TDDP.2 – FYA

	PROTECTIVE DEVICE AND THEIR DESINATIONS																													
	115 kV MAIN BUS		115 KV. LINE TO BAN PHO SUNSTATION MAIN1 & MAIN2								115–22 kV.TRANSFORMER–TP 1 MAIN1 & MAIN2					115 KV. LINE TO HUA SAMRONG SUBSTATION MAIN1 & MAIN2								115–22 kV.TRANSFORMER–TP 2 MAIN1 & MAIN2					
	BUS DIFFERENTIAL RELAY	CT SUPERVISION RELAY	DISTANCE RELAY, PHASE&GROUND ZONE #1	DISTANCE RELAY, PHASE&GROUND ZONE #2	DISTANCE RELAY, PHASE&GROUND ZONE #3	DIRECTIONAL PHASE&GROUND OVERCURRENT RELAY	LINE BREAKER FAILURE RELAYING	UNDER/OVER VOLTAGE RELAYS			TP1 INTERNAL PROTECTIVE DEVICES	TP1 TRANSFORMER DIFFERENTIAL RELAY WITH RESTRICTED EARTH FAULT RELAY	TP1 115 kV. SIDE PHASE & GROUND OVERCURRENT RELAY	TP1 OVERCURRENT GROUND BACKUP RELAY	TP1 BREAKER FAILURE RELAYING	DISTANCE RELAY, PHASE&GROUND ZONE #1	DISTANCE RELAY, PHASE&GROUND ZONE #2	DISTANCE RELAY, PHASE&GROUND ZONE #3	DIRECTIONAL PHASE&GROUND OVERCURRENT RELAY	LINE BREAKER FAILURE RELAYING	UNDER/OVER VOLTAGE RELAYS			TP2 INTERNAL PROTECTIVE DEVICES	TP2 TRANSFORMER DIFFERENTIAL RELAY WITH RESTRICTED EARTH FAULT RELAY	TP2 115 kV. SIDE PHASE & GROUND OVERCURRENT RELAY	TP2 OVERCURRENT GROUND BACKUP RELAY	TP2 BREAKER FAILURE RELAYING
LOCATION OF DEVICE (PNL.NO.)	BCP&BZP		LCP1&LRP1								TCP1&TPP1					LCP2&LRP2								TCP2&TPP2					
DEVICE NO.	87 B	95 B	21–1 21N–1	21–2 21N–2	21–3 21N–3	67 67N	50 BF	27 59			TP1 DEVICES	87T 87REF	50, 50N 51, 51N	51 GB	50 BF	21–1 21N–1	21–2 21N–2	21–3 21N–3	67 67N	50 BF	27 59			TP2 DEVICES	87T 87REF	50, 50N 51, 51N	51 GB	50 BF
AUXILIARY TIMING RELAY																													
AUXILIARY TRIPPING RELAY	86B						86B				86T1&86T2				86B					86B				86T1&86T2				86B
TRIPPING RELAY CHARACTERISTICS	HS ER						HS ER				HS ER		HS ER		HS ER					HS ER				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
FUNCTION OF DEVICE 01YB–01	T_L		T_R	T	T	T	T_{L1}								T_{L1}					T_{L1}								T_{L1}
FUNCTION OF DEVICE 02YB–01	T_L						T_{L1}				T_L		T_L		T_{L1}					T_{L1}								T_{L1}
FUNCTION OF DEVICE 03YB–01	T_L						T_{L1}								T_{L1}	T_R	T	T	T	T_{L1}								T_{L1}
FUNCTION OF DEVICE 04YB–01	T_L						T_{L1}								T_{L1}					T_{L1}				T_L		T_L		T_{L1}
FUNCTION OF DEVICE 1BVB–01											T_L		T_L															
FUNCTION OF DEVICE 2BVB–01																								T_L		T_L		

