

Hitachi Energy				132kV Incomer													
Department			Author		Status									Date		Lang.	
Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark
						Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic				
132kV Incomer																	
1	I/C 132kV	350/1	Siemens	Siprotech 7UT61	51	I>	P/F	0.10-0.01-4.00	0.05-0.01-3.20	4	0.05	NI	0.53	2.5	EI		
					50	I>>	P/F Hs	0.1-0.01-35.00	0.00-0.01-60.00	1.14	30		8.58	0.25	DT		
					51N	IO>	EF	0.10-0.01-4.00	0.05-0.01-3.20	1	0.05	NI	0.2	2.5	NI		
					50N	IO>>	E/F Hs	0.1-0.01-35.00	0.00-0.01-60.00	Infinity	Infinity		2.15	0.25	DT		
2	O/G TR-1 (Kirloskar)	150/1	Siemens	Siprotech 7UT61	51	I>	P/F	0.10-0.01-4.00	0.05-0.01-3.20	4	0.05	NI					
					50	I>>	P/F Hs	0.1-0.01-35.00	0.00-0.01-60.00	1	30						
					51N	IO>	EF	0.10-0.01-4.00	0.05-0.01-3.20	1	0.05	NI					
					50N	IO>>	E/F Hs	0.1-0.01-35.00	0.00-0.01-60.00	13	0.05						
					51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.77	0.6	EI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					10.8	0.05	DT	
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	1.03	NI	
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT	
3	O/G TR-2 (Kirloskar)	150/1	Siemens	Siprotech 7UT61	51	I>	P/F	0.10-0.01-4.00	0.05-0.01-3.20	4	0.05	NI					
					50	I>>	P/F Hs	0.1-0.01-35.00	0.00-0.01-60.00	1	30						
					51N	IO>	EF	0.10-0.01-4.00	0.05-0.01-3.20	1	0.05	NI					
					50N	IO>>	E/F Hs	0.1-0.01-35.00	0.00-0.01-60.00	13	0.05						
					51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.88	0.48	EI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					10.1	0.05	DT	
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.49	NI	
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT	
4	O/G TR-1A (BHEL)	200/1	EE		51	I>	P/F	0.10-0.01-4.00	0.05-0.01-3.20	1	0.3	Inverse					
					50	I>>	P/F Hs	0.1-0.01-35.00	0.00-0.01-60.00								
					51N	IO>	EF	0.10-0.01-4.00	0.05-0.01-3.20	0.2	0.35	Inverse					
					50N	IO>>	E/F Hs	0.1-0.01-35.00	0.00-0.01-60.00								
					51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.79	0.5	NI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					10.9	0.05	DT	
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.5	NI	
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT	
5	O/G TR-2A (BHEL)	200/1	EE		51	I>	P/F	0.10-0.01-4.00	0.05-0.01-3.20	1	0.3	Inverse					
					50	I>>	P/F Hs	0.1-0.01-35.00	0.00-0.01-60.00								
					51N	IO>	EF	0.10-0.01-4.00	0.05-0.01-3.20	0.2	0.35	Inverse					
					50N	IO>>	E/F Hs	0.1-0.01-35.00	0.00-0.01-60.00								
					51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.79	0.55	EI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					10.9	0.05	DT	
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.55	NI	
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT	

Hitachi Energy				11kV DG												
Department			Author		Status								Date		Lang.	
Power Consulting			Pritul Panchal		V								20-05-2024		en	
sr. No	Feeder Type or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting		
									Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic
<b>11kV DG</b>																
1	I/C AUX TR	150/5	ABB	SPAJ141C	51	I>	P/F	0.5-0.01-5.00	0.05-0.01-1.00	0.84	0.25					
					50	I>>	P/F Hs	0.5-0.01-40.00	0.04-0.01-300.00 (s)	4	1					
					51N	IO>	EF	1.0-0.1-25.0 (%)	0.05-0.01-300.00 (s)	7%	2					
					50N	IO>>	E/F Hs	2.0-0.1-200.0 (%)	0.05-0.01-300.00 (s)	18%	1					
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.84	0.2	NI
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					12	0.05	DT
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000							
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT
2	I/C CP-10 TR	2500/5	ABB	SPAJ141C	51	I>	P/F	0.5-0.01-5.00	0.05-0.01-1.00	0.84	0.25					
					50	I>>	P/F Hs	0.5-0.01-40.00	0.04-0.01-300.00 (s)	4	1					
					51N	IO>	EF	1.0-0.1-25.0 (%)	0.05-0.01-300.00 (s)	7%	2					
					50N	IO>>	E/F Hs	2.0-0.1-200.0 (%)	0.05-0.01-300.00 (s)	18%	1					
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					1.01	0.2	NI
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					8	0.05	DT
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.2	NI
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT
3	O/G CP-9 TR	2500/5	ABB	SPAJ141C	51	I>	P/F	0.5-0.01-5.00	0.05-0.01-1.00	0.84	0.25					
					50	I>>	P/F Hs	0.5-0.01-40.00	0.04-0.01-300.00 (s)	4	1					
					51N	IO>	EF	1.0-0.1-25.0 (%)	0.05-0.01-300.00 (s)	0.07	2					
					50N	IO>>	E/F Hs	2.0-0.1-200.0 (%)	0.05-0.01-300.00 (s)	0.18	1					
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					1.01	0.1	NI
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					8.4	0.05	DT
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000							
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.12	0.05	DT

④ Hitachi Energy				11kV Siemens Bus												
Department			Author		Status								Date		Lang.	
Power Consulting			Pritul Panchal		Rev B								20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
<b>11kV Siemens Bus - A</b>																
1	I/C TR-1 (From Kirloskar Tr)	1600/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	SI	0.5	1.1	EI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1.1	30		5	0.45	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		8						
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.1	0.1	SI	0.2	0.45	DT	
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.3	30					
2	I/C DG SUPPLY (From DG Sec A Bus B)	1200/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	SI	0.7	0.25	NI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1.1	30		2.3	0.25	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		8						
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.2	0.5	SI	0.2	0.24	NI	
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	4	30					
3	O/G ROASTER 3 (SEC-A)	750/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	SI	0.5	3.2	EI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.3	25		5	0.25	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5								
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.3	0.1	SI				
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.3	25		0.3	0.25	DT	
4	O/G CAP BANK 4	1600/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	0.5	0.5	SI	1.2	0.05	NI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1	1		5	0.05	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		3						
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.3	0.5	SI				
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.4	1		0.1	0.05	DT	
<b>11kV Siemens Bus - B</b>																
5	I/C TR-2 (From Kirloskar Tr)	1600/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	SI	1	0.27	EI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1.1	30		6	0.45	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		8						
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.4	0.1	SI				
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.3	30		0.3	0.45	DT	
6	O/G CAP FDR-2	300/5	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	225A	0.05		1.25	0.05	NI	
					51N	I0>	E/F	0.05 .. 4.00	0.05 .. 3.2	60A	0.05		0.2	0.05	NI	
7	O/G ROASTER 3 (SEC-B)	750/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	SI	0.5	2.4	EI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.3	25		5	0.25	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12						
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.3	0.1	SI				
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.3	25		0.4	0.25	DT	
8	O/G RECTIFIER 3	1600/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	0.6	0.5	SI	0.8	0.1	NI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1	1		7.4	0.05	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		3						
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	0.3	0.5	SI				
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.4	1		0.2	0.05	DT	

Hitachi Energy			11kV ABB Bus														
Department			Author		Status									Date		Lang.	
Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
11kV ABB Bus																	
1	O/G ABB Rect TR-2	500/5	ABB	SPAJ140C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.00	0.8	0.1						
					50	I>>	P/F Hs	0.5-0.01-40.00	0.04-0.01-300.00 (s)	2.17	0.07						
					51N	I0>	EF	0.1-0.01-0.80	0.05-0.01-1.00	0.29	4						
					50N	I0>>	E/F Hs	0.1-0.01-10.00	0.05-0.01-300.00 (s)	0.1	0.05						
		500/5	ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				0.24	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				2.87	0.05	DT		
					51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000				0.2	0.2	NI		
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT		



## 11kV Solar Plant

Department			Author		Status									Date		Lang.	
Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Existing Setting			Proposed Setting		Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
<b>11kV INV ROOM-1 BUS</b>																	
1	I/C INV ROOM-1 BUS	250/1	ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.15		1	0.28	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.15		11	0.25	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.15						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.045	0.15		0.26	0.25	DT		
2	O/G INV DUTY TR-1 (INV ROOM-1)	125/1	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.1		1.11	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.1		22	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	1.1	0.1						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.5	0.05		0.5	0.05	DT		
3	O/G INV DUTY TR-1 (INV ROOM-1)	125/1	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.1		1.11	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.1		22	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.1						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.5	0.15		0.5	0.05	DT		
<b>11kV INV ROOM-2 BUS</b>																	
1	I/C INV ROOM-2 BUS	250/1	ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.15		1	0.28	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.15		11	0.25	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.15						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.045	0.15		0.26	0.25	DT		
2	O/G INV DUTY TR-1 (INV ROOM-2)	125/1	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.1		1.11	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.1		22	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.1						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.5	0.05		0.5	0.05	DT		
3	O/G INV DUTY TR-1 (INV ROOM-2)	125/1	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	1.2		1.11	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.1		22	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.14	1.2						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	1	0.1		0.5	0.05	DT		
<b>11kV MAIN SOLAR BUS</b>																	
4	I/C Main Solar Bus	800/1	ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.02		1	0.28	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.31		3.44	0.45	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.31						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.045	0.25		0.1	0.45	DT		
5	O/G INV ROOM-1 BUS	250/1	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.2		1	0.28	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.25		11	0.25	DT		
					51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.2						
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.5	0.25		0.26	0.05	DT		
6	O/G INV DUTY TR-1 (CTRL ROOM)	125/1	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.1		1.11	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.1		22	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.000									



## 11kV Solar Plant

Department			Author		Status										Date		Lang.	
Power Consulting			Pritul Panchal		Rev B										20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark		
<b>11kV SOLAR BUS</b>																		
8	O/G Solar Bus	800/5	ABB	REJ601	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000	1.01	0.2		1	0.28	NI			
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	2.3	0.25		3.44	0.45	DT			
					51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000	0.1	0.2							
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)	0.5	0.25		0.1	0.45	DT			

④ Hitachi Energy				11kV MRSS													
Department			Author		Status									Date		Lang.	
Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
<b>11kV MRSS Bus - A</b>																	
1	I/C DG SUPPLY (From DG Sec A Bus B)	1600/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	240A	0.4		0.5	0.15	NI		
					51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	64A	0.45		0.2	0.15	NI		
2	O/G CONTROL ROOM BUS	400/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	800A	1						
					51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	160A	0.4						
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				0.3	10	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				8.75	0.25	DT		
					51N	IO>	EF	0.010-0.005-5.0	0.025-0.005-15.000				0.2	0.2	NI		
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.25	DT		
3	O/G AUX TR-1	50/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	37.5A	0.5		1.25	0.15	NI		
					50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02				20	0.02	DT		
			Alstom	CAG14	51N	IO>	E/F	0.1-0.05-0.4	0.025	10A			0.8	0.025	DT		
4	O/G AUX TR-2	50/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	30A	0.3		1.25	0.15	NI		
					50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02				20	0.02	DT		
			Alstom	CAG14	51N	IO>	E/F	0.1-0.05-0.4	0.025	10A			0.8	0.025	DT		
4	O/G TR (5MVA)	300/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	225A	0.05						
					51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	60A	0.2						
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1	0.2	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				17.1	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.0	0.025-0.005-15.000				0.2	0.2	NI		
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT		
5	O/G AUX TR-4	100/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	100A	0.3						
			Alstom	CAG14	51N	IO>	E/F	0.1-0.05-0.4	0.025	20A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1.13	0.94	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				20.6	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.0	0.025-0.005-15.000								
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT		
6	O/G AUX TR-3	100/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	200A	0.4						
			Alstom	CAG14	51N	IO>	E/F	0.1-0.05-0.4	0.025	20A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1.15	0.9	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				20.4	0.05	DT		
					51N	IO>	EF	0.010-0.005-5.0	0.025-0.005-15.000				0.2	0.2	EI		
					50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT		

