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Location:	24.0.1N	Date:	14-07-2026
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	Study Case: SC3Ph		

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:	4	0	18	22			
	XFMR2	XFMR3	Reactor	Line/Cable/ Busway	Impedance	Tie PD	Total
Number of Branches:	3	0	0	17	0	1	21
	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\SC_GEN_ONLY_3PHG.SC6S

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Adjustments

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

<u>Temperature Correction</u>	<u>Apply Adjustments</u>	<u>Individual /Global</u>	<u>Degree C</u>
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	2	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	2	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	Load	0.400	2	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	2	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	2	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	2	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		
Bus9	3Phase	Load	0.400	2	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	Load	0.700	2	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	2	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	2	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	2	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	2	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	2	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	2	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.
Bus18	3Phase	Load	0.400	2	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		
Bus19	3Phase	Load	0.400	2	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	2	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	2	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	2	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	2	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		
Bus24	3Phase	Swing	0.400	2	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	Load	0.400	2	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: 22								0.000	0.000	0.000	0.000		

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Cable/Busway Input Data

Cable/Busway								ohms/1000 m per Conductor		
ID	Phase	Library	Size	Length		#/Phase	T (°C)	R	X	Y
				Adj. (m)	% Tol.					
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	
Cable21	3Phase	1.0kV 4/C CU	240	30.0	0.0	3	20	0.078156	0.077686	

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		Operating Temp °C
			Adj. (m)	% Tol.	
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

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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	
Cable21	3Phase	Cable	Bus9	Bus24	48.85	48.55	68.87	
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	
CB8	3Phase	Tie Circuit	Main Bus	Bus9	0.00	0.00	0.00	

Synchronous Generator Input Data

Synchronous Generator							Connected Bus		Rating				% Impedance in Machine Base				Excitation Type
													Xd''				
ID	Type	ID	MVA	kV	RPM	% PF	R	Adj.	Tol.	R/X	Xd, sat						
Gen1	Steam Turbo	Bus24	0.556	0.400	1500	90.00	1.000	19.00	0.0	0.05	155.00	Turbine 130%					

Total Connected Synchronous Generators (= 1) : 0.556 MVA

Synchronous Generator			Grounding			Exciter Type	Impedances (%)			
							Negative Seq		Zero Seq.	
ID	Type	Connected Bus ID	Conn.	Type	Amp		R2	X2	R0	X0
Gen1	Steam Turbo	Bus24	Wye	Solid		Turbine 130%	2.00	18.00	1.00	7.00

Lumped Load Input Data

Lumped Load							Motor Loads								
Lumped Load ID	Rating				% Load		Loading		% Impedance (Machine Base)			Grounding			MW/PP
	kVA	kV	Amp	% PF	MTR	STAT	kW	kvar	R	X"	R/X"	Conn.	Type	Amp	
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, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus1	Total	3phG, C	0.00	0.00	0.00	4.998	-77.7	4.998	162.3	4.999	42.3
Bus3	Bus1	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus4	Bus1	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Main Bus	Bus1	3phG, C	11.30	11.30	11.30	4.998	-77.7	4.998	162.3	4.999	42.3

Fault at Bus: Bus3
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus3	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus1	Bus3	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus4
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus4	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus1	Bus4	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus5
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus5	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus6	Bus5	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus6
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus6	Total	3phG, C	0.00	0.00	0.00	4.998	-77.7	4.998	162.3	4.999	42.3
Bus5	Bus6	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus7	Bus6	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Main Bus	Bus6	3phG, C	11.30	11.30	11.30	4.998	-77.7	4.998	162.3	4.999	42.3

Fault at Bus: Bus7
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus7	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus6	Bus7	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus9
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus9	Total	3phG, C	0.00	0.00	0.00	5.338	-82.9	5.338	157.1	5.338	37.1
Bus24	Bus9	3phG, B	2.14	2.14	2.14	4.494	-86.2	4.494	153.8	4.494	33.8
Main Bus	Bus9	3phG, C	0.00	0.00	0.00	0.891	-65.8	0.891	174.2	0.891	54.2

