CLIENT	TANZANIA ELECTRIC SUPPLY COMPANY LIMITED (TANESCO)
CONSULTANT	POWER GRID CORPORATION OF INDIA
CONTRACTOR	TBEA COMPANY LTD
PROJECT	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Proposed 400/330kV Tunduma Auto-Transformation Substation and 4km of 330kV Double Circuit Transmission Line from Tunduma Substation to the Border
CONTRACT NAME	Lot-4 400/330 KV Tunduma Substation & 330 kV OHTL line to Zambia Border
CONTRACT NUMBER	PA/001/2020-2021/HQ/W/46
TITLE	Protection and Control for 330kV Transmission Lines
DOC NO.	HQW46-4-TND-EQP-DWG-1331

0	09.08.2025	ISSUED FOR APPROVAL	XU	SUN DX	WXD
REVISION	DATE	DESCRIPTION	DSG	CHKD	APPD

	Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

REFERENCE/INTERFACE INFORMATION ONLY

PROJECT NAME	400kV TUNDUMA SUBSTATION		
PANEL NO.	SJS25002395.PG274-PG275	DRAWING NO.	NR-D25-012572-C0008
TYPE	NR-G03 PANEL	QUANTITY	2
DIMENSION	2260*800*800(H*W*D)	PAINT	RAL7035
TECHNICAL RATING	POWER:DC220V CT:1A PT:110V f:50Hz		

=D06+R1

330kV NAKONDE1 LINE PROTECTION PANEL A

THIS DRAWING IS VALID FOR D06/D07 LINE

REV	DATE	DESCRIPTION	DESD.	CKD.	APPRD.
0	2025.08.09	FOR APPROVAL	XU	Sun Dexian	Zhong Siwei

CLIENT: TANZANIA ELECTRIC SUPPLY COMPANY LTD.
Plot 114, Block G, Dar es Salaam Road, P.O. Box 453, Dodoma, Tanzania

CONSULTANT: POWER GRID CORPORATION OF INDIA

CONTRACTOR: TBEA CO., LIMITED
Building 27, Block 18, Nansihuan West Road
Beijing, China

PROJECT : Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Proposed 400/330kV Tunduma Auto-Transformation Substation and 4km of 330kV Double Circuit Transmission Line from Tunduma Substation to the Border

CONTRACT NO. : PA/001/2020-2021/HQ/W/46

SUBSTATION: 400kV TUNDUMA SUBSTATION

RELEASED FOR: ☐ BASIC ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ AS BUILT REV.: 0

APRROVED	Zhong Siwei	SCALE	TITLE : 330kV NAKONDE1 LINE PROTECTION PANEL A COVER
CHECKED	Sun Dexian	N/A	
DESIGNED	XU	2025-06-19	
SIZE	A3		DWG. No. :HQW46-4-TND-EQP-DWG-1331 SHEET 01 OF 57

	Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

NO.	SHEET	DWG. TITLE	REV.
1	01	COVER	0
2	02	INDEX	0
3	03	LEGEND	0
4	04	PANEL LAYOUT	0
5	05	BILL OF MATERIALS	0
6	06	SINGLE LINE DIAGRAM	0
7	07	TRIP MATRIX	0
8	08	PANEL STRUCTURE 1	0
9	09	PANEL STRUCTURE 2	0
10	10	PANEL DETAILED INFORMATION	0
11	11	AC POWER SUPPLY CIRCUIT	0
12	12	DC POWER SUPPLY CIRCUIT 1	0
13	13	DC POWER SUPPLY CIRCUIT 2	0
14	14	BUSBAR VT SELECTION RELAY -K941 CIRCUIT	0
15	15	BUSBAR VT SELECTION RELAY -K942 CIRCUIT	0
16	16	-F87L&-F51 CT CURRENT CIRCUIT	0
17	17	-F87L&-F51 VT VOLTAGE CIRCUIT	0
18	18	LOCKOUT RELAY -K861 DIAGRAM	0
19	19	CB TRIP CIRCUIT 1 SCHEMATIC 1	0
20	20	CB TRIP CIRCUIT 1 SCHEMATIC 2	0
21	21	CB CLOSE & OPEN CIRCUIT	0
22	22	CB CONTROL DIAGRAM	0
23	23	-F87L BINARY INPUT CIRCUIT 1	0
24	24	-F87L BINARY INPUT CIRCUIT 2	0
25	25	-F87L BINARY INPUT CIRCUIT 3	0
26	26	-F87L BINARY INPUT CIRCUIT 4	0
27	27	-F87L BINARY OUTPUT CIRCUIT 1	0
28	28	-F87L BINARY OUTPUT CIRCUIT 2	0
29	29	-F87L BINARY OUTPUT CIRCUIT 3	0
30	30	-F87L BINARY OUTPUT CIRCUIT 4	0

NO.	SHEET	DWG. TITLE	REV.
31	31	-F87L BINARY OUTPUT CIRCUIT 5	0
32	32	-F51 BINARY INPUT CIRCUIT 1	0
33	33	-F51 BINARY INPUT CIRCUIT 2	0
34	34	-F51 BINARY INPUT CIRCUIT 3	0
35	35	-F51 BINARY INPUT CIRCUIT 4	0
36	36	-F51 BINARY OUTPUT CIRCUIT 1	0
37	37	-F51 BINARY OUTPUT CIRCUIT 2	0
38	38	-F51 BINARY OUTPUT CIRCUIT 3	0
39	39	-F51 BINARY OUTPUT CIRCUIT 4	0
40	40	-F51 BINARY OUTPUT CIRCUIT 5	0
41	41	BYPASS MODE DS&CB STATUS CIRCUIT 1	0
42	42	BYPASS MODE DS&CB STATUS CIRCUIT 2	0
43	43	SIGNAL OUTPUT CIRCUIT	0
44	44	SIGNAL OUTPUT CIRCUIT	0
45	45	-F87L PCS-931S-M REAR VIEW	0
46	46	-F51 PCS-902S-M REAR VIEW	0
47	47	ACCESSORIES MATERIAL LIST	0
48	48	ACCESSORIES MATERIAL LIST	0
49	49	ACCESSORIES MATERIAL LIST	0
50	50	ACCESSORIES MATERIAL LIST	0
51	51	BILL OF MATERIALS	0
52	52	ACCESSORIES MATERIAL LIST	0
53	53	ACCESSORIES MATERIAL LIST	0
54	54	ACCESSORIES MATERIAL LIST	0
55	55	TERMINAL BLOCK	0
56	56	TERMINAL BLOCK	0
57	57	TERMINAL BLOCK	0

Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Tunduma - Sumbawanga - Kisada - Mbeya - Tunduma Transmission Line under Four Lots (Lot 1, 2, 3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A INDEX

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	02
SIZE	A3	NEXT	03
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MAKE CONTACT		RELAY COIL (1 COIL)		LIMITED SWITCH, NC		RESISTOR		TRANSFORMER WITH TWO WINDINGS
	BREAK CONTACT		RELAY COIL (1 ACTIVE COIL AND 1 RESET COIL)		PUSHING BUTTON, NO		HEATER		THREE PHASE WINDING STAR
	CHANGEOVER CONTACT		AC OR DC / DC CONVERTER		SELECTION SWITCH		PROBE TEMPERATURE AND HUMIDITY CONTROLLER		THREE PHASE WINDING DELTA
	ISOLATOR LINK		DC CONVERTER	123	SELECTION SWITCH, 3 POSITIONS	M 1~	AC MOTOR, VENTILATING FAN, SINGLE PHASE		CURRENT TRANSFORMER
	FEED-THROUGH TERMINAL BLOCK		TRANSDUCER		MINIATURE CIRCUIT BREAKER		ALARM / BELL		CIRCUIT BREAKER
	DISCONNECT WITH TEST PLUGS TERMINAL BLOCK		COAXIAL CABLE PORT		WINDING	A	AMP-METER		DISCONNECT SWITCH
	KNIFE DISCONNECT TERMINAL BLOCK		RJ45 ETHERNET PORT		OPTOCOUPLER	V	VOLT-METER	M	OPERATED BY MOTOR
	TEST BLOCK		LC FIBER OPTICAL PORT		DIODE	W	WATT-METER		LIGHTNING ARRESTER
	TERMINAL WITH PLUG-IN CONNECTION (FEMALE PIN)		FC/ST OPTICAL PORT		LAMP	VAR	VAR-METER		FUSE
	TERMINAL WITH PLUG-IN CONNECTION (MALE PIN)		CABLE		SOCKET	WH	WATT-HOUR-METER		GROUND

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
LEGEND

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

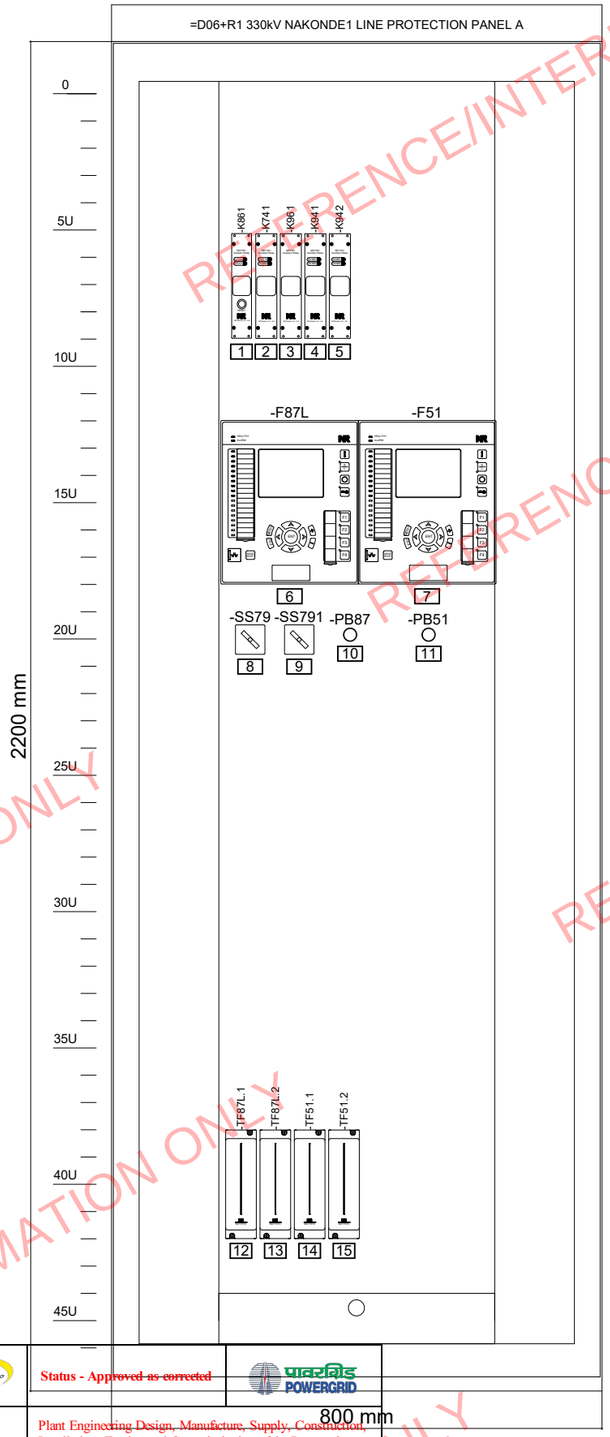
SCALE	N/A	SHEET	03
SIZE	A3	NEXT	04
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

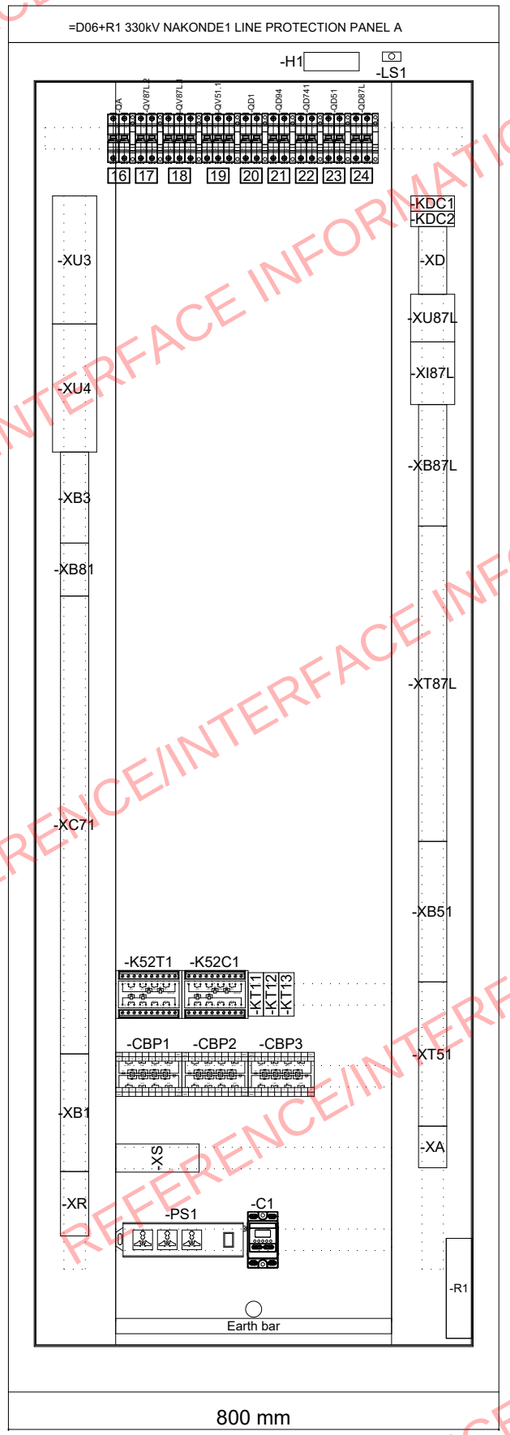
REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



FRONT VIEW



REAR VIEW

THIS DRAWING IS VALID FOR:

PANEL NO.	NAME PLATE	BAY NO.
PG274	=D06+R1 330kV NAKONDE1 LINE PROTECTION PANEL A	D06
PG275	=D07+R1 330kV NAKONDE2 LINE PROTECTION PANEL A	D07

NO.	LABEL
1	-K861 LOCKOUT RELAY 1
2	-K741 CB TCS RELAY 1
3	-K961 CURRENT OPERATED RELAY
4	-K941 BB VOLTAGE SELECTION RELAY 1
5	-K942 BB VOLTAGE SELECTION RELAY 2
6	-F87L LINE MAIN 1 DIFF. RELAY
7	-F51 LINE BACKUP RELAY
8	-SS79 AR MODE SWITCH
9	-SS791 AR MAIN 1/MAIN 2 SWITCH
10	-PB87 RESET -F87L
11	-PB51 RESET -F51
12	-TF87L.1 TEST BLOCK 1 FOR -F87L
13	-TF87L.2 TEST BLOCK 2 FOR -F87L
14	-TF51.1 TEST BLOCK 1 FOR -F51
15	-TF51.2 TEST BLOCK 2 FOR -F51

NO.	LABEL
16	-QA MCB FOR AC POWER
17	-QV87L.2 -F87L BB VOLTAGE MCB
18	-QV87L.1 -F87L LINE VOLTAGE MCB
19	-QV51.1 -F51 LINE VOLTAGE MCB
20	-QD1 AUX. RELAY DC SUPPLY
21	-QD94 -K941 RELAY DC SUPPLY
22	-QD741 TRIP&TCS 1 DC SUPPLY
23	-QD51 -F51 DC SUPPLY
24	-QD87L -F87L DC SUPPLY

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1, 2, 3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
PANEL LAYOUT

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	04
SIZE	A3	NEXT	05
REV.	0	TOTAL	57

NO.	SYMBOL	DESCRIPTION	TYPE	QTY.	MANUFACTURER	REMARK
1	-F51	LINE DISTANCE RELAY	PCS-902S-M	1	NR	MOT:PCS-902S-A-AA-RX.XX-ACBA-BCAAC-A-CXXBXEFFXXXXXXXX-R2;
2	-F87L	LINE DIFFERENTIAL RELAY	PCS-931S-M	1	NR	MOT:PCS-931S-A-AA-RX.XX-ACBA-BCAAC-A-CAXBXEFFXXXXXXXX-R2;
3	-PB51;-PB87	PUSH BUTTON	ELXAL5-10-20/203-G+NONE	2	ELX	
4	-SS79	SELECTION SWITCH	LW21-16/4.4115.4 M1(W)	1	ELX	
5	-SS791	SELECTION SWITCH	LW21-16/9.0616.2 M1(W)	1	ELX	
6	-QA	MCB	NDB2LE-63C 16/2	1	Nader	Residual current operated circuit breakers prevent earth leakage;
7	-QD1;-QD51;-QD87L;-QD94	MCB	NDB2Z-63C 4A/2P	4	Nader	
8	-QD741	MCB	NDB2Z-63C 16A/2P	1	Nader	
9	-QV51.1;-QV87L.1	MCB	NDB2-63C 1A/3P	2	Nader	
10	-QV87L.2	MCB	NDB2-63C 1A/2P	1	Nader	
11	-QA;-QD1;-QD51;-QD87L;-QD94;-QD741 -QV51.1;-QV87L.1;-QV87L.2	AUXILIARY CONTACT (OF)	NDB2-OF2	9	Nader	
12	-XA;-XB1;-XB3;-XB51;-XB81;-XB87L;-XR -XS;-XT51;-XT87L	FEED-THROUGH TERMINAL BLOCK	UK 5 N	289	Phoenix Contact	
13	-XC71	FEED-THROUGH TERMINAL BLOCK	UK 10 N	72	Phoenix Contact	
14	-XD	FEED-THROUGH TERMINAL BLOCK	UK 6 N	12	Phoenix Contact	
15	-XI87L;-XU3;-XU4;-XU87L	TEST DISCONNECT TERMINAL BLOCK	URTK/S	67	Phoenix Contact	
16	-TF51.1;-TF87L.1	TEST BLOCK	MD1701S-1I10U	2	NR	
17	-TF51.2;-TF87L.2	TEST BLOCK	MD1701S-14U	2	NR	
18	-PS1	SOCKET	KDY-CZ-03	1	KEJIA	Support British standard plug;
19	-C1	TEMP.& HUMIDITY CONTROLLER	TH-E-11/LED	1	ODES	
20	-CBP1...-CBP3	RELAY	ST4L2A-DC220V	3	NR	
21	-K52C1;-K52T1	RELAY	DSP2-4A-DC220V	2	NR	
22	-K741	TCS RELAY	MD1501-552-AAA	1	NR	
23	-K861	LOCKOUT RELAY	MD1501-571-AAA	1	NR	
24	-K941;-K942	VOLTAGE SWITCHING RELAY	MD1501-561-AAA	2	NR	
25	-K961	CURRENT OPERATED AUXILIARY RELAY	MD1501-556-AAA	1	NR	
26	-KDC1;-KDC2;-KT11...-KT13	RELAY	DRG570220L	5	Weidmueller	
27	-KDC1;-KDC2;-KT11...-KT13	RELAY SOCKET	FS 4CO	5	Weidmueller	
28		HEATER	JRD2-150W	1	ODES	

Status - Approved as corrected

-R1 पावरग्रिड POWERGRID

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
BILL OF MATERIALS

DWG. NO. HQW46-4-TND-EQP-DWG-1331

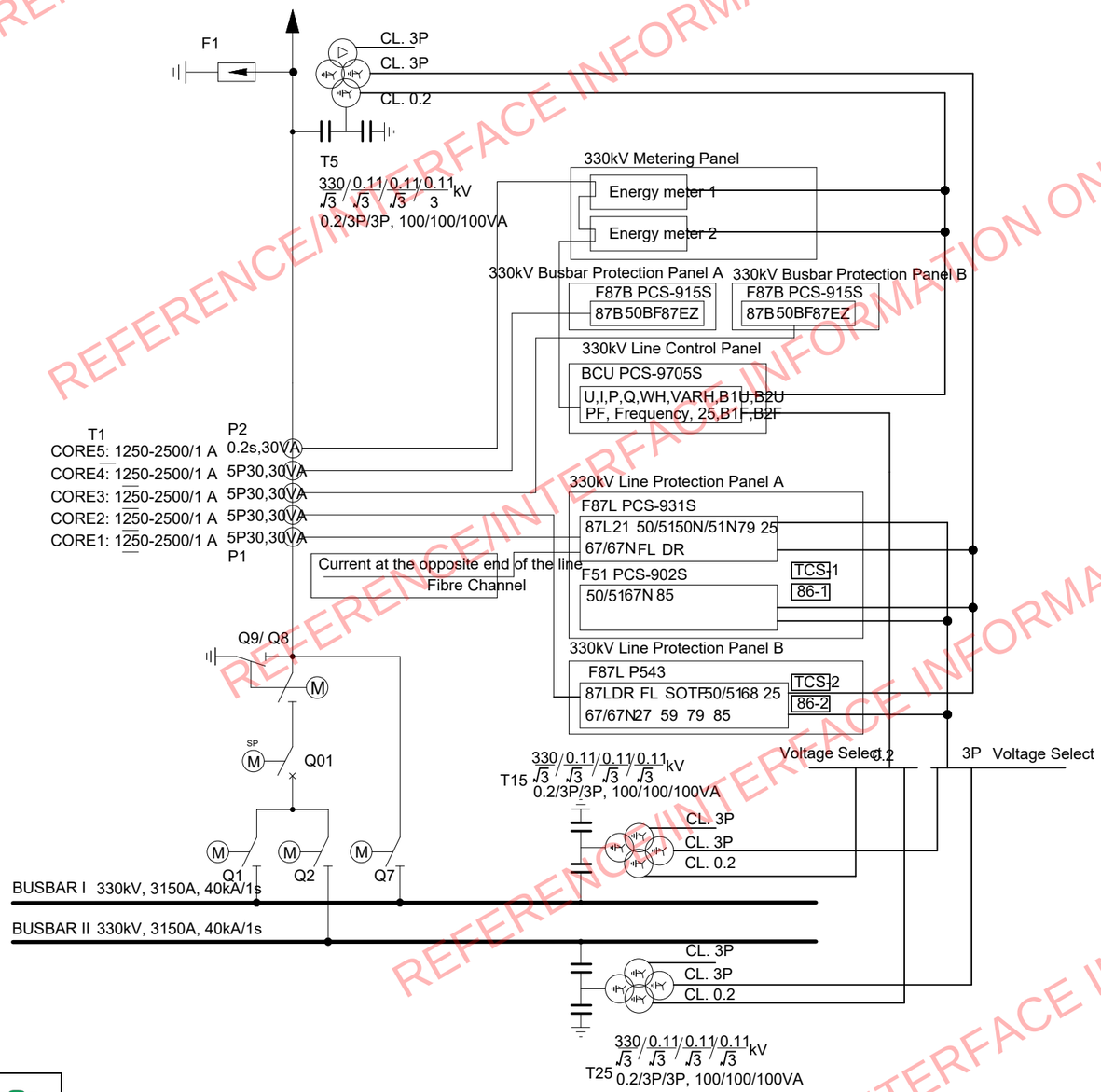
=D06+R1

SCALE	N/A	SHEET	05
SIZE	A3	NEXT	06
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.



