	PROTECTIVE DEVICE AND THEIR DESIGNATIONS																																							
	CAPACITOR BANK C1			OUTGOING NO.1		OUTGOING NO.2		INCOMING LINE NO.1					OUTGOING NO.3		OUTGOING NO.4		OUTGOING NO.5		BUS COUPLING BREAKER		OUTGOING NO.6		OUTGOING NO.7		OUTGOING NO.8		INCOMING LINE NO.2					OUTGOING NO.9		OUTGOING NO.10		CAPACITOR BANK C2		
	OVERCURRENT PHASE AND GROUND RELAY	CAPACITOR BANK UNBALANCE SENSING RELAY	CAPACITOR BANK BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	22kV.SWITCHGEAR MAIN BUS NO.1 ARC PROTECTION	INCOMING LINE BREAKER FAILURE RELAYING	UNDER FREQUENCY RELAY	UNDER AND OVER VOLTAGE RELAY	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	BUS COUPLING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	22kV.SWITCHGEAR MAIN BUS NO.2 ARC PROTECTION	INCOMING LINE BREAKER FAILURE RELAYING	UNDER FREQUENCY RELAY	UNDER AND OVER VOLTAGE RELAY	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	OUTGOING BREAKER FAILURE RELAYING	OVERCURRENT PHASE AND GROUND RELAY	CAPACITOR BANK UNBALANCE SENSING RELAY	CAPACITOR BANK BREAKER FAILURE RELAYING
LOCATION OF DEVICE (PNL.NO.)	C1			01		02		I1					03		04		05		BC1		06		07		08		I2					09		010		C2		
DEVICE NO.	50 51 50N 51N	60	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 ARC	50 BF	81	27 59	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	50 ARC	50 BF	81	27 59	50 51 50N 51N	50 BF	50 51 50N 51N	50 BF	50 51 50N 51N	60	50 BF
AUXILIARY TIMING RELAY																																							
AUXILIARY TRIPPING RELAY			86 BF		86 BF		86 BF		86 ARC	86 BF	81X			86 BF		86 BF		86 BF		86 BF		86 BF		86 BF		86 BF		86 ARC	86 BF	81X				86 BF		86 BF		86 BF
TRIPPING RELAY CHARACTERISTICS			HS ER		HS ER		HS ER		HS ER	HS ER	SS SR			HS ER		HS ER		HS ER		HS ER		HS ER		HS ER		HS ER		HS ER	HS ER	SS SR				HS ER		HS ER		HS ER
OPERATION TARGET/AUDIBLE ALARM	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FUNCTION OF DEVICE 1CVB–01	T		T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}				T_{L1}		T_{L1}		T_{L1}																						
01VB–01			T_{L1}	T_R	T_{L1}		T_{L1}		T_{L1}	T_{L1}	T			T_{L1}		T_{L1}		T_{L1}																						
02VB–01			T_{L1}		T_{L1}	T_R	T_{L1}		T_{L1}	T_{L1}	T			T_{L1}		T_{L1}		T_{L1}																						
1BVB–01			T_{L1}		T_{L1}		T_{L1}	T	T_{L1}	T_{L1}				T_{L1}		T_{L1}		T_{L1}		T_{L1}																				
03VB–01			T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}	T		T_R	T_{L1}		T_{L1}		T_{L1}																						
04VB–01			T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}	T			T_{L1}	T_R	T_{L1}		T_{L1}																						
05VB–01			T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}	T			T_{L1}		T_{L1}	T_R	T_{L1}																						
0BVB–01			T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}				T_{L1}		T_{L1}		T_{L1}	T	T_{L1}		T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}		T_{L1}		T_{L1}		T_{L1}			T_{L1}
06VB–01																				T_R	T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}	T	T_{L1}		T_{L1}		T_{L1}				T_{L1}
07VB–01																					T_{L1}	T_R	T_{L1}		T_{L1}		T_{L1}	T_{L1}	T	T_{L1}		T_{L1}		T_{L1}				T_{L1}
08VB–01																					T_{L1}		T_{L1}	T_R	T_{L1}		T_{L1}	T_{L1}	T	T_{L1}		T_{L1}		T_{L1}				T_{L1}
2BVB–01																			T_{L1}		T_{L1}		T_{L1}		T_{L1}	T	T_{L1}	T_{L1}		T_{L1}		T_{L1}		T_{L1}				T_{L1}
09VB–01																					T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}	T	T_{L1}	T_R	T_{L1}		T_{L1}				T_{L1}
10VB–01																					T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}	T	T_{L1}		T_{L1}	T_R	T_{L1}				T_{L1}
2CVB–01																					T_{L1}		T_{L1}		T_{L1}		T_{L1}	T_{L1}		T_{L1}		T_{L1}		T_{L1}	T		T_{L1}
02YB–01									T_{L1}	T_{L1}																												
04YB–01																											T_{L1}	T_{L1}										
C–BANK VACUUM SWITCHES–SWGR NO.1		T_L										T_L																										
C–BANK VACUUM SWITCHES–SWGR NO.2																														T_{L1}							T_{L1}	