Fault at Bus: Bus11
Fault Type: 3phG

Nominal kV = 0.700
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus11	Total	3phG, C	0.00	0.00	0.00	2.396	-106.6	2.396	133.4	2.396	13.4
Bus12	Bus11	3phG, C	22.73	22.73	22.73	2.396	-106.6	2.396	133.4	2.396	13.4

Fault at Bus: Bus12
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
			A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus12	Total	3phG, C	0.00	0.00	0.00	5.238	-82.0	5.238	158.0	5.238	38.0
Main Bus	Bus12	3phG, C	2.50	2.50	2.50	5.238	-82.0	5.238	158.0	5.238	38.0
Bus11	Bus12	3phG, B	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0

Fault at Bus: Bus13
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus13	Total	3phG, C	0.00	0.00	0.00	4.413	-60.0	4.413	180.0	4.413	60.0
Main Bus	Bus13	3phG, C	41.98	41.98	41.98	4.413	-60.0	4.413	180.0	4.413	60.0

Fault at Bus: Bus14
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus14	Total	3phG, C	0.00	0.00	0.00	5.277	-82.2	5.277	157.8	5.277	37.8
Main Bus	Bus14	3phG, B	2.11	2.11	2.11	4.426	-85.4	4.426	154.6	4.426	34.6
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, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus15	Total	3phG, B	0.00	0.00	0.00	0.175	-47.3	0.175	-167.3	0.175	72.7
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	20.86	20.86	20.86	0.140	-50.1	0.140	-170.1	0.140	69.9

Fault at Bus: Bus16
Fault Type: 3phG

Nominal kV = 11.000
Voltage c Factor = 1.10

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus16	Total	3phG, B	0.00	0.00	0.00	0.175	-47.3	0.175	-167.3	0.175	72.7
Bus15	Bus16	3phG, B	0.29	0.27	0.27	0.140	-50.0	0.140	-170.1	0.140	69.9
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, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
			A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus17	Total	3phG, C	0.00	0.00	0.00	3.843	-72.5	3.844	167.5	3.844	47.5
Bus16	Bus17	3phG, C	25.58	25.58	25.58	2.831	-74.4	2.831	165.6	2.831	45.6
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, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus18	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus19	Bus18	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus19
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus19	Total	3phG, C	0.00	0.00	0.00	4.998	-77.7	4.998	162.3	4.999	42.3
Bus18	Bus19	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus20	Bus19	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Main Bus	Bus19	3phG, C	11.30	11.30	11.30	4.998	-77.7	4.998	162.3	4.999	42.3

Fault at Bus: Bus20
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus20	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus19	Bus20	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus21
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus21	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus22	Bus21	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus22
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus22	Total	3phG, C	0.00	0.00	0.00	4.998	-77.7	4.998	162.3	4.999	42.3
Bus21	Bus22	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus23	Bus22	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Main Bus	Bus22	3phG, C	11.30	11.30	11.30	4.998	-77.7	4.998	162.3	4.999	42.3

Fault at Bus: Bus23
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus23	Total	3phG, C	0.00	0.00	0.00	4.084	-57.2	4.084	-177.2	4.084	62.8
Bus22	Bus23	3phG, C	38.86	38.86	38.86	4.084	-57.2	4.084	-177.2	4.084	62.8

Fault at Bus: Bus24
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
From Bus	To Bus		A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Bus24	Total	3phG, C	0.00	0.00	0.00	5.400	-83.6	5.400	156.4	5.400	36.4
Bus9	Bus24	3phG, C	0.42	0.42	0.42	0.888	-65.7	0.888	174.3	0.888	54.3
Gen1	Bus24	3phG, B	105.00	105.00	105.00	4.564	-87.0	4.564	153.0	4.564	33.0

Fault at Bus: Main Bus
Fault Type: 3phG

Nominal kV = 0.400
Voltage c Factor = 1.05

Contribution		Fault Type, Max If Phase	% Voltage From Bus			Initial Symmetrical Current (kA, rms)					
						A		B		C	
			A	B	C	Mag.	Ang.	Mag.	Ang.	Mag.	Ang.
Main Bus	Total	3phG, C	0.00	0.00	0.00	5.338	-82.9	5.338	157.1	5.338	37.1
Bus1	Main Bus	3phG, B	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus6	Main Bus	3phG, B	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus12	Main Bus	3phG, C	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
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	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus22	Main Bus	3phG, B	0.00	0.00	0.00	0.000	180.0	0.000	180.0	0.000	180.0
Bus9	Main Bus	3phG, B	0.00	0.00	0.00	4.494	-86.2	4.494	153.8	4.494	33.8