LEGEND	DESCRIPTION
87L	Line Differential Protection
21	Distance Protection
68	Power Swing Blocking
50/51	Phase over current protection
50N/51N	Earth over current protection
67/67N	Directional over current/earth fault protection
25	Synchronizing check
79	Auto Reclose Relay
50BF	Breaker Failure Protection
27	Under Voltage Protection
59	Over Voltage Protection
DR	Disturbance Recorder
FL	Fault Location
TCS	Trip Circuit Failure Supervision
86	Tripping & Lockout Relay
87B	Bus bar differential protection(Centralized type)
87EZ	Bus bar end zone protection
SOTF	Switch Onto Fault Protection
85	Tele Protection
B1U	Busbar 1 Voltage
B2U	Busbar 2 Voltage
B1F	Busbar 1 Frequency
B2F	Busbar 2 Frequency

Status - Approved as corrected

पावरग्रिड POWERGRID

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A SINGLE LINE DIAGRAM

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	06
SIZE	A3	NEXT	07
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY

FROM		TO	LOCKOUT RELAY 1 (861) FOR LINE CB	LOCKOUT RELAY 2 (862) FOR LINE CB	INITIATE BFP OF LINE CB	INITIATE BFP OF LINE CB	START AR OF LINE CB	BLOCK AR OF LINE CB	TRIP CB COIL 1 OF LINE CB	TRIP CB COIL 2 OF LINE CB	BLOCK CB LINE CB CLOSE	AUTO-RECLOSE CB LINE CB	LOCKOUT RELAY 1 (861) FOR BC CB (BYPASS MODE)	LOCKOUT RELAY 2 (862) FOR BC CB (BYPASS MODE)	INITIATE BFP OF BC CB (BYPASS MODE)	START AR OF BC CB (BYPASS MODE)	BLOCK AR OF BC CB (BYPASS MODE)	TRIP CB COIL 1 OF BC CB (BYPASS MODE)	TRIP CB COIL 2 OF BC CB (BYPASS MODE)	BLOCK CB BC CB (BYPASS MODE) CLOSE	AUTO-RECLOSE CB BC CB (BYPASS MODE)	DIST. SENT (85Z) [FIBER OPTICAL CHANNEL]	DEF SENT (85DEF)[FIBER OPTICAL CHANNEL]	DTT SENT[FIBER OPTICAL CHANNEL]
RELAY	PROTECTION TRIP	LOCATION	=D06+R1	=D06+R2	=D08+R1	=D08+R2	=D06+R1	=D06+R1	=D06+R1	=D06+R2	=D06+R1	=D06+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	SDH/PDH	SDH/PDH	SDH/PDH
F87L (NR PCS-931S) MANI-A	DIFFERENTIAL PROTECTION FOR LINE (87L)	=D06+R1			3		3		3						3	3		3						
	DISTANCE PROTECTION FOR LINE ZONE 2 / 3 /4 (21 Z2/Z3/Z4)	=D06+R1	X		X								X		X									
	DISTANCE PROTECTION FOR LINE ZONE 1 (21 Z1)	=D06+R1			3		3		3						3	3		3						
	DIRECTIONAL O/C EARTH FAULT PROTECTION FOR LINE (67N/85DEF)	=D06+R1			3		3		3						3	3		3					X	
	PILOT DISTANCE PROTECTION FOR LINE (85Z)	=D06+R1			3		3		3						3	3		3				X		
	INSTANTANEOUS O/C PROTECTION FOR LINE(50/50N)	=D06+R1	X		X								X		X									
	TIME O/C PROTECTION FOR LINE (51/51N)	=D06+R1	X		X								X		X									
	DTT RECEIVED (50BF BREAKER FAILURE)	=D06+R1	X		X								X		X									X
	OVER VOLTAGE PROTECTION (59)	=D06+R1	X		X								X		X									
	UNDER VOLTAGE PROTECTION (27)	=D06+R1	X		X								X		X									
	SOTF	=D06+R1	X		X								X		X									
	AUTO RECLOSE OF LINE CB (79)	=D06+R1										X												
F51 (NR PCS-902S) BACK UP	DIRECTIONAL O/C EARTH FAULT PROTECTION FOR LINE (67N/85DEF)	=D06+R1				3	3		3	3					3	3		3	3					
	PILOT DISTANCE PROTECTION FOR LINE (85Z)	=D06+R1				3	3		3	3					3	3		3	3					
	INSTANTANEOUS O/C PROTECTION FOR LINE(50/50N)	=D06+R1	X	X		X							X	X	X									
	TIME O/C PROTECTION FOR LINE (51/51N)	=D06+R1	X	X		X							X	X	X									
	DTT RECEIVED (50BF BREAKER FAILURE)	=D06+R1	X			X							X		X									X
F87 (Schneider P543) MANI-B	DIFFERENTIAL PROTECTION FOR LINE (87L)	=D06+R1			3		3		3						3	3		3						
	DISTANCE PROTECTION FOR LINE ZONE 2 / 3 /4 (21 Z2/Z3/Z4)	=D06+R1	X		X								X		X									
	DISTANCE PROTECTION FOR LINE ZONE 1 (21 Z1)	=D06+R1			3		3		3						3	3		3						
	DIRECTIONAL O/C EARTH FAULT PROTECTION FOR LINE (67N/85DEF)	=D06+R1			3		3		3						3	3		3					X	
	PILOT DISTANCE PROTECTION FOR LINE (85Z)	=D06+R1			3		3		3						3	3		3				X		
	INSTANTANEOUS O/C PROTECTION FOR LINE(50/50N)	=D06+R1	X		X								X		X									
	TIME O/C PROTECTION FOR LINE (51/51N)	=D06+R1	X		X								X		X									
	DTT RECEIVED (50BF BREAKER FAILURE)	=D06+R1	X		X								X		X									X
	OVER VOLTAGE PROTECTION (59)	=D06+R1	X		X								X		X									
	UNDER VOLTAGE PROTECTION (27)	=D06+R1	X		X								X		X									
	SOTF	=D06+R1	X		X								X		X									
	AUTO RECLOSE OF LINE CB (79)	=D06+R1										X												
K861	LOCKOUT RELAY 1 (86) FOR LINE CB	=D06+R1						X	X		X						X							
K862	LOCKOUT RELAY 2 (86) FOR LINE CB	=D06+R2						X		X	X						X							
K861	LOCKOUT RELAY 1 (86) FOR BUS COUPLER CB (BYPASS MODE)	=D05+R1																X		X				
K862	LOCKOUT RELAY 2 (86) FOR BUS COUPLER CB (BYPASS MODE)	=D05+R1																	X	X				

NOTE: X START FUNCTION OR RELAY

0 START FUNCTION OR RELAY (1 PER PHASE)

THE SAME WITH D07

=D06+R1 330kV NAKONDE 1 LINE MAIN1 PROTECTION PANEL
=D06+R2 330kV NAKONDE 1 LINE MAIN2 PROTECTION PANEL
=D08+R1 330kV BB MAIN1 PROTECTION PANEL
=D08+R2 330kV BB MAIN2 PROTECTION PANEL
=D05+R1 330kV BUS COUPLER PROTECTION PANEL

Status - Approved as Corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A TRIP MATRIX

DWG. NO. HQW46-4-TND-EQP-DWG-1331

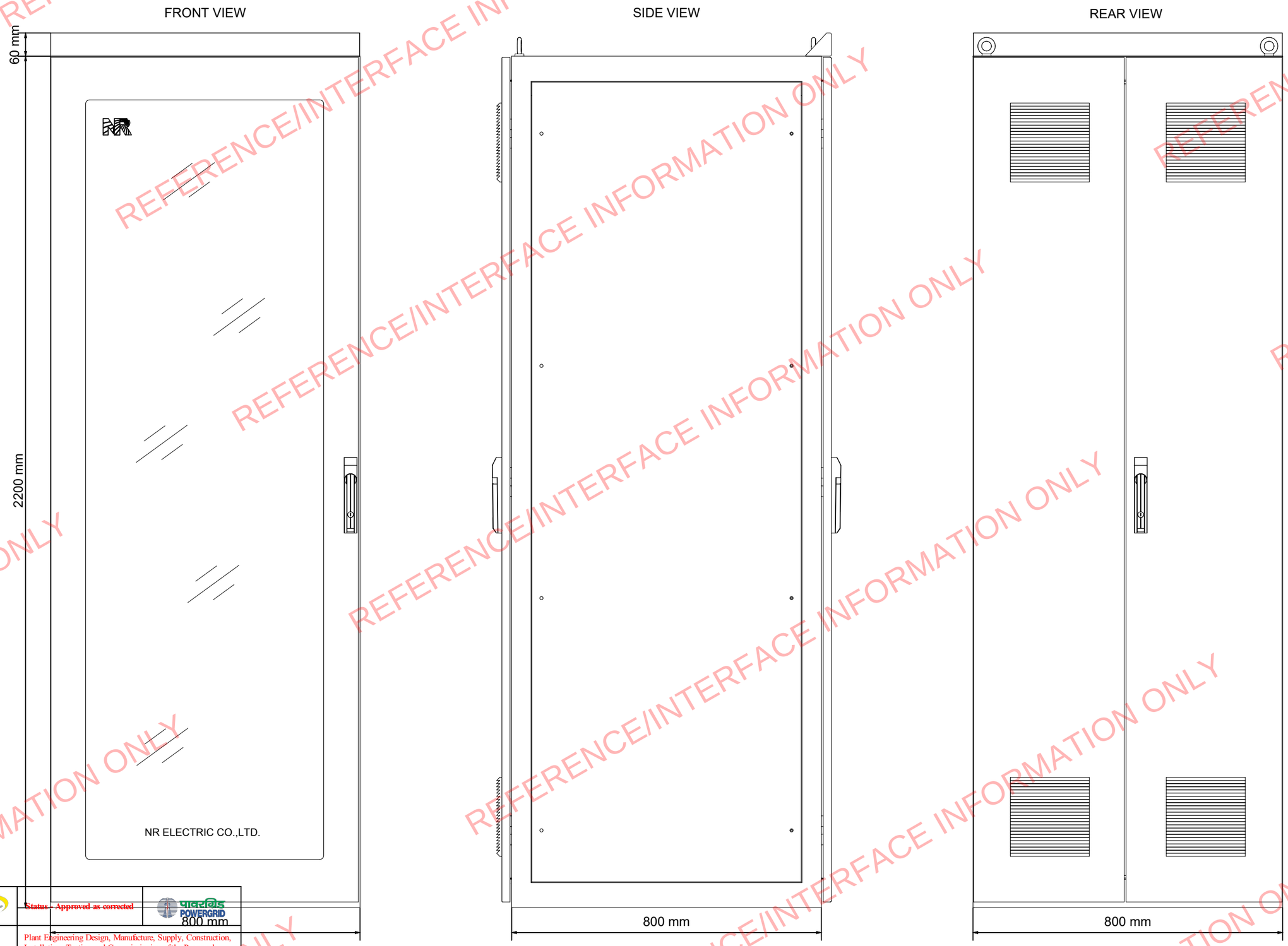
=D06+R1

SCALE	N/A	SHEET	07
SIZE	A3	NEXT	08
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.



REFERENCE/INTERFACE INFORMATION ONLY

	Status : Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

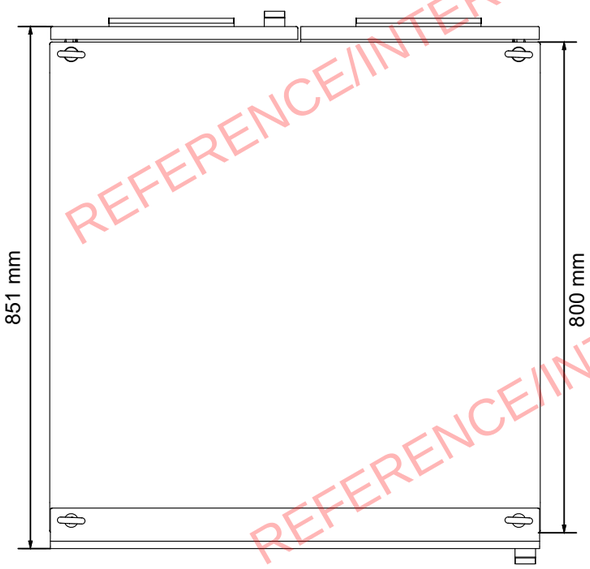
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A PANEL STRUCTURE 1	SCALE N/A	SHEET 08
		SIZE A3	NEXT 09
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

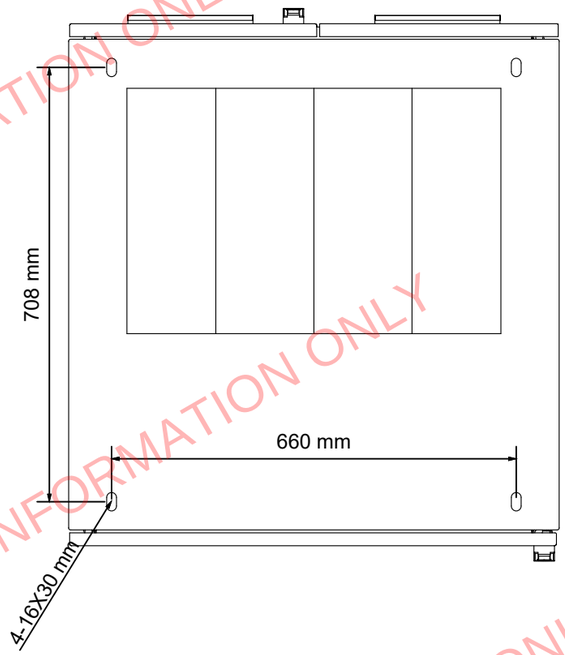
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TOP VIEW



BOTTOM VIEW



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A PANEL STRUCTURE 2

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	09
SIZE	A3	NEXT	10
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

PANEL MECHANICAL CHARACTERISTICS:

ITEM	DESCRIPTION	PARAMETER
1	TYPE	NR-G03 PANEL
2	DIMENSION	2260*800*800(H*W*D)
3	COLOR	EXTERIOR: RAL7035 INTERIOR: RAL7035
4	PROTECTION DEGREE	IP54
5	MATERIAL	SHEET STEEL
6	PLATE THICKNESS	2.5mm
7	MOUNTING	FLOOR MOUNTING, BOTTOM ENTRY OF POWER AND MULTI-CORE CABLES
8	EARTH BAR	COPPER STRIP: 485(L)×25(W)×4(D)mm

PANEL INFORMATION:

1. The colour of MIMIC is required as below:
   - 400kV--Purple
   - 330kV--Red
   - 220kV--Yellow
   - 132kV--Blue
   - 33kV--Green
   - Ground-Black
2. The width of MIMIC lines is 4mm, 6mm for busbar.

TERMINAL BLOCK:

NAME	DESCRIPTION	NOTE
XA:	TERMINAL BLOCK FOR AC POWER SUPPLY CIRCUIT.	UK5N
XD:	TERMINAL BLOCK FOR DC POWER SUPPLY CIRCUIT.	UK6N
XI:	TERMINAL BLOCK FOR CT CIRCUIT.	URTK/S
XU:	TERMINAL BLOCK FOR VT CIRCUIT.	URTK/S
XW:	TERMINAL BLOCK FOR DC ANALOG CIRCUIT.	UK5N
XB:	TERMINAL BLOCK FOR BINARY INPUT.	UK5N
XT:	TERMINAL BLOCK FOR TRIPPING CIRCUIT.	UK5N
XC:	TERMINAL BLOCK FOR TRIP SUPERVISION OR CONTROL CIRCUIT.	UK10N
XR:	TERMINAL BLOCK FOR REMOTE SIGNAL CIRCUIT.	UK5N
XH:	TERMINAL BLOCK FOR ANNUNCIATOR CIRCUIT.	UK5N
XF:	TERMINAL BLOCK FOR RECORD SIGNAL CIRCUIT.	UK5N
XM:	TERMINAL BLOCK FOR COMMUNICATION CIRCUIT.	UK5N
XS:	TERMINAL BLOCK FOR SPARE.	UK5N

WIRING CHARACTERISTICS:

1. 4mm² multistrands insulated copper conductor for CT circuits.
2. 2.5mm² multistrands insulated copper conductor for VT circuits.
3. 4mm² multistrands insulated copper conductor for earthing circuits.
4. 1.5mm² multistrands insulated copper conductor for all other circuits.

WIRING COLOR:

Red	— Phase R CT&VT Circuit
Yellow	— Phase Y CT&VT Circuit
Blue	— Phase B CT&VT Circuit
Black	— AC Current And Voltage Neutral Circuit.
Yellow/green	— Earthing Circuit
Grey	— All Other Circuits

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Substations and 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

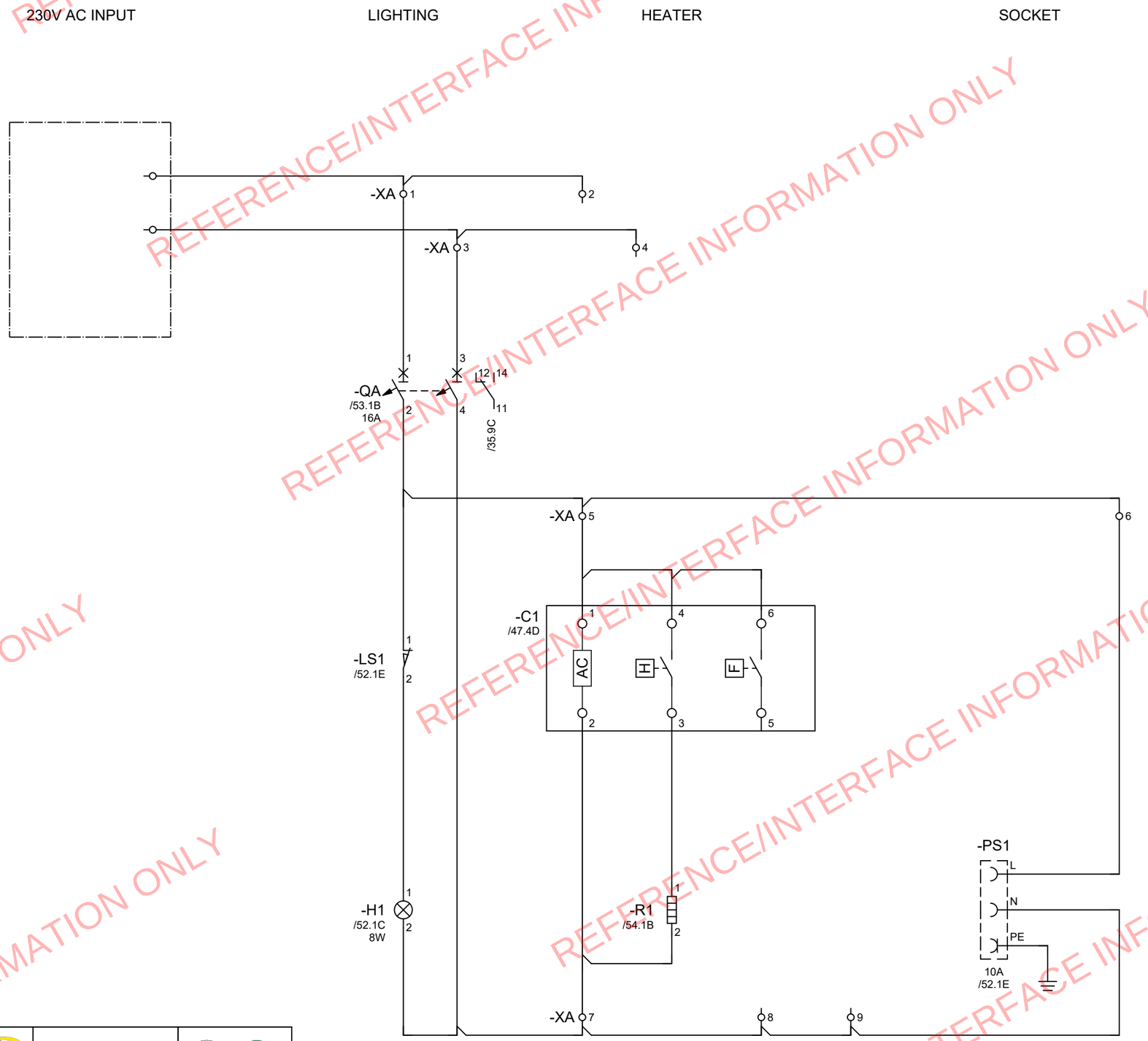
HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A PANEL DETAILED INFORMATION	SCALE N/A	SHEET 10
		SIZE A3	NEXT 11
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



