

						PROTECTIVE DEVICE AND THEIR DESIGNATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
						115 kV. MAIN BUS NO.1		115 kV. MAIN BUS NO.2		LINE TO SURIN 2 SUBSTATION (EGAT)							LINE TO RATTANABURI SUBSTATION							LINE TO SURIN 2 SUBSTATION (EGAT)							LINE TO MUNG CHAROEN BIOMASS (SPP)							LINE TO SURIN 2 SUBSTATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
						115 kV. BUS NO.1 DIFFERENTIAL RELAY CT SUPERVISION RELAY		115 kV. BUS NO.2 DIFFERENTIAL RELAY CT SUPERVISION RELAY		MAIN 1 & MAIN 2 PROTECTION							MAIN 1 & MAIN 2 PROTECTION							MAIN 1 & MAIN 2 PROTECTION							MAIN 1 & MAIN 2 PROTECTION							MAIN 1 & MAIN 2 PROTECTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
										LINE CURRENT DIFFERENTIAL RELAY	DISTANCE RELAY, PHASE & GROUND ZONE #1	DISTANCE RELAY, PHASE & GROUND ZONE #2	DISTANCE RELAY, PHASE & GROUND ZONE #3	DIRECTIONAL PHASD AND GROUND OVERCURRENT RELAY	BUS NO.1 LINE BREAKER FAILURE RELAYING	TRIP COMMAND FORM 50BF (EGAT)	UNDER & OVER VOLTAGE RELAY	DISTANCE RELAY, PHASE & GROUND ZONE #1	DISTANCE RELAY, PHASE & GROUND ZONE #2	DISTANCE RELAY, PHASE & GROUND ZONE #3	DIRECTIONAL PHASD AND GROUND OVERCURRENT RELAY	BUS NO.2 LINE BREAKER FAILURE RELAYING	CENTER BREAKER FAILURE RELAYING	UNDER & OVER VOLTAGE RELAY	LINE CURRENT DIFFERENTIAL RELAY	DISTANCE RELAY, PHASE & GROUND ZONE #1	DISTANCE RELAY, PHASE & GROUND ZONE #2	DISTANCE RELAY, PHASE & GROUND ZONE #3	DIRECTIONAL PHASD AND GROUND OVERCURRENT RELAY	BUS NO.1 LINE BREAKER FAILURE RELAYING	TRIP COMMAND FORM 50BF (EGAT)	UNDER & OVER VOLTAGE RELAY	DISTANCE RELAY, PHASE & GROUND ZONE #1	DISTANCE RELAY, PHASE & GROUND ZONE #2	DISTANCE RELAY, PHASE & GROUND ZONE #3	DIRECTIONAL PHASD AND GROUND OVERCURRENT RELAY	BUS NO.2 LINE BREAKER FAILURE RELAYING	CENTER BREAKER FAILURE RELAYING	UNDER & OVER VOLTAGE RELAY	DISTANCE RELAY, PHASE & GROUND ZONE #1	DISTANCE RELAY, PHASE & GROUND ZONE #2	DISTANCE RELAY, PHASE & GROUND ZONE #3	DIRECTIONAL PHASD AND GROUND OVERCURRENT RELAY	BUS NO.2 LINE BREAKER FAILURE RELAYING	CENTER BREAKER FAILURE RELAYING	UNDER & OVER VOLTAGE RELAY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
LOCATION OF DEVICE (PNL.NO.)						BZP1		BZP2		LRP1							LRP2							LRP3							LRP4							LRP6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
DEVICE NO.						87 B1	95 B1	87 B2	95 B2	87L	21-1 21N-1	21-2 21N-2	21-3 21N-3	67 67N	50 E5	50 E9	27 S9	21-1 21N-1	21-2 21N-2	21-3 21N-3	67 67N	50 E5	50 E9	27 S9	87L	21-1 21N-1	21-2 21N-2	21-3 21N-3	67 67N	50 E5	50 E9	27 S9	21-1 21N-1	21-2 21N-2	21-3 21N-3	67 67N	50 E5	50 E9	27 S9	21-1 21N-1	21-2 21N-2	21-3 21N-3	67 67N	50 E5	50 E9	27 S9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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AUXILIARY TRIPPING RELAY						86 B1		86 B2						86B1 86BF1	86 DTT					86B2 86BF2	86BF1 86BF2			86B1 86BF1	86 DTT					86B1 86BF1	86 DTT					86B2 86BF2	86BF1 86BF2					86B2 86BF1	86BF1 86BF2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
TRIPPING RELAY CHARACTERISTICS						H5 ER		H5 ER						H5 ER	H5 ER					H5 ER	H5 ER			H5 ER	H5 ER					H5 ER	H5 ER					H5 ER	H5 ER					H5 ER	H5 ER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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FUNCTION OF DEVICE	01YB-01					T_L				T_R	T_R	T	T	T	T_1	T_L														T_1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										</

