

Project: IV Train Jose 250  
 Location: Anaco - Anzoátegui State  
 Contract: 1295  
 Engineer: Daniel Serres  
 Filename: 1295-01\_OP2

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 Config.: SALTRX-15

Option 2

**Momentary Duty Summary Report**

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Crest	Symm. kA rms	Asymm. kA rms	Asymm. kA Crest
Bus-1	13.800	Bus-1	Switchgear	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	52G1	5 cy Sym CB	25.254	21.2	1.577	39.827	66.511		77.000	130.000
	13.800	52 NC	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB2	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB40-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB74-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB20-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB10-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
Bus-2	13.800	Bus-2	Switchgear	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	52G2	5 cy Sym CB	25.254	21.2	1.577	39.827	66.511		77.000	130.000
	13.800	52 NC	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB13	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB54-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB73-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB53-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
	13.800	CB55-1	5 cy Sym CB	33.595	21.2	1.577	52.981	88.478		77.000	130.000
Bus-3	13.800	Bus-3	Switchgear	19.369	20.7	1.573	30.475	50.920		77.000	130.000
	13.800	52G3	5 cy Sym CB	11.028	20.7	1.573	17.352	28.993		77.000	130.000
	13.800	CB24	5 cy Sym CB	19.369	20.7	1.573	30.475	50.920		77.000	130.000
	13.800	CB7-1	5 cy Sym CB	19.369	20.7	1.573	30.475	50.920		67.000	113.100
MCC-480-01.	0.480	MCC-480-01.	Bus	41.348	11.2	1.462	60.468	102.597			
MCC-480-02.	0.480	MCC-480-02.	Bus	41.783	11.4	1.466	61.266	103.897			
MCC-480-03.	0.480	MCC-480-03.	Bus	41.348	11.2	1.462	60.468	102.597			
MCC-480-04.	0.480	MCC-480-04.	Bus	41.783	11.4	1.466	61.266	103.897			
MCC-480-05.	0.480	MCC-480-05.	Bus	43.670	11.1	1.462	63.829	108.311			
MCC-480-06.	0.480	MCC-480-06.	Bus	42.209	11.3	1.465	61.821	104.862			
MCC-480-07.	0.480	MCC-480-07.	Bus	43.670	11.1	1.462	63.829	108.311			
MCC-480-08.	0.480	MCC-480-08.	Bus	42.209	11.3	1.465	61.821	104.862			
MCC-480-09 A	0.480	MCC-480-09 A	Bus	42.303	10.7	1.453	61.478	104.435			
MCC-480-09 B	0.480	MCC-480-09 B	Bus	43.989	10.6	1.451	63.811	108.436			
MCC-480-10.	0.480	MCC-480-10.	Bus	42.303	10.7	1.453	61.478	104.435			
MCC-480-11 A	0.480	MCC-480-11 A	Bus	42.303	10.7	1.453	61.478	104.435			
MCC-480-11 B	0.480	MCC-480-11 B	Bus	43.989	10.6	1.451	63.811	108.436			