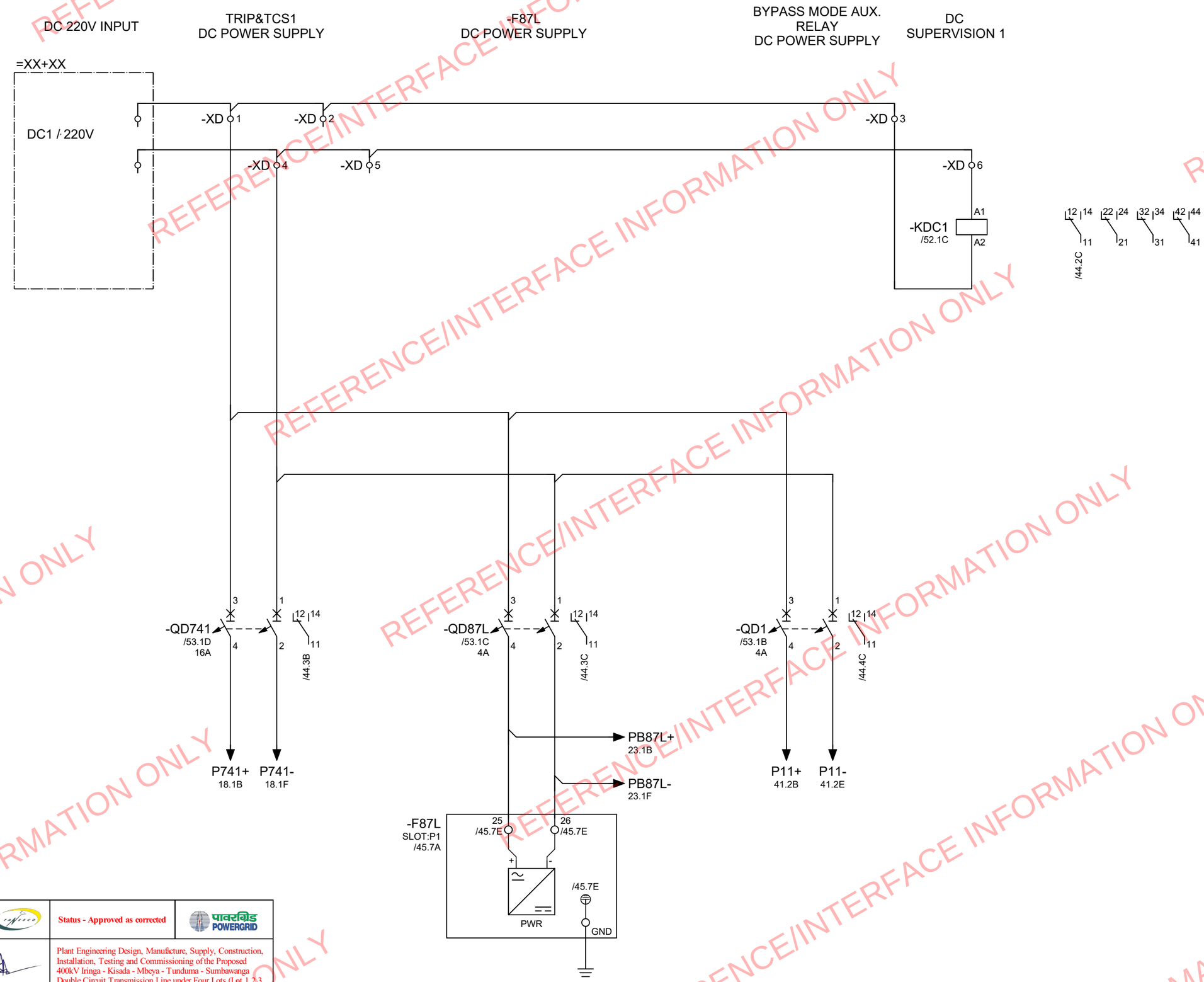
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A AC POWER SUPPLY CIRCUIT	SCALE N/A	SHEET 11
		SIZE A3	NEXT 12
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A DC POWER SUPPLY CIRCUIT 1	SCALE N/A	SHEET 12
		SIZE A3	NEXT 13
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

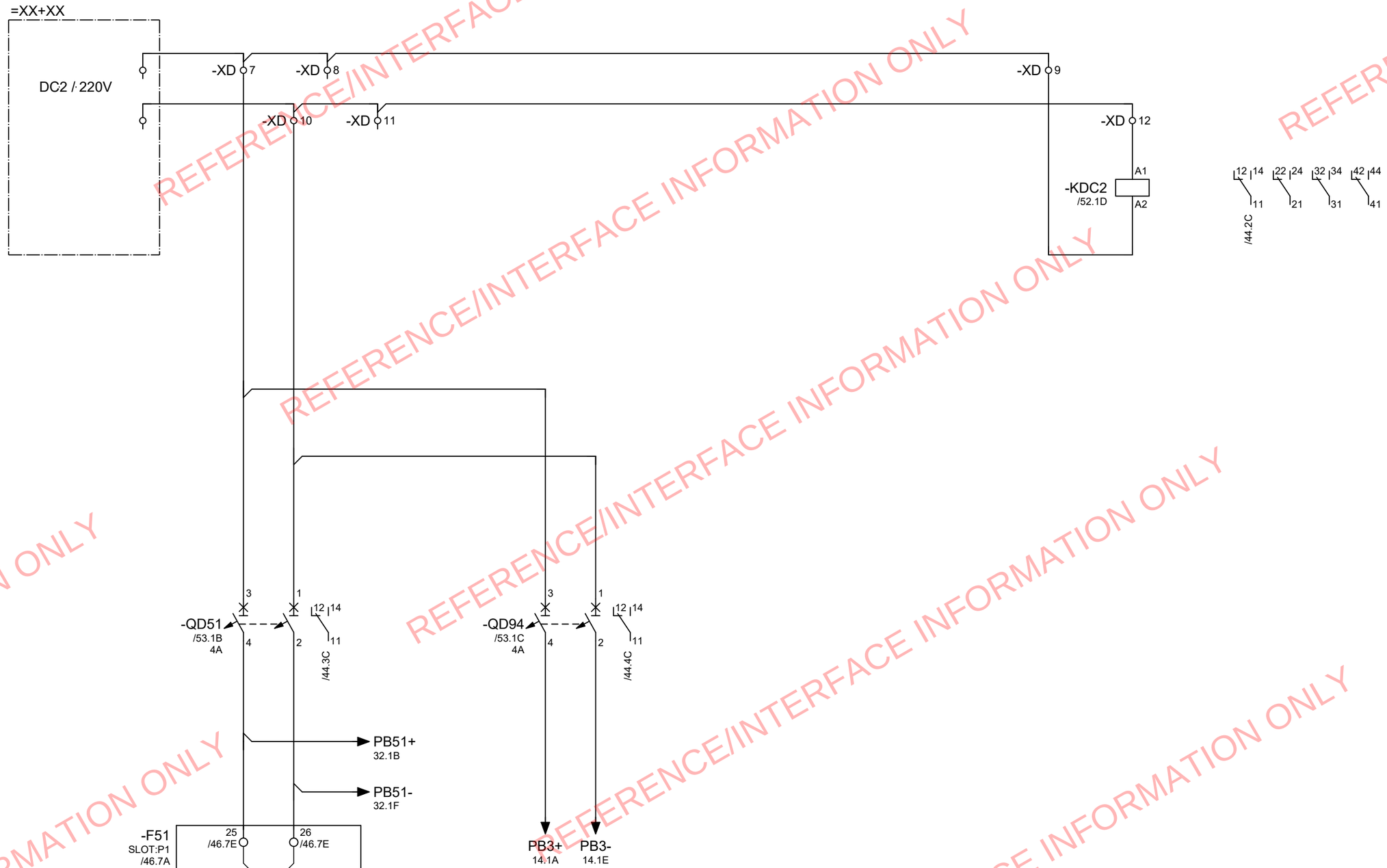
REFERENCE/INTERFACE INFORMATION ONLY

DC 220V INPUT

-F51
DC POWER SUPPLY

VOLTAGE SELECT
RELAY
DC POWER SUPPLY

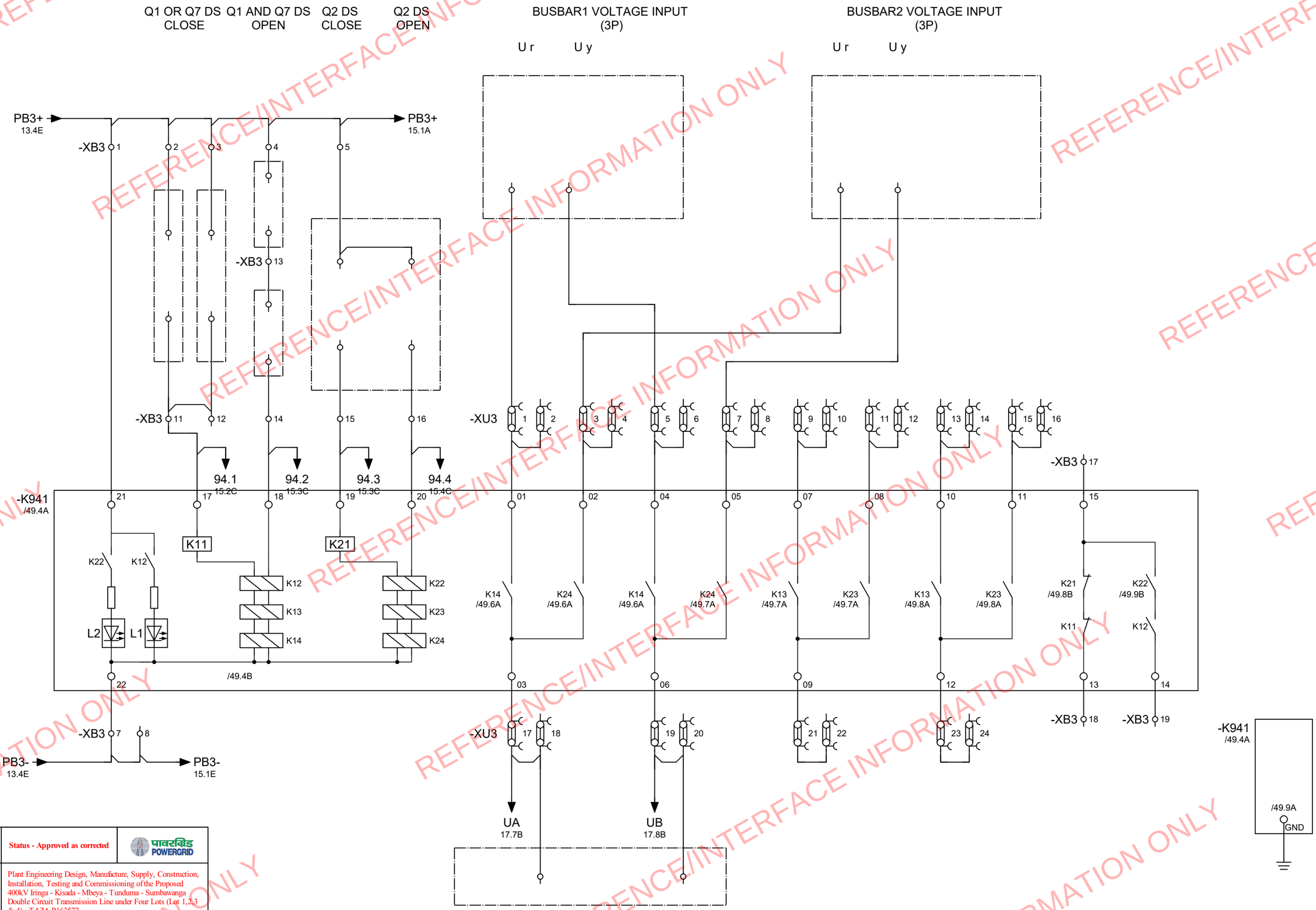
DC
SUPERVISION 2



	Status - Approved as corrected
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A DC POWER SUPPLY CIRCUIT 2	SCALE N/A	SHEET 13
		SIZE A3	NEXT 14
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
BUSBAR VT SELECTION RELAY -K941 CIRCUIT

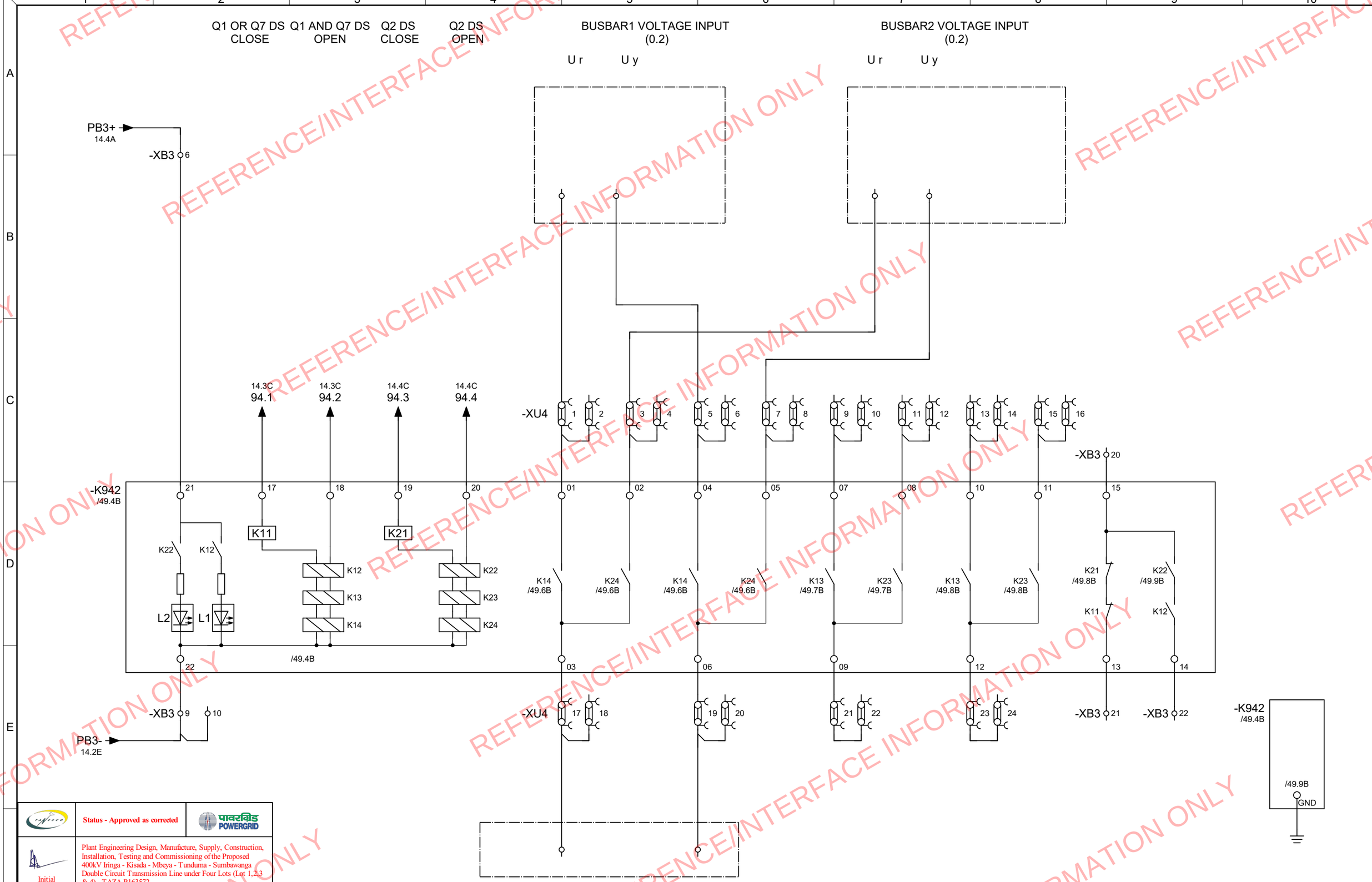
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	14
SIZE	A3	NEXT	15
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A BUSBAR VT SELECTION RELAY -K942 CIRCUIT

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	15
SIZE	A3	NEXT	16
REV.	0	TOTAL	57

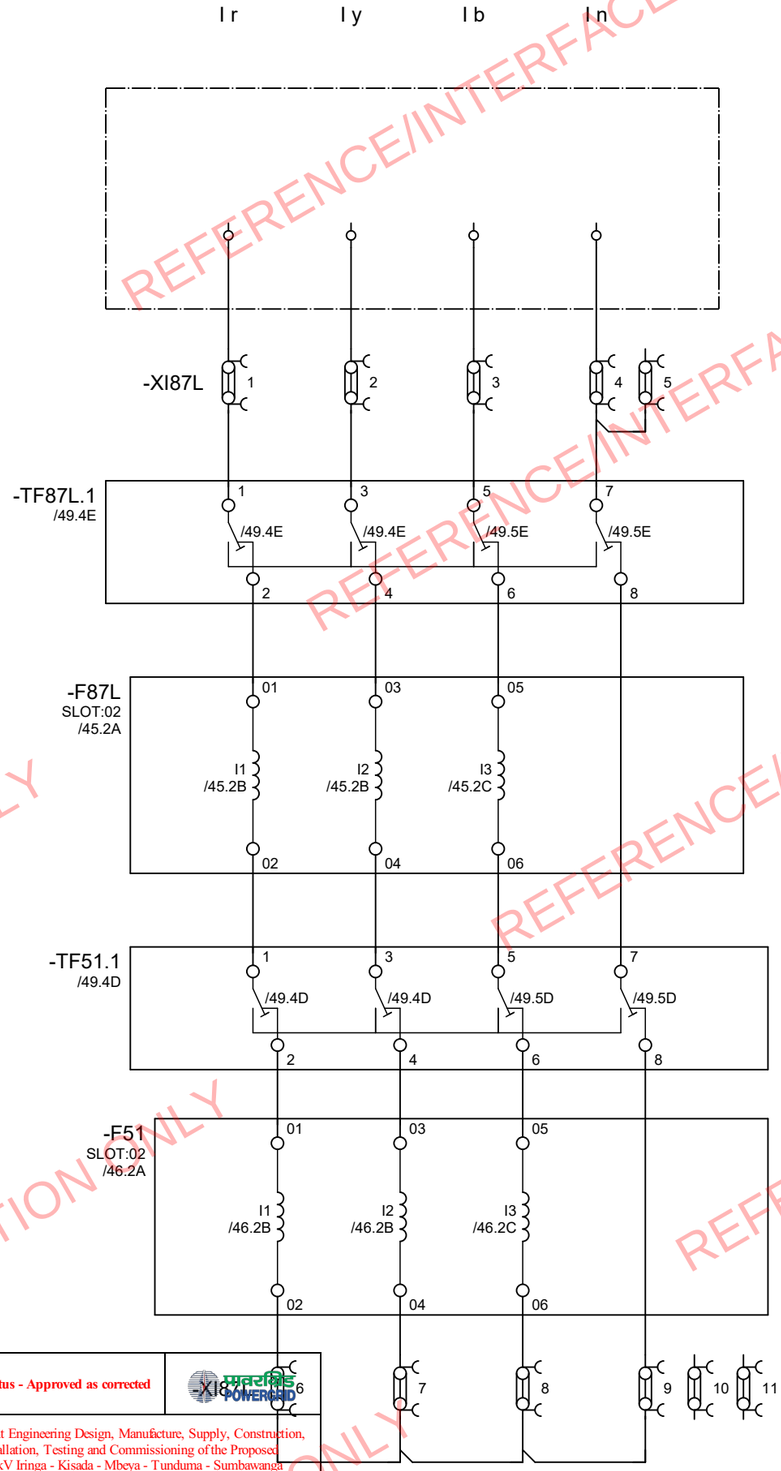
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

3 PHASE CURRENT INPUT
FOR MAIN1&BACKUP PROTECTION



	Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A -F87L&-F51 CT CURRENT CIRCUIT	SCALE N/A	SHEET 16
		SIZE A3	NEXT 17
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

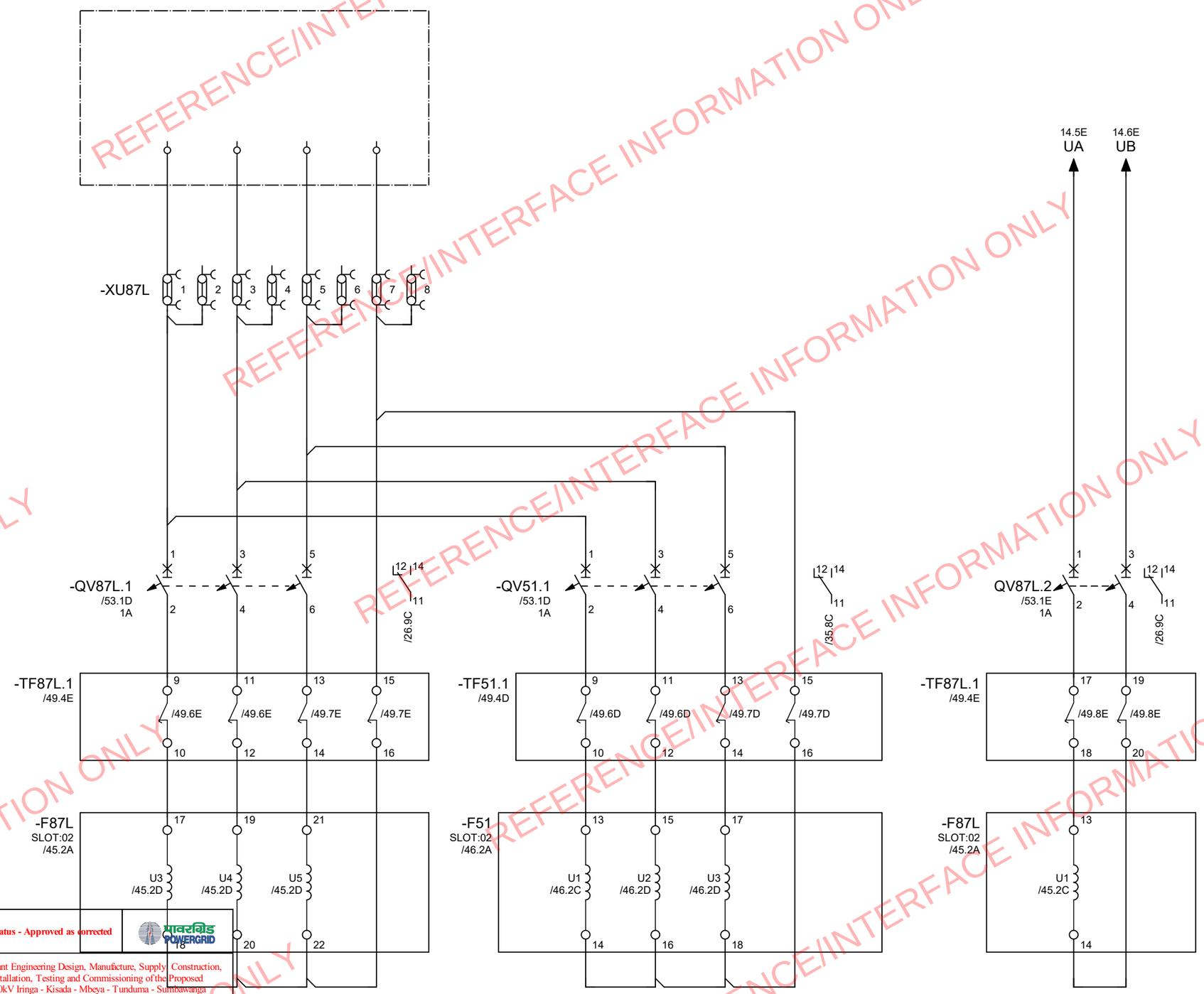
REFERENCE/INTERFACE INFORMATION ONLY

LINE 3 PHASE VOLTAGE INPUT FOR
MAIN1 PROTECTION (CL:3P)

