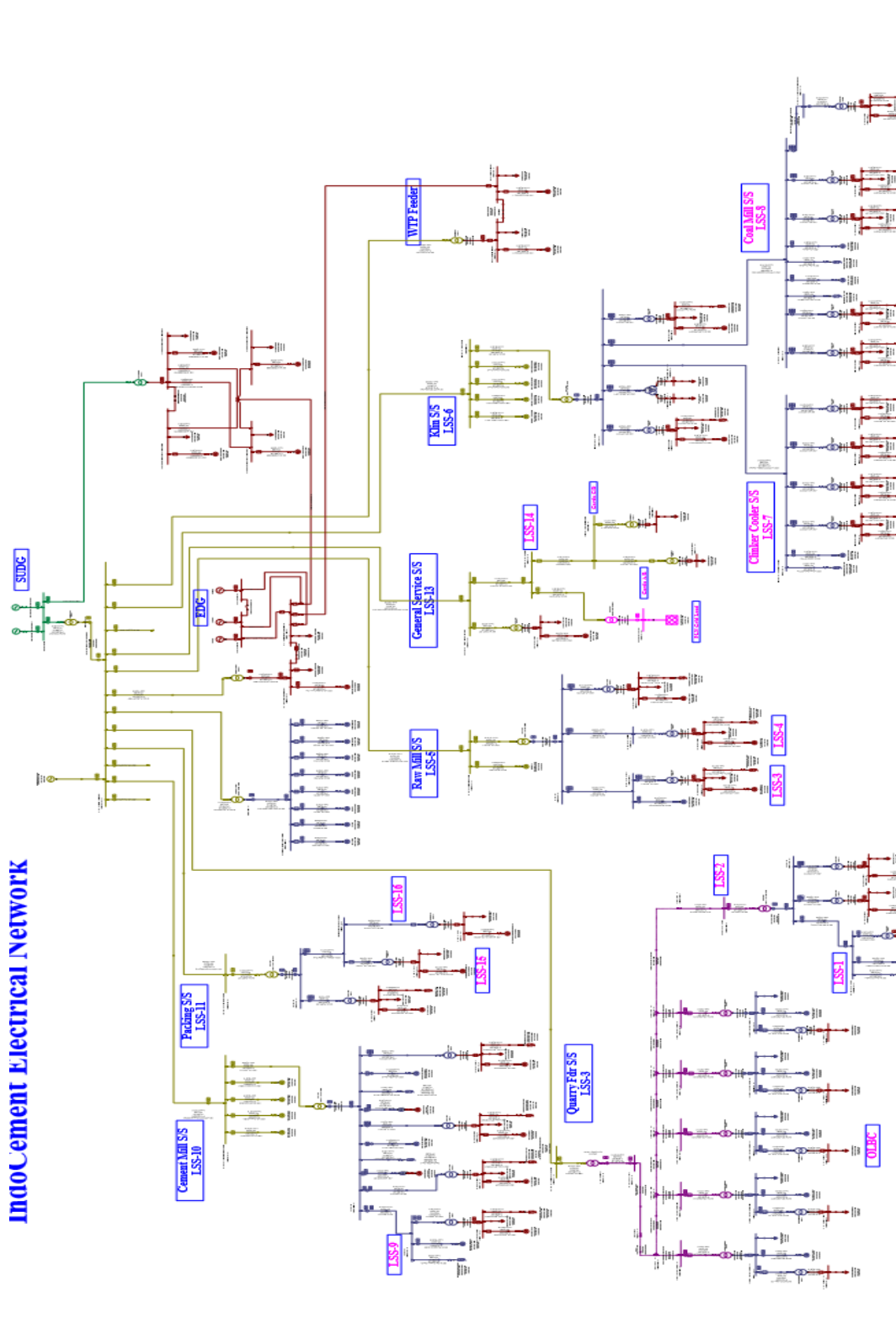


LAMPIRAN

1. Single line yang ada di PT. Indocement Tunggal Prakarsa, Tbk Plant 12



2. Lampiran Relay yang di setting dilapangan

ABB														Indo Cement Protection Settings- Power Plant S/s									
Sr. No	Feeder/Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings			Remark								
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	Characteristic									
PSS Power Station																							
1	IC to PSS from STG_Turbine Gen	4000S	ABB	SPAJ 140C	S1	P/F	0.5-0.01-2.5	0.05-0.01-1	0.95	0.05	RI	0.95	0.20	NI									
					S0	P/F HS	0.5-0.01-40	0.04-0.01-300	1.28	1.20	DT	4.00	0.85	DT									
					S1N	E/F	0.1-0.01-0.8	0.05-0.01-1	--	--	--	--	--	--									
					S0N	E/F HS	0.1-0.01-10	0.05-0.01-300	0.10	1.20	DT	0.50	0.65	DT									
2	IC to PSS from 18.5 MVA Trfo (11kV side)	1250S	ABB	SPAJ 140C	S1	P/F	0.5-0.01-2.5	0.05-0.01-1	0.77	0.15	RI	0.50	0.20	NI									
					S0	P/F HS	0.5-0.01-40	0.04-0.01-300	5.00	0.20	DT	0.20	0.20	NI									
					S1N	E/F	0.1-0.01-0.8	0.05-0.01-1	0.20	1.00	DT	4.00	0.04	DT									
					S0N	E/F HS	0.1-0.01-10	0.05-0.01-300	--	--	DT	2.00	0.05	DT									
3	TR_SUDG (3kV side)	4000S	ABB	SPAJ 110C	S1N	E/F	0.1-0.05-0.8	0.05-0.05-1	0.10	0.50	NI	0.70	0.80	VI									
					S0N	E/F HS	0.1-0.1-4	0.05-0.05-100	--	--	--	2.50	0.05	DT									
					S1	P/F	0.5-0.01-2.5	0.05-0.01-1	--	--	--	--	--	--									
					S0	P/F HS	0.5-0.01-40	0.04-0.01-300	--	--	--	--	--	--									
4	IC to SP1-1S1 (Cement Mill S/s)	2000S	ABB	SPAJ 140C	S1N	E/F	0.1-0.01-0.8	0.05-0.01-1	0.17	0.50	DT	--	--	--									
					S0N	E/F HS	0.1-0.01-10	0.05-0.01-300	--	--	DT	0.10	0.26	DT									
					S1	P/F	0.5-0.01-2.5	0.05-0.01-1	1.00	0.22	NI	0.84	0.28	NI									
					S0	P/F HS	0.5-0.01-40	0.04-0.01-300	8.33	0.50	DT	12.50	0.23	DT									
5	IC to SP1-1S1 (Packing S/s)	600S	ABB	SPAJ 140C	S1N	E/F	0.1-0.01-0.8	0.05-0.01-1	0.50	0.50	DT	--	--	--									
					S0N	E/F HS	0.1-0.01-10	0.05-0.01-300	--	--	DT	0.20	0.26	DT									
					S1	P/F	0.5-0.01-2.5	0.05-0.01-1	1.00	0.14	NI	1.00	0.26	NI									
					S0	P/F HS	0.5-0.01-40	0.04-0.01-300	3.20	0.65	DT	12.60	0.23	DT									
6	IC to 2P1-1S1 (Quarry Pdr S/s)	1000S	ABB	SPAJ 140C	S1N	E/F	0.1-0.01-0.8	0.05-0.01-1	0.30	0.50	DT	--	--	--									
					S0N	E/F HS	0.1-0.01-10	0.05-0.01-300	--	--	DT	0.14	0.26	DT									
					S1	P/F	0.5-0.01-2.5	0.05-0.01-1	1.00	0.14	NI	1.00	0.26	NI									
					S0	P/F HS	0.5-0.01-40	0.04-0.01-300	3.20	0.65	DT	12.60	0.23	DT									

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)														
Sr. No	Feeder Type or Location	CT Ratio Ampe	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings			Remark	