Hitachi Energy				11kV MRSS													
Department			Author		Status									Date		Lang.	
Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
<b>11kV MRSS Bus - B</b>																	
6	I/C TR-1A (BHEL Tr)	1600/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	1920A	0.5						
					51N	I0>	E/F	0.1-0.05-0.4	0.025	320A	0.5						
			Alstom	CAG14	50N	I0>>	E/F Hs	0.1-0.05-0.4	0.025	480A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1	0.47	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				5	0.85	DT		
7	I/C SOLAR PP	800/5	ABB	REF615	51N	I0>	EF	0.010-0.005-5.0	0.025-0.005-15.000								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				1	0.8	DT	CBCT of 50/1 is proposed.	
					51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1	0.36	NI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				3.44	0.65	DT		
8	O/G AUX TR-7	100/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	120A	0.2						
					51N	I0>	E/F	0.1-0.05-0.4	0.025	20A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1.1	1.25	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				18.2	0.05	DT		
					51N	I0>	EF	0.010-0.005-5.0	0.025-0.005-15.000								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT		
9	O/G ANDREW YULE (VCB PNL BRD) BUS - A	800/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	600A	0.2	NI					
					51N	I0>	E/F	0.1-0.05-0.4	0.025	160A	0.1						
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				0.63	0.9	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				5	0.4	DT		
					51N	I0>	EF	0.010-0.005-5.0	0.025-0.005-15.000								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.12	0.4	DT		
10	O/G AUX TR-6	100/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	100A	0.2						
					50N	I0>>	E/F Hs	0.1-0.05-0.4	0.025	20A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1.14	1	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				19.7	0.05	DT		
					51N	I0>	EF	0.010-0.005-5.0	0.025-0.005-15.000								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT		

④ Hitachi Energy				11kV MRSS													
Department			Author		Status								Date		Lang.		
Power Consulting			Pritul Panchal		Rev B								20-05-2024		en		
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
<b>11kV MRSS Bus - C</b>																	
11	I/C TR-2A	1600/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	1920A	0.4						
					51N	I0>	E/F	0.1-0.05-0.4	0.025	320A	0.4						
			Alstom	CAG14	50N	I0>>	E/F Hs	0.1-0.05-0.4	0.025	480A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1	0.48	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				3.13	0.6	DT		
					51N	I0>	EF	0.010-0.005-5.0	0.025-0.005-15.000				0.2	3.005	EI		
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.6	DT		
12	O/G ANDREW YULE (VCB PNL BRD) BUS - B	800/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	400A	0.1						
					50N	I0>>	E/F Hs	0.1-0.05-0.4	0.025	240A							
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				0.63	1.7	EI		
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				5	0.4	DT		
					51N	I0>	EF	0.010-0.005-5.0	0.025-0.005-15.000				0.2	1.7	EI		
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.4	DT		
13	O/G RECT TR-1	800/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	600A	0.1		1.25	0.1	NI		
					50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02				9.8	0.02	DT		
					51N	I0>	E/F	0.1-0.05-0.4	0.025	160A	0.1		0.2	0.1	NI		



## 11kV BUS CONTROL ROOM

Department			Author		Status							Date		Lang.	
Power Consulting			Pritul Panchal		Rev B							20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting		Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic
<b>11kV Control Room</b>															
1	I/C CONTROL ROOM BUS	125/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	100A	0.4				
					51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	75A	0.4				
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				0.96	1	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				14	0.25	
			Jyoti	JTRSA	51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000				0.2	0.2	
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.25	
			ABB	REF615	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	125A	0.5				
					50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02	125A	0.02				
2	O/G SS-5 RTP TR	125/5	Jyoti	JTRSA	51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	125A	0.05				
					51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1.01	1	
			ABB	REF615	50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				18.9	0.05	
					51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000				0.2	0.2	
			Jyoti	JTRSA	50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	
					51	I>	P/F	0.5-0.25-2	0.0-0.01-1	93.75A	1				
			ABB	REF615	50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02	93.75A					
					51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	75A	1				
3	O/G AUX TR-2 (CTRL RM)	125/5	Jyoti	JTRSA	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				0.91	0.65	
					50	I>>	P/F Hs	40-10-200000 (ms)					17.4	0.05	
			ABB	REF615	51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000				0.2	0.2	
					50N	I0>>	E/F Hs	40-10-200000 (ms)					0.5	0.05	
			Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	100A	0.4		1	0.2	
					50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02	100A			19.4	0.01	
			ABB	REF615	51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	93.75A	0.4		0.2	0.2	
					51	I>>	P/F Hs	4-6-8-10-12-16-20	0.02	93.75A					
4	O/G PHE TR	125/5	Jyoti	JTRSA	51	I>	P/F	0.5-0.25-2	0.0-0.01-1						
					50	I>>	P/F Hs	4-6-8-10-12-16-20	0.02				19.4	0.01	
					51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	100A	0.4		0.2	0.2	
					51	I>>	P/F Hs	4-6-8-10-12-16-20	0.02	93.75A					

Hitachi Energy			11kV ANDREW YULE PANEL													
Department			Author		Status								Date		Lang.	
Power Consulting			Pritul Panchal		Rev B								20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
<b>11kV Andrew Yule Bus - A</b>																
1	I/C-1 Andrew Yule Panel (From 11kV Bus - B)	400/5	Siemens	7SR1103	51	I>	P/F	0.05, 0.06 .. 2.5	0.025, 0.030 .. 1.6	0.95	1		1.25	1	EI	
					50	I>>	P/F Hs	0.05, 0.06 .. 2.5, 2.55 .. 50	0.00, 0.01 .. 20.00, 20.10 .. 100, 101 .. 1000, 1010 .. 10000, 10100 .. 14400 (s)	0.8	0		5	0.4	DT	
					51N	I0>	EF	0.05, 0.06 .. 2.5	0.025, 0.030 .. 1.6	0.7	1					
					50N	I0>>	E/F Hs	0.05, 0.06 .. 2.5, 2.55 .. 50	0.00, 0.01 .. 20.00, 20.10 .. 100, 101 .. 1000, 1010 .. 10000, 10100 .. 14400 (s)	OFF	OFF		0.5	0.4	DT	
2	O/G MCTP TR-5	100/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	50A	0.1					
					51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	20A	0.02					
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				1.2	1.07	EI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				18.1	0.05	DT	
					51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000				0.2	0.25	EI	
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				0.5	0.05	DT	
3	O/G SS-1 TR-1	50/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	37.5A	0.2					
					51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	10A	0.1					
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000				2.26	0.8	EI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)				35.9	0.05	DT	
					51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000				0.2	0.86	EI	
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)							
6	O/G CAP FDR-3	300/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	225A	0.05		1	0.06	NI	
					51N	I0>	E/F	0.1-0.05-0.4	0.0-0.01-1	60A	0.02		0.2	0.1	NI	

Hitachi Energy			11kV ANDREW YULE PANEL														
Department			Author		Status									Date		Lang.	
Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark
						Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic				
<b>11kV Andrew Yule Bus - B</b>																	
7	I/C-2 Andrew Yule Panel (From 11kV Bus - C)		800/5	Siemens	7SR1103	51	I>	P/F	0.05, 0.06 .. 2.5	0.025, 0.030 .. 1.6	0.75	1		0.63	1.6	EI	
						50	I>>	P/F Hs	0.05, 0.06 .. 2.5, 2.55 .. 50	0.00, 0.01 .. 20.00, 20.10 .. 100, 101 .. 1000, 1010 .. 10000, 10100 .. 14400 (s)	0.8	0.1		5	0.4	DT	
						51N	IO>	EF	0.05, 0.06 .. 2.5	0.025, 0.030 .. 1.6	0.5	0.8		0.2	1.6	EI	
						50N	IO>>	E/F Hs	0.05, 0.06 .. 2.5, 2.55 .. 50	0.00, 0.01 .. 20.00, 20.10 .. 100, 101 .. 1000, 1010 .. 10000, 10100 .. 14400 (s)	0.2	0.05		0.5	0.4	DT	
8	O/G CAP FDR-1		300/5	Alstom	CDG31	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	225A	0.05		1	0.05	NI	
						51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	60A	0.05		0.2	0.1	NI	
9	O/G DARIBA PUPING STATION		50/5	Alstom	CDG31	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	37.5A	1					
						51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	10A	0					
				ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.94	0.2	NI
						50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					20.6	0.05	DT
						51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.2	NI
						50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT
10	O/G ETP TR		50/5	Alstom	CDG31	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	37.5A	0.2					
						51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	10A	0.05					
				ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.8	1.1	EI
						50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					14.6	0.05	DT
						51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	1.1	EI
						50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT
11	O/G CRDL TR		100/5	Alstom	CDG31	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	100A	0.3					
						51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	20A	0.05					
				ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					1.26	0.2	NI
						50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					21.2	0.05	DT
						51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.2	NI
						50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT
12	O/G ZN MELT TR		100/5	Alstom	CDG31	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	75A	0.1					
						51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	20A	0.1					
				ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					1.13	6.3	EI
						50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					14.6	0.05	DT
						51N	IO>	EF	0.010-0.005-5.000	0.025-0.005-15.000					0.2	0.2	EI
						50N	IO>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.05	DT
13	O/G COLONY		50/5	Alstom	P154	51	I>	P/F	0.05-0.01-4	0.025-0.005-1.2	50A	1.1	EI	1	1	NI	
						50	I>>	P/F Hs	0.05-0.01-35.00	0-0.01-100 (s)					35	0.2	DT
						51N	IO>	EF	0.05-0.01-4	0.025-0.005-1.2	30	0.9	VI	0.2	1	NI	
						50N	IO>>	E/F Hs	0.002-0.001-2.00	0-0.01-200 (s)					0.5	0.2	DT

④ Hitachi Energy			6.6kV Bus 2EPU-423														
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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range			Exisitng Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
								L	O/L	0.75 .. 1.0		1		1			
1	O/G AUX TR-1	3200A rating	L&T	DN1 Release	S	S/C		7kA & 8.9kA	0.025								
		100/5	English Electric	CAG14	51N	I0>	EF	10%-40% 20%-80%	0.025		0.025	EI	0.8	0.025	DT		

④ Hitachi Energy				MELTING FURNACE																		
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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark						
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic							
								<b>0.415kV MELTING FURNACE</b>														
								L	O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	1	10		1	6						
1	I/C MELTING FURNACE PCC (From ZN MELT TR)	3200A rating	Siemens	ETU27B	S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400 (ms)	6	0.4		6	400							
					I			Instantaneous	20	20 (ms)	20											
					G			Ground														
					L			O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	1	10		0.7								
2	I/C MELTING FURNACE PCC (From SS-5)	3200A rating	Siemens	ETU27B	S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400 (ms)	6	0.4		4	400							
					I			Instantaneous	20	20 (ms)	20											
					G			Ground														
					L			O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	1	10		0.65								
3	O/G DEMAG FURNACE	1600A rating	Siemens	ETU27B	S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400 (ms)	3	0.4		4	200							
					I			Instantaneous	20	20 (ms)	20											
					G			Ground														
					L			O/L	0.4:0.45:0.5:0.6:0.63:0.7:0.8:0.9:0.95:1	2.5;4-2-10;14;17;20;25;30				0.9	2.5							
4	I/C DEMAG FURNACE	1200A rating	Siemens	MCCB	I			Instantaneous	1.25:1.5:2-1-6:8:10:11	0.025	1	0.025		5	0.025							
					L			O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	0.5	10		0.65								
					S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400 (ms)	2	0.1		4	200							
					I			Instantaneous	20	20 (ms)	20											
5	O/G AJAX FURNACE	1600A rating	Siemens	ETU27B	G			Ground														
					L			O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	0.5	10		0.65								
					S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400 (ms)	2	0.1		4	200							
					I			Instantaneous	20	20 (ms)	20											
6	I/C AJAX FURNACE	1200A rating	Siemens	MCCB	L			O/L	0.4:0.45:0.5:0.6:0.63:0.7:0.8:0.9:0.95:1	2.5;4-2-10;14;17;20;25;30				0.9	2.5							
					I			Instantaneous	1.25:1.5:2-1-6:8:10:11	0.025	1	0.025		4	0.025							
					L			O/L	0.4:0.45:0.5:0.6:0.63:0.7:0.8:0.9:0.95:1	0.8-0.1-1.0				1								
					I			Instantaneous	5-1-10	0.025	1	0.025		5	0.025							
7	O/G FURNACE BAG FILTER PNL	250A rating	Siemens	MCCB	<b>0.415kV FURNACE BAG FILTER PNL</b>																	
					L			O/L	0.8-0.1-1.0						1							
					I			Instantaneous	5-1-10	0.025	1	0.025		5	0.025							
					L			O/L	0.8-0.1-1.0													