Short-Circuit Summary Report

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus1	0.400	Bus1	Bus	3phG, C					4.999	11.128				1.454
				AG, A					4.764	10.605				4.764
				BG, B					4.764	10.605				4.764
				CG, C					4.764	10.605				4.764
				ABG, B					5.070	11.288				5.070
				BCG, C					5.070	11.288				5.070
				CAG, A					5.070	11.288				5.070
				AB, A					4.408	9.813				4.408
				BC, B					4.408	9.813				4.408
				CA, A					4.408	9.813				4.408
		CB2	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
		CB3	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus3	0.400	Bus3	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563
Bus4	0.400	Bus4	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563
Bus5	0.400	Bus5	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563
Bus6	0.400	Bus6	Bus	3phG, C					4.999	11.128				1.454
				AG, A					4.764	10.605				4.764
				BG, B					4.764	10.605				4.764
				CG, C					4.764	10.605				4.764
				ABG, B					5.070	11.288				5.070
				BCG, C					5.070	11.288				5.070
				CAG, A					5.070	11.288				5.070
				AB, A					4.408	9.813				4.408
				BC, B					4.408	9.813				4.408
				CA, A					4.408	9.813				4.408

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					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		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
		CB5	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
Bus7	0.400	Bus7	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563
Bus9	0.400	Bus9	Bus	3phG, C					5.338	11.915				1.463
				AG, A					7.039	15.711				7.039
				BG, B					7.039	15.711				7.039
				CG, C					7.039	15.711				7.039
				ABG, A					6.802	15.183				6.802
				BCG, B					6.802	15.183				6.802
				CAG, C					6.802	15.183				6.802
				AB, B					4.723	10.543				4.723
				BC, B					4.723	10.543				4.723
				CA, C					4.723	10.543				4.723

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB8	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
Bus11	0.700	Bus11	Bus	3phG, C					2.396	5.207				0.814
				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					2.106	4.576				2.106
				BCG, B					2.106	4.576				2.106
				CAG, C					2.106	4.576				2.106
				AB, A					2.106	4.576				2.106
				BC, B					2.106	4.576				2.106
				CA, A					2.106	4.576				2.106
Bus12	0.400	Bus12	Bus	3phG, C					5.238	12.691				1.461
				AG, A					7.252	17.571				7.252
				BG, B					7.252	17.571				7.252
				CG, C					7.252	17.571				7.252
				ABG, A					7.471	18.103				7.471
				BCG, B					7.471	18.103				7.471
				CAG, C					7.471	18.103				7.471
				AB, B					4.631	11.220				4.631
				BC, B					4.631	11.220				4.631
				CA, C					4.631	11.220				4.631
		CB19	CB	3phG, C	88.000	42.000	42.064		5.238	12.691	4.207	4.834	2.380	
				AG, A	88.000	42.000	42.064		7.252	17.571	7.252	7.644	2.416	
				BG, B	88.000	42.000	42.064		7.252	17.571	7.252	7.644	2.416	
				CG, C	88.000	42.000	42.064		7.252	17.571	7.252	7.644	2.416	
				ABG, A	88.000	42.000	42.064		7.471	18.103	7.471	7.835	2.361	
				BCG, B	88.000	42.000	42.064		7.471	18.103	7.471	7.835	2.361	
				CAG, C	88.000	42.000	42.064		7.471	18.103	7.471	7.836	2.361	
				AB, B	88.000	42.000	42.064		4.631	11.220	4.631	5.086	2.104	
				BC, B	88.000	42.000	42.064		4.631	11.220	4.631	5.086	2.104	
				CA, C	88.000	42.000	42.064		4.631	11.220	4.631	5.086	2.104	