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3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Crest	Symm. kA rms	Asymm. kA rms	Asymm. kA Crest
MCC-480-12.	0.480	MCC-480-12.	Bus	43.989	10.6	1.451	63.811	108.436			
MCC-480-13 A	0.480	MCC-480-13 A	Bus	42.303	10.7	1.453	61.478	104.435			
MCC-480-13 B	0.480	MCC-480-13 B	Bus	43.989	10.6	1.451	63.811	108.436			
MCC-480-14.	0.480	MCC-480-14.	Bus	42.303	10.7	1.453	61.478	104.435			
MCC-480-15 A	0.480	MCC-480-15 A	Bus	42.303	10.7	1.453	61.478	104.435			
MCC-480-15 B	0.480	MCC-480-15 B	Bus	43.989	10.6	1.451	63.811	108.436			
MCC-480-16.	0.480	MCC-480-16.	Bus	43.989	10.6	1.451	63.811	108.436			
MCC-480-17 A	0.480	MCC-480-17 A	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-17 B	0.480	MCC-480-17 B	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-18 A	0.480	MCC-480-18 A	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-18 B	0.480	MCC-480-18 B	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-19 A	0.480	MCC-480-19 A	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-19 B	0.480	MCC-480-19 B	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-20 A	0.480	MCC-480-20 A	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-20 B	0.480	MCC-480-20 B	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-21.	0.480	MCC-480-21.	Bus	54.203	9.7	1.430	77.524	132.080			
MCC-480-22.	0.480	MCC-480-22.	Bus	54.203	9.7	1.430	77.524	132.080			
OFFSITES A	0.480	OFFSITES A	Switchgear	41.173	5.5	1.280	52.706	91.131	65.000	86.500	
OFFSITES B	0.480	OFFSITES B	Switchgear	41.173	5.5	1.280	52.706	91.131	65.000	86.500	
PDC-480-01-A	0.480	PDC-480-01-A	Bus	41.348	11.2	1.462	60.468	102.597			
PDC-480-01-B	0.480	PDC-480-01-B	Bus	41.783	11.4	1.466	61.266	103.897			
PDC-480-02-A	0.480	PDC-480-02-A	Bus	43.670	11.1	1.462	63.829	108.311			
PDC-480-02-B	0.480	PDC-480-02-B	Bus	42.209	11.3	1.465	61.821	104.862			
PDC-480-03-A	0.480	PDC-480-03-A	Bus	42.303	10.7	1.453	61.478	104.435			
PDC-480-03-B	0.480	PDC-480-03-B	Bus	43.989	10.6	1.451	63.811	108.436			
PDC-480-04-A	0.480	PDC-480-04-A	Bus	42.303	10.7	1.453	61.478	104.435			
PDC-480-04-B	0.480	PDC-480-04-B	Bus	43.989	10.6	1.451	63.811	108.436			
PDC-480-05A	0.480	PDC-480-05A	Bus	54.203	9.7	1.430	77.524	132.080			
PDC-480-05B	0.480	PDC-480-05B	Bus	54.203	9.7	1.430	77.524	132.080			
PDC-4160-01-A	4.160	PDC-4160-01-A	Switchgear	14.680	13.7	1.505	22.096	37.275		58.000	97.880
PDC-4160-01-B	4.160	PDC-4160-01-B	Switchgear	16.126	14.2	1.512	24.375	41.084		58.000	97.880
PDC-4160-02-A	4.160	PDC-4160-02-A	Switchgear	14.548	13.5	1.502	21.857	36.886		58.000	97.880
PDC-4160-02-B	4.160	PDC-4160-02-B	Switchgear	15.828	13.1	1.497	23.687	40.007		58.000	97.880
	4.160	CB61-1	5 cy Sym CB	15.828	13.1	1.497	23.687	40.007		32.000	54.000
PDC-4160-03-A	4.160	PDC-4160-03-A	Switchgear	15.073	15.3	1.525	22.990	38.676		58.000	97.880
PDC-4160-03-B	4.160	PDC-4160-03-B	Switchgear	17.618	14.1	1.511	26.614	44.863		58.000	97.880

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Option 2

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Momentary Duty					Device Capability		
ID	kV	ID	Type	Symm. kA rms	X/R Ratio	M.F.	Asymm. kA rms	Asymm. kA Crest	Symm. kA rms	Asymm. kA rms	Asymm. kA Crest
PDC-4160-03-B	4.160	CB81	5 cy Sym CB	17.618	14.1	1.511	26.614	44.863		32.000	54.000
SW-13800-01-A	13.800	SW-13800-01-A	Switchgear	17.120	12.4	1.485	25.423	43.006		67.000	113.100
	13.800	CB84	5 cy Sym CB	17.120	12.4	1.485	25.423	43.006		67.000	113.100
	13.800	CB93	5 cy Sym CB	17.120	12.4	1.485	25.423	43.006		67.000	113.100
	13.800	CB94	5 cy Sym CB	17.120	12.4	1.485	25.423	43.006		67.000	113.100
SW-13800-01-B	13.800	SW-13800-01-B	Switchgear	26.990	10.0	1.437	38.784	66.022		67.000	113.100
	13.800	CB83-2	5 cy Sym CB	26.990	10.0	1.437	38.784	66.022		67.000	113.100
	13.800	CB91	5 cy Sym CB	26.990	10.0	1.437	38.784	66.022		67.000	113.100
	13.800	CB1-1	5 cy Sym CB	26.990	10.0	1.437	38.784	66.022		67.000	113.100
Tren A - BUS A	4.160	Tren A - BUS A	Switchgear	18.170	7.1	1.350	24.523	42.166		39.000	65.810
	4.160	CB4-1	5 cy Sym CB	18.170	7.1	1.350	24.523	42.166		58.000	97.000
Tren A - BUS B	4.160	Tren A - BUS B	Switchgear	18.170	7.1	1.350	24.523	42.166		39.000	65.810
	4.160	CB4-1	5 cy Sym CB	18.170	7.1	1.350	24.523	42.166		58.000	97.000
Tren B - BUS A	4.160	Tren B - BUS A	Switchgear	17.071	9.8	1.432	24.449	41.644		39.000	65.810
	4.160	CB76-1	5 cy Sym CB	17.071	9.8	1.432	24.449	41.644		77.000	130.000
	4.160	CB80-1	5 cy Sym CB	17.071	9.8	1.432	24.449	41.644		58.000	97.000
Tren B - BUS B	4.160	Tren B - BUS B	Switchgear	17.071	9.8	1.432	24.449	41.644		39.000	65.810
	4.160	CB80-1	5 cy Sym CB	17.071	9.8	1.432	24.449	41.644		58.000	97.000

