
Bus18	0.400	Bus18	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus19	0.400	Bus19	Bus	3phG, C					1.544	2.508				0.676
				AG, A					2.129	3.460				2.129
				BG, B					2.130	3.460				2.130
				CG, C					2.129	3.460				2.129
				ABG, B					3.055	4.964				3.055
				BCG, C					3.055	4.964				3.055
				CAG, A					3.055	4.964				3.055
				AB, A					1.455	2.364				1.455
				BC, B					1.455	2.364				1.455
				CA, A					1.455	2.364				1.455
		CB13	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	

Bus		Device		Fault Type,	Device Capacity (kA) Making				Short-Circuit Current (kA)					
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB14	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
Bus20	0.400	Bus20	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus21	0.400	Bus21	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Bus22	0.400	Bus22	Bus	3phG, C					1.544	2.508				0.676
				AG, A					2.129	3.460				2.129
				BG, B					2.130	3.460				2.130
				CG, C					2.129	3.460				2.129
				ABG, B					3.055	4.964				3.055
				BCG, C					3.055	4.964				3.055
				CAG, A					3.055	4.964				3.055
				AB, A					1.455	2.364				1.455
				BC, B					1.455	2.364				1.455
				CA, A					1.455	2.364				1.455

Bus		Device		Fault Type,	Device Capacity (kA) Making				Short-Circuit Current (kA)					
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB16	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
		CB17	CB	3phG, C	46.200	22.000	22.842		1.544	2.508	1.310	1.312	0.071	
				AG, A	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				BG, B	46.200	22.000	22.842		2.130	3.460	2.130	2.132	0.096	
				CG, C	46.200	22.000	22.842		2.129	3.460	2.129	2.132	0.096	
				ABG, B	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				BCG, C	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				CAG, A	46.200	22.000	22.842		3.055	4.964	3.055	3.057	0.099	
				AB, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				BC, B	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
				CA, A	46.200	22.000	22.842		1.455	2.364	1.455	1.456	0.062	
Bus23	0.400	Bus23	Bus	3phG, C					1.761	2.737				0.809
				AG, A					1.825	2.836				1.825
				BG, B					1.825	2.836				1.825
				CG, C					1.825	2.836				1.825
				ABG, B					2.499	3.884				2.499
				BCG, C					2.499	3.884				2.499
				CAG, A					2.499	3.884				2.499
				AB, A					1.367	2.125				1.367
				BC, B					1.367	2.125				1.367
				CA, C					1.367	2.125				1.367
Main Bus	0.400	CB10	CB	3phG, C	88.000	42.000	42.064		1.511	2.580	1.127	1.127	0.006	
				AG, A	88.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				BG, B	88.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				CG, C	88.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				ABG, B	88.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				BCG, C	88.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				CAG, A	88.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				AB, B	88.000	42.000	42.064		1.484	2.534	1.484	1.484	0.007	
				BC, B	88.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
				CA, C	88.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	

Bus		Device		Fault Type,	Device Capacity (kA) Making				Short-Circuit Current (kA)					
ID	kV	ID	Type	Phase	Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB15	CB	3phG, C	56.000	42.000	42.064		1.511	2.580	1.127	1.127	0.006	
				AG, A	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				BG, B	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				CG, C	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				ABG, B	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				BCG, C	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				CAG, A	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				AB, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.007	
				BC, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
				CA, C	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
		CB18	CB	3phG, C	56.000	42.000	42.064		1.511	2.580	1.127	1.127	0.006	
				AG, A	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				BG, B	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				CG, C	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				ABG, B	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				BCG, C	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				CAG, A	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				AB, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.007	
				BC, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
				CA, C	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
		CB6	CB	3phG, C	56.000	42.000	42.064		1.511	2.580	1.127	1.127	0.006	
				AG, A	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				BG, B	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				CG, C	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				ABG, B	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				BCG, C	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				CAG, A	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				AB, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.007	
				BC, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
				CA, C	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
		CB7	CB	3phG, C	56.000	42.000	42.064		1.511	2.580	1.127	1.127	0.006	
				AG, A	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				BG, B	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				CG, C	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				ABG, B	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				BCG, C	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				CAG, A	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				AB, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.007	
				BC, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
				CA, C	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	