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	Characteristic		
2P1-1S1 Quarry Feeder Bus (LSS-3)																
1	OIG to P_2P1-1T1	1250/5	P&B	MRI-E	51	PIF	0.5-0.05-4	0.05-0.01-1.8	0.82	1.20	EI	0.70	0.21	NI		
					50	PIF HS	2-0.1-40	0.05-0.01-2	2.30	0.05	DT	9.00	0.03	DT		
					51N	EIF	0.01-0.1-2	0.05-0.01-1.8	0.926	EXT	DT	--	--			
		50N	EIF HS	0.01-0.1-1.5	0.05-0.01-2	0.45	0.30	DT	0.10	0.06	DT					
		51N	EIF	0.01-0.1-2	0.05-0.01-1.8	0.25	EXT	DT	--	--						
		50N	EIF HS	0.01-0.1-1.5	0.05-0.01-2	0.30	0.04	DT	0.20	0.68	DT					
2	IC to 2P1-1S2 (LSS-3)	400/5	P&B	MRI-E	51	PIF	0.5-0.05-4	0.05-0.01-1.8	0.50	1.20	EI	0.75	0.12	NI		
					50	PIF HS	2-0.1-40	0.05-0.01-2	1.70	0.15	DT	2.70	0.45	DT		
					51N	EIF	0.01-0.1-2	0.05-0.01-1.8	0.10	EXT	DT	--	--			
		50N	EIF HS	0.01-0.1-1.5	0.05-0.01-2	0.07	0.04	DT	0.10	0.47	DT					
		33KV_OILCBSS 5% (LSS-3)														
		3	OIG to TR_DLBC_55	200A	MG	Fuse			250A				200A			
4	IC To 8.9KV_OILCB Bus 55	100/5	Schneider Electric	SEPM	51	PIF	0.3-0.01-2.4	0.1-0.01-12.5	--	--	--	1.45	0.29	SI		
					50	PIF HS	0.3-0.01-24	0.05-0.01-655	--	--	--	--	--			
					51N	EIF	0.05-0.01-1	0.1-0.01-12.5	--	--	0.27	0.48	SI			
					50N	EIF HS	0.05-0.01-10	0.05-0.01-655	--	--	--	--	--			
5	OIG to 2P1-CSH1-MF1	100/5 200/1	P&B	MPR-3E5	49	Thermal overload unit	5 X Setting	1-1-120 Sec			4	4				
							Full Load Current	0.5-1.25x CT Primary (A)	0.43	0.43						
							CT Primary setting	10-1-2500 A	100	100						
							Hot / Cold ratio	20-10-100%	20%	20%						
							Thermal OL Pre-Alarm	50-1-90% & OFF	95%	95%						
					50N	Earth-fault unit	EJ Fault Current, %In	1-1-40% & OFF	34%	34%						
							EJ Fault Time	0-0.1-1 sec	0	0						
					4E	NPS Unit	NPS Current, %FLC	15%, 30%, & OFF	15%	15%						
					51	Low set overcurrent unit	Low set O/C, %FLC	110%, 200%, 300 % & OFF	200%	200%						
							Low set O/C, Time	0.5-0.5-5 Sec	0.5	0.5						
50	High set overcurrent unit	High set O/C, xIn	2-0.5-20 X In & OFF	700	700											
		High set O/C, Time	0-0.1-1 sec	0	0											
		Under Current	Under Current %FLC	20-9-80% & OFF	OFF	OFF										

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)																
Sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protocol Type	Relay Range			Existing Settings			Proposed Settings			Remark		
							Pick-up range	Time setting range (sec) / TMS range	Pick-up setting (PSM)	Time setting (TMS)	Charact aristic	Pick-up (PSM)	Time setting (TMS)	Charact aristic				
							Current Unit	Under Current Time		1-1-120 Sec								
						48	Start/stop supervision on unit	Number of start/stop		1-1-20 & OFF		3	3					
								Start inhibit Time		1-1-60 Min		30	30					
								Set Password		Any 4 char		MM	MM					