NOTES

1. EACH RELAY LINE TERMINAL SHALL UTILIZE A LINE CURRENT DIFFERENTIAL RELAY OR A DISTANCE RELAY AS A PRIMARY PROTECTION WITH/WITHOUT PILOT TRIPPING SCHEME FOR PROTECTION OF 115 KV LINE AGAINST BOTH PHASE AND GROUND FAULTS AS FOLLOWS :
- FOR 115 KV INCOMING LINE FROM EGAT'S SUBSTATION, A LINE CURRENT DIFFERENTIAL RELAY AND DISTANCE RELAY SHALL BE USED WITH A DEDICATED FIBER-OPTIC CABLE AS A PRIMARY PROTECTION. THE DEDICATED FIBER-OPTIC CABLE SHALL BE USED AS A COMMUNICATION LINK TO PERMIT HIGH SPEED THREE-POLE INTERTRIPPING OF THE BREAKERS AT BOTH ENDS OF THE LINE. THE RECLOSURE FOR BOTH LINE CURRENT DIFFERENTIAL RELAY AND DISTANCE RELAY ZONE #1 SHALL BE DONE THROUGH A SYNCHRO-CHECK RELAY.
- FOR 115 KV OUTGOING LINE, A DISTANCE RELAY SHALL BE USED AS MAIN1&2 PROTECTION WITH/WITHOUT PILOT TRIPPING SCHEME. THE ZONE #1 OR TELE - PROTECTION SHALL BE USED FOR HIGH SPEED THREE-POLE TRIPPING AND RECLOSING. THE RECLOSURE SHALL BE DONE THROUGH A SYNCHRO-CHECK RELAY.
- FOR ZONE#2 AND ZONE #3, OF EACH DISTANCE RELAY, 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.
- THE MAIN1&2 PROTECTION FOR BOTH 115 KV LINES, THERE SHALL BE DIRECTIONAL PHASE AND GROUND OVERCURRENT RELAYS FOR PHASE AND GROUND FAULT PROTECTION FOR BOTH TYPES OF THE 115 KV LINES. EACH PHASE AND GROUND RELAY SHALL BE PROVIDED WITH A PROVISION OF VOLTAGE-POLARIZED DIRECTIONAL UNIT.
2. EACH BREAKER FAILURE RELAY (50BF) SHALL INITIATE THE RELEVANT BUS DIFFERENTIRY AUXILIARY TRIPPING AND LOCKOUT RELAY (86B) AND/OR THE RELEVANT BREAKER FAILURE AUXILIARY TRIPPING AND LOCKOUT RELAY (86BF) TO TRIP AND BLOCK CLOSING CIRCUITS OF ALL BREAKER WHICH CONNECTED TO THAT MAIN BUS AND THE ASSOCIATED CENTER BREAKER
- IN CASE OF THE INCOMING BREAKER FAILS, THE INCOMING BREAKER FAILURE RELAY (50BF) SHALL, IN ADDITION TO THE ABOVE FUNCTIONS. SEND A TRIP COMMAND TO EGAT (T) VIA A REMOTE I/O MODULE.
3. 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.
4. FOR AUXILIARY TRIPPING AND LOCKOUT RELAY(86B) OF BUS BAR PROTECTION, AUXILIARY TRIPPING AND BLOCKING CONTACTS FOR FUTURE INSTALLATION OF 115KV. SWITCHGEAR SHALL BE PROVIDED.

CS1	CS2	CS3
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ENCLOSED TYPE CONTROL SWITCHBOARD

BZP1	BZP2	LRP1	LRP2	LRP3	LRP4	LRP6
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SWING RACK TYPE PROTECTIVE RELAY PANEL

LRP - LINE RELAY PROTECTION PANEL

BZP - BUS ZONE PROTECTION PANEL

CS - CONTROL SWITCHBOARD

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 _I	BREAKER TRIP FOR CB FAIL (TIME DELAY) VIA BUSBAR PROTECTION TRIP BY GOOSE
86DTT	DIRECT TRANSFER TRIPPING LOCKOUT RELAY

		SUC-P
กองออกแบบสถานีไฟฟ้า ฝ่ายงานสถานีไฟฟ้า	การไฟฟ้าส่วนภูมิภาค	ไร้แทนแบบ — ลูกแทนโดยแบบ —
ผู้เขียน <u>สุวิกรม</u> ผู้สำรวจ <u>—</u> วิศวกร <u>สุวิกรม</u> หัวหน้าแผนก <u>วรวิทย์</u> ผู้อำนวยการกอง <u>—</u> ผู้อำนวยการฝ่าย <u>(แนบ)</u> รองผู้อำนวยการวิศวกรรม <u>—</u>	ผู้ว่าราชการ <u>(แนบ)</u> สถานีไฟฟ้าสุรินทร์ 3 จ.สุรินทร์ ฟังก์ชันการทำงานของอุปกรณ์ป้องกัน	เขียนเสร็จวันที่ <u>31 มี.ค. 2563</u> แก้แบบวันที่ <u>—</u> รับผิดชอบ <u>—</u> มาตรฐาน <u>—</u>
	SURIN 3 SUBSTATION PROTECTIVE DEVICE FUNCTION	แบบเลขที่ <u>FA4-011/63030</u> แผนที่ <u>1</u> ของจำนวน <u>1</u> แผ่น