U r U y U b U n

BUSBAR VOLTAGE

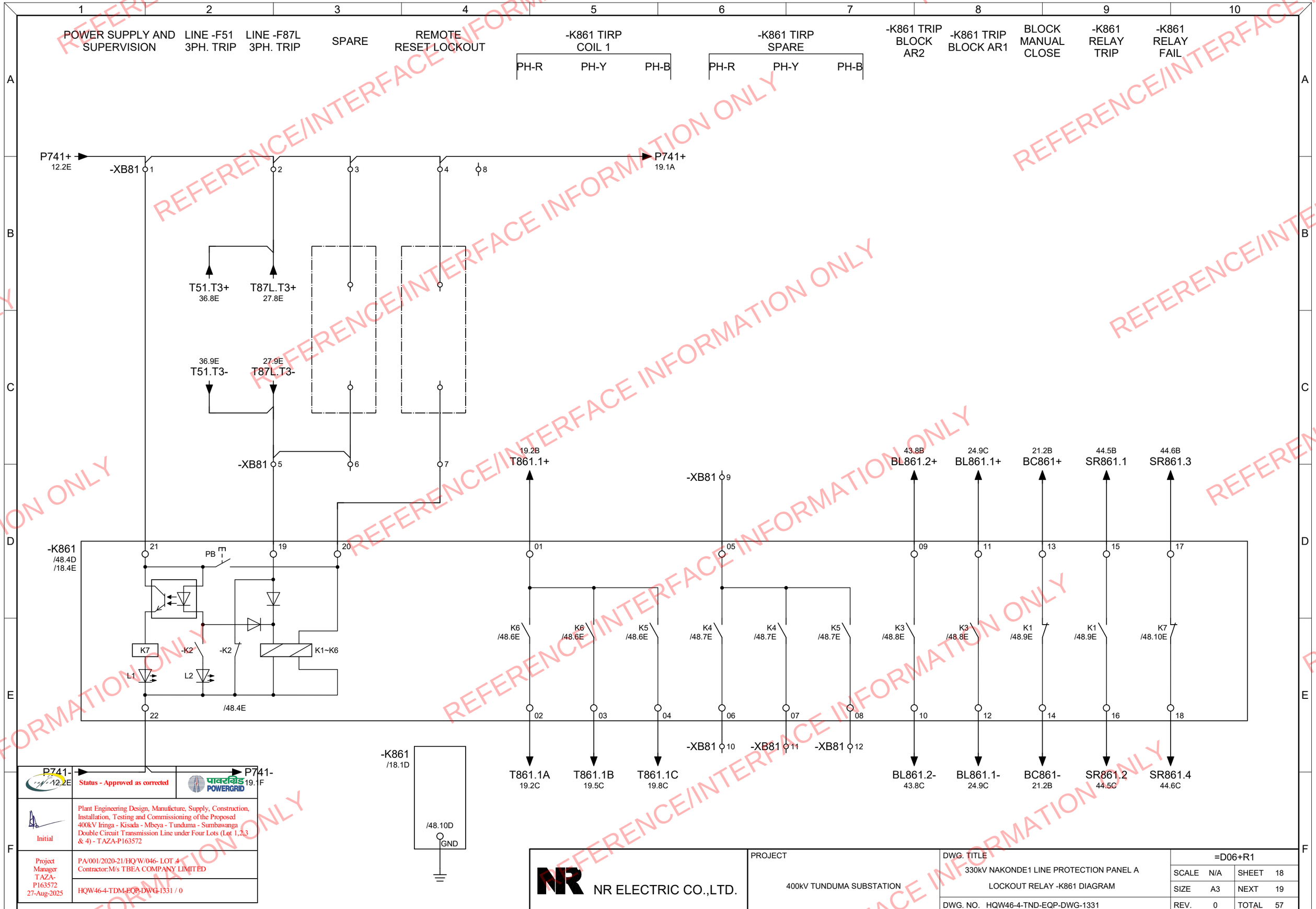
U r U y



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

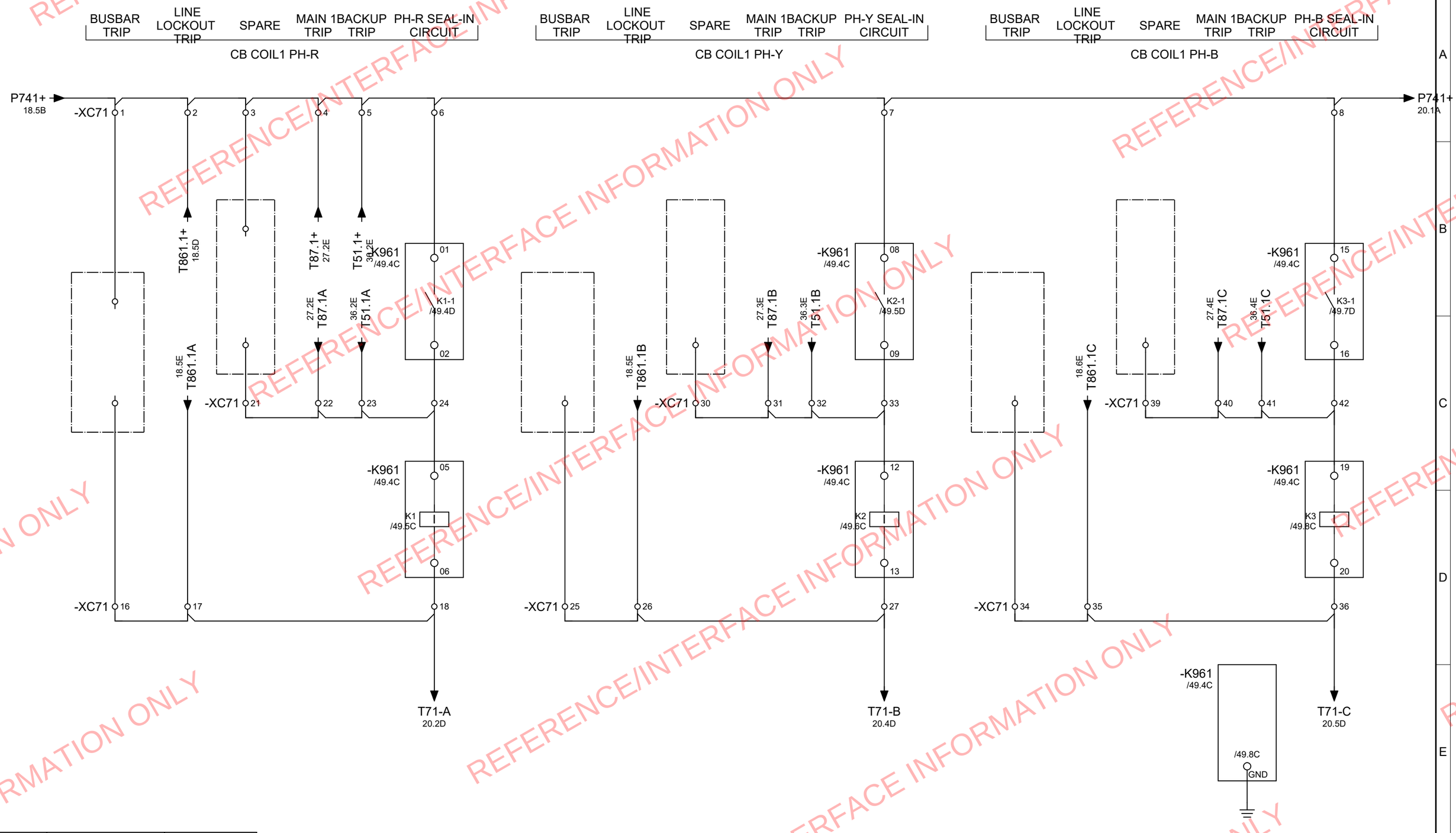
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 17
	-F87L&-F51 VT VOLTAGE CIRCUIT	SIZE A3	NEXT 18
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57



We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



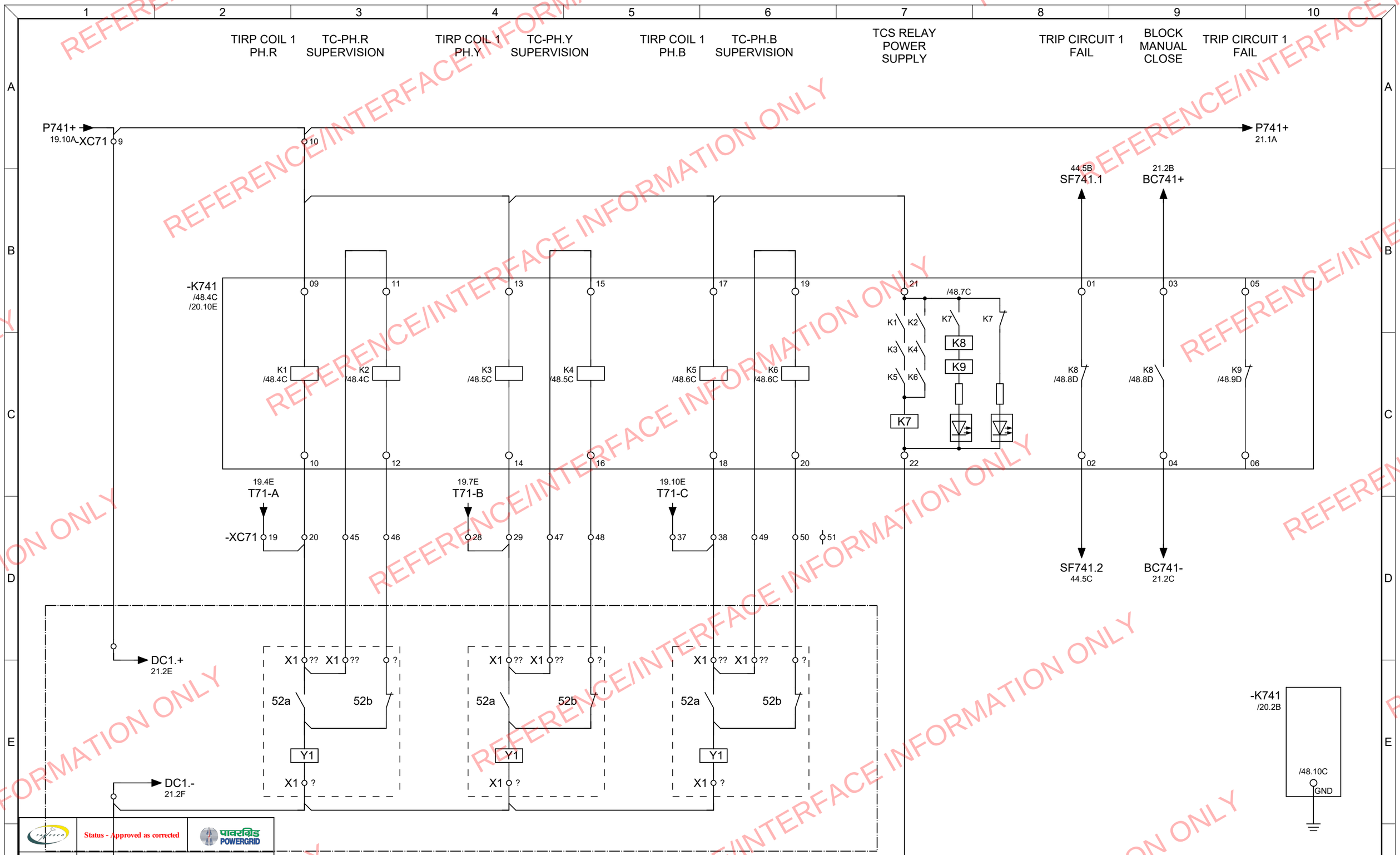
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A CB TRIP CIRCUIT 1 SCHEMATIC 1	SCALE N/A	SHEET 19
		SIZE A3	NEXT 20
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Tunduma - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
CB TRIP CIRCUIT 1 SCHEMATIC 2

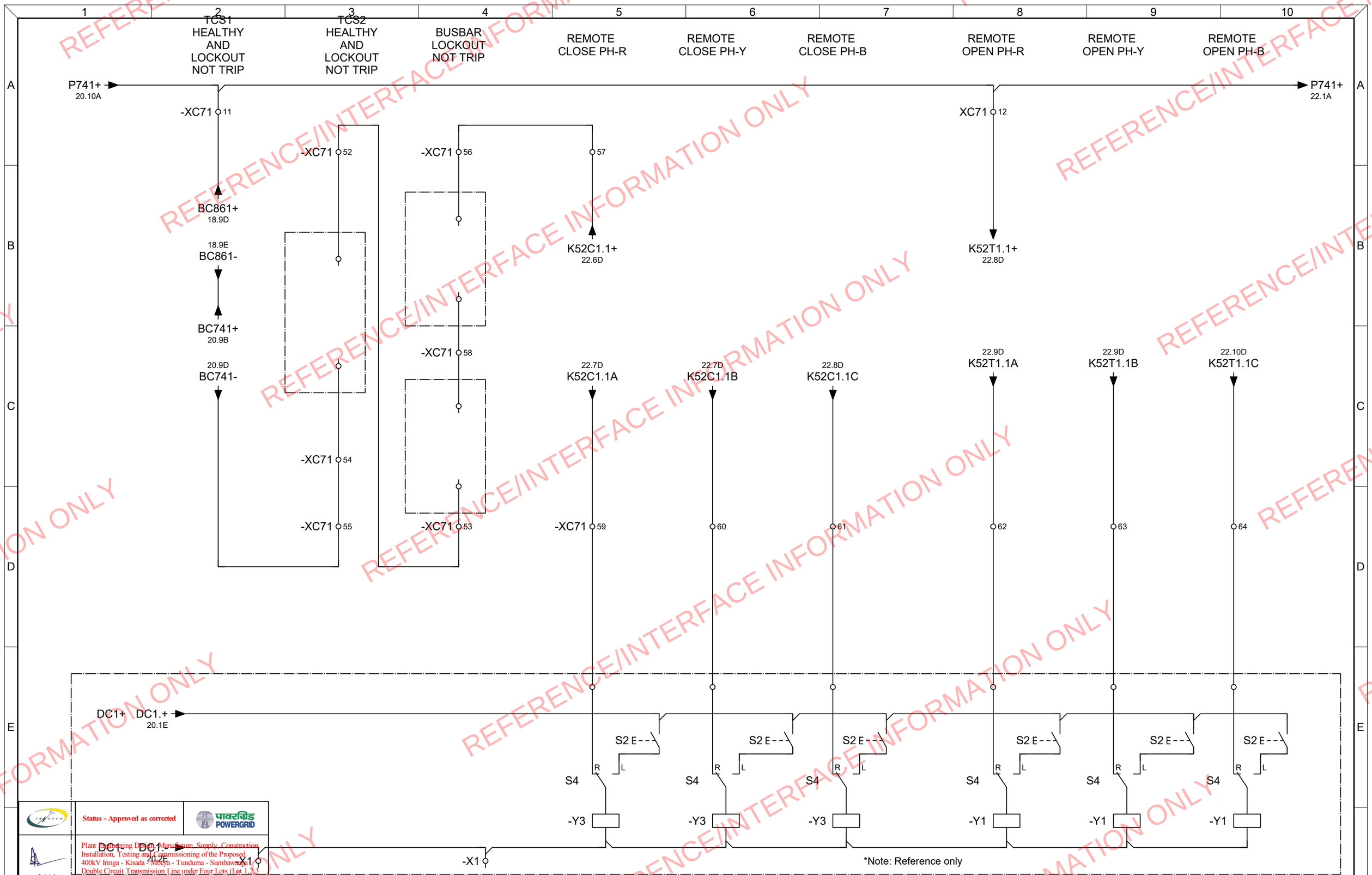
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	20
SIZE	A3	NEXT	21
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Including Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Nidegya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A CB CLOSE & OPEN CIRCUIT

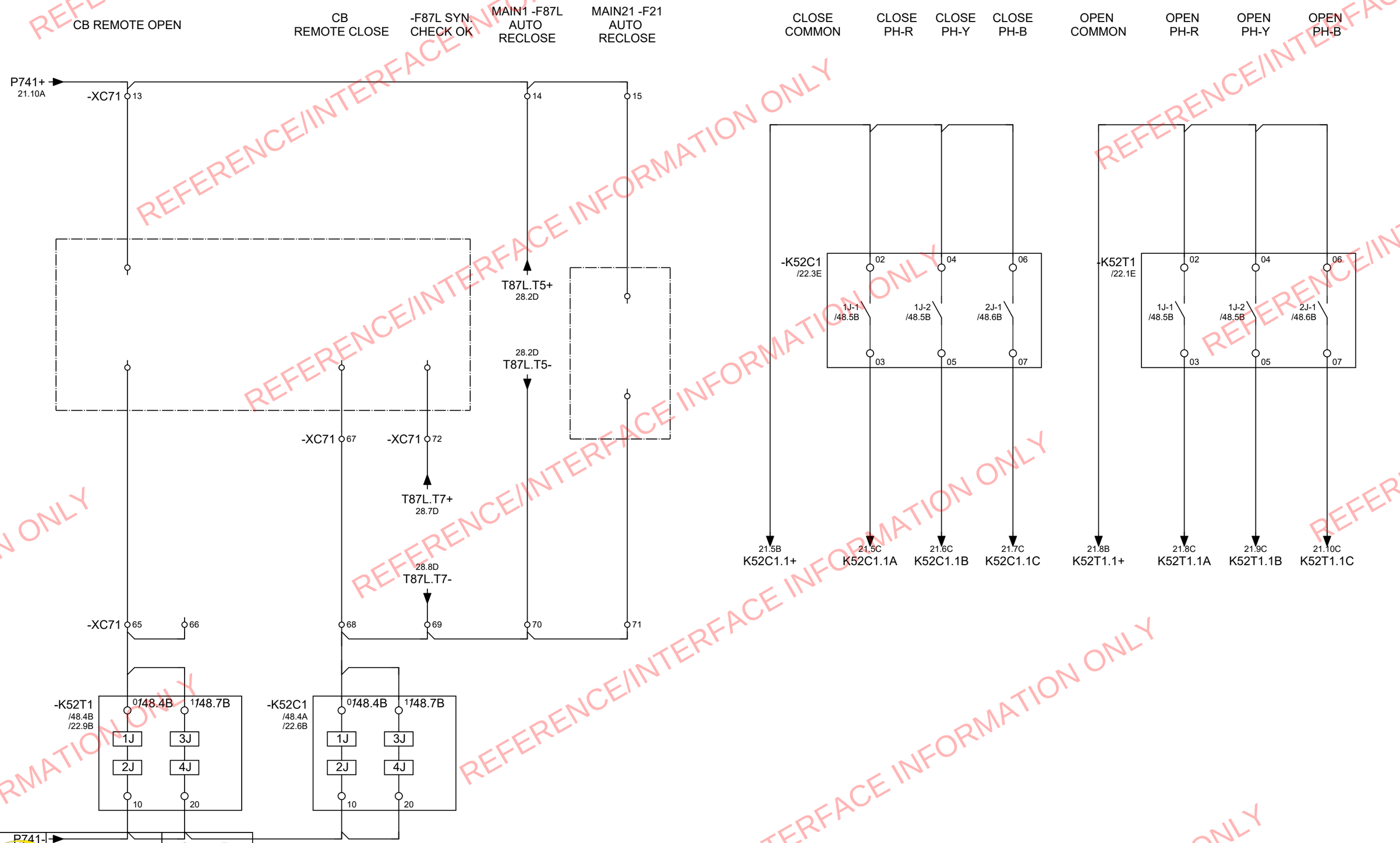
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	21
SIZE	A3	NEXT	22
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