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus13	0.400	Bus13	Bus	3phG, C					4.413	7.601				1.437
				AG, A					4.169	7.181				4.169
				BG, B					4.169	7.181				4.169
				CG, C					4.169	7.181				4.169
				ABG, B					4.522	7.788				4.522
				BCG, C					4.522	7.788				4.522
				CAG, A					4.522	7.788				4.522
				AB, A					3.856	6.641				3.856
				BC, B					3.856	6.641				3.856
				CA, A					3.856	6.641				3.856
Bus14	0.400	Bus14	Bus	3phG, C					5.277	11.633				1.461
				AG, A					6.161	13.583				6.161
				BG, B					6.161	13.583				6.161
				CG, C					6.161	13.583				6.161
				ABG, B					5.874	12.948				5.874
				BCG, C					5.874	12.949				5.874
				CAG, A					5.874	12.948				5.874
				AB, A					4.666	10.285				4.666
				BC, B					4.666	10.286				4.666
				CA, A					4.666	10.285				4.666
Bus15	11.000	Bus15	Bus	3phG, B					0.175	0.357				0.052
				AG, A					0.239	0.488				0.239
				BG, B					0.239	0.488				0.239
				CG, C					0.239	0.488				0.239
				ABG, A					0.247	0.506				0.247
				BCG, B					0.247	0.506				0.247
				CAG, C					0.247	0.506				0.247
				AB, A					0.154	0.314				0.154
				BC, C					0.154	0.314				0.154
				CA, C					0.154	0.314				0.154
		CB11	CB	3phG, B	40.000	16.000	19.081	10.396	0.175	0.357	0.141	0.144	0.030	
				AG, A	40.000	16.000	19.081	10.396	0.239	0.488	0.239	0.240	0.018	
				BG, B	40.000	16.000	19.081	10.396	0.239	0.488	0.239	0.240	0.018	
				CG, C	40.000	16.000	19.081	10.396	0.239	0.488	0.239	0.240	0.018	
				ABG, A	40.000	16.000	19.081	10.396	0.247	0.506	0.247	0.248	0.021	
				BCG, B	40.000	16.000	19.081	10.396	0.247	0.506	0.247	0.248	0.021	
				CAG, C	40.000	16.000	19.081	10.396	0.247	0.506	0.247	0.248	0.021	
				AB, A	40.000	16.000	19.081	10.396	0.154	0.314	0.154	0.155	0.019	
				BC, C	40.000	16.000	19.081	10.396	0.154	0.314	0.154	0.155	0.020	
				CA, C	40.000	16.000	19.081	10.396	0.154	0.314	0.154	0.155	0.019	

