

FUNCTION	APPLIES TO	AMP RANGE	DEFINITE MINIMUM		SETTING		MINIMUM PICK-UP AMPERES		TIMING			CURRENT TRANSF.		REMARKS	
			SECONDS	TAP	LEVER	RELAY COIL 12 KV BASIS		SECONDS AT AMPERES	RELAY COIL 12 KV BASIS	RATIO USED	MAX. RATIO				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
132 KV LINE TO LINE FAULTS (SUPERVISED BY FAULT DETECTORS) SEE DWG. # 2202	STEP-UP STATIONS														
	METUCHEN		4-15	2.0	8.0	3.0	7.75	2690	0.86	32.0	11520	1800/5	3000/5	CURR. TR. ALSO FOR "CD"	
	RICHMOND	1-FREQ. CHANGER	4-15	4.0	10.0	3.5	10.0	3600	2.0	40.0	14400	1800/5	3000/5	CURR. TR. ALSO FOR "CD" SEE TAP CHANGER.	
		2 " "						5100			20550				
	ARSENAL BRIDGE	CO RELAY	4-12		10.0	1.0	9.6	1920	0.13	40.0	8000	1800/5	3000/5	2 CTS IN SERIES (1 EA. ON PHASE A & B)	
		INSTANT.			9.0		8.4	2016	INSTANT	8.4	2016	1200/5	1200/5		
		TIME DELAY			8.9	2.5~	8.45	2028	2.5~	8.45	2028				
	LAMOKIN (NORTH)	1-FREQ. CHANGER	4-15	4.0	8.0	3.6	8.0	1920	2.3	32.0	7680	1200/5	2000/5	4-12A. RANGE FOR TR. 12 & 52 SEE TAP CHANGER. CURR. TR. ALSO FOR "CD" FOR TRSF #62 & 515 ONLY 4-12A. RANGE FOR TR. 4 & 62	
		2 " "						3000			12070				
		3 " "						3800			15360				
	LAMOKIN (SOUTH)	1-FREQ. CHANGER	4-15	4.0	8.0	4.8	8.0	2520	2.8	32.0	13165	1800/5	3000/5		
		2 " "						3600			14400				
		3 " "						4500			18000				
	SAFE HARBOR (CONESTOGA)		4-15	2.0	6.0	10.8	6.0	2160	3.1	24.0	8640	1800/5	3000/5		
	BENNING		4-15	4.0	8.0	1.5	8.0	2880	0.86	32.0	11520	1800/5	3000/5	CURR. TR. ALSO FOR "CD"	
132 KV LINE TO GROUND FAULTS	STEP-UP TRANSF. NEUTRAL RES.														
	HACKENSACK		0.5-2.5	3.5	1.5	1.7	1.5	66 KV BASIS 57	3.6	3.3	200	50/5	200/5	CURRENT TRANSF. RATIO ERROR TAKEN INTO ACCOUNT	
	METUCHEN		4/	0.5-2.5		0.8	7.0	0.84	8.4	1.4	20.0	200	50/5	50/5	WOUND TYPE CURR. TR.
	RICHMOND	TRANSF. 32 & 42	0.5-2.5	4.0	1.0	3.65	1.0	23	2.5	5.8	200	75/5	400/5	CURRENT TRANSF. RATIO ERROR TAKEN INTO ACCOUNT	
		" 24 & 42	0.5-2.5	4.0	0.8	3.6	0.8	42	2.0	6.6	200	75/5	400/5		
		" 13 & 31	0.5-2.5	4.0	0.8	7.2	0.8	12.0	3.0	13.3	200	75/5	400/5		
	ARSENAL BRIDGE		0.5-2.5	3.5	0.8	7.5	0.8	12.1	3.0	13.2	200	75/5	400/5		
	LAMOKIN (NORTH)		0.5-2.5	2.0	2.0	10.0	2.0	20	2.2	20.0	200	50/5	50/5	WOUND TYPE CURR. TR.	
	LAMOKIN (SOUTH)		0.5-2.5	2.0	2.0	10.0	2.0	20	2.2	20.0	200	50/5	50/5	WOUND TYPE CURR. TR.	
	SAFE HARBOR (CONESTOGA)		0.5-2.5		1.0	5.0						64 50/5	64 50/5	WOUND TYPE CURR. TR.	
	BENNING		0.5-2.5	2.0	2.0	10.0	2.0	20	2.2	20.0	200	50/5	50/5	WOUND TYPE CURR. TR.	

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NOTES:
 (1) ALL RELAYS, EXCEPT AS NOTED, ARE W. B. M. CO. TYPE "CO" RELAYS.
 (2) TIME LEVER SETTINGS GIVEN ARE ONLY APPROXIMATE;
 TIMING VALUES TO BE USED FOR ACCURATE SETTING.

REFERENCE DRAWINGS:
 FAULT DETECTOR - VOLTAGE RELAY DATA ———— DWG. NO. 2202
 CURRENT BALANCE (DIFFERENTIAL OVERCURRENT) RELAY DATA ———— DWG. NO. 2207

FUNCTION	STEP-UP STATION	FREQUENCY CHANGERS	STEP-UP TRANSFORMERS		REMARKS
		(GENERATORS)	TURN-RATIO OF AUTO-TRANSFORMERS		
		NUMBER IN SERVICE	PRIMARY (CONNECTED TO SECONDARY OF C.T.)	SECONDARY ("RELAY COIL")	
132 KV. LINE to LINE FAULTS TAP CHANGER WITH CURRENT BALANCING AUTO-TRANSFORMERS FOR OVERCURRENT RELAYS	LAMOKIN (NORTH)	1	70	70	
		2	70	110	
		3	70	140	
	LAMOKIN (SOUTH)	1	80	70	
		2	80	100	
		3	80	125	
	RICHMOND	1	110	110	
		2	110	157	

THE PENNSYLVANIA RAILROAD EASTERN ELECTRIFICATION RELAY DATA FOR 25-CYCLE SYSTEM OVERCURRENT RELAYS FOR LINE FAULTS PHILADELPHIA, PENNA.					
NO 2201A					
10-8-36	2	CORRECTED FOR HARRISBURG ELEC.		ORIGINAL	
10-17-35	1	HARRISBURG ELEC.		ORIGINAL	
DATE	ISSUE	APPROVAL	REMARKS	CHECKED BY MOTIVE POWER	
				ELECTRICAL ENGINEER	