								Serial Link Address		1-1-32 & OFF		OFF	OFF					
								Set Trip Relay, Trnn		0-255 see Matrix		T 241	T 241					
								Set Program Relay, Pnnn		0-255 see Matrix		P 000	P 000					
								Set Alarm Relay, Annn		0-255 see Matrix		A 218	A 218					
								Set E/ fault, Ennn		0-255 see Matrix		E 138	E 138					
								Set Trip Reset, Rnnn		0-255 see Matrix		R 000	R 000					
								Set Thermal Oil, Cnnn		0-255 see Matrix		C 148	C 148					
								Set Speed Switch, Snnn		0-255 see Matrix		S 000	S 000					
								Advanced relay, Xnnn		0-255 see Matrix		X 132	X 132					
33kV_OLEBC54 S/s (LSS-3)																		
8	O/G to TR_OLEBC S4	200A	MG	Fuse				200A					200A					
7	UC To 6.6kV_OLEBC Blue S4	100S	Schneider Electric	SEPAM	51	P/F	0.3-0.01-2.4	0.1-0.01-12.5					2.40	0.28	SI			
					50	P/F HS	0.3-0.01-24	0.05-0.01-855										
					51N	E/F	0.05-0.01-1	0.1-0.01-12.5							0.44	0.48	SI	
					50N	E/F HS	0.05-0.01-10	0.05-0.01-855										
								B X Setting		1-1-120 Sec		4	4					
						49	Thermal overload unit	Full Load Current		0.5-1.25x CT Primary (A)		0.43	0.43					
								CT Primary setting		10-1-2500 A		100	100					
								Hot / Cold ratio		20-10-100%		20%	20%					
								Thermal Oil Pro-alarm		50-1-99% & OFF		95%	95%					
						50N	Earth-fault unit	E/ Fault Current, %In		1-1-40% & OFF		34%	34%					
								E/ Fault Time		0-0.1-1 sec		0	0					
						45	NPS Unit	NPS Current, %FLC		15%, 30% & OFF		15%	15%					
						51	Low set overcurrent unit	Low set O/C, %FLC		110%, 200%, 300% & OFF		200%	200%					
								Low set O/C, Time		0.5-0.5-5 Sec		0.5	0.5					

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)														
Sr. No.	Feeder/Type of Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings			Remark	
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	Characteristic		
8	D/G to 251-CAH1-MM1	100S 200/1	P&B	MPR-3E5	50	High set overcurrent unit	High set O/C, xIn	2.0-5.20 X In	8OFF	700	700					
							High set O/C, Time	0-0.1-1 sec	0	0						
							Under Current %FLC	20-5-80% &OFF	OFF	OFF						
							Under Current Time	1-1-120 Sec								
							48	Start-up supervision unit	Number of start/hr	1-1-20 &OFF	3	3				
									Start inhibit Time	1-1-60 Min	30	30				
							General Settings	Set Password	Any 4 char	↑↑↑↑	↑↑↑↑					
								Serial Link Address	1-1-32 &OFF	OFF	OFF					
								Set Trip Relay, Trnn	0-255 see Matrix	T 241	T 241					
								Set Program Relay, Pnrm	0-255 see Matrix	P 000	P 000					
								Set Alarm Relay, Anrm	0-255 see Matrix	A 218	A 218					
								Set E/ fault, Enrm	0-255 see Matrix	E 138	E 138					
								Set Trip Reset, Rnrm	0-255 see Matrix	R 000	R 000					
								Set Thermal OL, Cnrm	0-255 see Matrix	C 148	C 148					