NOTES

1. EACH PANEL SHALL HAVE IT OWN AUXILIARY TRIPPING AND LOCKOUT RELAYS ;
   ONE FOR EACH BREAKER FAILURE PROTECTION AND THE OTHER ONE FOR ARC PROTECTION.
   IF ANY BREAKER FAILURE OCCURS, ITS BREAKER FAILURE RELAYING SHALL INITIATE ALL BREAKER AUXILIARY TRIPPING AND LOCKOUT RELAYS TO TRIP ALL BREAKERS WHICH ARE CONNECTED WITH THE SAME BUS INCLUDING THE BUS SECTION BREAKER, EXCEPT FOR THE INCOMING BREAKER FAILS, THE INCOMING BREAKER FAILURE RELAYING SHALL, IN ADDITION TO THE ABOVE FUNCTIONS, TRIP AND LOCKOUT 115 kV TRANSFORMER BREAKER. SIMILARY, THE ARC DETECTION SHALL HAVE THE SAME TRIP AND LOCKOUT FUNCTIONS AS THOSE FOR THE BREAKER FAILURE PROTECTION.
2. EACH UNDER FREQUENCY RELAY SHALL BE FURNISHED TO PERFORM THE LOAD SHEDDING SCHEME BY USING A CUT–OFF SWITCH (81CO) FOR TRIPPING THE OUTGOING LINE AS REQUIRED.
3. IN CASE OF OVERVOLTAGE TO THE CAPACITOR BANKS, THE OVERVOLTAGE RELAY (59) SHALL TRIP ALL VACUUM SWITCHES OF THE CAPACITOR BANKS AND PROVIDE THE CONTACT TO RESET THE POWER FACTOR CONTROLLER TO RETURN TO THE NEUTRAL STAGE TO PREVENT THE POWER FACTOR CONTROLLER FROM RECLOSING THE VACUUM SWITCHES AGAIN.
4. THE PROTECTION AND PROTECTION RELATED FUNCTION SHALL BE ABLE TO DISTRIBUTED AND ALLOCATED IN IEC61850 COMPLIANT IED.
5. BAY CONTROL UNIT(BCU) IS INTEGRATED IN PROTECTIVE RELAY.
6. FOR CIRCUIT BREAKER FAILURE FUNCTION(50BF) AND ARC PROTECTION(50ARC) SHALL BE TRIP VIA GOOSE.

LEGEND	EXPLANATION
Y	YES
HS	HIGH SPEED
SS	STANDARD SPEED
ER	ELECTRICAL RESET
SR	SELF RESET
T_R	3–POLE TRIP AND RECLOSE
T	3–POLE TRIP– NO RECLOSING
T_L	3–POLE TRIP AND LOCKOUT
T_{L1}	3–POLE TRIP AND LOCKOUT (TRIP VIA GOOSE)

REFERENCE DRAWING

– METERING AND RELAYING DIAGRAM.....DWG NO. FA4–011/64005

FYA–PP

กองออกแบบสถานีไฟฟ้า ฝ่ายงานสถานีไฟฟ้า	การไฟฟ้าส่วนภูมิภาค	ใช้แทนแบบ –
ผู้เขียน ภราดร ผู้สำรวจ – วิศวกร ภราดร หัวหน้าแผนก วรเวช ผู้อำนวยการกอง ผู้อำนวยการฝ่าย (แทน)	ผู้ว่าการ (แทน)	ถูกแทนโดยแบบ – เขียนเสร็จวันที่ 11 ม.ค. 64 แก้แบบวันที่ มิติเป็น – มาตราส่วน –
รองผู้ว่าการวิศวกรรม —	สถานีไฟฟ้าแปลงยาว จ.ฉะเชิงเทรา ฟังก์ชั่นการทำงานของอุปกรณ์ป้องกัน PLAENG YAO SUBSTATION CHACHOENGSAO PROVINCE PROTECTIVE DEVICE FUNCTION	แบบเลขที่ FA4–011/64006 แผ่นที่ 2 ของจำนวน 2 แผ่น