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
								0.415kV PYROTEC PCC								
1	I/C AUX TR 2 (PYROTEC PCC)	2000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0					1			
					S		S/C	11KA & 14KA	0.025							
2	O/G1 ZE PYROTEC MCC	2000A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20- 24	0.8	12		0.5	8		
					S		S/C	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4	5	0.4		5	0.2		
					I		Instantaneous	2-3-4-6-8-10- 12-15	50							
					G		Ground	0.2-0.3-0.4-0.5- 0.6-0.7-0.8-0.9- 1.0	0.1-0.2-0.3-0.4	0.4	0.6		0.8	0.2		
3	O/G1 301A MCC	2000A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20- 24	0.5	12		0.6	12		
					S		S/C	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4	5	0.3		5	0.2		
					I		Instantaneous	2-3-4-6-8-10- 12-15	50	0.3						
					G		Ground	0.2-0.3-0.4-0.5- 0.6-0.7-0.8-0.9- 1.0	0.1-0.2-0.3-0.4	0.2	0.2		800	0.2		
4	O/G MG PANEL (SS-1)	2000A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20- 24	0.5	12		0.8	4		
					S		S/C	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4	5	0.3		5	0.4		
					I		Instantaneous	2-3-4-6-8-10- 12-15	50	0.3						
					G		Ground	0.2-0.3-0.4-0.5- 0.6-0.7-0.8-0.9- 1.0	0.1-0.2-0.3-0.4	0.2	0.2		800	0.4		
5	O/G1 COOLING TOWER MCC	2000A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20- 24	0.9	12		0.9	12		
					S		S/C	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4	4	0.4		4	0.4		
					I		Instantaneous	2-3-4-6-8-10- 12-15	50							
					G		Ground	0.2-0.3-0.4-0.5- 0.6-0.7-0.8-0.9- 1.0	0.1-0.2-0.3-0.4	0.3	0.4		600	0.4		
0.415kV MG PANEL MCC																
6	I/C MG PANEL MCC BUS A	1250A rating	L&T	SR18G Release	L		O/L	0.50-0.60-0.65- 0.70-0.75-0.80- 0.85-0.90-0.95- 1.00	2.5	1	2.5		1	2.5		
					S		S/C	2-3-4-5-6-7-8-9- 10	20-60-100-160-200-260- 300-400-500-600 (ms)	7	0.6		5	0.4		
					I		Instantaneous	6-12	0.025	12						
					G		Ground	0.2-0.3-0.4-0.5- 0.6	100-200-300-400 (ms)	0.4	0.2		0.6	0.4		

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
7	O/G Cadmium Old MG MCC	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	2	10		0.5	2		
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	200		
					I		Instantaneous	6-12	0.025							
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.2	200		
8	O/G2 PYROTEC LP MCC	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	1.5	10		1	2		
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	200		
					I		Instantaneous	6-12	0.025							
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	0.2		
9	O/G2 COOLING TOWER MCC	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	1.5	10		1	2		
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	200		
					I		Instantaneous	6-12	0.025							
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	200		
10	O/G2 LEACHING 201B2 MCC	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	2	10		1	2		
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				8	200		
					I		Instantaneous	6-12	0.025							
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	200		
11	I/C MG PANEL (SS-1)	1250A rating	L&T	SR18G Release	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	1	2.5		0.8	2.5		
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)	7	0.6		7	0.4		
					I		Instantaneous	6-12	0.025	12						
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)	0.4	0.2		0.6	0.4		
12	O/G 301B MCC	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	2	10		1	2		
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	200		
					I		Instantaneous	6-12	0.025							

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark	
				G			Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	200			
13	O/G LR MILL	250A rating	Schneider	TCVS250N MCCB	L		O/L	0.8-0.1-1.0		1			1	1			
					I		Instantaneous	5-1-10	0.025	1250			5	0.025			
14	O/G WARTSILA + CISF	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	1	10		1	2			
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	0.2			
					I		Instantaneous	6-12	0.025								
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	0.2			
15	O/G1 DM PLANT	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	0.5	10		1	2			
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				4	0.2			
					I		Instantaneous	6-12	0.025								
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.2	200			
16	O/G1 NEW CADMIUM MCC	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	2	10		1	8			
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	0.2			
					I		Instantaneous	6-12	0.025								
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	0.2			
17	O/G SUPPLY TO NEW DPH	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	1	10		1	8			
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	0.2			
					I		Instantaneous	6-12	0.025								
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.8	0.2			
18	O/G L&T MCC (MCC-3)	800A rating	MG	MicroLogic 6.0	L		O/L	0.50-0.60-0.65-0.70-0.75-0.80-0.85-0.90-0.95-1.00	2.5	2	10		1	8			
					S		S/C	2-3-4-5-6-7-8-9-10	20-60-100-160-200-260-300-400-500-600 (ms)				5	0.2			
					I		Instantaneous	6-12	0.025								
					G		Ground	0.2-0.3-0.4-0.5-0.6	100-200-300-400 (ms)				0.2	0.2			



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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
<b>0.415kV 301A MCC</b>																		
19	I/C1 301A MCC (From SS-1)	1250A rating	L&T	UW-MTX1.5G	L		O/L	0.4-0.5-0.6-0.7- 0.8-0.85-0.9- 0.95-1	0.5-1-2-4-6-12-18-24- 30	1	12		0.8	6				
					S		S/C	0.6-1-1.5-2-3-4- 6-8-10-12	20-100-200-300-400 (ms)	4	0.4		4	0.2				
					I		Instantaneous	1.5-2-3-4-6-8- 10-12-15	0.025	OFF								
					G		Ground	0.2-0.3-0.4-0.5- 0.6	0.1-0.2-0.3-0.4-1 (s)	0.6	0.1		0.6	0.2				
20	I/C2 301A MCC (From SS-4)	1250A rating	L&T	UW-MTX1.5G	L		O/L	0.4-0.5-0.6-0.7- 0.8-0.85-0.9- 0.95-1	0.5-1-2-4-6-12-18-24- 30	0.85	12		0.8	6				
					S		S/C	0.6-1-1.5-2-3-4- 6-8-10-12	20-100-200-300-400 (ms)	3	0.4		4	0.2				
					I		Instantaneous	1.5-2-3-4-6-8- 10-12-15	0.025	OFF								
					G		Ground	0.2-0.3-0.4-0.5- 0.6	0.1-0.2-0.3-0.4-1 (s)	0.5	0.2		0.6	0.2				
21	O/G HRM ZE PIROTEC MCC	250A rating	L&T	SFU														
<b>0.415kV Cadmium Old MG MCC</b>																		
22	I/C Cadmium Old MG MCC	600A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20- 24	600			0.5	2				
					S		S/C	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4				5	0.2				
					I		Instantaneous	2-3-4-6-8-10- 12-15	50									
					G		Ground	0.2-0.3-0.4-0.5- 0.6-0.7-0.8-0.9- 1.0	0.1-0.2-0.3-0.4				0.2	0.2				
23	O/G HRM Cadmium Old MG MCC	25A rating	MG	B664	L		O/L	1	1					1	1			
<b>0.415kV LR MILL MCC</b>																		
24	I/C LR MILL	630A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1					1	1			
					I		Instantaneous	5-1-10	0.01					5	0.01			
<b>0.415kV DM PLANT MCC</b>																		
25	I/C1 DM PLANT (From SS-1)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75					
					S		S/C	4.7kA & 6kA	0.025				4.7	0.025				
26	I/C2 DM PLANT (From SS-7)				Supply Removed													
<b>0.415kV NEW CADMIUM MCC</b>																		
27	I/C1 NEW CADMIUM MCC (From SS-1)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75					
					S		S/C	5.7kA & 7.2kA	0.025				5.7	0.025				



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Department			Author		Status										Date		Lang.	
Power Consulting			Pritul Panchal		Rev B										20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting			Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
28	I/C2 STANDBY CADMIUM 2EPZ 701 (From SS-4)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75					
					S		S/C	5.7kA & 7.2kA	0.025				5.7	0.025				
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0				0.2	1	EI			
<b>0.415kV L&amp;T MCC (MCC-3)</b>																		
29	I/C L&T MCC (MCC-3)	1600A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75					
					S		S/C	8.8kA & 11.5kA	0.025				8.8	0.025				
30	O/G HBF MCC	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75					
					S		S/C	5.7kA & 7.2kA	0.025				5.7	0.025				
<b>0.415kV ZE PIROTEC MCC</b>																		
31	I/C1 ZE PYROTEC MCC (From SS-1)	1600A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20-24	0.6	8		0.5	8				
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4	3	0.4		5	0.2				
					I		Instantaneous	2-3-4-6-8-10-12-15	50	0.2	0.2							
					G		Ground	0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4				0.8	0.2				
32	I/C2 ZE PYROTEC MCC (From SS-2)	1600A rating	MG	MicroLogic 6.0	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20-24	0.6	8		0.5	4				
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4	3	0.4		5	0.2				
					I		Instantaneous	2-3-4-6-8-10-12-15	50									
					G		Ground	0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4	0.2	0.2		0.5	0.2				
<b>0.415kV COOLING TOWER BUS</b>																		
33	I/C2 COOLING TOWER MCC (From MG Panel SS-1)	400A rating	Siemens	ETU12	L		O/L	0.4-0.45-0.5-0.63-0.7-0.8-0.9-0.95-1	2.5-4-6-8-10-14-17-20-25-30	1			1	2.5				
					I		Instantaneous	1.25-1.5-2-3-4-5-6-8-10-11	0.02	4			5	1				
					G		Ground	0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4	1	0.3		0.6	0.1				
34	I/C1 COOLING TOWER MCC (From Pyrotec PCC SS-1)	400A rating	Siemens	ETU12	L		O/L	0.4-0.45-0.5-0.63-0.7-0.8-0.9-0.95-1	2.5-4-6-8-10-14-17-20-25-30	0.95			1	2.5				
					I		Instantaneous	1.25-1.5-2-3-4-5-6-8-10-11	0.02	5			5	1				
					G		Ground	0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4	0.6	0.3		0.6	0.1				



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Power Consulting			Pritul Panchal		Rev B							20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting		Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic
<b>0.415kV SS-2</b>															
1	I/C AUX TR-3 Bus-A	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.8			0.8	-	
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-	
2	I/C AUX TR-4 Bus-B	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-	
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-	
		2500/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	1	0.85	EI	0.8	1	EI
3	O/G1 ROASTER II L&T 2EPZ 501 (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		8.9	0.025	
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.2	EI	0.1	1	EI
4	O/G ACID PLANT II	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		8.9	0.025	
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.5	EI	0.8	1	EI
5	O/G ROASTER II ID FAN	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.8	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-	
		300/5	Alstom	CDG12	51N		Standby EF	15% & 20%	0.1 .. 1.0	1	0.7	LI	0.2	0.1	LI
6	I/C ROASTER II ID FAN	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-	
		1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.95			0.95	-	
7	O/G1 CADMIUM BUILDING PCC II	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		-	-		5.7	0.025	
					S		S/C	5.7kA & 7.2kA	0.025	-	-		5.7	0.025	
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.35	EI	0.1	1	EI
8	O/G1 ROASTER II GE MCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.75	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		7	0.025	
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.5	EI	0.1	1	EI
9	O/G IR-1 COMP	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.75	-	
					S		S/C	4.7kA & 6kA	0.025	-	-		6	0.025	
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.65	EI	0.1	0.65	EI
10	O/G2 TGT SPARE SUPPLY (From SS-2)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			1	-	
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025	
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.5	EI	0.1	1	EI
11	O/G2 ZE PIROTEC MCC (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			1.25	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-	
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.85	EI	0.1	0.25	EI
12	O/G PHE PCC TIE (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-	
		1000/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	1	EI	0.1	1	EI
13	O/G SS-7 (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-	
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-	
		1250/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	1	0.25	EI	0.2	0.25	EI