								Set Speed Switch, Snrm	0-255 see Matrix	S 000	S 000					
Advanced relay, Xnrm	0-255 see Matrix	X 132	X 132													
33kV_OLBCS3 S/s (LSS-3)																
9	D/G to TR_OLBC_S3	200A	MG	Fuse			200A				200A					
10	IC To 6.6KV_OLBC Bus S3	100S	Schneider Electric	SEPAM	51	P/F	0.3-0.01-2.4	0.1-0.01-12.5				2.46	0.28	SI		
					50	P/F HS	0.3-0.01-2.4	0.05-0.01-855								
					51N	E/F	0.05-0.01-1	0.1-0.01-12.5				0.44	0.47	SI		
					50N	E/F HS	0.05-0.01-10	0.05-0.01-855								
					49	Thermal overload unit	6 X Setting	1-1-120 Sec	4	4						
50N	Earth-fault unit	Full Load Current	0.5-1.25x CT Primary (A)	0.43	0.43											
		CT Primary setting	10-1-2500 A	100	100											
		Hot / Cold ratio	20-10-100%	20%	20%											
		Thermal OL, Pre-alarm	50-1-80% & OFF	65%	65%											
50N	Earth-fault unit	E/ Fault Current, %In	1-1-40% & OFF	34%	34%											
		E/ Fault Time	0-0.1-1 sec	0	0											

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)												
Sh. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range			Existing Settings		Proposed Settings		Remark
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	
11	O/G to 2B1-C3H1-M#1	100/5 200/1	P&B	MPR-3E5	46	NPS Unit	NPS Current, %FLC		15%, 30%, & OFF	15%	15%			
						51	Low set overcurrent unit	Low set O/C, %FLC		110%, 200%, 300% %, 400% & OFF	200%	200%		
							Low set O/C, Time		0.5-0.5-5 Sec	0.5	0.5			
						50	High set overcurrent unit	High set O/C, xIn		2-0.5-20 X In & OFF	700	700		
							High set O/C, Time		0-0.1-1 sec	0	0			
						Under Current Unit	Under Current %FLC		20-5-60% & OFF	OFF	OFF			
							Under Current Time		1-1-120 Sec					
						48	Start-up supervision on unit	Number of start/hr		1-1-20 & OFF	3	3		
							Start Inhibit Time		1-1-60 Min	30	30			
						General Settings	Set Password		Any 4 char					
							Serial Link Address		1-1-32 & OFF	OFF	OFF			
							Set Trip Relay, Trmn		0-255 see Matrix	T 241	T 241			
							Set Program Relay, Pnrm		0-255 see Matrix	P 000	P 000			
							Set Alarm Relay, Anrm		0-255 see Matrix	A 218	A 218			
							Set E/fault, Enrm		0-255 see Matrix	E 138	E 138			
Set Trip Reset, Rnrm		0-255 see Matrix	R 000	R 000										
Set Thermal Oil, Cnrm		0-255 see Matrix	C 148	C 148										
Set Speed Switch, Snrm		0-255 see Matrix	S 000	S 000										
Advanced relay, Xnrm		0-255 see Matrix	X 132	X 132										
33kV_OLBSC2 S/s (LSS-3)														
12	O/G to TR_OLBC_S2	200A	MG	Fuse			200A				200A			
13	WC To 6.6kV_OLBC Bus S2	100/5	Schneider Electric	SEFAM	51	PF	0.3-0.01-2.4	0.1-0.01-12.5				1.45	0.27	SI
					50	PF HS	0.3-0.01-2.4	0.05-0.01-655						
					51N	E/F	0.05-0.01-1	0.1-0.01-12.5				0.27	0.48	SI