Status - Approved as corrected

पावरग्रिड POWERGRID

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

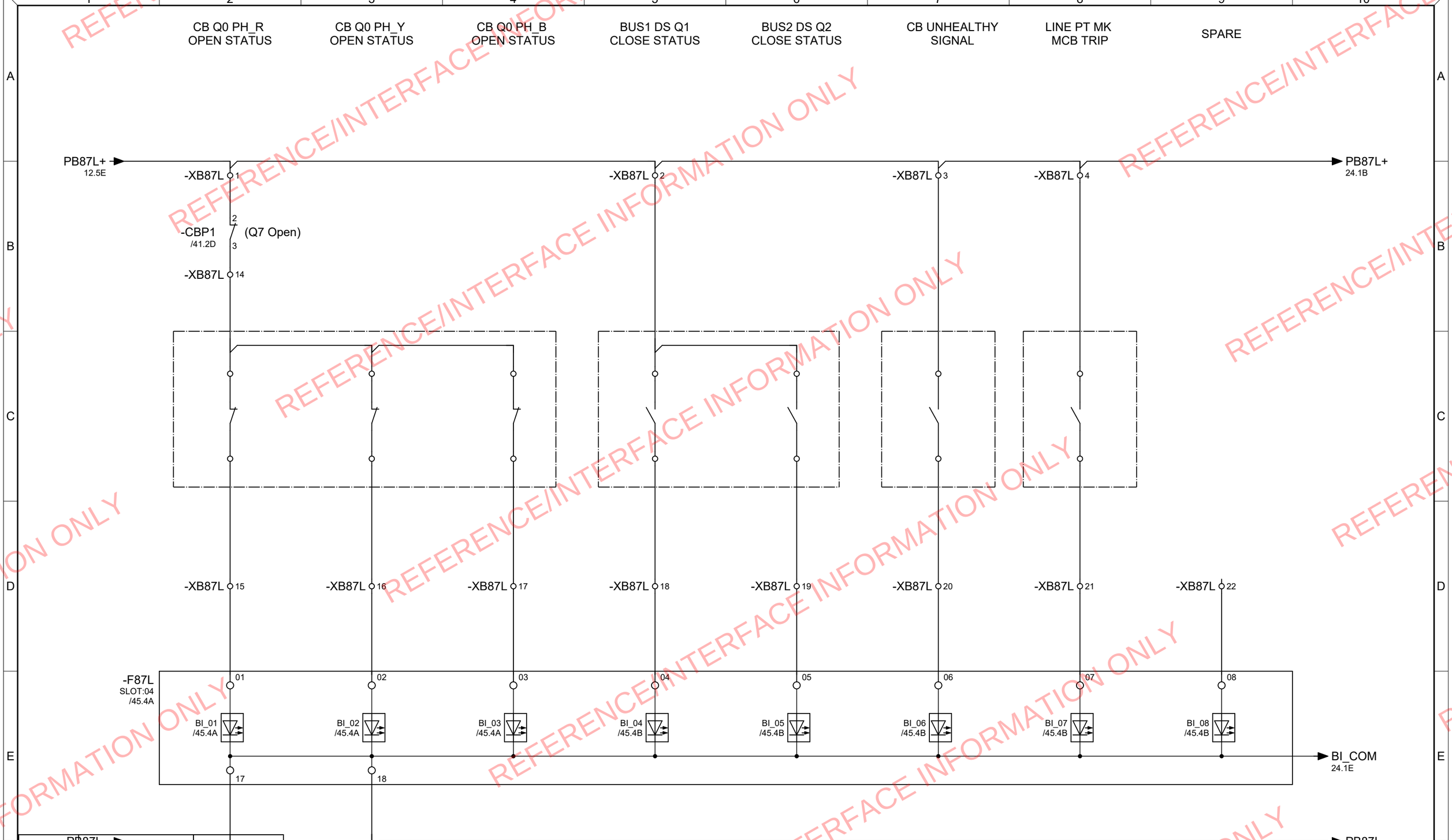
HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A CB CONTROL DIAGRAM	SCALE N/A	SHEET 22
		SIZE A3	NEXT 23
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	12.5E - Approved as corrected
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F87L BINARY INPUT CIRCUIT 1

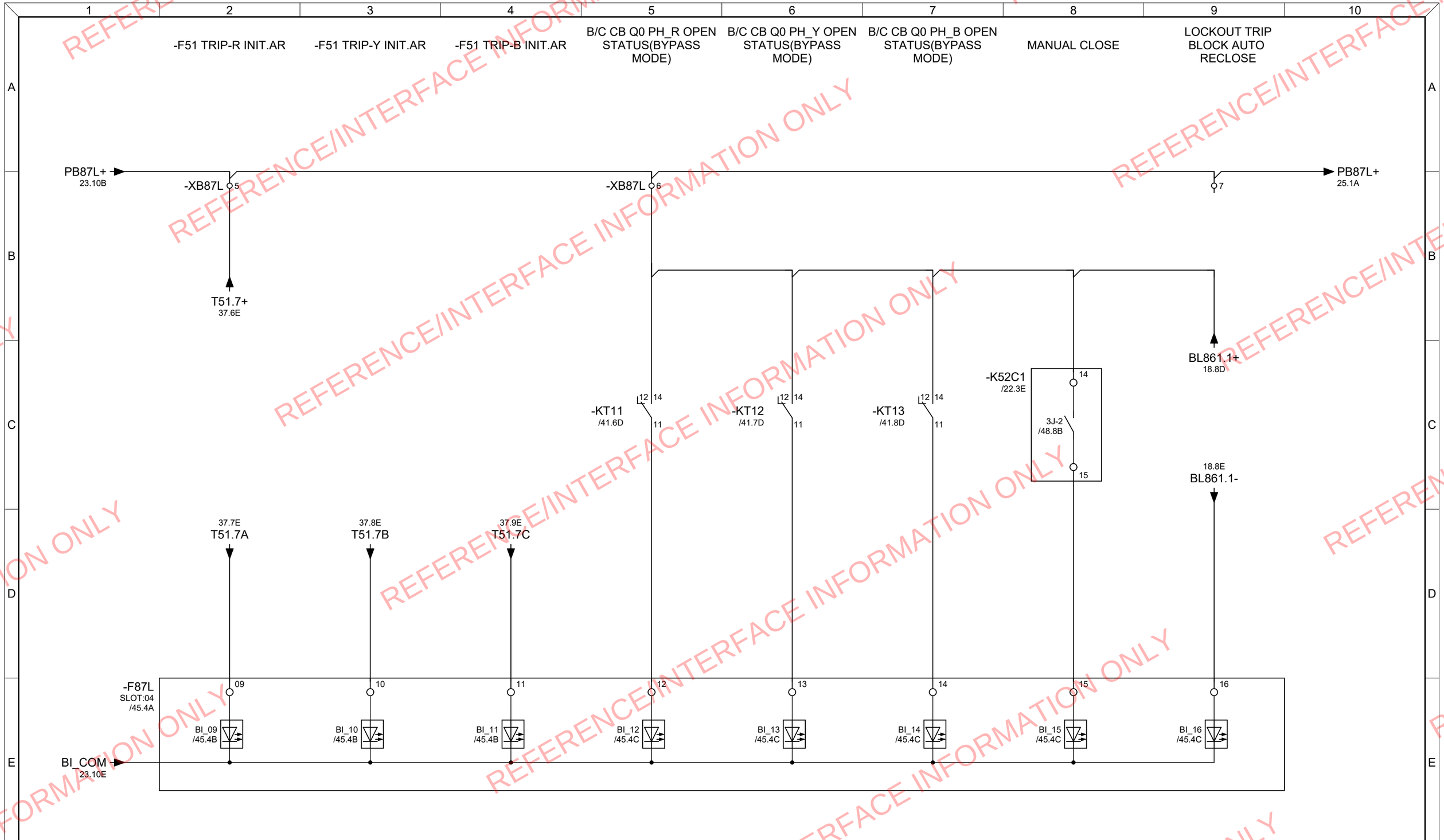
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	23
SIZE	A3	NEXT	24
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F87L BINARY INPUT CIRCUIT 2

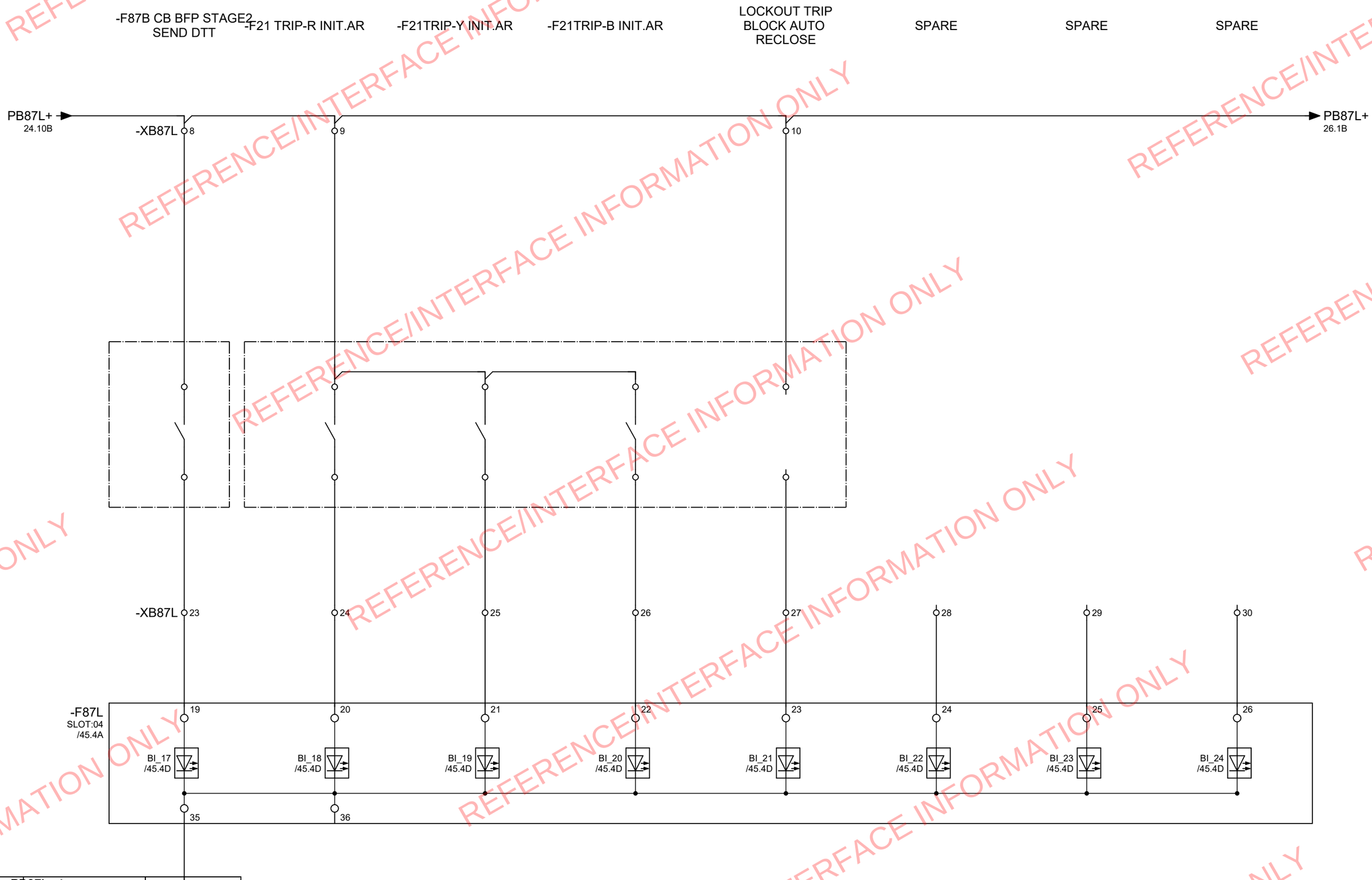
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	24
SIZE	A3	NEXT	25
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Action - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F87L BINARY INPUT CIRCUIT 3

DWG. NO. HQW46-4-TND-EQP-DWG-1331

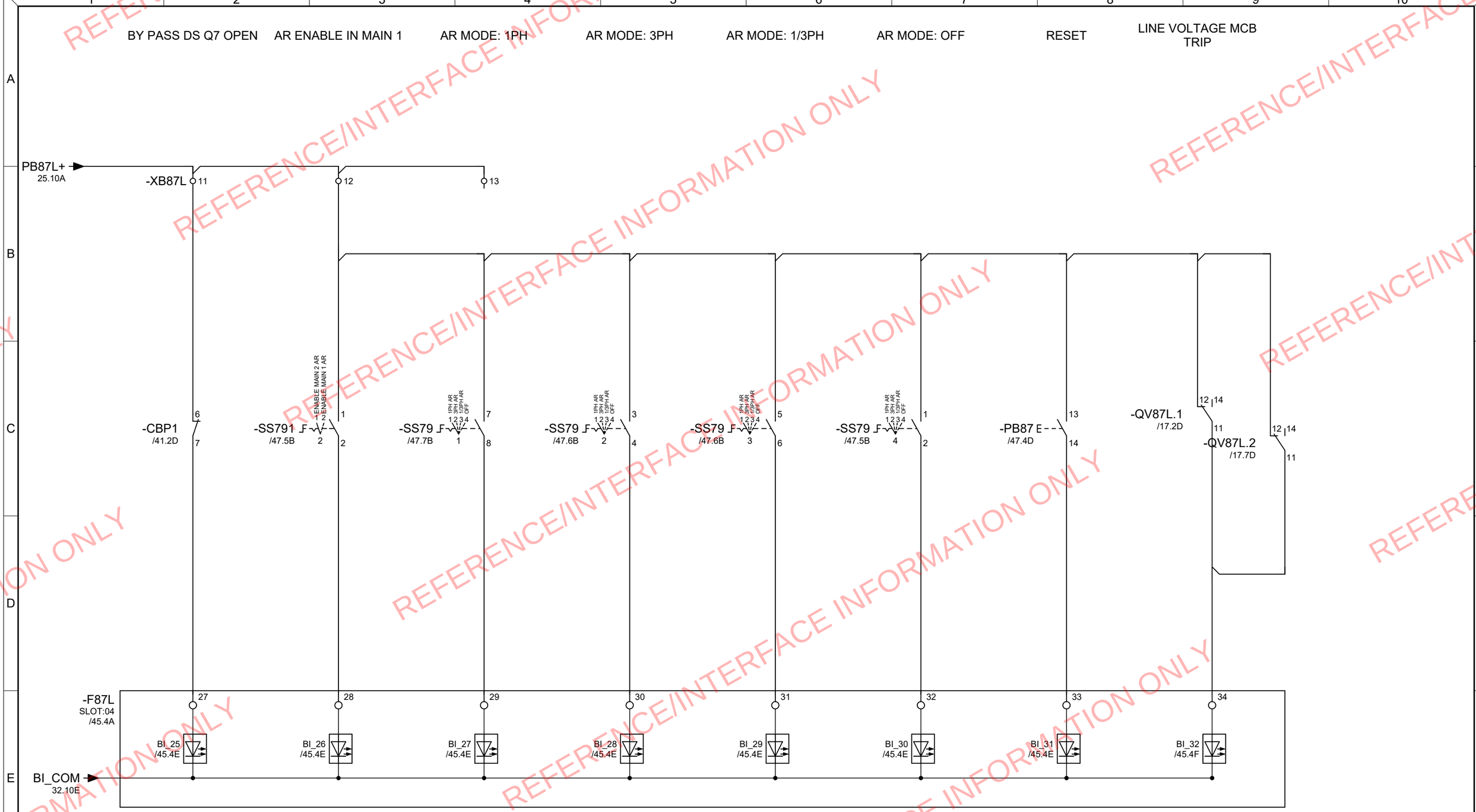
=D06+R1			
SCALE	N/A	SHEET	25
SIZE	A3	NEXT	26
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F87L BINARY INPUT CIRCUIT 4

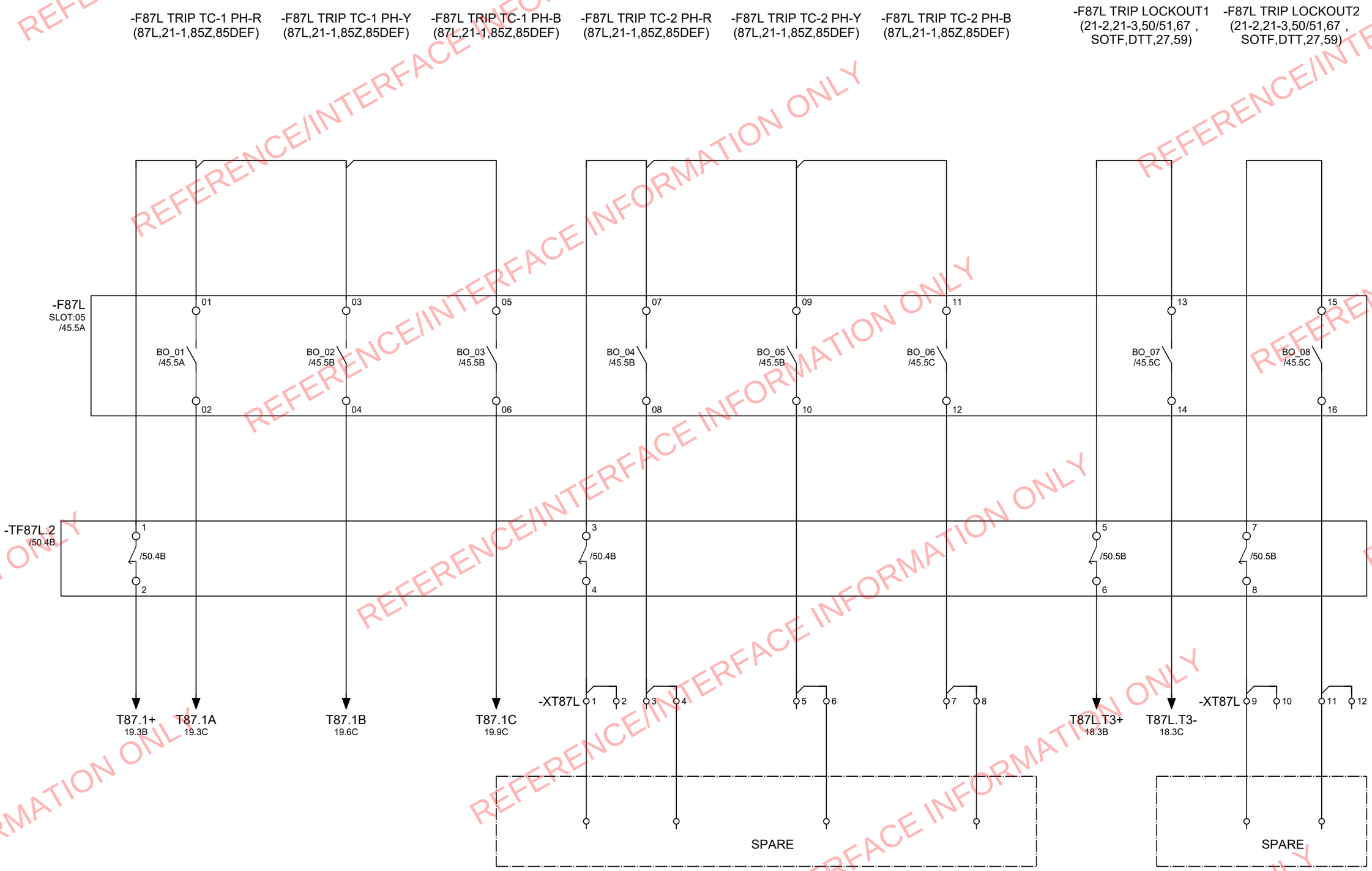
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	26
SIZE	A3	NEXT	27
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

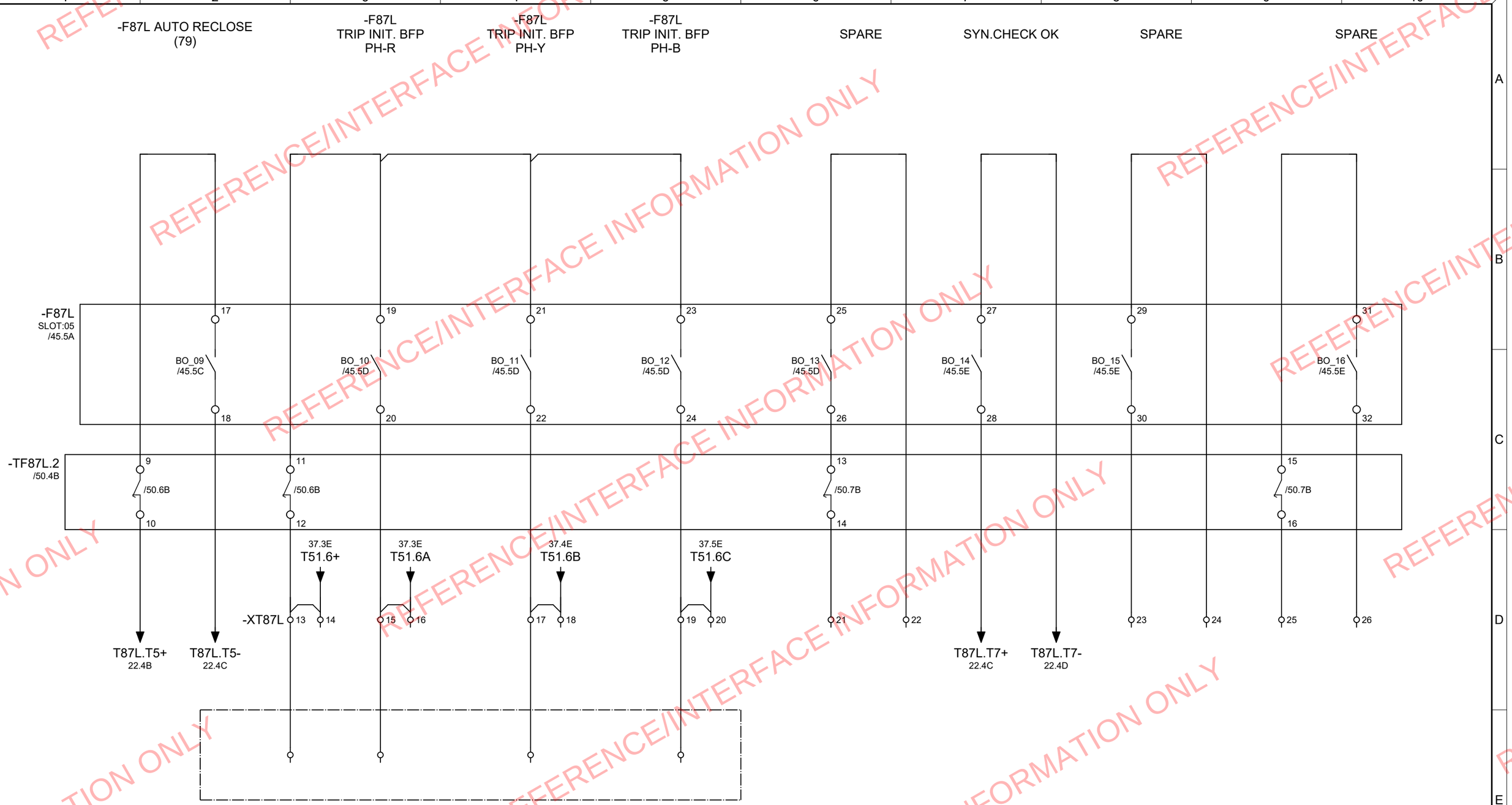
REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A -F87L BINARY OUTPUT CIRCUIT 1	SCALE N/A	SHEET 27
		SIZE A3	NEXT 28
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