Bus		Device			Device Capacity (kA)				Short-Circuit Current (kA)					
ID	kV	ID	Type	Fault Type, Phase	Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB9	CB	3phG, C	56.000	42.000	42.064		1.511	2.580	1.127	1.127	0.006	
				AG, A	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				BG, B	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				CG, C	56.000	42.000	42.064		2.399	4.097	2.399	2.399	0.006	
				ABG, B	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				BCG, C	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				CAG, A	56.000	42.000	42.064		2.819	4.815	2.819	2.819	0.007	
				AB, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.007	
				BC, B	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
				CA, C	56.000	42.000	42.064		1.484	2.534	1.484	1.484	0.004	
		Main Bus	Bus	3phG, C					1.511	2.580				0.653
				AG, A					2.399	4.097				2.399
				BG, B					2.399	4.097				2.399
				CG, C					2.399	4.097				2.399
				ABG, B					2.819	4.815				2.819
				BCG, C					2.819	4.815				2.819
				CAG, A					2.819	4.815				2.819
				AB, B					1.484	2.534				1.484
				BC, B					1.484	2.534				1.484
				CA, C					1.484	2.534				1.484

-For each fault type, the maximum I"k will be displayed first, and then any other violated value (if any) with phase indictor will displayed next.

ip is calculated using method C

Ib does not include decay of non-terminal faulted induction motors

Ik is the maximum steady state fault current

Idc is based on X/R from Method C and Ib as specified above

LV CB duty determined based on service rating.

Total through current is used for device duty.

* Indicates a device with calculated duty exceeding the device capability.

\# Indicates a device with calculated duty exceeding the device marginal limit. (95 % times device capability)

Short-Circuit Thermal Summary Report

		Device Capacity				Short-Circuit Duty Result		
Bus ID	Device ID	Fault Type, Max If Phase	Ithr(kA)	Tkr (sec.)	Rated Thermal Energy (MJ))	Ith (kA)	Tkr (sec.)	Thermal Energy (MJ))
Bus1	CB2	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
	CB3	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
Bus6	CB4	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
	CB5	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
Bus12	CB19	3phG, C	42	1	1764	1.126	1	1.3
		AG, A	42	1	1764	2.487	1	6.2

		Device Capacity				Short-Circuit Duty Result		
Bus ID	Device ID	Fault Type, Max If Phase	Ithr(kA)	Tkr (sec.)	Rated Thermal Energy (MJ))	Ith (kA)	Tkr (sec.)	Thermal Energy (MJ))
		BG, B	42	1	1764	2.487	1	6.2
		CG, C	42	1	1764	2.487	1	6.2
		ABG, A	42	1	1764	2.727	1	7.4
		BCG, B	42	1	1764	2.727	1	7.4
		CAG, C	42	1	1764	2.727	1	7.4
		AB, A	42	1	1764	1.486	1	2.2
		BC, B	42	1	1764	1.486	1	2.2
		CA, C	42	1	1764	1.486	1	2.2
Bus15	CB11	3phG, B	16	3	768	0.038	3	0.0
		AG, A	16	3	768	0.091	3	0.0
		BG, B	16	3	768	0.091	3	0.0
		CG, C	16	3	768	0.091	3	0.0
		ABG, A	16	3	768	0.112	3	0.0
		BCG, B	16	3	768	0.112	3	0.0
		CAG, C	16	3	768	0.112	3	0.0
		AB, A	16	3	768	0.055	3	0.0
		BC, B	16	3	768	0.055	3	0.0
		CA, A	16	3	768	0.055	3	0.0
Bus17	CB12	3phG, A	42	1	1764	1.487	1	2.2
		AG, A	42	1	1764	2.434	1	5.9
		BG, B	42	1	1764	2.434	1	5.9
		CG, C	42	1	1764	2.434	1	5.9
		ABG, A	42	1	1764	3.739	1	14.0
		BCG, B	42	1	1764	3.739	1	14.0
		CAG, C	42	1	1764	3.739	1	14.0
		AB, B	42	1	1764	1.495	1	2.2
		BC, C	42	1	1764	1.495	1	2.2
		CA, A	42	1	1764	1.495	1	2.2
Bus19	CB13	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
	CB14	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4