					50N	E/F HS	0.05-0.01-10	0.05-0.01-655						
49	Thermal overload unit				B X Setting			1-1-120 Sec	4	4				
					Full Load Current			0.5-1.25x CT Primary (A)	0.43	0.43				
					CT Primary setting			10-1-2500 A	100	100				
					Hot / Cold ratio			20-10-100%	20%	20%				

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)																			
Sl. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings			Remark						
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	Characteristic							
14	O/G to 291-C241-MF1	100/5 200/1	PAB	MPR-3E5			Thermal OL Pre-alarm		50-1-99% & OFF	95%	95%										
							50N Earth-fault unit	EI Fault Current, %In	1-1-40% & OFF	34%	34%										
								EI Fault Time	0-0.1-1 sec	0	0										
							48 NPS Unit	NPS Current, %FLC	15%,30%,& OFF	15%	15%										
								51 Low set overcome unit	Low set O/C, %FLC	110%,200%,300 %,400%& OFF	200%	200%									
							Low set O/C, Time		0.5-0.5-5 Sec	0.5	0.5										
							50 High set overcome unit	High set O/C, xIn	2-0.5-20 X In &OFF	700	700										
								High set O/C, Time	0-0.1-1 sec	0	0										
							Under Current Unit	Under Current %FLC	20-5-65% &OFF	OFF	OFF										
								Under Current Time	1-1-120 Sec												
							48 Start-up supervision unit	Number of start/hr	1-1-20 &OFF	3	3										
								Start Inhibit Time	1-1-60 Min	30	30										
							General Settings							Set Password	Any 4 char	AAA	AAA				
														Serial Link Address	1-1-32 &OFF	OFF	OFF				
														Set Trip Relay, TnIn	0-255 see Matrix	T 241	T 241				
														Set Program Relay, PnIn	0-255 see Matrix	P 000	P 000				
														Set Alarm Relay, AnIn	0-255 see Matrix	A 218	A 218				
														Set E/ fault, EnIn	0-255 see Matrix	E 138	E 138				
							Set Trip Reset, RnIn	0-255 see Matrix	R 000	R 000											
							Set Thermal OL, CnIn	0-255 see Matrix	C 148	C 148											
							Set Speed Switch, SnIn	0-255 see Matrix	S 000	S 000											
							Advanced relay, XnIn	0-255 see Matrix	X 132	X 132											
33kV_OLBCB1 s/s (LSS-3)																					
15	O/G to TR_OLBC_S1	200A	MG	Fuse			200A				200A										
16	IC To 6.6kV_OLBC Bus S1	100/5	Schneider Electric	SEPAM			51 DIF	0.3-0.01-2.4	0.1-0.01-12.5			1.45	0.27	SI							
							50 DIF HS	0.3-0.01-2.4	0.05-0.01-855												
							S1N EF	0.05-0.01-1	0.1-0.01-12.5			0.27	0.46	SI							
							50N EF HS	0.05-0.01-10	0.05-0.01-855												
							6 X Setting	1-1-120 Sec	4	4											

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)																
Seq No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings			Remark			
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	Characteristic				