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Power Consulting			Pritul Panchal		Rev B										20-05-2024	en	
sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Existing Setting			Proposed Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Characteristic	Plug setting	Time setting (s) / TMs	Characteristic		
14	O/G COMPRESSOR HOUSE MCC SIEMENS (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-			
					S		S/C	7kA & 8.9kA	0.025	-	-		8.9	0.025			
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	1	0.1	EI	0.2	0.5	EI		
15	O/G1 PYROTEC LP MCC (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			1	-			
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-			
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	1	0.1	EI	0.2	0.5	EI		
<b>0.415kV ROASTER II L&amp;T 2EPZ 501</b>																	
16	I/C1 ROASTER II L&T 2EPZ 501 (From SS-2)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025			
17	I/C2 R2 LT MCC (SS-4)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025			
18	O/G HRM ROASTER II L&T 2EPZ 501	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025			
19	I/C ACID PLANT II	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025			
20	O/G HRM ACID PLANT II	160A rating	Siemens	MCCB	L		O/L	1	1				1	1			
					I		Instantaneous	1	0.01	1	0.025		1	0.01			
<b>0.415kV ACID PLANT II</b>																	
21	I/C1 ROASTER II GE MCC (From SS-2)	1000A rating	GE	MPACT M-PRO 17 Plus	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-1	Fixed	1	0.1		1				
					S		S/C	1.5-2-3-4-6-8-10-12	0.1-0.2-0.4-0.5-0.6-0.8-1.0 (s)								
					I		Instantaneous	OFF-2-3-4-6-8-10-12	0.025								
					G		Ground	OFF-0.4-0.6-0.8-1	0.1-0.2-0.4-0.6-0.8-1.0 (s)								
22	I/C2 ROASTER II GE MCC (From PHE PCC)	1000A rating	GE	MPACT M-PRO 17 Plus	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-1	Fixed	1	0.1		1				
					S		S/C	1.5-2-3-4-6-8-10-12	0.1-0.2-0.4-0.5-0.6-0.8-1.0 (s)								
					I		Instantaneous	OFF-2-3-4-6-8-10-12	0.025								
					G		Ground	OFF-0.4-0.6-0.8-1	0.1-0.2-0.4-0.6-0.8-1.0 (s)								
23	O/G HRM ROASTER II GE MCC (From SS-2)	630A rating	Siemens	MCCB	L		O/L	1					1				
					I		Instantaneous	1	0.025	1	0.025		5	0.01			
<b>0.415kV TGT PLANT MCC</b>																	
24	I/C2 TGT SPARE SUPPLY (From SS-2)	100A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1				0.8	1			
					I		Instantaneous	5-1-10	0.01	1	0.01		5	0.01			
<b>0.415kV PHE PCC</b>																	
25	I/C PHE PCC TIE (From SS-2)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		-	-			
		1000/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	20% .. 80%	0.1 .. 1.0	10	0.2	VI	0.5	0.2	VI		



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Department			Author		Status										Date	Lang.	
Power Consulting			Pritul Panchal		Rev B										20-05-2024	en	
sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Existing Setting			Proposed Setting		Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Characteristic	Plug setting	Time setting (s) / TMs	Characteristic		
26	I/C AUX TR 12	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		-	-			
		3000/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	10% .. 40%	0.1 .. 1.0	10	0.8	VI	0.2	1	VI		
27	O/G2 ROASTER II GE MCC (From PHE PCC)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-			
					S		S/C	4.7kA & 6kA	0.025				4.7	0.025			
28	O/G BCH PCC (From PHE PCC)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-			
					S		S/C	7kA & 8.9kA	0.025				7	0.025			
29	O/G1 PH2 MCC (From PHE PCC)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	7kA & 8.9kA	0.025				5.7	0.025			
		400/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	10% .. 40%	0.1 .. 1.0	10	0.5	VI	0.2	1	VI		
30	O/G COMP L&T MCC (From PHE PCC)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	7kA & 8.9kA	0.025				5.7	0.025			
		400/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	10% .. 40%	0.1 .. 1.0	10	0.2	VI	0.2	1	VI		
31	O/G NEW COMPRESSOR PANEL (From PHE PCC)	2000A rating	MG Enerpact	MicroLogic 6.0	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20-24	0.6	8		0.6	8			
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4	2	Inst		2	0.2			
					I		Instantaneous	2-3-4-6-8-10-12-15	50								
					G		Ground	0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4	0.1	Inst		500	0.2			
32	O/G1 DM PLANT MCC-3 (From PHE PCC)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.9	-			
					S		S/C	5.7kA & 7.2kA	0.025				5.7	0.025			
		400/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	10% .. 40%	0.1 .. 1.0	0.9	0.2	VI	0.2	1	VI		
33	O/G1 PH NO 3 MCC (From PHE PCC)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-			
					S		S/C	7kA & 8.9kA	0.025				7	0.025			
		1250/5	Universal Electrics Ltd	R-1638 IOC	51N	I0>	EF	10% .. 100%	0.1 .. 1.0	0.9		EI	0.2	0.4	EI		
<b>0.415kV BCH PCC</b>																	
34	I/C BCH PCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-			
					S		S/C	7kA & 8.9kA	0.025				7	0.025			
35	O/G HRM BCH PCC	200A rating	Siemens	MCCB	L		O/L	1					1	1			
					I		Instantaneous	1	0.025	1	0.025		1	0.025			
<b>0.415kV PH2 MCC</b>																	
36	I/C1 PH2 MCC (From PHE PCC)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	7kA & 8.9kA	0.025	-	-		5.7	0.025			
		250/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.4	EI	0.2	0.4	EI		
37	I/C2 PH2 MCC (From SS-4)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		5.7	0.025			
38	O/G HRM PH2 MCC	110A rating	Siemens	MCCB	L		O/L	1									
					I		Instantaneous	1	0.025	1	0.025						
		150/5	BOCR	3ez	50	I>>	P/F Hs	15A-180A	1 .. 30	10A	10	DT					



## SS - 2

Department			Author		Status										Date		Lang.	
Power Consulting			Pritul Panchal		Rev B										20-05-2024		en	
sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Existing Setting			Proposed Setting			Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
<b>0.415kV COMP L&amp;T MCC</b>																		
39	I/C COMP L&T MCC (From PHE PCC)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75					
					S		S/C	5.7kA & 7.2kA	0.025	-	-		5.7	0.025				
<b>0.415kV NEW COMPRESSOR PANEL</b>																		
40	O/G NEW COMPRESSOR PANEL (From PHE PCC)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			1					
					S		S/C	4.7kA & 6kA	0.025				4.7	0.025				
<b>0.415kV NEW PURIFICATION MCC-P</b>																		
41	I/C1 PYROTEC LP MCC (From SS-2)	1600A rating	MG	MicoLogic 6.0A	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	0.5-1-2-4-8-12-16-20-24	0.8	12		0.5	2				
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4 (s)	3	0.4		5	0.2				
					I		Instantaneous	2-3-4-6-8-10-12-15-OFF	0.02	-	-							
					G		Ground	0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4 (s)	0.6	0.4		0.6	0.2				
42	I/C2 PYROTEC LP MCC (From SS-1)	1600A rating	MG	MicoLogic 6.0A	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	0.5-1-2-4-8-12-16-20-24	0.7	12		0.5	2				
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4 (s)	-	-		5	0.2				
					I		Instantaneous	2-3-4-6-8-10-12-15-OFF	0.02	-	-							
					G		Ground	500-640-720-800-880-960-1040-1120-1200	0.1-0.2-0.3-0.4 (s)	0.64	0.4		0.64	0.2				



### SS - 3

Department				Author		Status								Date		Lang.	
Power Consulting				Pritul Panchal		Rev B								20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting		Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
<b>0.415kV SS-3</b>																	
1	I/C AUX TR 5	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			1	-			
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-			
2	O/G JAROSITE FILTER PRESS MCC (From SS-3)	1600A rating	L&T	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	1	EI	0.2	0.1	EI		
					L		O/L	OFF- 0.4-0.5- 0.6-0.7-0.8- 0.85-0.9-0.95-1	0.5-1-2-4-6-12-18-24-30	1	12		0.5	12			
					S		S/C	0.6-1-1.5-2-3-4- 6-8-10-12	20-100-200-300-400 (ms)	4	0.4		2	0.2			
					I		Instantaneous	OFF-1.5-2-3-4- 6-8-10-12-15	0.025	-	-						
3	O/G CAKE TREATMENT PLANT (From SS-3)	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		-	-			
		1000/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.2	EI	0.2	0.5	EI		
					L		O/L	0.75 .. 1.0		1			1	-			
4	O/G MCTP MCC-2 (From SS-3)	1000A rating	L&T	DN1 Release	S		S/C	5.7kA & 7.2kA	0.025	-	-		7	0.025			
					L		O/L	0.75 .. 1.0		0.5	0.5	EI	0.3	0.25	EI		
		1000/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.2	EI	0.1	0.2	EI		
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-			
5	O/G PDB (From SS-3)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-			
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-			
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.2	EI	0.1	0.2	EI		
					L		O/L	0.8-0.1-1.0					1	-			
6	I/C PDB	250A rating	Siemens	MCCB	I		Instantaneous	5-1-10	0.025	1	0.025		-	-			
					L		O/L	0.8-0.1-1.0					1	-			
		800A rating	L&T	DN1 Release	S		S/C	4.7kA & 6kA	0.025	-	-		6	0.025			
					L		O/L	0.75 .. 1.0		0.75			1	-			
7	O/G ZINC DUST (From SS-3)	400/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.2	EI	0.2	0.5	EI		
					S		S/C	4.7kA & 6kA	0.025	-	-		6	0.025			
		250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1	-			
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.01			
8	I/C ZINC DUST	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	5.7kA & 7.2kA	0.025	-	-		8.9	0.025			
		1000/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.2	EI	0.2	0.5	EI		
					L		O/L	0.75 .. 1.0		0.75			0.75	-			
9	O/G ACID LOADING MCC (From SS-3)	800A rating	L&T	DN1 Release	S		S/C	5.7kA & 7.2kA	0.025	-	-		8.9	0.025			
					L		O/L	0.75 .. 1.0		0.75			0.75	-			
		1000/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.2	EI	0.2	0.5	EI		
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-			
10	O/G STAND BY ETP (From SS-3)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-			
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-			
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.2	EI	0.2	0.5	EI		
					L		O/L	0.75 .. 1.0		0.75			0.75	-			
<b>0.415kV JAROSITE FILTER PRESS MCC</b>																	
11	I/C JAROSITE FILTER PRESS MCC	1600/1	Areva	MICOM P127	51	I>	P/F	0.10 .. 25.0	0.025 .. 1.5	0.8	0.025	NI	1	1.5	VI		



### SS - 3

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Power Consulting			Pritul Panchal		Rev B										20-05-2024		en	
sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Existing Setting			Proposed Setting			Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
<b>0.415kV MCTP MCC-1</b>																		
12	I/C CAKE TREATMENT PLANT	1250A rating	SIEMENS	ETU15D Release	L		O/L	0.5-0.55-0.6-0.65-0.7-0.75-0.8-0.85-0.9-1	10 (s)	1			0.5	10				
					S		S/C	2-3-4-5-6-7-8	0.025	6			5	0.025				
<b>0.415kV MCTP MCC-2</b>																		
13	I/C MCTP MCC-2	1000A rating	SIEMENS	ETU15D Release	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30 (s)	0.8	3.5		0.45	2				
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	0.02-100-200-300-400 (ms)	12	0.4		4	200				
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	0.025	12								
					G		Ground	100-300-600-900-1200	100-200-300-400-500 (ms)	1200	0.2		600	200				
<b>0.415kV ACID LOADING MCC-1</b>																		
14	I/C ACID LOADING MCC-1	200A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1					
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025				
15	O/G HRM ACID LOADING MCC-1		Siemens	MPCB SIEMENS OLR - 20 A SET	L		O/L	1										
					I		Instantaneous	1	0.025	1	0.025							
<b>0.415kV ACID LOADING MCC-1</b>																		
16	I/C ACID LOADING MCC-2	200A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1					
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025				

Hitachi Energy				ETP PCC												
Department			Author		Status								Date		Lang.	
Power Consulting			Pritul Panchal		Rev B								20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
								0.415kV ETP PCC								
1	I/C AUX TR 10	2000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.8			1	-		
					S		S/C	11kA & 14kA	0.025	-	-		-	-		
		2000/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.75	0.85	EI	0.2	1	EI	
2	O/G STAND BY ETP (From ETP PCC)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-		
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	0.3	EI	0.2	0.5	EI	
3	O/G PIROTEC PCC	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-		
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	1	EI	0.2	0.5	EI	
4	O/G EMAC MCC	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			1	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		7	0.025		
5	O/G SIEMENS MCC	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			1	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		-	-		
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 120%	0.1 .. 1.0	0.5	1	EI	0.2	0.5	EI	
0.415kV PIROTEC PCC																
6	I/C PIROTEC PCC (From ETP PCC)	2000A rating	Schneider	ETA 6G	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	0.5-1-2-4-8-12-16-20-24	0.4	0.5		0.8	1		
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0-0.1-0.2-0.3-0.4 (ms)	1.5	0.1		4	0.4		
					I		Instantaneous	2-3-4-6-8-10-12-15	0.025	2						
					G		Ground	500-640-720-800-880-960-1040-1120-1200	0-0.1-0.2-0.3-0.4 (ms)	500	0.1		0.5	0.4		
7	I/C PIROTEC PCC (From RO-ZLD PCC)	800A rating	Schneider	MVS20N ETA 6G	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	0.5-1-2-4-8-12-16-20-24	0.4	0.5		1	0.5		
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0-0.1-0.2-0.3-0.4 (ms)	1.5	0.1		4	0.2		
					I		Instantaneous	2-3-4-6-8-10-12-15	0.025	2						
					G		Ground	500-640-720-800-880-960-1040-1120-1200	0-0.1-0.2-0.3-0.4 (ms)	500	0.1		0.8	0.2		
8	O/G LECHAT MCC	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1			250 A MCCB
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025		
9	O/G CANEL PUMP MCC	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1			250 A MCCB
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025		