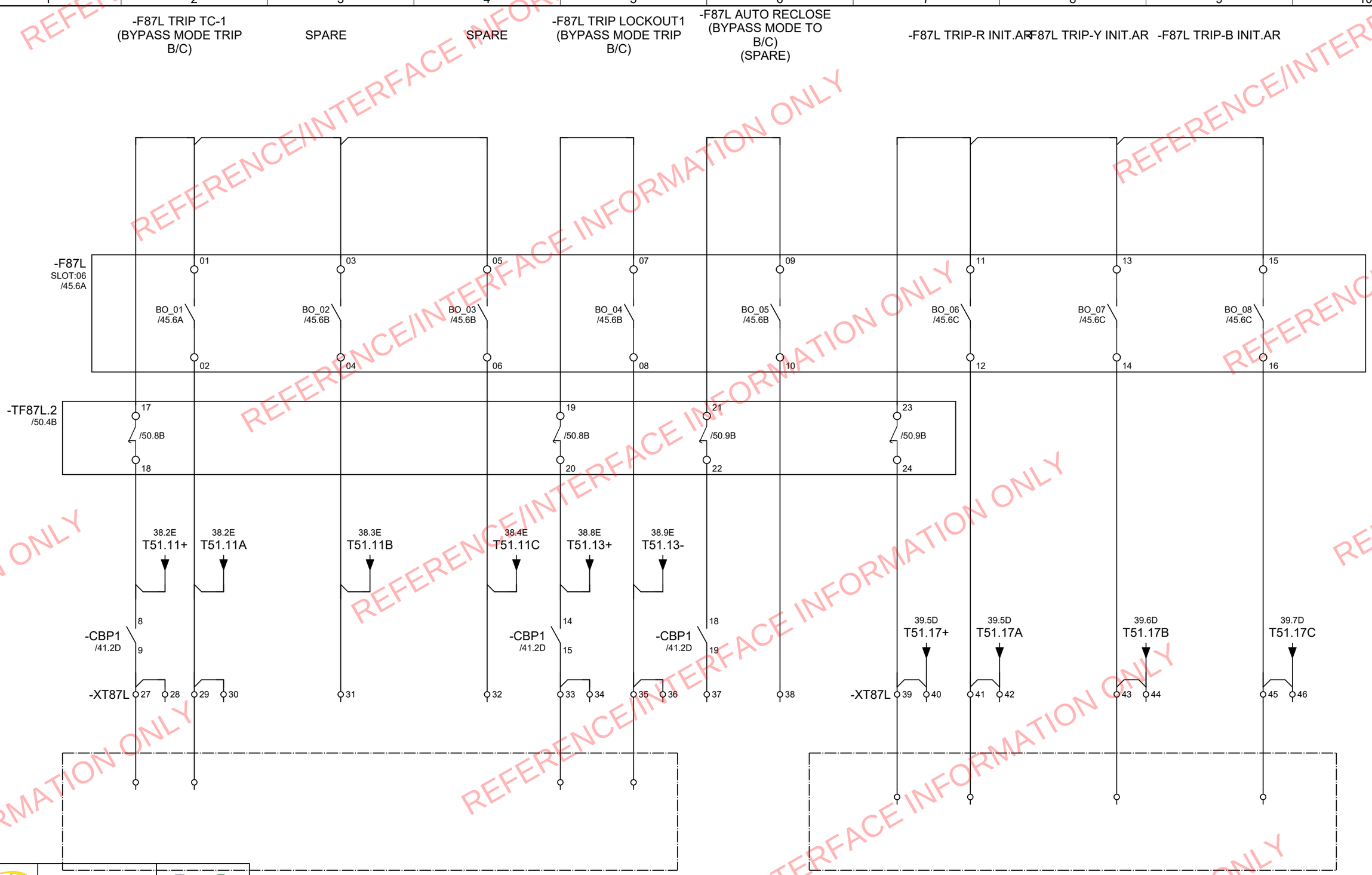
PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 28
	-F87L BINARY OUTPUT CIRCUIT 2	SIZE A3	NEXT 29
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

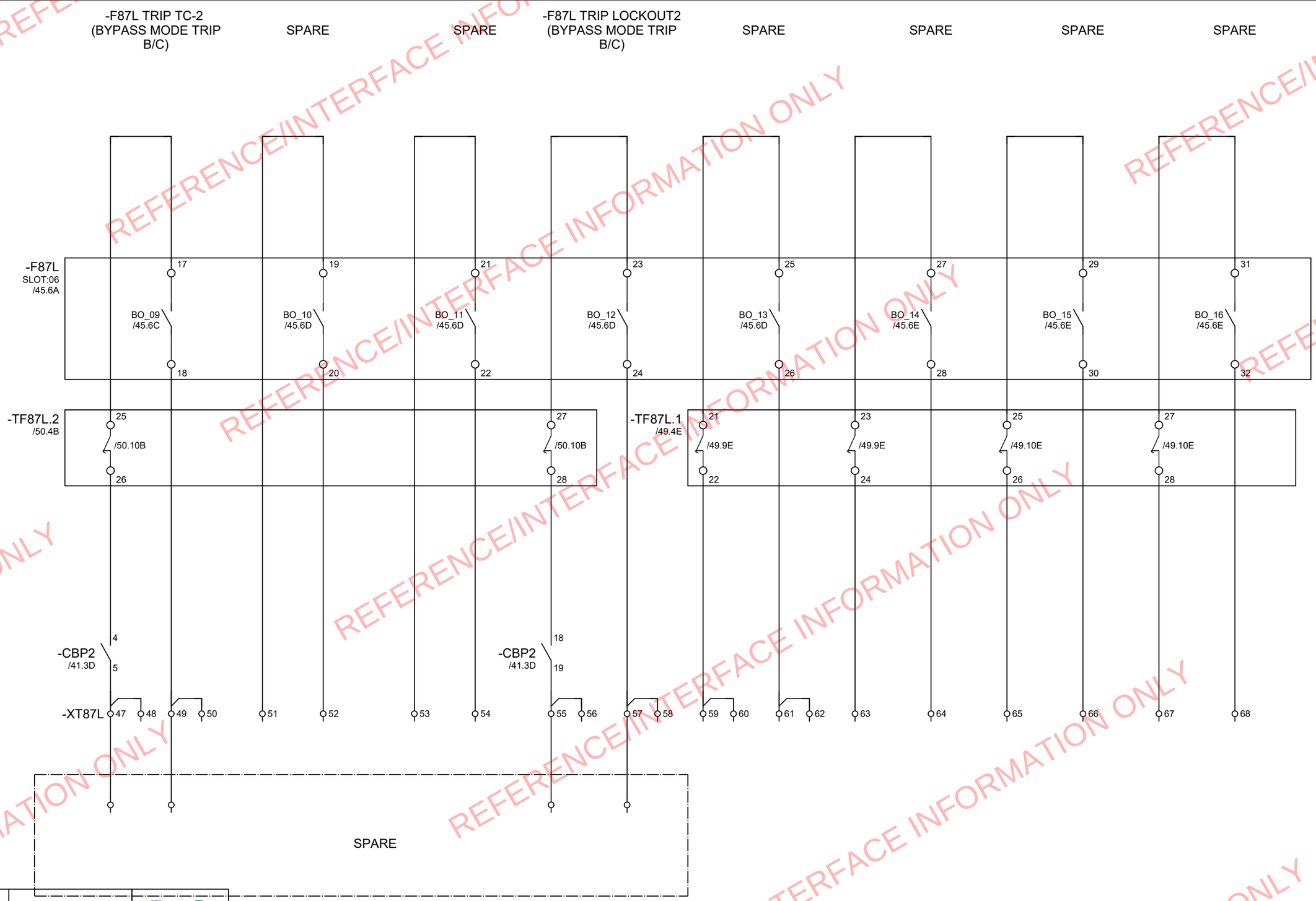
NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F87L BINARY OUTPUT CIRCUIT 3

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	29
SIZE	A3	NEXT	30
REV.	0	TOTAL	57



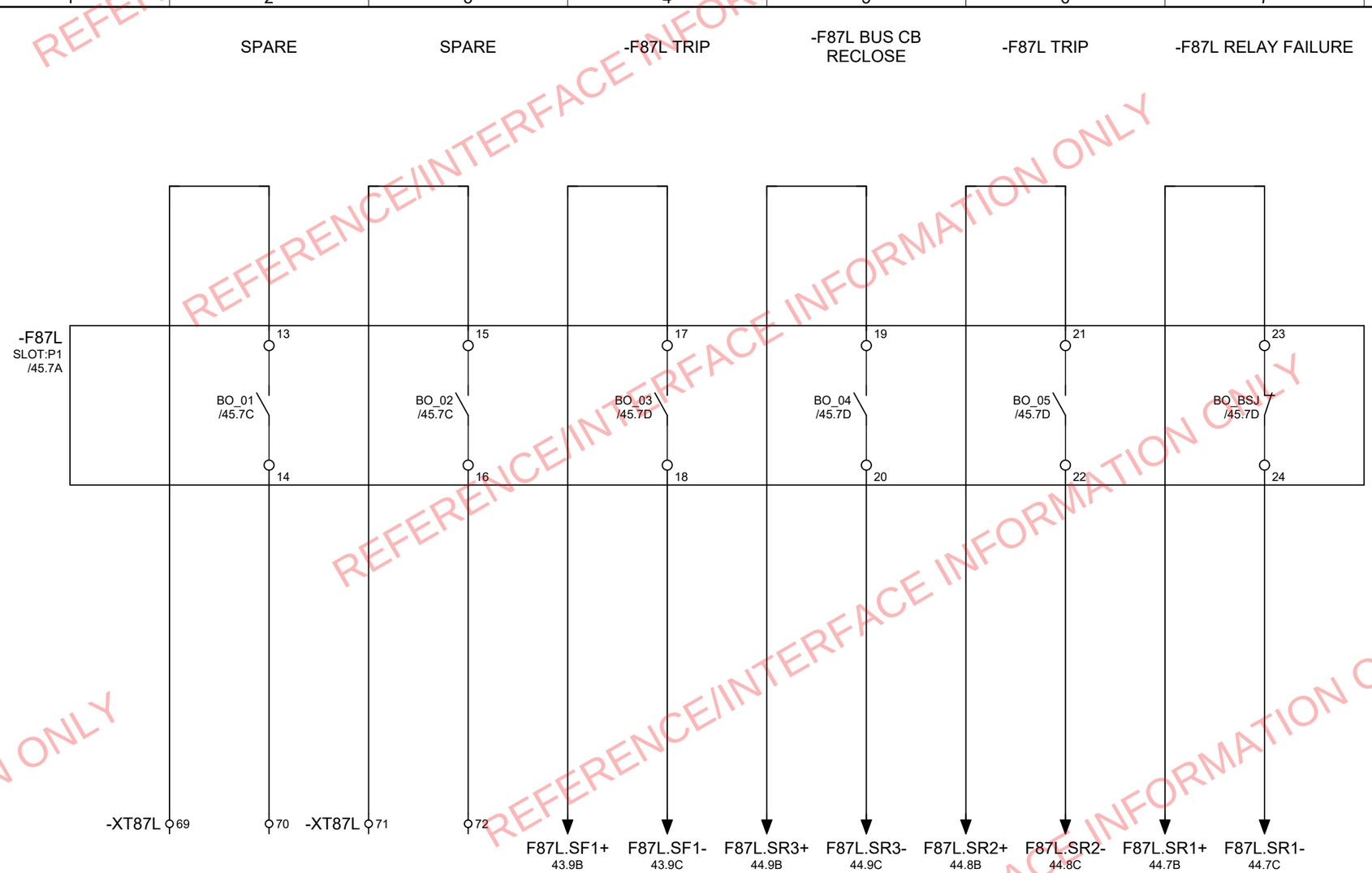
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 30
	-F87L BINARY OUTPUT CIRCUIT 4	SIZE A3	NEXT 31
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



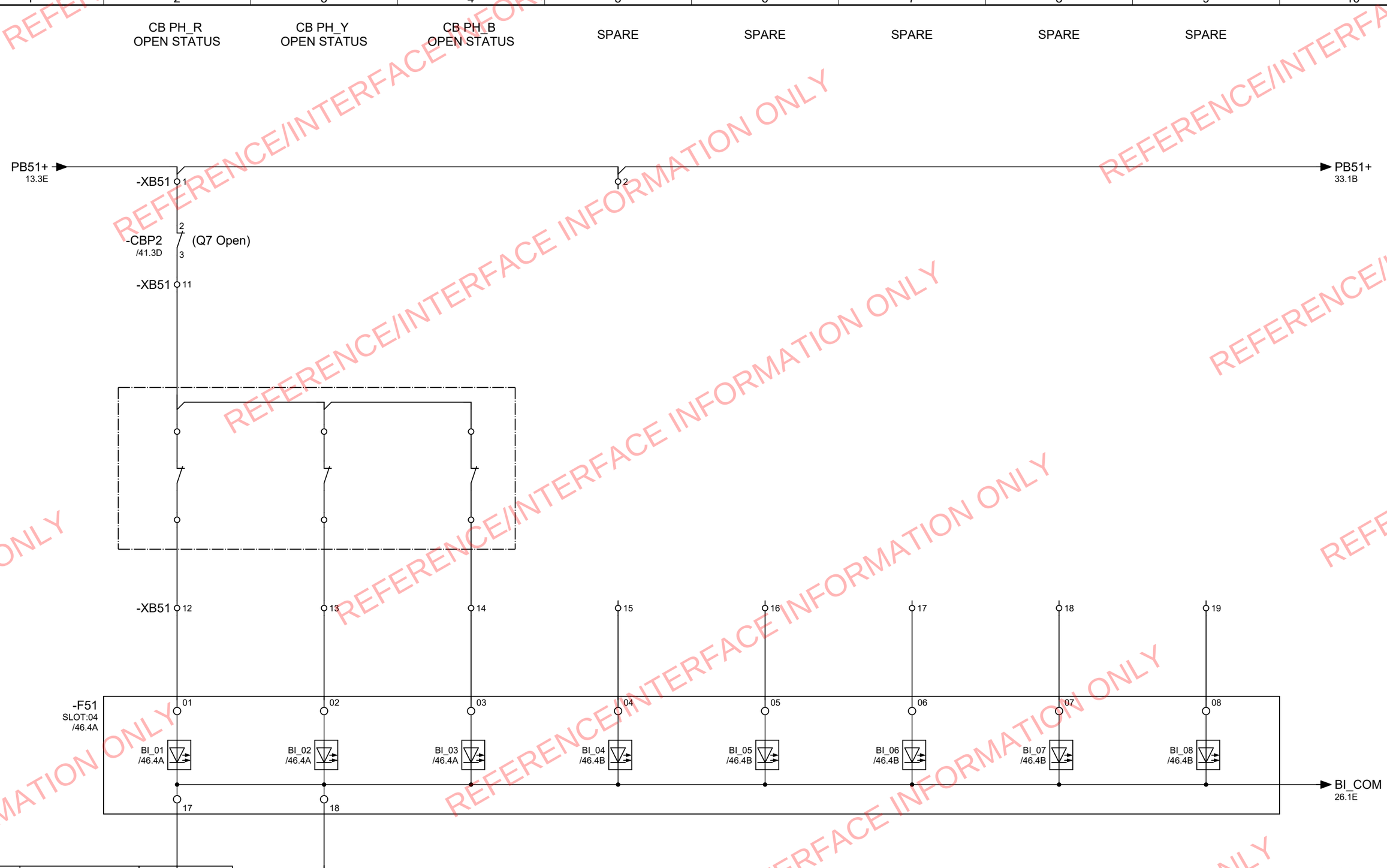
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 31
	-F87L BINARY OUTPUT CIRCUIT 5	SIZE A3	NEXT 32
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



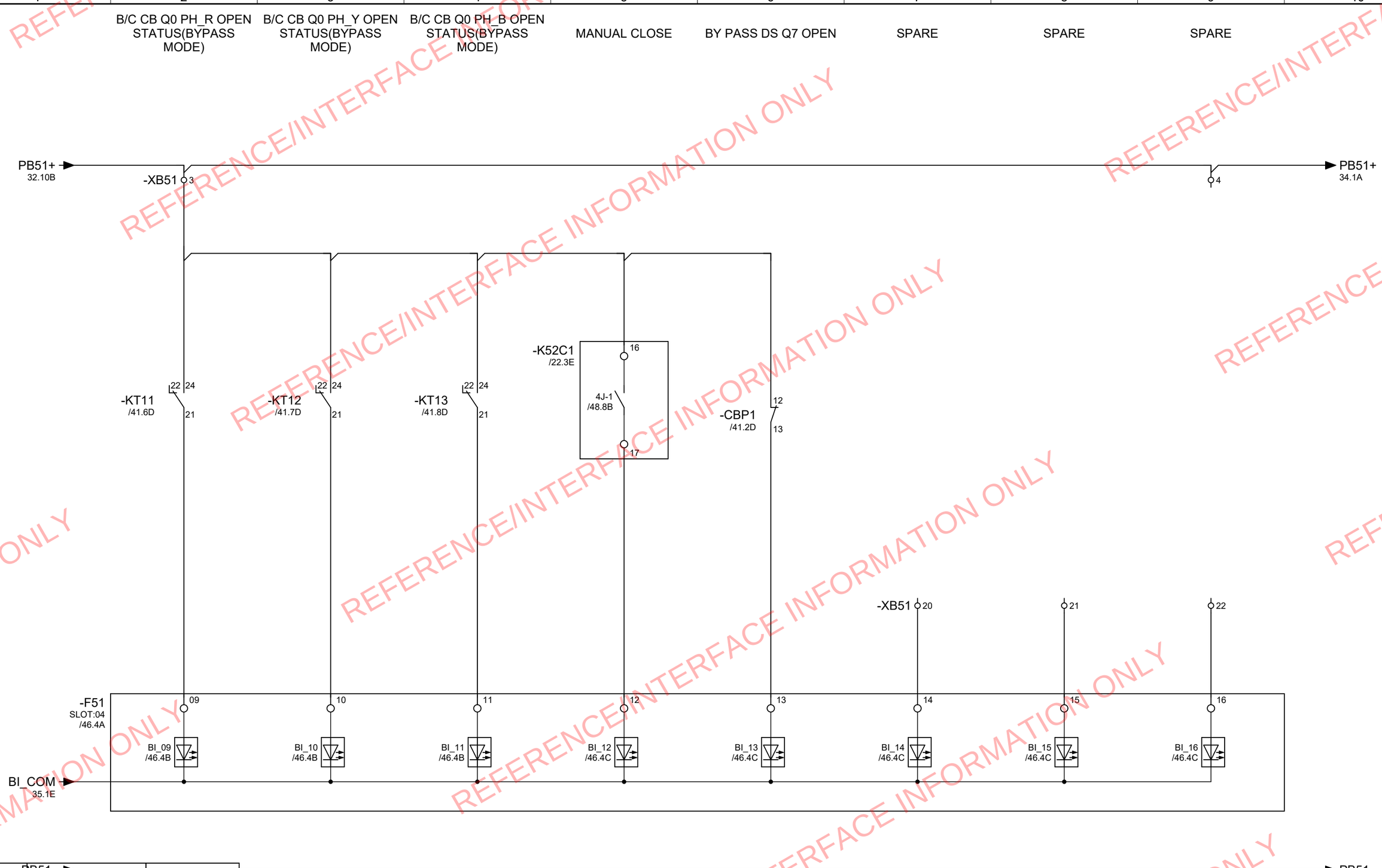
	Issued - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 32
	-F51 BINARY INPUT CIRCUIT 1	SIZE A3	NEXT 33
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	2100F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F51 BINARY INPUT CIRCUIT 2

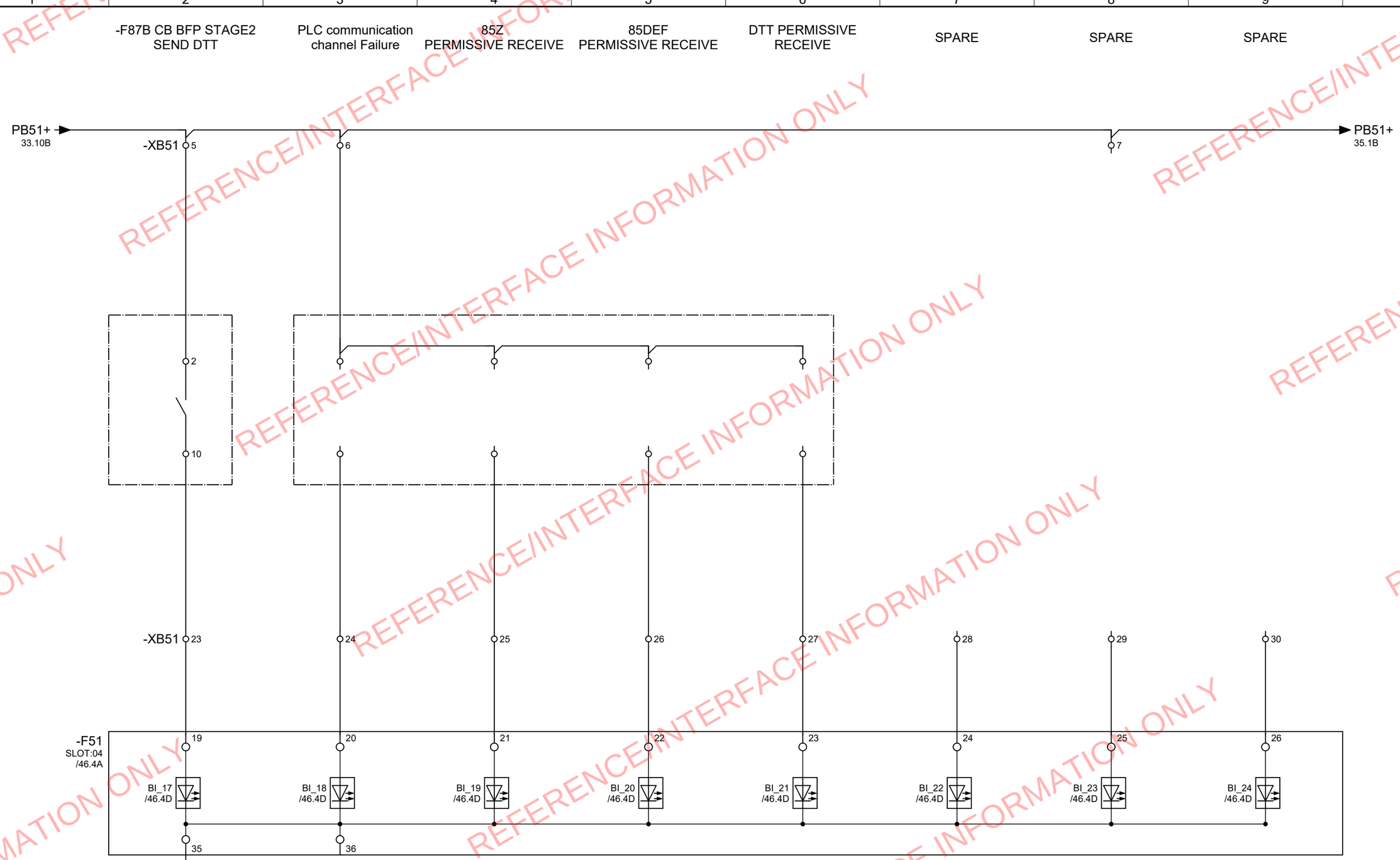
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	33
SIZE	A3	NEXT	34
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	33.10F - Approved as corrected
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F51 BINARY INPUT CIRCUIT 3