17	OIG to 291-C1H1-M#1	100/5 200/1	P&B	MPR-3ES	40	Thermal overload unit	Full Load Current		0.5-1.25x CT Primary (A)	0.43	0.43							
							CT Primary setting		10-1-2500 A	100	100							
							Hot / Cold ratio		20-10-100%	20%	20%							
							Thermal OL Pre-alarm		50-1-99% & OFF	95%	95%							
						50N	Earth-fault unit	EJ Fault Current, %In		1-1-40% & OFF	34%	34%						
								EJ Fault Time		0-0.1-1 sec	0	0						
						46	NPS Unit	NPS Current, %FLC		15%,30% & OFF	15%	15%						
						51	Low set overcurrent unit	Low set O/C, %FLC		110%,200%,300% %400%& OFF	200%	200%						
								Low set O/C, Time		0.5-0.5-5 Sec	0.5	0.5						
						50	High set overcurrent unit	High set O/C, %In		2-0.5-20 X In & OFF	700	700						
								High set O/C, Time		0-0.1-1 sec	0	0						
						46	Under Current Unit	Under Current %FLC		20-5-95% & OFF	OFF	OFF						
								Under Current Time		1-1-120 Sec								
						46	Start-up supervision unit	Number of start/hr		1-1-20 & OFF	3	3						
								Start Inhibit Time		1-1-60 Min	30	30						
						General Settings							Set Password	Any 4 char				
						Serial Link Address							1-1-32 & OFF	OFF	OFF			
						Set Trip Relay, Trinn							0-255 see Matrix	T 241	T 241			
						Set Program Relay, Pirnn							0-255 see Matrix	P 000	P 000			
						Set Alarm Relay, Acinn							0-255 see Matrix	A 218	A 218			
Set E/ fault, Ennn							0-255 see Matrix	E 138	E 138									
Set Trip Reset, Rnnn							0-255 see Matrix	R 000	R 000									
Set Thermal OL, Cnnn							0-255 see Matrix	C 148	C 148									
Set Speed Switch, Snnn							0-255 see Matrix	S 000	S 000									
Advanced relay, Xnnn							0-255 see Matrix	X 132	X 132									

LSS-2

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)																
Sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range			Existing Settings			Proposed Settings			Remark		
							Pick-up range	Time setting range (sec)/ TMS range	Pick-up (PSM)	Time setting (TMS)	Charact. aristic	Pick-up (PSM)	Time setting (TMS)	Charact. aristic				
1	O/G to P_2P2-1T1	125/5	P&B	MRI-E			S1	PIF	0.5-0.05-4	0.05-0.01-1.6	0.84	1.60	EI	0.80	0.18	NI		
							S0	PIF HS	2-0.1-40	0.05-0.01-2	10.00	0.05	DT	6.50	0.03	DT		
							S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.16	EXIT	DT	--	--			
	230/5A	P&B	MRI-E				S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.20	0.05	DT	0.20	0.05	DT		
							S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.36	EXIT	DT	--	--			
							S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.50	0.05	DT	0.40	0.70	DT		
2	IC To 2P2-1S2	600/5A	P&B	MRI-E			S1	PIF	0.5-0.05-4	0.05-0.01-1.6	0.70	1.60	EI	2.45	0.13	NI		
							S0	PIF HS	2-0.1-40	0.05-0.01-2	5.00	0.40	DT	--	--			
