TSDP 9.3 – OYM

		PROTECTIVE DEVICES AND THEIR DESIGNATIONS																											
		115 kV MAIN BUS 1		115 kV MAIN BUS 2		115 kV BUS COUPLING BREAKER	115 KV. TAP LINE SAM PHRAN 3–PHUTTHAMONTHON 2 SUBSTATION MAIN 1 & MAIN 2 PROTECTION						115–22kV.TRANSFORMER–TP1					115–22 kV.TRANSFORMER–TP2					115 KV. TAP LINE OM NOI 3 – OM YAI 3 SUBSTATION MAIN 1 & MAIN 2 PROTECTION					
		BUS DIFFERENTIAL RELAY	CT SUPERVISION RELAY	BUS DIFFERENTIAL RELAY	CT SUPERVISION RELAY	BUS COUPLING BREAKER FAILURE RELAYING	DISTANCE RELAY PHASE & GROUND ZONE #1	DISTANCE RELAY PHASE & GROUND ZONE #2	DISTANCE RELAY PHASE & GROUND ZONE #3	DISTANCE RELAY PHASE & GROUND OVERCURRENT RELAY	LINE BREAKER FAILURE RELAYING	AC.UNDER/OVER VOLTAGE RELAY	TP1 INTERNAL PROTECTIVE DEVICES	TP1 TRANSFORMER DIFFERENTIAL RELAY WITH RESTRICTED EARTH FAULT RELAY	TP1 115 kV. SIDE PHASE AND GROUND OVERCURRENT RELAY	TP1 OVERCURRENT GROUND BACKUP RELAY	TP1 BREAKER FAILURE RELAYING	TP2 INTERNAL PROTECTIVE DEVICES	TP2 TRANSFORMER DIFFERENTIAL RELAY WITH RESTRICTED EARTH FAULT RELAY	TP2 115 kV. SIDE PHASE AND GROUND OVERCURRENT RELAY	TP2 OVERCURRENT GROUND BACKUP RELAY	TP2 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	AC.UNDER/OVER VOLTAGE RELAY
LOCATION OF DEVICE (PNL.NO.)		BZP				BCP	LRP1 & LCP1						TPP1 & TCP1					TPP2 & TCP2					LRP2 & LCP2					
DEVICE NO.		87 B1	95 B1	87 B2	95 B2	50 BF	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	TP2 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
AUXILIARY TIMING RELAY																													
AUXILIARY TRIPPING RELAY		86 B1		86 B2		86BF 86B1,86B2					86BF		86T1 & 86T2				86BF	86T1 & 86T2				86BF					86BF	
TRIPPING RELAY CHARACTERISTICS		HS ER		HS ER		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	Y	Y	Y	Y
FUNCTION OF DEVICE	01YB–01						T_R	T	T	T	T1																		
	02YB–01												T_L			T_L	T1												
	03YB–01																	T_L			T_L	T1							
	04YB–01																						T_R	T	T	T	T1		
	0BYB–01	T_L		T_L		T1					T1						T1					T1					T1		
	TRIP ALL BUS NO.1 BREAKERS	T_L				T1					T1 SEE NOTE 3						T1 SEE NOTE 3	SEE NOTE 3				T1 SEE NOTE 3					T1 SEE NOTE 3	
	TRIP ALL BUS NO.2 BREAKERS			T_L		T1					T1						T1					T1					T1		
	1BVB–01												T_L		T_L														
	2BVB–01																	T_L		T_L									

NOTES

1. EACH RELAY LINE TERMINAL SHALL UTILIZE BOTH 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 MAIN 1& 2 PROTECTION SHALL INCLUDE A BREAKER FAILURE PROTECTION FOR EACH CIRCUIT BREAKER.

2. TRANSFORMER INTERNAL PROTECTIVE DEVICES REFER TO THE FOLLOWING DEVICES AS FOLLOWS :
   - 2.1 BUCHHOLZ RELAY STAGE 2 TRIP
   - 2.2 TRANSFORMER PRESSURE RELIEF DEVICE
   - 2.3 TRANSFORMER SUDDEN PRESSURE RELAY
   - 2.4 OLTC DIVERTER SWITCH PRESSURE RELIEF DEVICE
   - 2.5 OLTC DIVERTER SWITCH SUDDEN OIL FLOW
   - 2.6 TRANSFORMER WINDING TEMP. TRIP

3. THE BREAKER FAILURE AUXILIARY TRIPPING AND LOCKOUT RELAY (86BF) SHALL BE INITIATED BY LINE OR TRANSFORMER PROTECTION, AND IT SHALL TRIP ALL BUS NO.1 BREAKERS AND THE BUS COUPLING BREAKER WHEN THE FAILED BREAKER IS CONNECTED WITH THE BUS NO.1 OR TRIP ALL BUS NO.2 BREAKERS AND THE BUS COUPLING BREAKER WHEN THE FAILED BREAKER IS CONNECTED WITH THE BUS NO.2 .

4. ALL PROTECTIVE TRIPPING FUNCTION ENERGIZES BOTH TRIP COILS OF 115 kV. CIRCUIT BREAKER.

5. THE PROTECTION AND PROTECTION RELATED FUNCTION SHALL BE ABLE TO DISTRIBUTED AND ALLOCATED IN IEC61850 COMPLIANT IED.

6. BAY CONTROL UNIT IS INTEGRATED IN PROTECTIVE RELAY.

7. FOR CIRCUIT BREAKER FAILURE FUNCTION (50BF) AND ARC PROTECTION FUNCTION (50ARC) SHALL BE TRIP VIA GOOSE.

REFERENCE DRAWING

– METERING AND RELAYING DIAGRAM.....DWG NO. FA4–011/63023

BZP	BCP	LRP1& LCP1	TPP1& TCP1	TPP2& TCP2	LRP2& LCP2	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 CUBICLE OF A POWER TRANSFORMER

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_1	BREAKER TRIP FOR CB FAILURE (TIME DELAY) TRIP BY GOOSE

OYM–P

กองออกแบบสถานีไฟฟ้า ฝ่ายงานสถานีไฟฟ้า

ผู้เขียน ศุภชัย
ผู้สำรวจ —
วิศวกร —
หัวหน้าแผนก วรเวช
ผู้อำนวยการกอง
ผู้อำนวยการฝ่าย (แทน)

รองผู้ว่าการวิศวกรรม
—

การไฟฟ้าส่วนภูมิภาค

ผู้ว่าการ (แทน)

สถานีไฟฟ้าอ้อมใหญ่ 4 จ. นครปฐม
ฟังก์ชั่นการทำงานของอุปกรณ์ป้องกัน

OM YAI 4 SUBSTATION
PROTECTIVE DEVICE FUNCTION

ใช้แทนแบบ —
ถูกแทนโดยแบบ —
เขียนเสร็จวันที่ 3 มิ.ค. 2563
แก้แบบวันที่ —
มิติเป็น —
มาตราส่วน —

แบบเลขที่ FA4–011/63024
แผ่นที่ 1 ของจำนวน 2 แผ่น