Method: IEEE - X/R is calculated from separate R & X networks.

Protective device duty is calculated based on total fault current

\* Indicates a device with momentary duty exceeding the device capability

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Option 2

**Interrupting Duty Summary Report**

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty					Device Capability		
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
Bus-1	13.800	52G1	5 cy Sym CB	3.0	23.373	21.9	1.000	23.373	15.000		37.000	40.217
		52 NC	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB2	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB40-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB74-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB20-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB10-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
Bus-2	13.800	52G2	5 cy Sym CB	3.0	23.373	21.9	1.000	23.373	15.000		37.000	40.217
		52 NC	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB13	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB54-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB73-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB53-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
		CB55-1	5 cy Sym CB	3.0	31.714	21.9	1.031	32.694	15.000		37.000	40.217
Bus-3	13.800	52G3	5 cy Sym CB	3.0	9.948	21.1	1.000	9.948	15.000		37.000	40.217
		CB24	5 cy Sym CB	3.0	18.289	21.1	1.029	18.825	15.000		37.000	40.217
		CB7-1	5 cy Sym CB	3.0	18.289	21.1	1.029	18.825	15.000		42.000	45.652
MCC-480-01.	0.480				41.348	11.2						
MCC-480-02.	0.480				41.783	11.4						
MCC-480-03.	0.480				41.348	11.2						
MCC-480-04.	0.480				41.783	11.4						
MCC-480-05.	0.480				43.670	11.1						
MCC-480-06.	0.480				42.209	11.3						
MCC-480-07.	0.480				43.670	11.1						
MCC-480-08.	0.480				42.209	11.3						
MCC-480-09 A	0.480				42.303	10.7						
MCC-480-09 B	0.480				43.989	10.6						
MCC-480-10.	0.480				42.303	10.7						
MCC-480-11 A	0.480				42.303	10.7						
MCC-480-11 B	0.480				43.989	10.6						

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3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device			Interrupting Duty				Device Capability			
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
MCC-480-12.	0.480				43.989	10.6						
MCC-480-13 A	0.480				42.303	10.7						
MCC-480-13 B	0.480				43.989	10.6						
MCC-480-14.	0.480				42.303	10.7						
MCC-480-15 A	0.480				42.303	10.7						
MCC-480-15 B	0.480				43.989	10.6						
MCC-480-16.	0.480				43.989	10.6						
MCC-480-17 A	0.480				54.203	9.7						
MCC-480-17 B	0.480				54.203	9.7						
MCC-480-18 A	0.480				54.203	9.7						
MCC-480-18 B	0.480				54.203	9.7						
MCC-480-19 A	0.480				54.203	9.7						
MCC-480-19 B	0.480				54.203	9.7						
MCC-480-20 A	0.480				54.203	9.7						
MCC-480-20 B	0.480				54.203	9.7						
MCC-480-21.	0.480				54.203	9.7						
MCC-480-22.	0.480				54.203	9.7						
OFFSITES A	0.480	CB58-1	Molded Case		41.173	5.5	1.027	42.271	0.480	20.00	65.000	65.000
		CB56-1	Molded Case		41.173	5.5	1.027	42.271	0.480	20.00	65.000	65.000
OFFSITES B	0.480	CB57-1	Molded Case		41.173	5.5	1.027	42.271	0.480	20.00	65.000	65.000
		CB56-1	Molded Case		41.173	5.5	1.027	42.271	0.480	20.00	65.000	65.000
PDC-480-01-A	0.480				41.348	11.2						
PDC-480-01-B	0.480				41.783	11.4						
PDC-480-02-A	0.480				43.670	11.1						
PDC-480-02-B	0.480				42.209	11.3						
PDC-480-03-A	0.480				42.303	10.7						
PDC-480-03-B	0.480				43.989	10.6						
PDC-480-04-A	0.480				42.303	10.7						
PDC-480-04-B	0.480				43.989	10.6						
PDC-480-05A	0.480				54.203	9.7						
PDC-480-05B	0.480				54.203	9.7						
PDC-4160-01-A	4.160				13.109	13.7						
PDC-4160-01-B	4.160				14.740	14.0						
PDC-4160-02-A	4.160				12.866	13.7						