							S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.05	EXIT	DT	--	--			
	3	O/G to 2P3-1S1 (LSS-1)	500/5A 230/1A	P&B	MRI-E			S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.10	0.30	DT	0.16	0.48	DT	
								S1	PIF	0.5-0.05-4	0.05-0.01-1.6	0.74	1.60	EI	0.90	0.08	NI	
								S0	PIF HS	2-0.1-40	0.05-0.01-2	5.00	0.20	DT	--	--		
3	O/G to 2P3-1T2	200/5A 230/1A	P&B	MRI-E			S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.10	EXIT	DT	--	--			
							S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.20	0.25	DT	0.30	0.27	DT		
							S1	PIF	0.5-0.05-4	0.05-0.01-1.6	0.84	1.60	EI	0.80	0.38	EI		
	4	O/G to P_2P2-1T2	200/5A 230/1A	P&B	MRI-E			S0	PIF HS	2-0.1-40	0.05-0.01-2	10.00	0.05	DT	11.00	0.05	DT	
								S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.10	EXIT	DT	--	--		
								S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.15	0.10	DT	0.30	0.05	DT	
5	O/G to P_2P2-1T2	200/5A 230/1A	P&B	MRI-E			S1	PIF	0.5-0.05-4	0.05-0.01-1.6	0.84	1.60	EI	0.80	0.38	EI		
							S0	PIF HS	2-0.1-40	0.05-0.01-2	10.00	0.05	DT	11.00	0.05	DT		
							S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.10	EXIT	DT	--	--			
	6	IC To 2P3-1V2/1M2	250/5A	P&B	MRI-E			S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.15	0.10	DT	0.30	0.05	DT	
								S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.20	EXIT	DT	0.20	0.08	NI	
								S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.40	1.00	DT	1.00	0.05	DT	
7	IC To 2P2-1V1/1M1	250/5A	P&B	MRI-E			AL	OL	0.8-0.05-1.1	1.25,2.5,5,10,15,20,25,30	0.80	5	PI	0.80	5	PI		
							AS	SC	1,2,2.5,3,4,5,8,10	0.08,0.16,0.24,0.32,0.4,0.48,0.56	3.00	0.32	DT	3.00	0.16	DT		
							AJ	INST	2-2-16	INST	8.00	INST	DT	8.00	INST	DT		
7	IC To 2P2-1V1/1M1	250/5A	P&B	MRI-E			S1N	EF	0.01-0.1-2	0.05-0.01-1.6	0.20	EXIT	DT	0.20	0.08	NI		
							S0N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.40	1.00	DT	1.00	0.05	DT		
							AL	OL	0.8-0.05-1.1	1.25,2.5,5,10,15,20,25,30	0.80	5	PI	0.80	5	PI		

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ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)														
Sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings			Remark	
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)	Characteristic		
		2500A	Hyundai	HAT-2S		AS	SC	1,2,2.5,3,4,6,8,10	0.00-0.16,0.24,0.32,0.4,0.48,0.56	3.00	0.32	DT	3.00	0.16	DT	
						AI	INST	2-2-16.	INST	8.00	INST	DT	8.00	INST	DT	
LSS-1																
8	01G to 2P3-1S1 (LSS-1)	5005A 200/1A	P&B	MRI-IE		51	PIF	0.5-0.05-4	0.05-0.01-1.8	0.74	1.60	EI	0.90	0.06	NI	
						50	PIF HS	2-0.1-40	0.05-0.01-2	6.00	0.20	DT	-	-	-	
						51N	EF	0.01-0.1-2	0.05-0.01-1.8	0.16	EXT	DT	-	-	-	