Hitachi Energy				ETP PCC													
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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
								S	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4 (ms)	1.5	0.1	5	0.2			
								I	2-3-4-6-8-10-12- 15	0.025	2						
10	O/G BCH MCC	800A rating	Schneider	MVS20N ETA 6G	L	O/L	0.4-0.5-0.6-0.7- 0.8-0.9-0.95- 0.98-1	0.5-1-2-4-8-12-16-20-24	0.4	0.5		1	2			125 A MCCB	
								S	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4 (ms)	1.5	0.1	5	0.2			
								I	2-3-4-6-8-10-12- 15	0.025	2						
								G	500-640-720- 800-880-960- 1040-1120- 1200	0.1-0.2-0.3-0.4 (ms)	500	0.1	0.4	0.2			
11	O/G HYDRAULIC F/P	125A rating	Siemens	MCCB	L	O/L	1						1			125 A MCCB	
								I	Instantaneous	1	0.025	1	0.025	1	0.025		
0.415kV LECHAT MCC																	
12	I/C LECHAT MCC	250A rating	Siemens	MCCB	L	O/L	0.8-0.1-1.0						1			250 A MCCB	
								I	Instantaneous	5-1-10	0.025	1	0.025	5	0.025		
0.415kV BCH MCC																	
13	I/C BCH MCC	2000A rating	SIEMENS	ETU27B Release	L	O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	10 (s)	1			0.5					
								S	S/C	1.25-1.5-2-2.5- 3-4-6-8-10-12	0.02-100-200-300-400 (ms)	6	0	4	0.2		
								I	Instantaneous	20	0.025						
								G	Ground	100-300-600- 900-1200	100-200-300-400-500 (ms)			600	200		
0.415kV EMAC MCC																	
14	I/C EMAC MCC	400A rating	Siemens	MCCB	L	O/L	0.8-0.1-1.0						1			400 A MCCB	
								I	Instantaneous	5-1-10	0.025	1	0.025	5	0.025		
0.415kV SIEMENS MCC																	
15	I/C SIEMENS MCC	1000A rating	MG	MicoLogic 6.0A	L	O/L	0.4-0.5-0.6-0.7- 0.8-0.9-0.95- 0.98-1	0.5-1-2-4-8-12-16-20-24	0.7	0.5		0.7	0.5				
								S	S/C	1.5-2-2.5-3-4-5- 6-8-10	0.1-0.2-0.3-0.4 (s)	1.5	0.1	5	0.2		
								I	Instantaneous	2-3-4-6-8-10-12- 15-OFF	0.02	2	-				
								G	Ground	0.2-0.3-0.4-0.5- 0.6-0.7-0.8-0.9- 1.0	0.1-0.2-0.3-0.4 (s)	0.2	0.1	0.2	0.1		



## SS - 4

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Department			Author		Status							Date		Lang.		
Power Consulting			Pritul Panchal		Rev B							20-05-2024		en		
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting		Proposed Setting		Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
<b>0.415kV SS - 4</b>																
1	I/C AUX TR 7 Bus-A	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-		
		3200/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.75	0.8	EI	0.35	1	EI	
2	I/C AUX TR-6 Bus-B	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-		
		3200/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.75	0.8	EI	0.4	1	EI	
3	O/G2 R2 LT MCC	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025		
		600/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.8	EI	0.1	0.5	EI	
4	O/G MR MCC	1600A rating	L&T	UW-MTX1.5G	L		O/L	0.4-0.5-0.6-0.7-0.8-0.85-0.9-0.95-1	0.5-1-2-4-6-12-18-24-30	1	12		0.7	30		
					S		S/C	0.6-1-1.5-2-3-4-6-8-10-12	20-100-200-300-400 (ms)	4	0.4		4	0.2		
					I		Instantaneous	1.5-2-3-4-6-8-10-12-15	0.025	OFF						
					G		Ground	0.2-0.3-0.4-0.5-0.6	0.1-0.2-0.3-0.4-1 (s)	0.6	0.1		0.4	0.1		
5	O/G1 TGT PLANT MCC	3200A rating	Siemens	ETU8WT Release	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	0.4	10		0.4	2		
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	0.02-0.1-0.2-0.3-0.4 (s)	3	0.08		3	0.2		
					I		Instantaneous	20	0.025	15						
					G		Ground	100-300-600-900-1200	0.1-0.2-0.3-0.4-0.5 (s)	0.6	0.1		0.6	0.1		
6	O/G R2 BLENDE HANDLING MCC EPZ 507	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.8	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		5.7	0.025		
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.8	EI	0.1	1	EI	
7	O/G PH 1 NEW MCC 2EPU 505	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			1	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		5.7	0.025		
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.8	EI	0.1	1	EI	
8	O/G L&P 201B1 MCC	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		5.7	0.025		
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.8	EI	0.1	1	EI	
9	O/G1 LEACHING 201B2 MCC	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	5.7kA & 7.2kA	0.025	-	-		7.2	0.025		
		1000/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.8	EI	0.1	0.2	EI	
10	O/G2 STANDBY CADMIUM 2EPZ 701 (From SS-4 Bus-B)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	4.7kA & 6kA	0.025	-	-		6	0.025		
11	O/G PURIFICATION MCC 201A	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	5.7kA & 7.2kA	0.025	-	-		5.7	0.025		
		800/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.5	EI	0.1	0.2	EI	
12	O/G1 M&C GE MCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	7kA & 8.9kA	0.025	-	-		7	0.025		
		800/5	Universal Electrics Ltd	R1638	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	1	0.3	EI	0.2	0.2	EI	



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sr. No	Feeder Type or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Existing Setting			Proposed Setting			
										Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Characteristic	Plug setting	Time setting (s) / TMs	Characteristic
13	O/G1 FILTER WATER MCC PH-1 (From SS-4)		1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
						S		S/C	5.7kA & 7.2kA		0.025	-	-	5.7	0.025		
14	O/G L&P MCC-2		1600A rating	L&T	UW-MTX1.5G	L		O/L	0.4-0.5-0.6-0.7-0.8-0.85-0.9-0.95-1		0.5-1-2-4-6-12-18-24-30	1	4		0.5	12	
						S		S/C	0.6-1-1.5-2-3-4-6-8-10-12		20-100-200-300-400 (ms)	4	0.4		4	0.2	
						I		Instantaneous	10-12-15		0.025	OFF					
						G		Ground	0.2-0.3-0.4-0.5-0.6		0.1-0.2-0.3-0.4-1 (s)	0.4	0.1		0.4	0.1	
15	O/G2 PH2 MCC (From SS-4)		800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
						S		S/C	4.7kA & 6kA		0.025	-	-	5.7	0.025		
16	O/G TIE TO SS-5 (From SS-4)		1600A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-	These settings to be enabled when TIE feeder is ON keeping both bus couplers at SS-5 open.	
						S		S/C	8.8kA & 11.5kA		0.025	-	-	-	-		
			1600/5	English Electric	R1638	51N	I0>	EF	10% .. 320%		0.1 .. 1.0	1	0.35	EI	0.4	0.5	EI
17	O/G2 301AMCC (From SS-4)		1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			1	-		
						S		S/C	5.7kA & 7.2kA		0.025	-	-	-	-		
18	I/C MR MCC		1250A rating	Siemens	ETU37 Release	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1		10 (s)	1	10		0.8		
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12		0.02-0.1-0.2-0.3-0.4 (s)	2	0.2		4	0.2	
19	O/G HRM MR MCC		160A rating	Siemens	MCCB	I		Instantaneous	20		0.025	OFF					
						G		Ground	100-300-600-900-1200		0.1-0.2-0.3-0.4-0.5 (s)	OFF			600	0.1	
20	I/C1 TGT PLANT MCC (From SS-4)		3200A rating	Siemens	ETU8WT Release	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1		10 (s)	0.4	10		0.4	2	
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12		0.02-0.1-0.2-0.3-0.4 (s)	3	0.08		3	0.2	
						I		Instantaneous	20		0.025						
						G		Ground	100-300-600-900-1200		0.1-0.2-0.3-0.4-0.5 (s)	0.6	0.1		600	0.1	
21	O/G TGT PLANT MCC		100A rating	Siemens	MCCB	L		O/L	1					1			
						I		Instantaneous	1		0.025	1	0.025		1	0.025	
<b>0.415kV R2 BLENDE HANDLING MCC EPZ 507</b>																	
22	O/G BLENDE HANDLING MCC EPZ 507		63A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1			
						I		Instantaneous	5-1-10		0.025	1	0.025		1	0.025	



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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Plug setting range	Relay Range		Exisitng Setting			Proposed Setting				
<b>0.415kV PH1 SIEMENS MCC</b>																		
23	I/C PH1 SIEMENS MCC	250A rating	Siemens	MCCB	L		O/L	1							1			
					I		Instantaneous	1	0.025		1	0.025		10	0.025			
<b>0.415kV PH1 L&amp;T MCC</b>																		
24	I/C L&T MCC	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0							0.8			
					I		Instantaneous	5-1-10	0.025		1	0.025		5	0.025			
25	O/G HRM_L&T MCC	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0							0.8			
					I		Instantaneous	5-1-10	0.025		1	0.025		5	0.025			
<b>0.415kV L&amp;P 201B1 MCC</b>																		
26	I/C L&P 201B1 MCC	630A rating	L&T	SFU														
27	O/G HRM L&P 201B1 MCC	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1				0.75	-			
					S		S/C	4.7kA & 6kA	0.025	-	-			5.7	0.025			
<b>0.415kV LEACHING 201B2 MCC</b>																		
28	I/C1 LEACHING 201B2 MCC (From SS-4)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1				1	-			
		800/1	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.3	EI	0.1	0.2	EI			
29	I/C2 LEACHING 201B2 MCC (From SS-1)	800A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1				1	-			
		800/1	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	0.5	0.3	EI	0.5	1	EI			
30	O/G HRM L&P 202B2 MCC	160A rating	L&T	SFU														
<b>0.415kV PURIFICATION MCC 201A</b>																		
31	I/C PURIFICATION MCC 201A	630A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0						1	-			
32	O/G1 LEACHING MCC 2EPZ 201C (From PURIFICATION MCC 201A)	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0						1	-			
33	O/G HRM PURIFICATION MCC 201A	40A rating	Schneider	GV3-ME40 MCCB	L		O/L	1						1	-			
					I		Instantaneous	1	0.025		1	0.025		1	0.025			
<b>0.415kV M&amp;C GE MCC</b>																		
34	I/C1 M&C GE MCC (From SS-4)	1000A rating	GE	MPACT M-PRO 17 Plus	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-1	Fixed	1			1					
					S		S/C	1.5-2-3-4-6-8-10-12	0.1-0.2-0.4-0.5-0.6-0.8-1.0 (s)									
					I		Instantaneous	OFF-2-3-4-6-8-10-12	0.025									
					G		Ground	OFF-0.4-0.6-0.8-1.0-0.8-1	(s)									



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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark		
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
35	I/C2 M&C GE MCC (From SS-5)	1000A rating	GE	MPACT M-PRO 17 Plus	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-1	Fixed	1			1					
					S		S/C	1.5-2-3-4-6-8-10-12	0.1-0.2-0.4-0.5-0.6-0.8-1.0 (s)									
					I		Instantaneous	OFF-2-3-4-6-8-10-12	0.025									
					G		Ground	OFF-0.4-0.6-0.8-1	0.1-0.2-0.4-0.6-0.8-1.0 (s)									
36	O/G HRM M&C GE MCC	150/5	BOCR	3ez	50	>>	P/F Hs	15A-180A	1 .. 30	140A	10	DT	140	10	DT			
<b>0.415kV FILTER WATER MCC PH-1</b>																		
37	I/C1 FILTER WATER MCC PH-1 (From SS-4)	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1	-				
38	O/G HRM FILTER WATER MCC PH-1	100A rating	Siemens	MCCB	I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025				
<b>0.415kV L&amp;P MCC-2</b>																		
39	I/C L&P MCC-2	1250A rating	Siemens	ETU37 Release	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	10 (s)	1	10		0.4	10				
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	0.02-0.1-0.2-0.3-0.4 (s)	2	0.2		3	0.2				
					I		Instantaneous	20	0.025	OFF								
					G		Ground	100-300-600-900-1200	0.1-0.2-0.3-0.4-0.5 (s)	OFF			600	0.2				
40	O/G HRM_L&P MCC-2	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0		1			0.8	-				
					I		Instantaneous	5-1-10	0.025	2000			5	0.025				
<b>0.415kV LEACHING MCC 2EPZ 201C</b>																		
41	I/C1 LEACHING MCC 2EPZ 201C (From PURIFICATION MCC 201A)	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0		1			1	-				
42	I/C2 CADMIUM BUILDING PCC II (From CADMIUM BUILDING PCC II SS-2)	250A rating	SCHNEIDER	CVS250_TM250D MCCB	I		Instantaneous	5-1-10	0.025				5	0.025				
					L		O/L	0.8-0.1-1.0		1			1	-				
					I		Instantaneous	10	0.025				10	0.025				