DWG. NO. HQW46-4-TND-EQP-DWG-1331

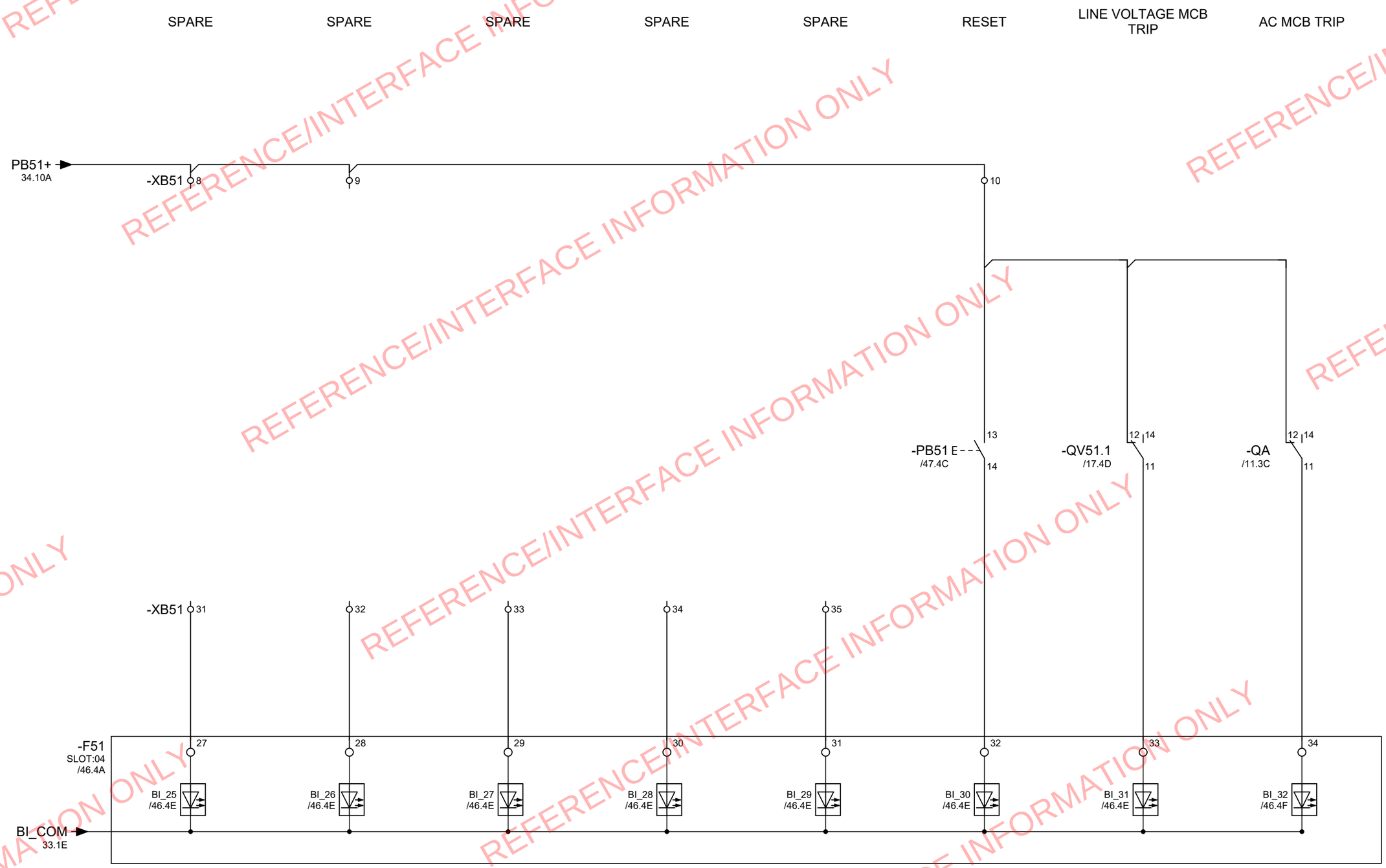
=D06+R1

SCALE	N/A	SHEET	34
SIZE	A3	NEXT	35
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.



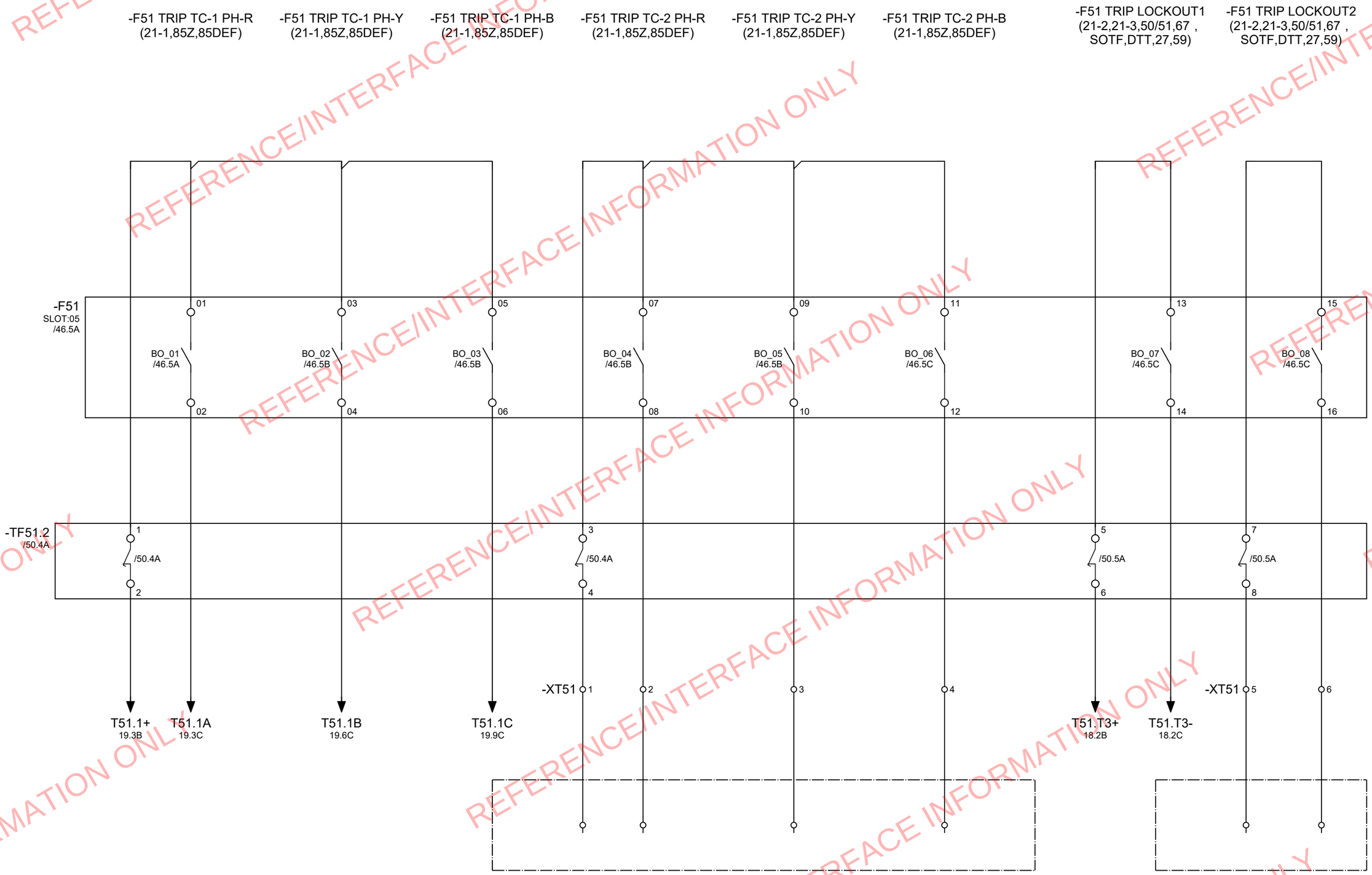
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A -F51 BINARY INPUT CIRCUIT 4	SCALE N/A	SHEET 35
		SIZE A3	NEXT 36
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

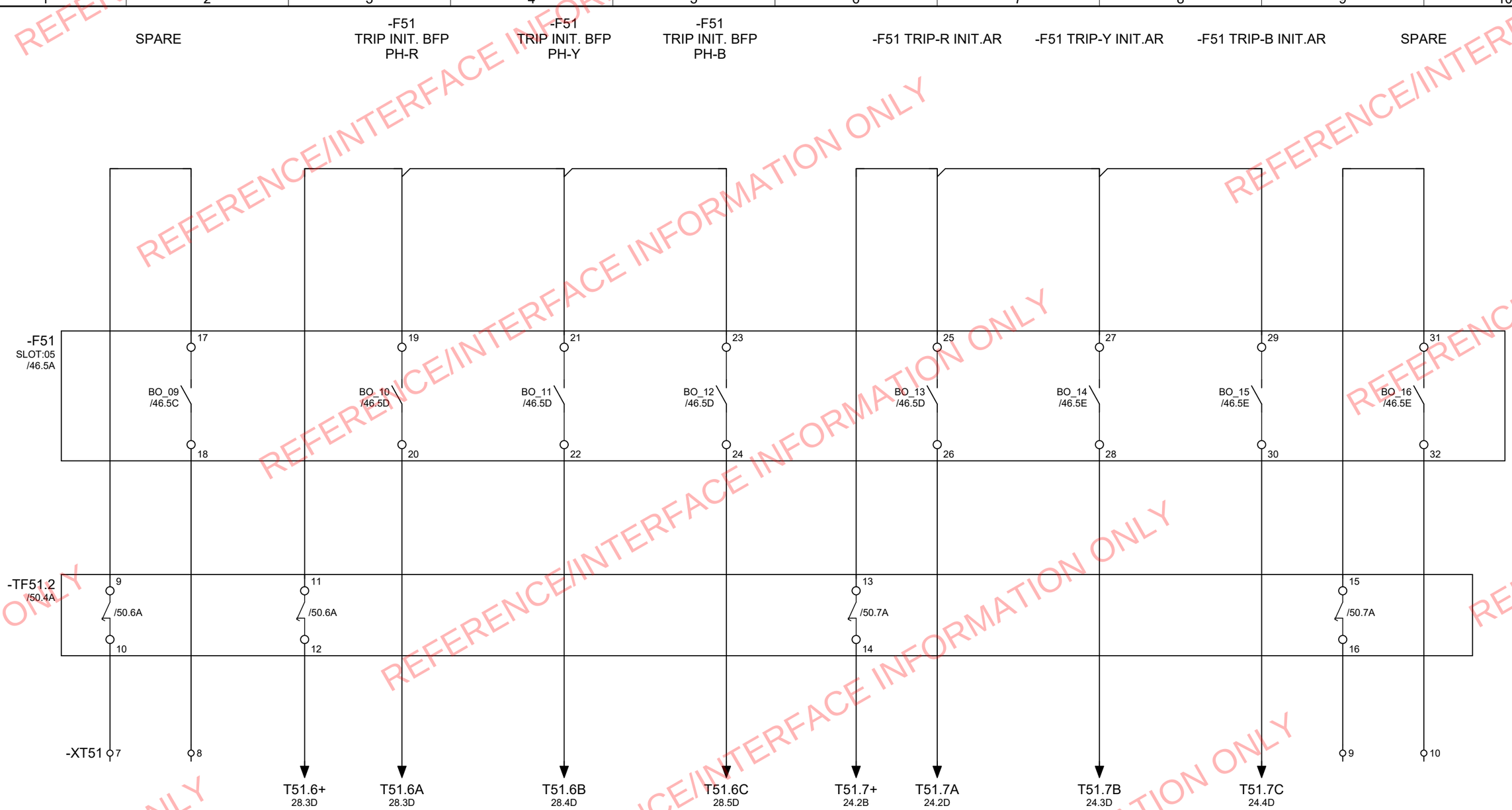
DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F51 BINARY OUTPUT CIRCUIT 1

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	36
SIZE	A3	NEXT	37
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

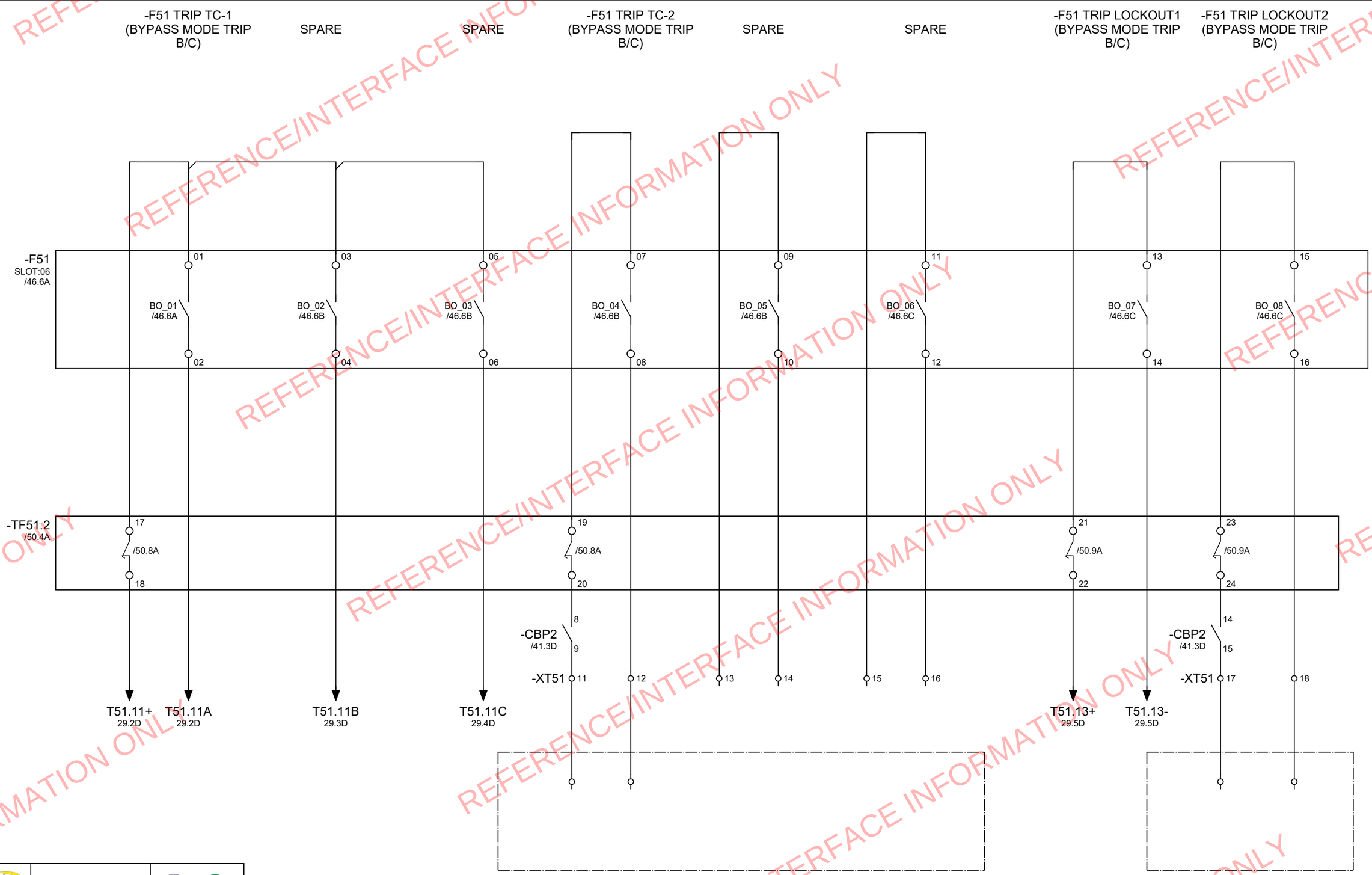
DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
-F51 BINARY OUTPUT CIRCUIT 2

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	37
SIZE	A3	NEXT	38
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
-F51 BINARY OUTPUT CIRCUIT 3

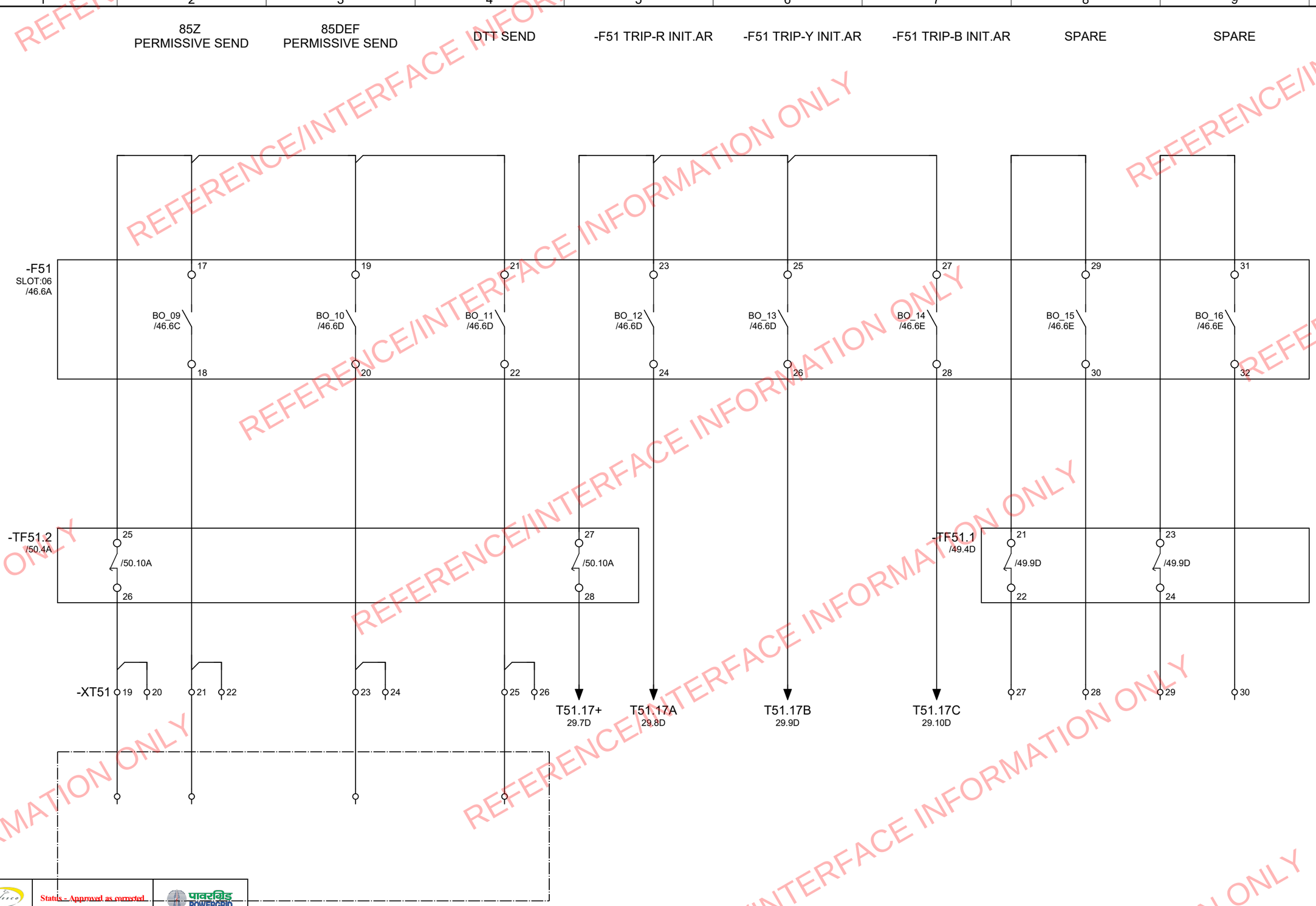
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	38
SIZE	A3	NEXT	39
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