						50N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.20	0.20	DT	0.30	0.27	DT	
								6 X Setting		1-1-120 Sec		4	4			
						49	Thermal overload unit	Full Load Current		0.5-1.25x CT Primary (A)		0.43	0.43			
								CT Primary setting		10-1-2500 A		100	100			
								Hot / Cold ratio		20-10-100%		20%	20%			
								Thermal OL Pre-alarm		50-1-99% & OFF		95%	95%			
						50N	Earth fault unit	EI Fault Current, %In		1-1-40% & OFF		34%	34%			
								EI Fault Time		0-0.1-1 sec		0	0			
						45	NPS Unit	NPS Current, %FLC		15%,30% & OFF		15%	15%			
						51	Low set overcurrent unit	Low set O/C, %FLC		110%,200%,300 % & OFF		200%	200%			
								Low set O/C, Time		0.5-0.5-5 Sec		0.5	0.5			
						50	High set overcurrent unit	High set O/C, xIn		2-0.5-20 X In & OFF		700	700			
								High set O/C, Time		0-0.1-1 sec		0	0			
							Under Current Link	Under Current %FLC		20-5-95% & OFF		OFF	OFF			
								Under Current Time		1-1-120 Sec						
						45	Start-up supervision unit	Number of start/hr		1-1-20 & OFF		3	3			
								Start Inhibit Time		1-1-60 Min		30	30			
								Set Password		Any 4 char		↑↑↑↑	↑↑↑↑			
								Serial Link Address		1-1-32 & OFF		OFF	OFF			
								Set Trip Relay, Tms		0-255 see Manbx		T 241	T 241			
								Set Program Relay, Pms		0-255 see Manbx		P 000	P 000			
							General Settings	Set Alarm Relay, Amn		0-255 see Manbx		A 210	A 210			

ABB		Indo Cement Protection Settings- Quarry Feeder S/s (LSS-3)														
Sr. No	Feeder Type or Location	CT Ratio Amps	Relay Make	Relay Type	NEMA Code	Protection Type	Relay Range		Existing Settings			Proposed Settings		Remark		
							Pick-up range	Time setting range (sec) / TMS range	Pick-up (PSM)	Time setting (TMS)	Characteristic	Pick-up (PSM)	Time setting (TMS)		Characteristic	
							Set E' fault, Ennn		0-255 see Matrix	E 138	E 138					
							Set Trip Reset, Rnmh		0-255 see Matrix	R 000	R 000					
							Set Thermal O/L, Cnmm		0-255 see Matrix	C 148	C 148					
							Set Speed Switch, Snnm		0-255 see Matrix	S 900	S 900					
							Advanced relay, Xnmm		0-255 see Matrix	X 132	X 132					
10	OIG to 2P3-TT1	2505A 2901A	P&B	MRI-E	51	PF	0.5-0.05-4	0.05-0.01-1.6			NI	0.65	0.26	EI		
					50	PF HS	2-0.1-40	0.03-0.01-2			DT	7.40	0.05	DT		
					51N	EF	0.01-0.1-2	0.05-0.01-1.6			NI					
					50N	EF HS	0.01-0.1-1.5	0.05-0.01-2			DT	0.40	0.05	DT		
					51N	EF	0.01-0.1-2	0.05-0.01-1.6	0.20	EXIT	DT	0.20	0.09	NI		
11	IIC To 2P3-1V1/1M1	2505A	P&B	MRI-E	50N	EF HS	0.01-0.1-1.5	0.05-0.01-2	0.40	1.00	DT	1.00	0.05	DT		
					AL	OL	0.8-0.05-1.1	1.25-2.5-5-10-15-20-25-30	0.85	5	Pt	0.90	5	Pt		
					AS	SC	1,2,2.5,3,4,6,8,10	0.08,0.16,0.24,0.32,0.4,0.48,0.56	3.00	0.32	DT	3.00	0.16	DT		
					AI	INST	2-2-16.	INST	8.00	INST	DT	8.00	INST	DT		