		Device Capacity				Short-Circuit Duty Result		
Bus ID	Device ID	Fault Type, Max If Phase	Ithr(kA)	Tkr (sec.)	Rated Thermal Energy (MJ))	Ith (kA)	Tkr (sec.)	Thermal Energy (MJ))
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
Bus22	CB16	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
	CB17	3phG, C	5	1	25	1.159	1	1.3
		AG, A	5	1	25	2.137	1	4.6
		BG, B	5	1	25	2.138	1	4.6
		CG, C	5	1	25	2.137	1	4.6
		ABG, B	5	1	25	3.067	1	9.4
		BCG, C	5	1	25	3.067	1	9.4
		CAG, A	5	1	25	3.067	1	9.4
		AB, A	5	1	25	1.460	1	2.1
		BC, B	5	1	25	1.460	1	2.1
		CA, A	5	1	25	1.460	1	2.1
Main Bus	CB10	3phG, C	42	1	1764	1.128	1	1.3
		AG, A	42	1	1764	2.408	1	5.8
		BG, B	42	1	1764	2.408	1	5.8
		CG, C	42	1	1764	2.408	1	5.8
		ABG, B	42	1	1764	2.830	1	8.0
		BCG, C	42	1	1764	2.830	1	8.0
		CAG, A	42	1	1764	2.830	1	8.0
		AB, B	42	1	1764	1.490	1	2.2
		BC, B	42	1	1764	1.490	1	2.2
		CA, C	42	1	1764	1.489	1	2.2
	CB15	3phG, C	42	1	1764	1.128	1	1.3
		AG, A	42	1	1764	2.408	1	5.8
		BG, B	42	1	1764	2.408	1	5.8
		CG, C	42	1	1764	2.408	1	5.8
		ABG, B	42	1	1764	2.830	1	8.0
		BCG, C	42	1	1764	2.830	1	8.0
		CAG, A	42	1	1764	2.830	1	8.0
		AB, B	42	1	1764	1.490	1	2.2
		BC, B	42	1	1764	1.490	1	2.2
		CA, C	42	1	1764	1.489	1	2.2

		Device Capacity				Short-Circuit Duty Result		
Bus ID	Device ID	Fault Type, Max If Phase	Ithr(kA)	Tkr (sec.)	Rated Thermal Energy (MJ))	Ith (kA)	Tkr (sec.)	Thermal Energy (MJ))
	CB18	3phG, C	42	1	1764	1.128	1	1.3
		AG, A	42	1	1764	2.408	1	5.8
		BG, B	42	1	1764	2.408	1	5.8
		CG, C	42	1	1764	2.408	1	5.8
		ABG, B	42	1	1764	2.830	1	8.0
		BCG, C	42	1	1764	2.830	1	8.0
		CAG, A	42	1	1764	2.830	1	8.0
		AB, B	42	1	1764	1.490	1	2.2
		BC, B	42	1	1764	1.490	1	2.2
		CA, C	42	1	1764	1.489	1	2.2
	CB6	3phG, C	42	1	1764	1.128	1	1.3
		AG, A	42	1	1764	2.408	1	5.8
		BG, B	42	1	1764	2.408	1	5.8
		CG, C	42	1	1764	2.408	1	5.8
		ABG, B	42	1	1764	2.830	1	8.0
		BCG, C	42	1	1764	2.830	1	8.0
		CAG, A	42	1	1764	2.830	1	8.0
		AB, B	42	1	1764	1.490	1	2.2
		BC, B	42	1	1764	1.490	1	2.2
		CA, C	42	1	1764	1.489	1	2.2
	CB7	3phG, C	42	1	1764	1.128	1	1.3
		AG, A	42	1	1764	2.408	1	5.8
		BG, B	42	1	1764	2.408	1	5.8
		CG, C	42	1	1764	2.408	1	5.8
		ABG, B	42	1	1764	2.830	1	8.0
		BCG, C	42	1	1764	2.830	1	8.0
		CAG, A	42	1	1764	2.830	1	8.0
		AB, B	42	1	1764	1.490	1	2.2
		BC, B	42	1	1764	1.490	1	2.2
		CA, C	42	1	1764	1.489	1	2.2
	CB9	3phG, C	42	1	1764	1.128	1	1.3
		AG, A	42	1	1764	2.408	1	5.8
		BG, B	42	1	1764	2.408	1	5.8
		CG, C	42	1	1764	2.408	1	5.8
		ABG, B	42	1	1764	2.830	1	8.0
		BCG, C	42	1	1764	2.830	1	8.0
		CAG, A	42	1	1764	2.830	1	8.0
		AB, B	42	1	1764	1.490	1	2.2
		BC, B	42	1	1764	1.490	1	2.2
		CA, C	42	1	1764	1.489	1	2.2

Ithr= Rated short-time withstand current (Icw for low voltage circuit breaker)

Tkr= Rated short-time

Ith= Thermal equivalent short-time current

* Indicates a device with calculated duty exceeding the device capability.

# Indicates a device with calculated duty exceeding the device marginal limit. (95 % times device capability)