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Power Consulting			Pritul Panchal		Rev B								20-05-2024		en			
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting					
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
<b>0.415kV SS - 5</b>																		
1	I/C TIE TO SS-5 Bus-A (From SS-4)	1600A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		These settings to be enabled when TIE feeder is ON keeping both bus couplers at SS-5 open.		
					S		S/C	8.8kA & 11.5kA	0.025	-	-		-	-				
2	I/C SS-5 Bus-B RTP TR	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			1	-				
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-				
					3200/5	Alstom	CDG24	51N	I0>	E/F	10% .. 320%	0.1 .. 1.0	1.5	0.5	EI	0.3	0.5	EI
3	I/C TIE SS-5 & SS 6 Bus-C (From SS-6)	1600A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		These settings to be enabled when TIE feeder is ON keeping both bus couplers at SS-5 open.		
					S		S/C	8.8kA & 11.5kA	0.025	-	-		-	-				
					1600/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	1	EI	0.2	0.5	EI
4	O/G SUPPLY TO INTERLAC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		-	-				
5	O/G WATER CLEARIFIR	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		7	0.025				
6	I/C WATER CLEARIFIR	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		7	0.025				
7	O/G1 LEACHING MCC-1 (From SS-5 Bus-A)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.9	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		-	-				
8	O/G2 M&C GE MCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		7	0.025				
9	O/G CAPACITOR CONTROL PANEL	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		8.9	0.025				
10	O/G CAP PANEL 1 RHS	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		-	-				
11	O/G2 NEW MELTING PCC (STANDBY)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		-	-				
12	O/G LT ROOM ADMIN BLOCK	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-				
					S		S/C	7KA & 8.9kA	0.025	-	-		8.9	0.025				
12					600/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	2	0.2	EI	0.2	0.2	EI



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Power Consulting			Pritul Panchal		Rev B									20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting				
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
13	O/G FILTERATION MCC-03	1600A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-			
					S		S/C	8.8kA & 11.5kA	0.025	-	-	-	-	-			
14	O/G SULZER MCC	2000A rating	L&T	UW-MTX1.5G	L		O/L	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	0.5	EI	0.2	0.5	EI		
					S		S/C	0.4-0.5-0.6-0.7-0.8-0.85-0.9-0.95-1	0.5-1-2-4-6-12-18-24-30	0.8	6		0.4	24			
					I		Instantaneous	1.5-2-3-4-6-8-10-12-15	0.025	OFF			2	0.2			
					G		Ground	0.2-0.3-0.4-0.5-0.6	0.1-0.2-0.3-0.4-1 (s)	0.6	1		0.3	0.1			
15	O/G INDUCTION FURNACE PCC SUPPLY	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.8	-			
					S		S/C	7kA & 8.9kA	0.025	-	-		7	0.025			
					800/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	0.4	EI	0.2	1
<b>0.415kV SUPPLY TO INTERLAC</b>																	
16	I/C SUPPLY TO INTERLAC	2000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5.5-8-10-14-17-21-25-30	0.8	30		0.4	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	3	400		1.5	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20 (ms)	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	OFF			300	200			
17	O/G HRM SUPPLY TO INTERLAC	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0		0.8			0.8	-			
					I		Instantaneous	5-1-10	0.025	5	0.025		5	0.025			
<b>0.415kV LEACHING MCC-1</b>																	
18	I/C1 LEACHING MCC-1 (From SS-5 Bus-A)	1000A rating	GE POWER CONTROLS INDIA PVT. LTD.	STATIC RELEASE LMZ 2	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-1.0	5-15-40 (s)	0.9			0.6	5			
					S		S/C	2-3-4-6-8-10	50-100-200-300-500 (ms)	3	0.4		4	200			
					I		Instantaneous	2-3-5-8-10-OFF	20 (ms)	-	-						
					G		Ground	0.25-0.3-0.4-0.5-0.6-0.7	200-300-400 (ms)	0.3	0.6		0.3	200			
19	I/C2 LEACHING MCC-1 (From SS-5 Bus-C)	1000A rating	GE POWER CONTROLS INDIA PVT. LTD.	STATIC RELEASE LMZ 2	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-1.0	5-15-40 (s)	0.9			0.6	5			
					S		S/C	2-3-4-6-8-10	50-100-200-300-500 (ms)	3	0.4		4	200			
					I		Instantaneous	2-3-5-8-10-OFF	20 (ms)	-	-						
					G		Ground	0.25-0.3-0.4-0.5-0.6-0.7	200-300-400 (ms)	0.3	0.6		0.3	200			
<b>0.415kV CAPACITOR CONTROL PANEL (LHS)</b>																	
20	I/C CAPACITOR CONTROL PANEL	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0		0.8			1				
					I		Instantaneous	5-1-10	0.025	5	0.025		10	0.025			



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Power Consulting			Pritul Panchal		Rev B										20-05-2024		en	
sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting					
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic			
<b>0.415kV CAPACITOR CONTROL PANEL (RHS)</b>																		
21	I/C CAPACITOR CONTROL PANEL	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0		0.8			1					
					I		Instantaneous	5-1-10	0.025	5	0.025		10	0.025				
<b>0.415kV FILTERATION MCC-03</b>																		
22	I/C FILTERATION MCC-03	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21- 25-30	0.4	2		0.4	2				
					S		S/C	1.25-1.5-2-2.5- 3-4-6-8-10-12	M-100-200-300-400	1.25	0.1		3	0.2				
					I		Instantaneous	1.5-2.2-3-4-6-8- 10-12	20 (ms)	12								
					G		Ground	100-300-600- 900-1200	100-200-300-400-500	100A	0.1		600	200				
23	O/G HRM FILTERATION MCC-03	400A rating	SCHNEIDER	NX400N MCCB	L		O/L	0.16-0.18-0.2- 0.25-0.28-0.32- 0.36-0.4		0.25			0.25					
					I		Instantaneous	0.6-1.5-2.4-3- 4.8-6.9	0.01-0.05 (s)				5	0.02				
<b>0.415kV SULZER MCC</b>																		
24	I/C SULZER MCC	1600A rating	Siemens	ETU37 Release	L		O/L	0.4-0.45-0.5- 0.55-0.6-0.65- 0.7-0.8-0.9-1	10 (s)	1	10		0.4					
					S		S/C	1.25-1.5-2-2.5- 3-4-6-8-10-12	0.02-0.1-0.2-0.3-0.4 (s)	2	0		2.5	0.2				
					I		Instantaneous	20	0.025	OFF			OFF					
					G		Ground	100-300-600- 900-1200	0.1-0.2-0.3-0.4-0.5 (s)	OFF			0.6	0.2				
25	O/G HRM SULZER MCC	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0		1			0.8					
					I		Instantaneous	5-1-10	0.025	8	0.025		5	0.025				
<b>0.415kV INDUCTION FURNACE PCC SUPPLY</b>																		
26	I/C1 INDUCTION FURNACE PCC SUPPLY (From SS-5)	800/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	3.75	1	NI	1	1	NI			
					51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	1	1	NI	0.2	0.1	NI			
27	I/C2 INDUCTION FURNACE (STANDBY) (From SS-6)	800/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	3.75	1	NI	1	1	NI			
					51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	1	1	NI	0.2	0.1	NI			
28	O/G HRM INDUCTION FURNACE PCC SUPPLY	800/5	CDG31	Alstom	51	I>	P/F	0.5-0.25-2	0.0-0.01-1	3.75	1	NI	1	1	NI			
					51N	IO>	E/F	0.1-0.05-0.4	0.0-0.01-1	1.5	1	NI	0.2	0.2	NI			
29	I/C HRM INDUCTION FURNACE PCC SUPPLY	1250A rating	Siemens	MCCB	L		O/L	0.4;0.45;0.5;0.6; 0.63;0.7;0.8;0.9;0.95;1	2.5;4-2- 10;14;17;20;25;30	1			0.7	2.5				
					I		Instantaneous	1.25;1.5;2-1- 6;8;10;11	0.025	8	0.025		5	0.025				



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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
<b>0.415kV SS - 6</b>																
1	I/C AUX TR 1	2000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.8			0.75	-		Relay Bypassed
					S		S/C	11kA & 14kA	0.025	-	-		-	-		
		400/5	Alstom	CDG14	51N	I0>	EF	10% .. 320%	0.1 .. 1.0	-	-	EI	0.45	1	VI	
2	O/G SS 1	3200A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	17.5kA & 22kA	0.025	-	-		-	-		
		400/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	1	EI	0.4	1	VI	
3	O/G TIE SS-5 & SS 6 (To SS-5)	1600A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		These settings to be enabled when TIE feeder is ON keeping both bus couplers at SS-5 open.
					S		S/C	8.8kA & 11.5kA	0.025	-	-		-	-		
		400/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	1	EI	0.2	1	VI	
4	O/G SS-7 PCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-		
		400/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	1	EI	0.2	0.5	VI	
5	O/G INDUCTION FURNACE (STANDBY)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	7kA & 8.9kA	0.025	-	-		-	-		
		400/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	0.2	EI	0.2	1	VI	



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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Proposed Setting		Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
<b>0.415kV SS - 7</b>																
1	I/C SS-7 (From SS-2)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	7kA & 8.9kA	0.025				-	-		
2	I/C SS-7 (From SS-6)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			1	-		
					S		S/C	7kA & 8.9kA	0.025				-	-		
		1250/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	2	0.15	EI	0.4	0.2	VI	
3	O/G ODPH MCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
		1250/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	2	0.25	EI	0.2	0.2	VI	
4	O/G2 PH NO 3 MCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
		1250/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	10% .. 40%	0.1 .. 1.0	90%	0.2	EI	0.2	0.2	VI	
5	O/G RO PLANT MCC	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.75	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
		400/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	2	1	EI	0.2	0.2	VI	
6	O/G BOILER MCC + HEATER SUPPLY FOR FO	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
		400/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	2	0.2	EI	0.2	0.2	VI	
7	O/G2 DM NEW MCC-1	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		1			0.75	-		
8	O/G DM PLANT MCC-3	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
		1250/5	English Electric	R1638	51N	I0>	EF	1-1.5-2-2.5-3-3.5-4	0.1 .. 1.0	1	0.15	EI	0.2	0.2	EI	
<b>0.415kV PH NO 3 MCC</b>																
9	I/C1 PH NO 3 MCC (From PHE PCC)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
10	I/C2 PH NO 3 MCC (From SS-7)	1250A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.9			0.9	-		
					S		S/C	7kA & 8.9kA	0.025				7	0.025		
		1250/5	EASUN ROYROLLE	TJM20	51N	I0>	EF	10% .. 40%	0.1 .. 1.0	90%	0.2	EI	0.2	0.2	VI	
11	O/G PH NO 3 MCC	250A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1			
					I		Instantaneous	5-1-10	0.025	1	10		10	10		
<b>0.415kV BOILER MCC + HEATER SUPPLY FOR FO</b>																
12	I/C BOILER MCC + HEATER SUPPLY FOR FO	125A rating	Siemens	MCCB	L		O/L	1					1			
					I		Instantaneous	1	0.025	1	0.025		1	0.025		



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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Proposed Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic	
<b>0.415kV DM PLANT MCC-3</b>																
13	I/C2 DM PLANT MCC-3 (From SS-7)	630A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1			
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025		
14	I/C1 DM PLANT MCC-3 (From PHE PCC)	630A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0					1			
					I		Instantaneous	5-1-10	0.025	1	0.025		5	0.025		
15	O/G HRM DM PLANT MCC-3	1000A rating	L&T	DN1 Release	L		O/L	0.75 .. 1.0		0.75			0.75	-		
					S		S/C	5.7kA & 7.2kA	0.025	-	-		5.7	0.025		