NOTES

1. EACH RELAY LINE TERMINAL SHALL UTILIZE A DISTANCE RELAY AS DOUBLE MAIN PROTECTION WITHOUT PILOT TRIPPING SCHEME FOR PROTECTION OF 115 kV LINE AGAINST BOTH PHASE AND GROUND FAULTS. THE ZONE#1 SHALL BE USED TO PROVIDE HIGH SPEED TRIPPING AND THREE POLE RECLOSING. THE RECLOSURE SHALL BE DONE THROUGH A SYNCHRO–CHECK RELAY. FOR ZONE#2 AND ZONE #3, THERE SHALL BE FURNISHED WITH A TIMING RELAY WITH TWO SEPARATE TIMING UNITS THAT WILL PROVIDE TIME–DELAYED TRIP FOR ZONE#2 AND ZONE#3. FOR MAIN1&2 PROTECTION, THERE SHALL BE DIRECTIONAL PHASE AND GROUND OVERCURRENT RELAYS FOR PHASE AND GROUND FAULT PROTECTION OF THE 115 kV LINE. EACH PHASE AND GROUND RELAY SHALL BE PROVIDED WITH A PROVISION OF VOLTAGE–POLARIZED DIRECTIONAL UNIT. EACH MAIN1&MAIN2 PROTECTION SHALL INCLUDE A BREAKER FAILURE PROTECTION FOR EACH CIRCUIT BREAKER.
2. BUS DIFFERENTIAL AUXILIARY TRIPPING AND LOCKOUT RELAY(86B) SHALL TRIP ALL CONNECTED TO ITS OWN BUS CIRCUIT BREAKERS.
3. TRANSFORMER INTERNAL PROTECTIVE DEVICES REFER TO THE FOLLOWING DEVICES AS FOLLOWS :
   - 3.1 BUCHHOLZ RELAY STAGE 2 TRIP
   - 3.2 TRANSFORMER PRESSURE RELIEF DEVICE
   - 3.3 TRANSFORMER OIL TEMP. TRIP
   - 3.4 OLTC DIVERTER SWITCH PRESSURE RELIEF DEVICE
   - 3.5 OLTC DIVERTER SWITCH SUDDEN OIL FLOW
   - 3.6 TRANSFORMER WINDING TEMP. TRIP
4. FOR AUXILIARY TRIPPING AND LOCKOUT RELAY (86B) OF BUSBAR PROTECTION, AUXILIARY TRIPPING AND BLOCKING CONTACTS FOR FUTURE INSTALLATION OF 115kV. SWITCHGEAR SHALL BE PROVIDED.
5. BREAKER TRIP FOR CB FAIL (TIME DELAY) VIA BUSBAR PROTECTION TRIP BY GOOSE AND AUXILIARY TRIPPING AND LOCKOUT RELAY (86B) TO TRIP AND BLOCK CLOSING OF ALL BREAKERS WHICH CONNECTED TO THAT MAIN BUS.
6. ALL PROTECTIVE TRIPPING FUNCTION ENERGIZED BOTH TRIP COILS OF 115 kV. CIRCUIT BRAEAKER.
7. THE CONTRACTOR SHALL PROVIDE ALL AUXILIARY EQUIPMENT AND ACCESSORIES TO COMPLETE THE ABOVE FUNCTION.

BCP & BZP & BCU	LCP1 & LRP1 & BCU	TCP1 & TPP1 & BCU	LCP2 & LRP2 & BCU	TCP2 & TPP2 & BCU

RCC1	RCC2

SWING RACK TYPE CONTROL AND PROTECTIVE RELAY PANEL
- BZP – BUS ZONE PROTECTION PANEL
- BCP – BUS CONTROL PANEL
- TPP – TRANSFORMER PROTECTION PANEL
- TCP – TRANSFORMER CONTROL PANEL
- LRP – LINE RELAY PROTECTION PANEL
- LCP – LINE CONTROL PANEL
- RCC – REMOTE CONTROL CABINET OF POWER TRANSFORMER
- BCU – BAY CONTROL UNIT

REFERENCE DRAWING

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

LEGEND	EXPLANATION
Y	YES
HS	HIGH 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}	BREAKER TRIP FOR CB FAIL (TIME DELAY) VIA BUSBAR PROTECTION TRIP BY GOOSE

FYA–P

กองออกแบบสถานีไฟฟ้า ฝ่ายงานสถานีไฟฟ้า	การไฟฟ้าส่วนภูมิภาค	ใช้แทนแบบ –
ผู้เขียน ภราดร	ผู้ว่าการ (แทน)	ถูกแทนโดยแบบ –
ผู้สำรวจ –		เขียนเสร็จวันที่ 11 ม.ค 64
วิศวกร ภราดร	สถานีไฟฟ้าแปลงยาว จ.ฉะเชิงเทรา	แก้แบบวันที่
หัวหน้าแผนก วรเวช	ฟังก์ชั่นการทำงานของอุปกรณ์ป้องกัน	มิติเป็น –
ผู้อำนวยการกอง		มาตราส่วน –
ผู้อำนวยการฝ่าย (แทน)	PLAENG YAO SUBSTATION CHACHOENGSAO PROVINCE PROTECTIVE DEVICE FUNCTION	แบบเลขที่ FA4–011/64006
รองผู้ว่าการวิศวกรรม —		แผ่นที่ 1 ของจำนวน 2 แผ่น