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Bus		Device		Interrupting Duty				Device Capability				
ID	kV	ID	Type	CPT (Cy)	Symm. kA rms	X/R Ratio	M.F.	Adj. Sym. kA rms	kV	Test PF	Rated Int.	Adjusted Int.
PDC-4160-02-B	4.160	CB61-1	5 cy Sym CB	3.0	14.119	13.3	1.000	14.119	4.760		20.000	22.885
PDC-4160-03-A	4.160				13.628	14.6						
PDC-4160-03-B	4.160	CB81	5 cy Sym CB	3.0	15.265	14.0	1.000	15.265	4.760		20.000	22.885
SW-13800-01-A	13.800	CB84	5 cy Sym CB	3.0	16.024	12.3	1.000	16.024	15.000		42.000	45.652
		CB93	5 cy Sym CB	3.0	16.024	12.3	1.000	16.024	15.000		42.000	45.652
		CB94	5 cy Sym CB	3.0	16.024	12.3	1.000	16.024	15.000		42.000	45.652
SW-13800-01-B	13.800	CB83-2	5 cy Sym CB	3.0	25.349	10.0	1.000	25.349	15.000		42.000	45.652
		CB91	5 cy Sym CB	3.0	25.349	10.0	1.000	25.349	15.000		42.000	45.652
		CB1-1	5 cy Sym CB	3.0	25.349	10.0	1.000	25.349	15.000		42.000	45.652
Tren A - BUS A	4.160	CB4-1	5 cy Sym CB	3.0	16.665	6.9	1.000	16.665	4.760		29.000	33.183
Tren A - BUS B	4.160	CB4-1	5 cy Sym CB	3.0	16.665	6.9	1.000	16.665	4.760		29.000	33.183
Tren B - BUS A	4.160	CB76-1	5 cy Sym CB	3.0	16.270	10.0	1.000	16.270	15.000		37.000	48.000
		CB80-1	5 cy Sym CB	3.0	16.270	10.0	1.000	16.270	4.760		29.000	33.183
Tren B - BUS B	4.160	CB80-1	5 cy Sym CB	3.0	16.270	10.0	1.000	16.270	4.760		29.000	33.183

Method: IEEE - X/R is calculated from separate R & X networks.

HV CB interrupting capability is adjusted based on bus nominal voltage

Short-Circuit multiplying factor for LV Molded Case and Insulated Case Circuit Breakers is calculated based on asymmetrical current.

Generator protective device duty is calculated based on maximum through fault current. Other protective device duty is calculated based on total fault current.

\* Indicates a device with interrupting duty exceeding the device capability

**Interrupting Duty Summary Report**  
**Generator Circuit-Breaker**

3-Phase Fault Currents: (Prefault Voltage = 100 % of the Bus Nominal Voltage)

Bus		Device		Peak Symmetrical kA	@ CB Parting Time	
ID	kV	ID	Type		Degree of Asymm.(%)	DC Fault Current (kA)
Bus-1	13.800	52G1	5 cy Sym CB	33.055	35.37	11.690
Bus-2	13.800	52G2	5 cy Sym CB	33.055	35.37	11.690
Bus-3	13.800	52G3	5 cy Sym CB	14.069	34.93	4.915

Generator protective device duty is calculated based on maximum through fault current.