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
<b>11kV CDSS S/s</b>																	
1	BUS-A_CDSS S/S SW-12 I/C	750/1	Siemens	SIPROTEC 7UM62	51	I>	P/F	0.10 .. 4.00	0.50 .. 15.00	3	0.05	NI	0.45	3.2	EI		
					50	I>>	P/F Hs	0.05 .. 20.00	0.00 .. 60.00	12	0.01	DMT	5	0.25	DT		
					50-1	I>>>	P/F Hs - 1	0.05 .. 20.00	0.00 .. 60.00	2.3	25	DT					
					51N	I0>	EF	0.10 .. 4.00	0.50 .. 15.00	0.6	20	NI					
					50N	I0>>	E/F Hs	0.05 .. 20.00	0.00 .. 60.00	0.01	0.01	DMT	0.4	0.25	DT		
2	BUS-B_CDSS S/S SW-12 I/C	750/1	Siemens	SIPROTEC 7UM62	51	I>	P/F	0.10 .. 4.00	0.50 .. 15.00	3	0.05	NI	0.5	2.4	EI		
					50	I>>	P/F Hs	0.05 .. 20.00	0.00 .. 60.00	12	0.01	DMT	5	0.25	DT		
					50-1	I>>>	P/F Hs - 1	0.05 .. 20.00	0.00 .. 60.00	2.3	25	DT					
					51N	I0>	EF	0.10 .. 4.00	0.50 .. 15.00	0.6	20	NI					
					50N	I0>>	E/F Hs	0.05 .. 20.00	0.00 .. 60.00	0.01	0.01	DMT	0.4	0.25	DT		
3	STG BUS I/C	400/1	ABB	SPAM150C	50	I>>	P/F Hs	0.5...20.0	0.04..30	20	0.04	DT					
					50N	I0>	E/F Hs	1.0...100%	0.05..30	1	0.05	DT					
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					1	0.42	EI	
					50	I>>	P/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					6.5	0.45	DT	
					51N	I0>	EF	0.010-0.005-5.000	0.025-0.005-15.000								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.87	0.45	DT	
4	O/G1 STG I/C	600/1			51	I>	P/F										
					50	I>>	P/F Hs										
					51N	I0>	EF										
					50N	I0>>	E/F Hs										
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.59	0.35	EI	
					50	I>>	P/F Hs	0.010-0.005-5.000	0.025-0.005-15.000					4.08	0.25	DT	
					51N	I0>	EF	0.1-0.01-40.00	40-10-200000 (ms)								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.25	DT	
5	I/C1 STG I/C	700/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2					0.5	0.33	EI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00					3.5	0.25	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5									
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2								
					50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00					0.4	0.25	DT	
6	O/G2 STG I/C	600/1			51	I>	P/F										
					50	I>>	P/F Hs										
					51N	I0>	EF										
					50N	I0>>	E/F Hs										
			ABB	REF615	51	I>	P/F	0.05-0.01-5.00	0.025-0.005-15.000					0.5	0.55	EI	
					50	I>>	P/F Hs	0.010-0.005-5.000	0.025-0.005-15.000					4.09	0.25	DT	
					51N	I0>	EF	0.1-0.01-40.00	40-10-200000 (ms)								
					50N	I0>>	E/F Hs	0.1-0.01-40.00	40-10-200000 (ms)					0.5	0.25	DT	
7	I/C2 STG I/C	700/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2					0.3	1	EI	
					50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00					3.5	0.25	DT	
					50-1	I>>>	P/F Hs - 1	0.3 .. 12.5									
					51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	</							

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark
8	O/G PFIC-11		200/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	7	0.06	NI	0.8	0.1	NI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1.6	1	DMT	25	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2							
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.05		DT	0.5	0.05	DT	
9	I/C TR-111-A		130/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	1	0.1	NI	1	1	EI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.5	20	DMT	18.5	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	2.6	0.1	NI				
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.1	0.1	DT	0.5	0.05	DT	
10	I/C TR-112-A		130/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	1	0.1	NI	1.1	1.7	EI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.5	20	DMT	18.8	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	2.6	0.1	NI				
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.1	0.1	DT	0.5	0.05	DT	
11	I/C TR-113-A		130/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	1	0.1	NI	1.1	2.2	EI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.5	20	DMT	18.8	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	2.6	0.1	NI				
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.1	0.1	DT	0.5	0.05	DT	
12	I/C TR 11-A		150/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	NI	1.1	1.3	NI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	8	25	DMT	18.7	0.05	DT	
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00				0.5	0.05	DT	
13	I/C TR 11-B		150/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	4	0.05	NI	1.1	1.1	NI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	8	25	DMT	18.7	0.05	DT	
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00				0.5	0.05	DT	
14	O/G PFIC-12		200/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	7	0.06	NI	1.5	0.1	NI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	1.6	1	DMT	25	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2							
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.05		DT	0.5	0.05	DT	
15	I/C TR 113-B		130/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	1	0.1	NI	1.1	2.3	EI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.5	20	DMT	18.5	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	2.6	0.1	NI				
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.1	0.1	DT	0.5	0.05	DT	
16	I/C TR-112-B		130/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	1	0.1	NI	1	1.35	EI	
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.5	20	DMT	17.5	0.05	DT	
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT				
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	2.6	0.1	NI				
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.1	0.1	DT	0.5	0.05	DT	

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark	
						Plug setting range			Time setting range (s) / TMs range		Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
17	I/C TR 111-B		130/1	Siemens	7SJ6001	51	I>	P/F	0.10 .. 4.00	0.05 .. 3.2	1	0.1	NI	1	1.35	EI		
						50	I>>	P/F Hs	0.10 .. 25	0.00 .. 60.00	2.5	20	DMT	18.8	0.05	DT		
						50-1	I>>>	P/F Hs - 1	0.3 .. 12.5		12.5		DT					
						51N	I0>	EF	0.05 .. 4.00	0.05 .. 3.2	2.6	0.1	NI					
						50N	I0>>	E/F Hs	0.05 .. 25	0.00 .. 60.00	0.1	0.1	DT	0.5	0.05	DT		
<b>3.3kV CDSS S/s</b>																		
18	I/C TR 11-A		500/1	Siemens	7SJ6001	51	I>	P/F	0.1-0.1-4	0.050-0.010-3.200	4	0.05	NI	0.3	1.95	NI		
						50	I>>	P/F Hs	0.100-0.100-25.0	0.010-0.010-60.0				5	0.25	DT		
						51N	I0>	EF	0.05-0.01-4	0.050-0.010-3.200	8	25	DMT					
						50N	I0>>	EF Hs	0.050-0.0100-25.0	0.01-0.01-60	Not Available			0.5	0.25	DT		
19	I/C TR 11-B		500/1	Siemens	7SJ6001	51	I>	P/F	0.1-0.1-4	0.050-0.010-3.200	4	0.05	NI	0.3	1.6	NI		
						50	I>>	P/F Hs	0.100-0.100-25.0	0.010-0.010-60.0				5	0.25	DT		
						51N	I0>	EF	0.05-0.01-4	0.050-0.010-3.200	8	25	DMT					
						50N	I0>>	EF Hs	0.050-0.0100-25.0	0.01-0.01-60	Not Available			0.5	0.25	DT		
20	O/G BALL MILL1		65/1	Siemens	7SJ6001	51	I>	P/F	0.1-0.1-4	0.050-0.010-3.200	4	0.2	NI	1.1	2	NI		
						50	I>>	P/F Hs	0.100-0.100-25.0	0.010-0.010-60.0	1.1	40	DMT	8.6	0.05	DT		
						51N	I0>	EF	0.05-0.01-4	0.050-0.010-3.200								
						50N	I0>>	EF Hs	0.050-0.0100-25.0	0.01-0.01-60	Not Available			0.5	0.05	DT		
21	O/G CIRCULATING PUMP WHRB		65/1	Siemens	7SJ6001	51	I>	P/F	0.1-0.1-4	0.050-0.010-3.200	4	0.05	NI	0.8	2	NI		
						50	I>>	P/F Hs	0.100-0.100-25.0	0.010-0.010-60.0	0.9	35	DMT	6.7	0.05	DT		
						51N	I0>	EF	0.05-0.01-4	0.050-0.010-3.200	12.5							
						50N	I0>>	EF Hs	0.050-0.0100-25.0	0.01-0.01-60	Not Available			0.5	0.05	DT		
22	O/G FEED WATER PUMP		65/1	Siemens	7SJ6001	51	I>	P/F	0.1-0.1-4	0.050-0.010-3.200	4	0.05	NI	0.9	2	NI		
						50	I>>	P/F Hs	0.100-0.100-25.0	0.010-0.010-60.0	0.9	35	DMT	7.4	0.05	DT		
						51N	I0>	EF	0.05-0.01-4	0.050-0.010-3.200	12.5							
						50N	I0>>	EF Hs	0.050-0.0100-25.0	0.01-0.01-60	Not Available			0.5	0.05	DT		
<b>0.415kV RO ZLD PCC</b>																		
23	I/C RO-ZLD PCC		5000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30				0.6	2			
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				3	400			
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20								
						G		Ground	100-300-600-900-1200	100-200-300-400-500				300	200			
24	O/G COMPRESSOR MOTOR		100A rating	Siemens	MCCB	L		O/L	1	1	1	2		1	1			
						I		Instantaneous	1	0.01	900	0.1		1	0.01			

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			
										Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic
25	O/G MCC-1	1250A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30				0.8	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				4	200	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20						
					G				Ground	100-300-600-900-1200	100-200-300-400-500				600	200	
26	I/C MCC-1	800A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30				1	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				4	200	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20						
					G				Ground	100-300-600-900-1200	100-200-300-400-500				600	200	
27	O/G MCC-2	1250A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30				0.8	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				4	200	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20						
					G				Ground	100-300-600-900-1200	100-200-300-400-500				600	200	
28	I/C MCC-2	800A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30				1	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				4	200	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20						
					G				Ground	100-300-600-900-1200	100-200-300-400-500				600	200	
29	O/G VFD-2	630A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	0.1		0.45	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	Not Available			4	M	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20	Not Available					
					G				Ground	100-300-600-900-1200	100-200-300-400-500	Disabled			600	100	
30	O/G VFD-1	630A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	0.1		0.9	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	Not Available			8	M	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20	Not Available					
					G				Ground	100-300-600-900-1200	100-200-300-400-500	Disabled			600	100	
31	O/G CAP BUS	2000A rating	Siemens	ETU45B	L				O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	0.1		0.5	2	
					S				S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	Not Available			3	200	
					I				Instantaneous	1.5-2.2-3-4-6-8-10-12	20	Not Available					
					G				Ground	100-300-600-900-1200	100-200-300-400-500	Disabled			600	200	

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Exisitng Setting			Remark
32	O/G PIROTEC PCC (From RO-ZLD PCC)	800A rating	Schneider	MVS20N ETA 6G	L		O/L		0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	0.5-1-2-4-8-12-16-20-24	0.4	0.5		0.5	2		
					S		S/C		1.5-2-2.5-3-4-5-6-8-10	0-0.1-0.2-0.3-0.4 (ms)	1.5	0.1		4	0.2		
					I		Instantaneous		2-3-4-6-8-10-12-15	0.025	2						
					G		Ground		500-640-720-800-880-960-1040-1120-1200	0-0.1-0.2-0.3-0.4 (ms)	500	0.1		600	0.2		
0.415kV PCC - 113																	
33	I/C PCC-113_BUS A	4000A rating	Siemens	ETU45B	L		O/L		0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	1	21		1	2		
					S		S/C		1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	10	0.4		2	400		
					I		Instantaneous		1.5-2.2-3-4-6-8-10-12	20	10						
					G		Ground		100-300-600-900-1200	100-200-300-400-500	1200	0.2		900	400		
34	I/C PCC-113_BUS B	4000A rating	Siemens	ETU45B	L		O/L		0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	1	21		1	2		
					S		S/C		1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	10	0.4		2	400		
					I		Instantaneous		1.5-2.2-3-4-6-8-10-12	20	10						
					G		Ground		100-300-600-900-1200	100-200-300-400-500	1200	0.2		900	400		
35	O/G GA-55	1000A rating	Siemens	ETU45B	L		O/L		0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	0.4	2		0.4	2		
					S		S/C		1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	1.25	0.1					
					I		Instantaneous		1.5-2.2-3-4-6-8-10-12	20	12			1.5	20		
					G		Ground		100-300-600-900-1200	100-200-300-400-500	100	0.1		600	100		
36	O/G MCC 115 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L		0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.9	3.5		
					S		S/C		1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	1	0.2		8	200		
					I		Instantaneous		1.5-2.2-3-4-6-8-10-12	20	8						
					G		Ground		100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200		
37	I/C MCC 115 BUS B I/C-2	800A rating	Siemens	ETU45B	L		O/L		0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	0.9	3.5		0.9	3.5		
					S		S/C		1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	Not Available						
					I		Instantaneous		1.5-2.2-3-4-6-8-10-12	20	Not Available						
					G		Ground		100-300-600-900-1200	100-200-300-400-500	900	0.1					