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus16	11.000	Bus16	Bus	3phG, B					0.175	0.356				0.052
				AG, A					0.238	0.485				0.238
				BG, B					0.238	0.485				0.238
				CG, C					0.238	0.486				0.238
				ABG, A					0.246	0.502				0.246
				BCG, B					0.246	0.502				0.246
				CAG, C					0.246	0.502				0.246
				AB, A					0.153	0.313				0.153
				BC, B					0.153	0.313				0.153
				CA, C					0.153	0.313				0.153
Bus17	0.400	Bus17	Bus	3phG, C					3.844	7.364				1.364
				AG, A					5.006	9.589				5.006
				BG, B					5.006	9.589				5.006
				CG, C					5.006	9.591				5.006
				ABG, A					5.071	9.714				5.071
				BCG, B					5.071	9.713				5.071
				CAG, C					5.071	9.715				5.071
				AB, B					3.357	6.431				3.357
				BC, B					3.358	6.432				3.358
				CA, A					3.357	6.432				3.357
		CB12	CB	3phG, C	46.200	22.000	22.842		3.844	7.364	3.346	3.440	0.799	
				AG, A	46.200	22.000	22.842		5.006	9.589	5.006	5.054	0.693	
				BG, B	46.200	22.000	22.842		5.006	9.589	5.006	5.054	0.693	
				CG, C	46.200	22.000	22.842		5.006	9.591	5.006	5.054	0.693	
				ABG, A	46.200	22.000	22.842		5.071	9.714	5.071	5.130	0.776	
				BCG, B	46.200	22.000	22.842		5.071	9.713	5.071	5.130	0.776	
				CAG, C	46.200	22.000	22.842		5.071	9.715	5.071	5.130	0.776	
				AB, A	46.200	22.000	22.842		3.357	6.432	3.357	3.413	0.616	
				BC, B	46.200	22.000	22.842		3.358	6.432	3.358	3.414	0.616	
				CA, A	46.200	22.000	22.842		3.357	6.432	3.357	3.415	0.622	
Bus18	0.400	Bus18	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus19	0.400	Bus19	Bus	3phG, C					4.999	11.128				1.454
				AG, A					4.764	10.605				4.764
				BG, B					4.764	10.605				4.764
				CG, C					4.764	10.605				4.764
				ABG, B					5.070	11.288				5.070
				BCG, C					5.070	11.288				5.070
				CAG, A					5.070	11.288				5.070
				AB, A					4.408	9.813				4.408
				BC, B					4.408	9.813				4.408
				CA, A					4.408	9.813				4.408
		CB13	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
		CB14	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
Bus20	0.400	Bus20	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus21	0.400	Bus21	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563
Bus22	0.400	Bus22	Bus	3phG, C					4.999	11.128				1.454
				AG, A					4.764	10.605				4.764
				BG, B					4.764	10.605				4.764
				CG, C					4.764	10.605				4.764
				ABG, B					5.070	11.288				5.070
				BCG, C					5.070	11.288				5.070
				CAG, A					5.070	11.288				5.070
				AB, A					4.408	9.813				4.408
				BC, B					4.408	9.813				4.408
				CA, A					4.408	9.813				4.408
		CB16	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
		CB17	CB	3phG, C	46.200	22.000	22.842		4.999	11.128	4.436	5.118	2.553	
				AG, A	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				BG, B	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				CG, C	46.200	22.000	22.842		4.764	10.605	4.764	5.349	2.433	
				ABG, B	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				BCG, C	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				CAG, A	46.200	22.000	22.842		5.070	11.288	5.070	5.693	2.590	
				AB, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				BC, B	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	
				CA, A	46.200	22.000	22.842		4.408	9.813	4.408	4.949	2.251	

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
Bus23	0.400	Bus23	Bus	3phG, C					4.084	6.830				1.424
				AG, A					3.257	5.447				3.257
				BG, B					3.257	5.447				3.257
				CG, C					3.257	5.447				3.257
				ABG, B					4.105	6.865				4.105
				BCG, C					4.105	6.865				4.105
				CAG, A					4.105	6.865				4.105
				AB, A					3.563	5.958				3.563
				BC, B					3.563	5.958				3.563
				CA, A					3.563	5.958				3.563
Bus24	0.400	Bus24	Bus	3phG, C					5.400	12.214				1.466
				AG, A					7.209	16.305				7.209
				BG, B					7.209	16.305				7.209
				CG, C					7.209	16.305				7.209
				ABG, A					6.943	15.702				6.943
				BCG, B					6.943	15.702				6.943
				CAG, C					6.943	15.702				6.943
				AB, A					4.782	10.815				4.782
				BC, B					4.782	10.815				4.782
				CA, A					4.782	10.815				4.782
Main Bus	0.400	CB10	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
		CB15	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
		CB18	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
		CB6	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
		CB7	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
		CB8	CB	3phG, C	46.200	22.000	22.842		5.338	11.915	4.615	6.282	4.263	
				AG, A	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				BG, B	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				CG, C	46.200	22.000	22.842		7.039	15.711	7.039	8.090	3.988	
				ABG, A	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				BCG, B	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				CAG, C	46.200	22.000	22.842		6.802	15.183	6.802	8.054	4.313	
				AB, A	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	
				BC, C	46.200	22.000	22.842		4.723	10.543	4.723	5.705	3.200	
				CA, C	46.200	22.000	22.842		4.723	10.543	4.723	5.670	3.137	

Bus		Device		Fault Type, Phase	Device Capacity (kA)				Short-Circuit Current (kA)					
					Making Peak	Ib sym	Ib asym	Idc	I"k	ip	Ib sym	Ib asym	Idc	Ik
CB9	CB	3phG, C	46.200	22.000	22.842	5.338	11.915	4.615	6.282	4.263				
Main Bus	Bus	3phG, C	46.200	22.000	22.842	5.338	11.915	4.615	6.282	4.263				

-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

Bus ID	Device ID	Device Capacity				Short-Circuit Duty Result		
		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	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
	CB3	3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
Bus6	CB4	3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
	CB5	3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
Bus9	CB8	3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2

		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))
Bus12	CB19	BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2
		ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
		CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
		BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1
		3phG, C	42	1	1764	3.306	1	10.9
		AG, A	42	1	1764	7.358	1	54.1
		BG, B	42	1	1764	7.358	1	54.1
		CG, C	42	1	1764	7.358	1	54.1
		ABG, A	42	1	1764	7.581	1	57.5
		BCG, B	42	1	1764	7.581	1	57.5
		CAG, C	42	1	1764	7.581	1	57.5
		AB, B	42	1	1764	4.699	1	22.1
		BC, B	42	1	1764	4.699	1	22.1
		CA, C	42	1	1764	4.699	1	22.1
Bus15	CB11	3phG, B	16	3	768	0.086	3	0.0
		AG, A	16	3	768	0.240	3	0.2
		BG, B	16	3	768	0.240	3	0.2
		CG, C	16	3	768	0.240	3	0.2
		ABG, A	16	3	768	0.248	3	0.2
		BCG, B	16	3	768	0.248	3	0.2
		CAG, C	16	3	768	0.248	3	0.2
		AB, A	16	3	768	0.154	3	0.1
		BC, C	16	3	768	0.154	3	0.1
Bus17	CB12	CA, C	16	3	768	0.154	3	0.1
		3phG, C	5	1	25	2.648	1	7.0
		AG, A	5	1	25	5.034*	1	25.3
		BG, B	5	1	25	5.034*	1	25.3
		CG, C	5	1	25	5.034*	1	25.3
		ABG, A	5	1	25	5.099*	1	26.0
		BCG, B	5	1	25	5.099*	1	26.0
		CAG, C	5	1	25	5.100*	1	26.0
		AB, A	5	1	25	3.376	1	11.4
Bus19	CB13	BC, B	5	1	25	3.377	1	11.4
		CA, A	5	1	25	3.376	1	11.4
		3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2

		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))
Bus22	CB14	CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
		3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
	CB16	3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
	CB17	3phG, C	5	1	25	3.171	1	10.1
		AG, A	5	1	25	4.807	1	23.1
		BG, B	5	1	25	4.807	1	23.1
		CG, C	5	1	25	4.807	1	23.1
		ABG, B	5	1	25	5.116*	1	26.2
		BCG, C	5	1	25	5.116*	1	26.2
		CAG, A	5	1	25	5.116*	1	26.2
		AB, A	5	1	25	4.447	1	19.8
		BC, B	5	1	25	4.447	1	19.8
		CA, A	5	1	25	4.447	1	19.8
Main Bus	CB10	3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2
		BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2
		ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
		CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
		BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1

		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))
	CB15	3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2
		BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2
		ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
		CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
	CB18	BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1
		3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2
		BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2
		ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
	CB6	CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
		BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1
		3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2
		BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2
	CB7	ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
		CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
		BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1
		3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2
	CB8	BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2

Bus ID	Device ID	Device Capacity				Short-Circuit Duty Result		
		Fault Type,	Ithr(kA)	Tkr (sec.)	Rated Thermal Energy (MJ))	Ith (kA)	Tkr (sec.)	Thermal Energy (MJ))
		Max If Phase						
	CB9	ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
		CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
		BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1
		3phG, C	5	1	25	3.362	1	11.3
		AG, A	5	1	25	7.157*	1	51.2
		BG, B	5	1	25	7.157*	1	51.2
		CG, C	5	1	25	7.157*	1	51.2
		ABG, A	5	1	25	6.916*	1	47.8
		BCG, B	5	1	25	6.916*	1	47.8
		CAG, C	5	1	25	6.916*	1	47.8
		AB, A	5	1	25	4.803	1	23.1
		BC, C	5	1	25	4.803	1	23.1
		CA, C	5	1	25	4.803	1	23.1

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)