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark	
38	O/G MCC 114 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	1	2		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
39	I/C MCC 114 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	0.1		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12			8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	Not Available							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	Disabled			600	200			
40	O/G PDB 112 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200			
41	I/C PDB 112 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200			
42	O/G COOLING MOTOR 2 FOR TOWER4	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
43	O/G COOLING MOTOR 4 FOR TOWER1	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.5	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				2.03	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
44	O/G IR-3	630A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	0.1		0.45	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	Not Available			4	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	Not Available							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	Disabled			300	200			

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
45	O/G MCC 118 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	1	2		1	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
46	I/C MCC 118 BUS B I/C-2	630A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	2		1	1			
					I		Instantaneous	5-1-10	0.01	900	0.1		10	0.01			
47	O/G COOLING WATER PUMP 3 FOR TOWER 2	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
48	O/G COOLING WATER PUMP 2 FOR TOWER 5	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
49	O/G IR COMP 5	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.72	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				5.88	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
50	O/G COOLING AIR FAN	630A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30				0.4	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				1.25	M			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20								
					G		Ground	100-300-600-900-1200	100-200-300-400-500				300	100			
51	O/G MCC 111 BUS B I/C-2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.3		2	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200			
52	I/C MCC 111 BUS B I/C-2	800A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	1			1	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	9	0.2		2.5	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200			

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Exisitng Setting			Remark
53	O/G COOLING WATER PUMP 1 FOR TOWER 1		400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI	
						50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT	
						51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI	
						50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT	
54	O/G WGP-2 TR		630A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30	1	2		0.8	2		
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		4	200		
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8						
						G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200		
55	I/C WGP-2 TR		400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	2		1	1		
						I		Instantaneous	5-1-10	0.01	900	0.1		5	0.01		
56	O/G FILTER WATER MCC PH-1 I/C-2		1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30	1	2		1	2		
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		8	200		
57	I/C FILTER WATER MCC PH-1 I/C-2		400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	2		1	1		
						I		Instantaneous	5-1-10	0.01	900	0.1		5	0.01		
0.415kV PCC - 112																	
58	I/C PCC-112_BUS A		4000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30	1	21		0.8	2		
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	10	0.4		2	400		
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	10						
						G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	400		
59	I/C PCC-112_BUS B		4000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30	1	21		0.6	2		
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	10	0.4		6	400		
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	10						
						G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	400		
60	O/G WGP-3 TR		630A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3-5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2		
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2					
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8			6	20		
						G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200		

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
61	I/C WGP-3 TR	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	2		1	1			
					I		Instantaneous	5-1-10	0.01	900	0.1		5	0.01			
62	O/G WGP-4 TR	630A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2						
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8			3	20			
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
63	I/C WGP-4 TR	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	2		1	1			
					I		Instantaneous	5-1-10	0.01	900	0.1		5	0.01			
64	O/G WGP-1 TR	630A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		1	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2						
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8			3	20			
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
65	I/C WGP-1 TR	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	2		1	1			
					I		Instantaneous	5-1-10	0.01	900	0.1		5	0.01			
66	O/G SCREW COMPRESSOR PNEUMATIC-3	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.72	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				5.85	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.3	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
67	O/G COOLING WATER PUMP 1 FOR TOWER 2	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
68	O/G COOLING WATER PUMP 3 FOR TOWER 1	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
69	O/G MCC-116 BUS A I/C-1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200			
70	I/C MCC-116 BUS A I/C-1	1000A rating	Schneider	MicroLogic 6.0	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20-24	0.9	2		0.9	2			
					S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4	Not Available							
					I		Instantaneous	2-3-4-6-8-10-12-15	50	Not Available							
					G		Ground	0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4	Not Available							

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Exisitng Setting			Remark	
71	O/G MCC 113 BUS B I/C-2		1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2			
72	I/C MCC 113 BUS B I/C-2		1000A rating	Siemens	ETU45B	S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		3	200			
73	O/G COOLING WATER PUMP 1 FOR TOWER 4		400/1	ABB	SPAM150C	I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8							
74	O/G MCC-116 BUS B I/C-2		1000A rating	Siemens	ETU45B	G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200 <th data-kind="ghost"></th>			
75	I/C MCC-116 BUS B I/C-2		1000A rating	Schneider	MicroLogic 6.0	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
76	O/G PDB-111-A BUS B I/C1		1000A rating	Siemens	ETU45B	50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
77	I/C PDB-111-A BUS B I/C1		1000A rating	Siemens	ETU45B	51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
						50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
						L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.9	2			
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		12	200			
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
						G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200			
						L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	0.5-1-2-4-8-12-16-20-24	0.9	2		0.9	2			
						S		S/C	1.5-2-2.5-3-4-5-6-8-10	0.1-0.2-0.3-0.4	Not Available							
						I		Instantaneous	2-3-4-6-8-10-12-15	50	Not Available							
						G		Ground	0.2-0.3-0.4-0.5-0.6-0.7-0.8-0.9-1.0	0.1-0.2-0.3-0.4	Not Available							
						L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		12	200			
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
						G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200			
						L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
						S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		12	200			
						I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
						G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200			

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Exisitng Setting			Remark	
								Plug setting range	Time setting (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
78	O/G COOLING WATER PUMP 2 FOR TOWER 1	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
79	O/G MCC 112 BUS B I/C1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		12	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.2		600	200			
80	I/C MCC 112 BUS B I/C1	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	0.1		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	Not Available							
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	Not Available							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	Not Available							
81	O/G COOLING WATER PUMP 2 FOR TOWER 2	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
82	O/G SCREW COMPRESSOR PNEUMATIC-4	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
83	O/G IAT SOFT STARTER PANEL	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.9	21		0.4	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	0.6	0.4		2	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	3							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.3		600	200			
84	O/G ACID PUMP FOR IAT	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0				0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.2	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0				0.5	0.05	DT		
85	O/G COOLING WATER PUMP 3 FOR TOWER 4	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.83	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				6.78	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.3	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		

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sr. No	FeederType or Location		CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting				Exisiting Setting				Remark											
									Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic														
									0.415kV PCC - 111																					
									O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	1	21		0.6	2														
86	I/C PCC-111_BUS A		4000A rating	Siemens	ETU45B	L			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	10	0.4		2	400														
						S			Instantaneous	1.5-2.2-3-4-6-8-10-12	20	10		-	-															
						I			Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		900	400														
						G																								
87	I/C PCC-111_BUS B		4000A rating	Siemens	ETU45B	L			O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.91	2-3.5-5.5-8-10-14-17-21-25-30	1	21		0.6	2														
						S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	10	0.4		6	400														
						I			Instantaneous	1.5-2.2-3-4-6-8-10-12	20	10																		
						G			Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		1200	400														
88	O/G SCREW COMPRESSOR PNEUMATIC-1		400/1	ABB	SPAM150C	51			P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.8	1	NI													
						50			P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				6.45	0.05	DT													
						51N			E/F	0.100-0.010-1.00	0.050-0.010-30				0.3	1	NI													
						50N			E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT													
89	O/G COOLING WATER PUMP 1 FOR TOWER 5		400/1	ABB	SPAM150C	51			P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI													
						50			P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT													
						51N			E/F	0.100-0.010-1.00	0.050-0.010-30				0.3	1	NI													
						50N			E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT													
90	O/G MCC-114 BUS A I/C1		1000A rating	Siemens	ETU45B	L			O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5														
						S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		8	200														
						I			Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12																		
						G			Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200														
91	I/C MCC-114 BUS A I/C1		800A rating	Siemens	ETU45B	L			O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5														
						S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		6	200														
						I			Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12																		
						G			Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200														
92	O/G MCC-112 BUS A I/C2		1000A rating	Siemens	ETU45B	L			O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	3.5														
						S			S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		6	200														
						I			Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8																		
						G			Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200														

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisiting Setting			Exisiting Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
93	I/C MCC-112 BUS A I/C2	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.9	3.5		0.9	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	8	0.2		6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
94	O/G MCC-115 BUS A I/C1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200			
95	I/C MCC-115 BUS A I/C1	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.9	3.5		0.9	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	8	0.2		8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
96	O/G PDB-111 BUS A I/C1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	3.5			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12			-	-			
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		600	200			
97	I/C PDB-111 BUS A I/C1	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.9	2		0.9	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400				6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20								
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		600	200			
98	O/G MCC 118 BUS A I/C1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		8	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12							
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		900	200			
99	I/C MCC 118 BUS A I/C1	630A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	0.8	3.5		1	1			
					I		Instantaneous	5-1-10	0.01	1200	0.2		10	0.01			
100	O/G MCC-111 BUS A I/C1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	1	2		1	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		2	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		900	200			

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range			Exisitng Setting			Exisitng Setting			Remark
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
101	I/C MCC-111 BUS A I/C1	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	1	2		1	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		2	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		900	200			
102	O/G MCC-113 BUS A I/C1	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		900	200			
103	I/C MCC-113 BUS A I/C1	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		6	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		0.9	200			
104	O/G PDB-112 BUS A I/C2	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	3.5		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.4		4	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	12		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	1200	0.2		900	200			
105	I/C PDB-112 BUS A I/C2	800A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		4	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		900	200			
106	O/G SCREW COMPRESSOR PNEUMATIC-2	400/1	ABB	SPAM150C	51	I>	P/F	0.5-0.01-2.5	0.05-0.01-1.0	20	0.04	DT	0.9	1	NI		
					50	I>>	P/F Hs	0.500-0.010-40.0	0.040-0.010-300.0				7.32	0.05	DT		
					51N	I0>	E/F	0.100-0.010-1.00	0.050-0.010-30				0.3	1	NI		
					50N	I0>>	E/F Hs	0.100-0.010-10.0	0.050-0.010-300.0	1	0.05	DT	0.5	0.05	DT		
107	O/G CLDC MCC	1000A rating	Siemens	ETU45B	L		O/L	0.4-0.5-0.6-0.7-0.8-0.9-0.95-0.98-1	2-3.5-5.5-8-10-14-17-21-25-30	0.8	2		0.8	2			
					S		S/C	1.25-1.5-2-2.5-3-4-6-8-10-12	M-100-200-300-400	12	0.2		4	200			
					I		Instantaneous	1.5-2.2-3-4-6-8-10-12	20	8		-	-				
					G		Ground	100-300-600-900-1200	100-200-300-400-500	900	0.1		900	200			
108	I/C CLDC MCC	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1		1	1		1	1		400 A MCCB
109	O/G HRM CLDC MCC	160A rating	Siemens	MCCB	L		Instantaneous	5-1-10	0.01		5	0.01		5	0.01		

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sr. No	FeederType or Location	CT Ratio Amps	Relay Make	Relay Type	Relay NEMA Code	IEC Code	Prot Type	Relay Range		Exisitng Setting			Exisitng Setting			Remark	
								Plug setting range	Time setting range (s) / TMs range	Plug setting	Time setting (s) / TMs	Charact eristic	Plug setting	Time setting (s) / TMs	Charact eristic		
110	O/G FAT PUMP	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
111	O/G DT PUMP	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
<b>0.415kV PDB - 111</b>																	
112	O/G HRM PDB-111 BUS A	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
113	O/G BATTERY CHARGER I/C1	63A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
114	O/G UPS 40 KVA I/C1	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
115	O/G UPS 30 KVA I/C1	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
116	O/G UPS 40 KVA I/C2	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
117	O/G UPS 30 KVA I/C2	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
<b>0.415kV PDB - 112</b>																	
118	O/G PNV BLOWER	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
119	O/G HRM PDB-112 BUS B	160A rating	Siemens	MCCB	L		O/L	1	1	1	1		1	1			
					I		Instantaneous	1	0.01	1	0.01		1	0.01			
<b>0.415kV MCC - 111</b>																	
120	O/G HGP TR-1	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
121	I/C HGP TR-1	200A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
122	O/G HGP TR-2	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
123	I/C HGP TR-2	200A rating	Siemens	MCCB	L		O/L	0.8,0.9,1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
124	O/G HGP TR-3	400A rating	Siemens	MCCB	L		O/L	0.8-0.1-1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			
125	I/C HGP TR-3	200A rating	Siemens	MCCB	L		O/L	0.8,0.9,1.0	1	1	1		1	1			
					I		Instantaneous	5-1-10	0.01	5	0.01		5	0.01			