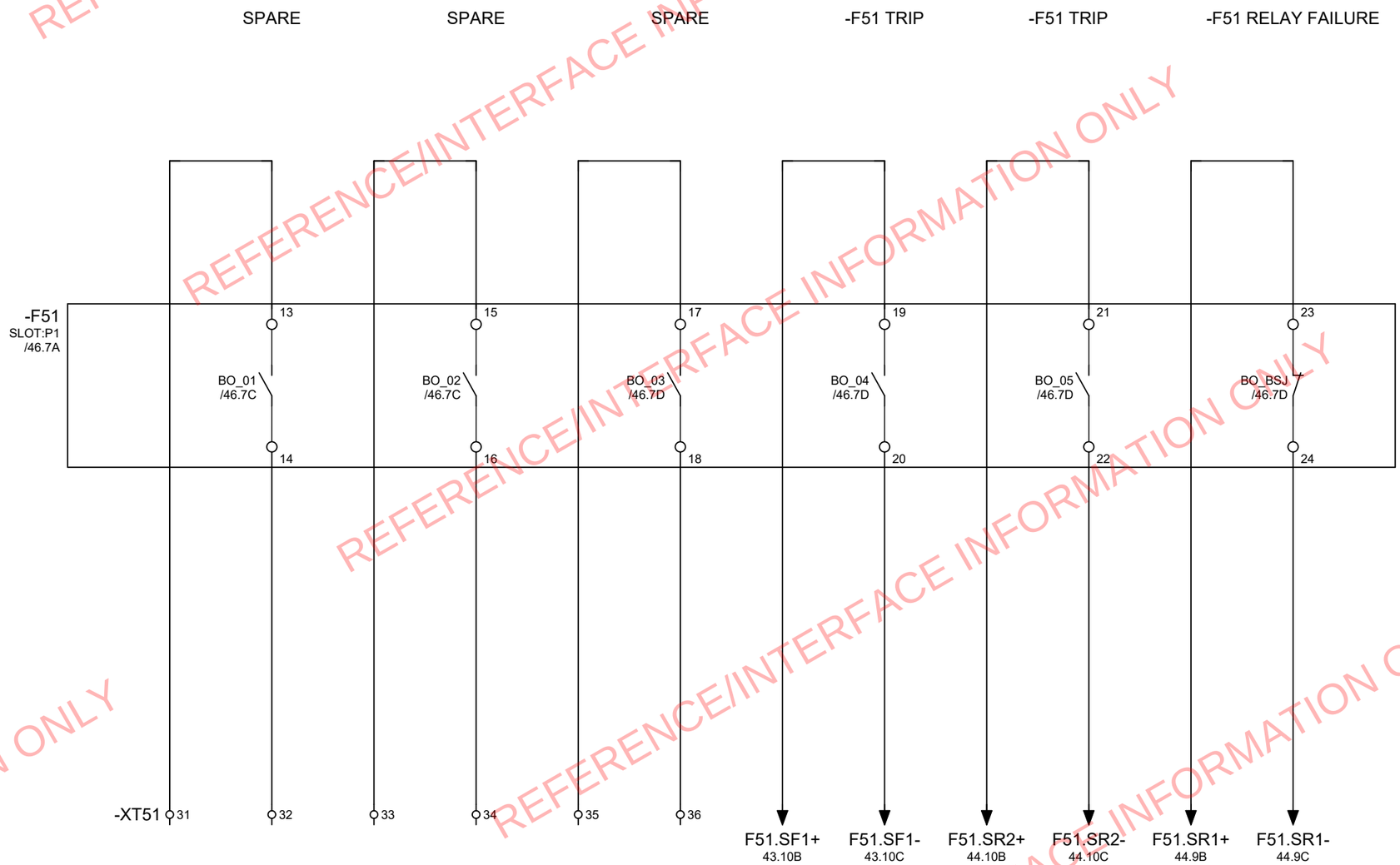


	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 39
	-F51 BINARY OUTPUT CIRCUIT 4	SIZE A3	NEXT 40
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F51 BINARY OUTPUT CIRCUIT 5

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	40
SIZE	A3	NEXT	41
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

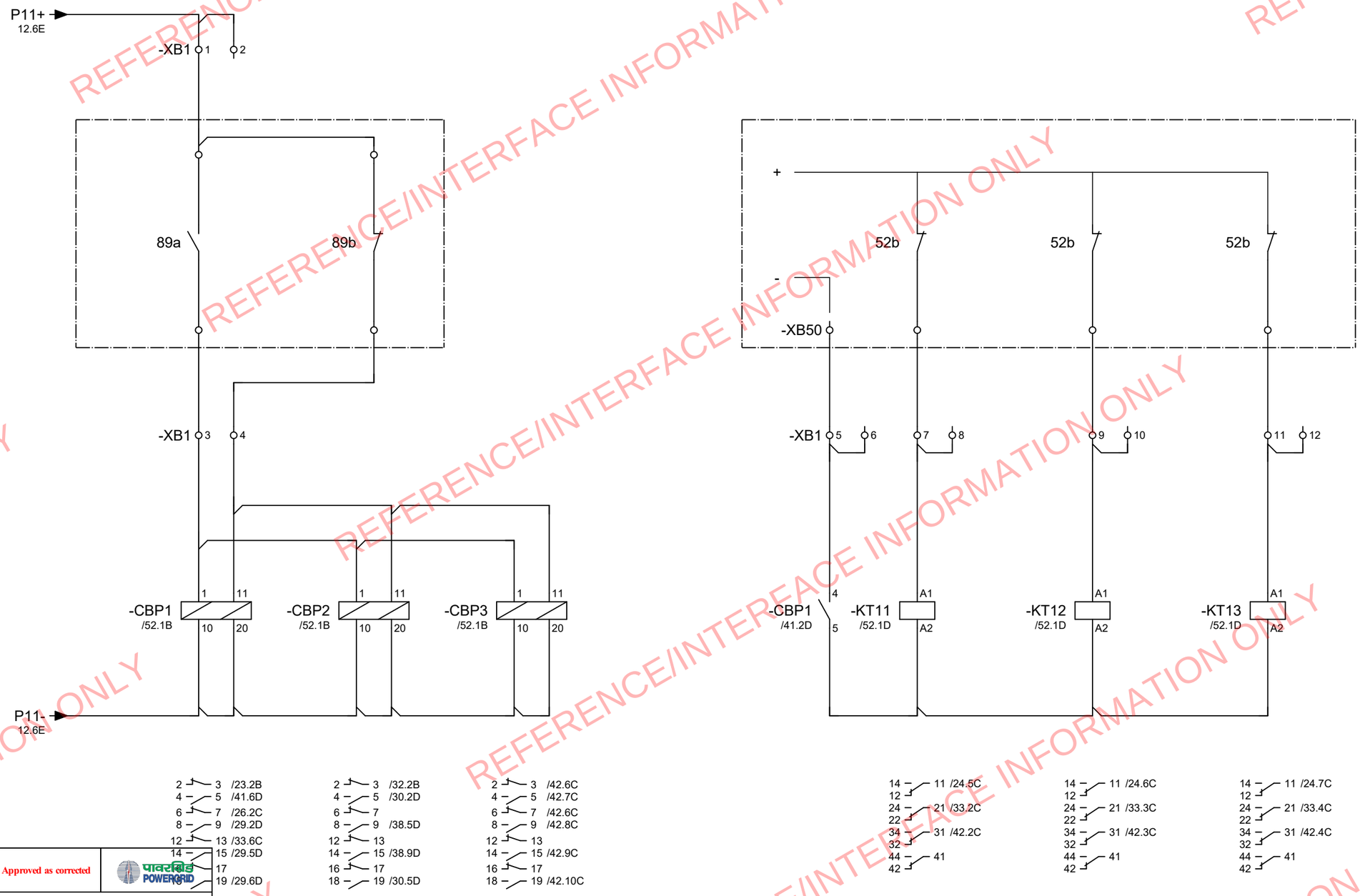
BYPASS DS Q7 CLOSE STATUS

BYPASS DS Q7 OPEN STATUS

BUS COUPLER CB PH-R OPEN STATUS

BUS COUPLER CB PH-Y OPEN STATUS

BUS COUPLER CB PH-B OPEN STATUS

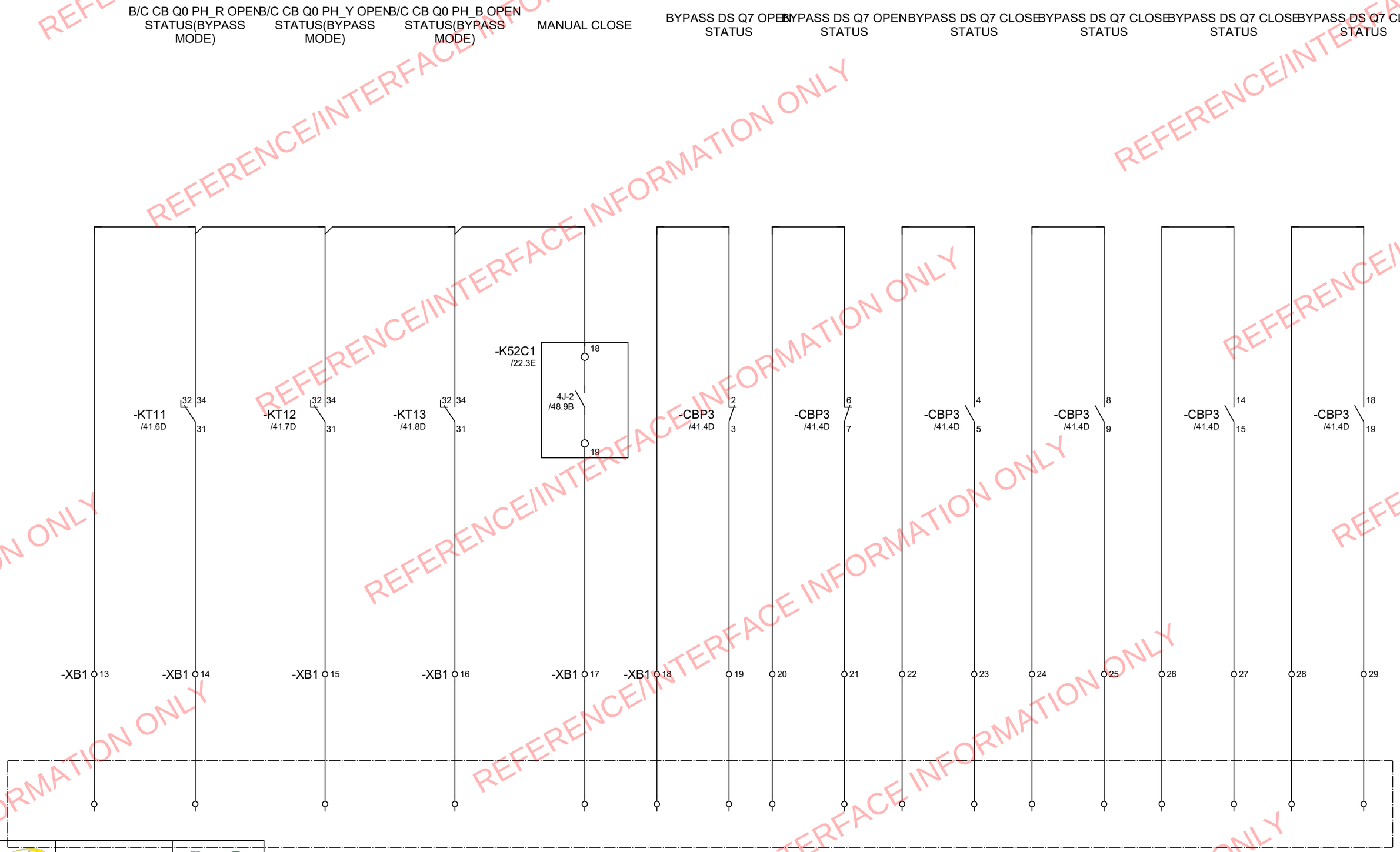


rapisco	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A BYPASS MODE DS&CB STATUS CIRCUIT 1	SCALE N/A	SHEET 41
		SIZE A3	NEXT 42
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

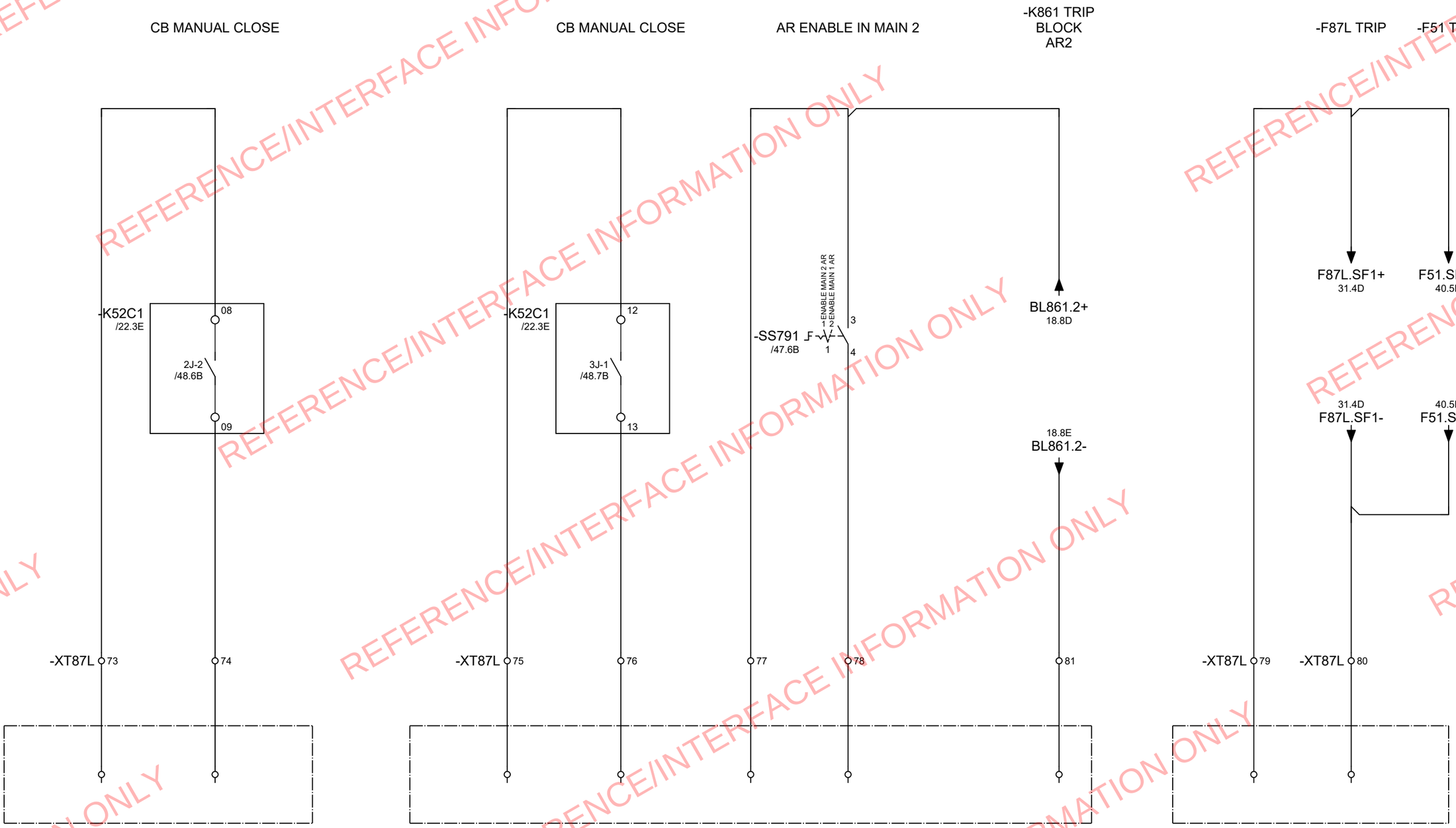
PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A BYPASS MODE DS&CB STATUS CIRCUIT 2

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	42
SIZE	A3	NEXT	43
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

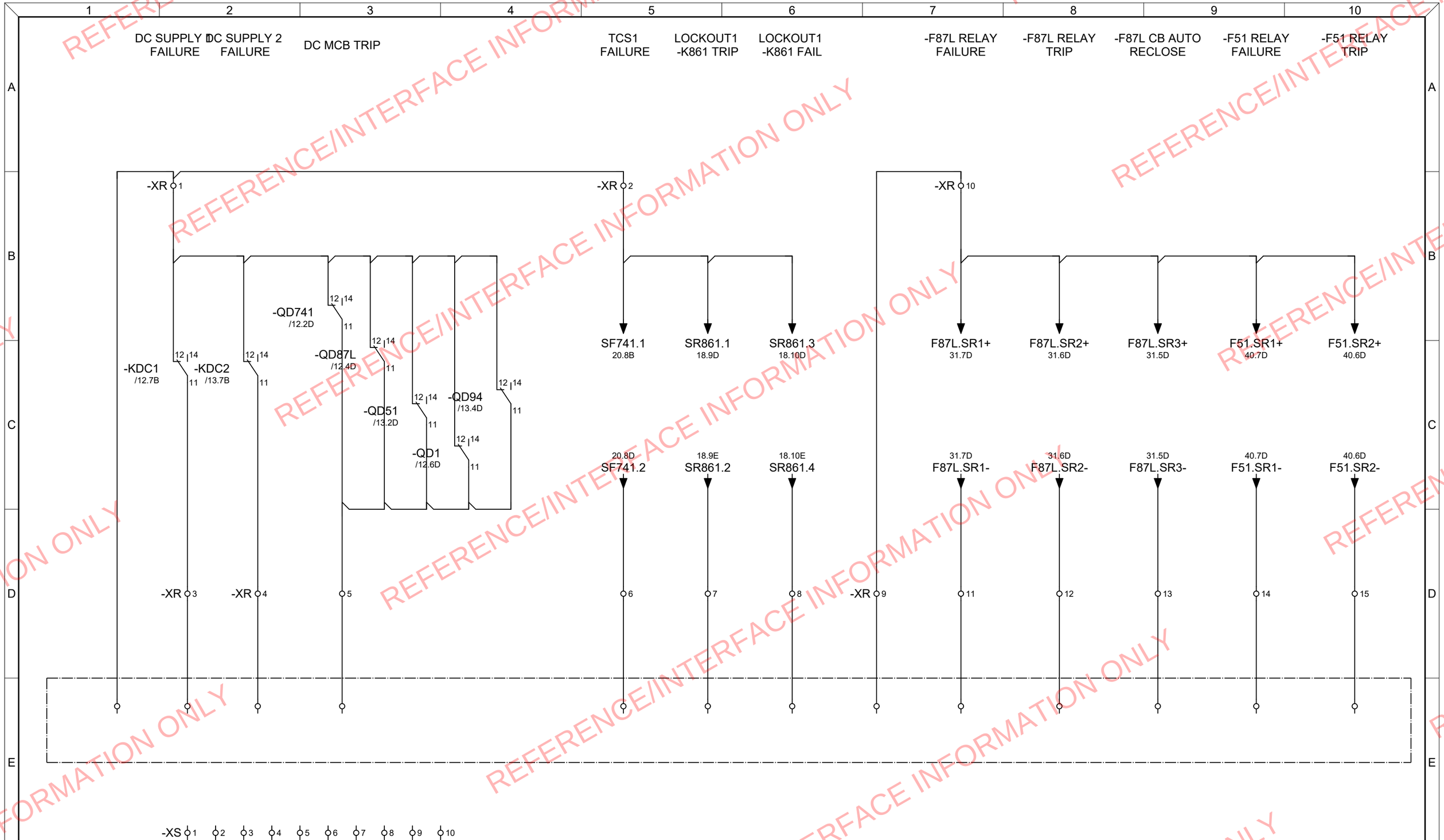
DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A SIGNAL OUTPUT CIRCUIT

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1			
SCALE	N/A	SHEET	43
SIZE	A3	NEXT	44
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



rVisco	Draft / Approved / Issued for Construction	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sambalanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

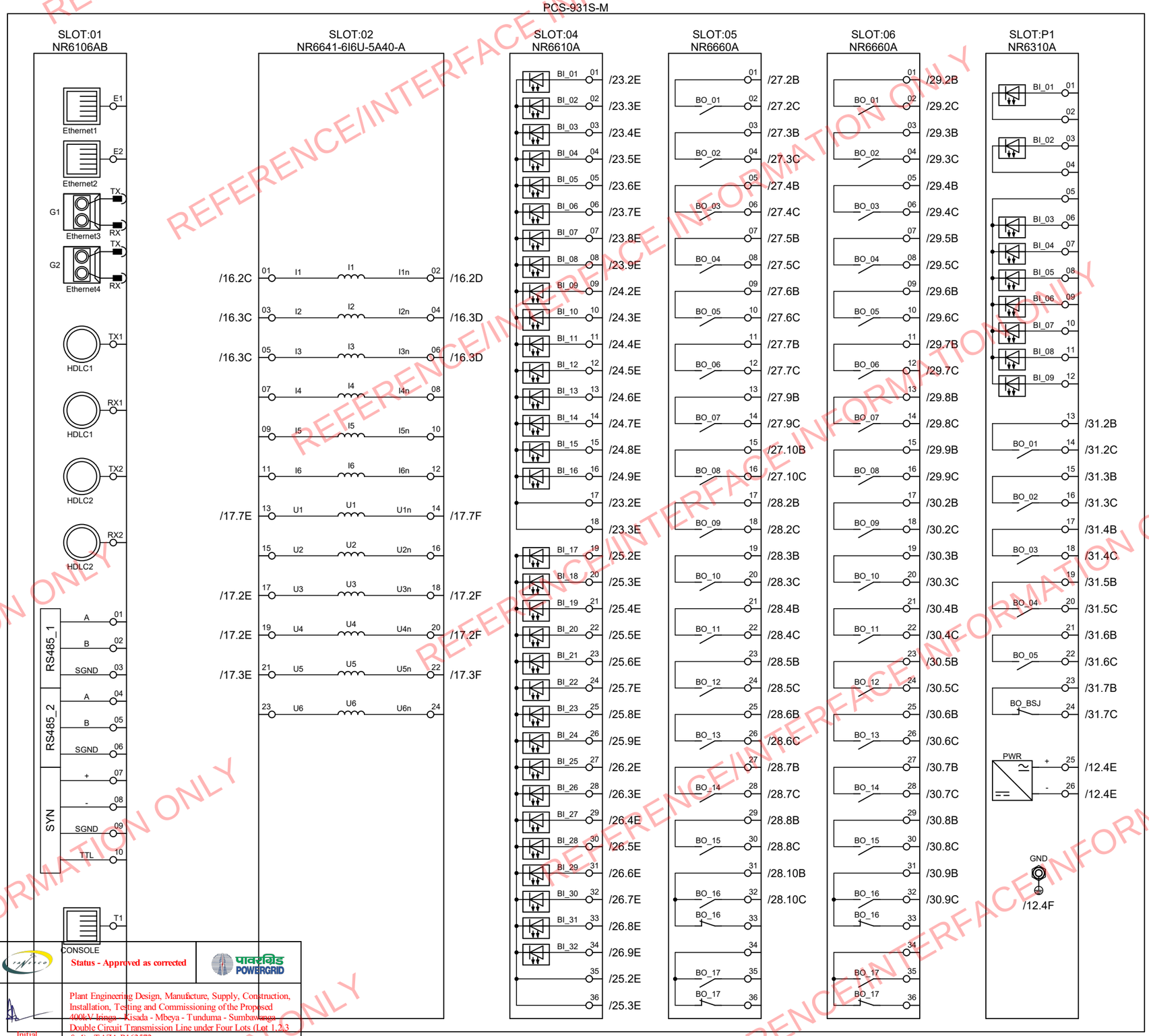
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A	SCALE N/A	SHEET 44
	SIGNAL OUTPUT CIRCUIT	SIZE A3	NEXT 45
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

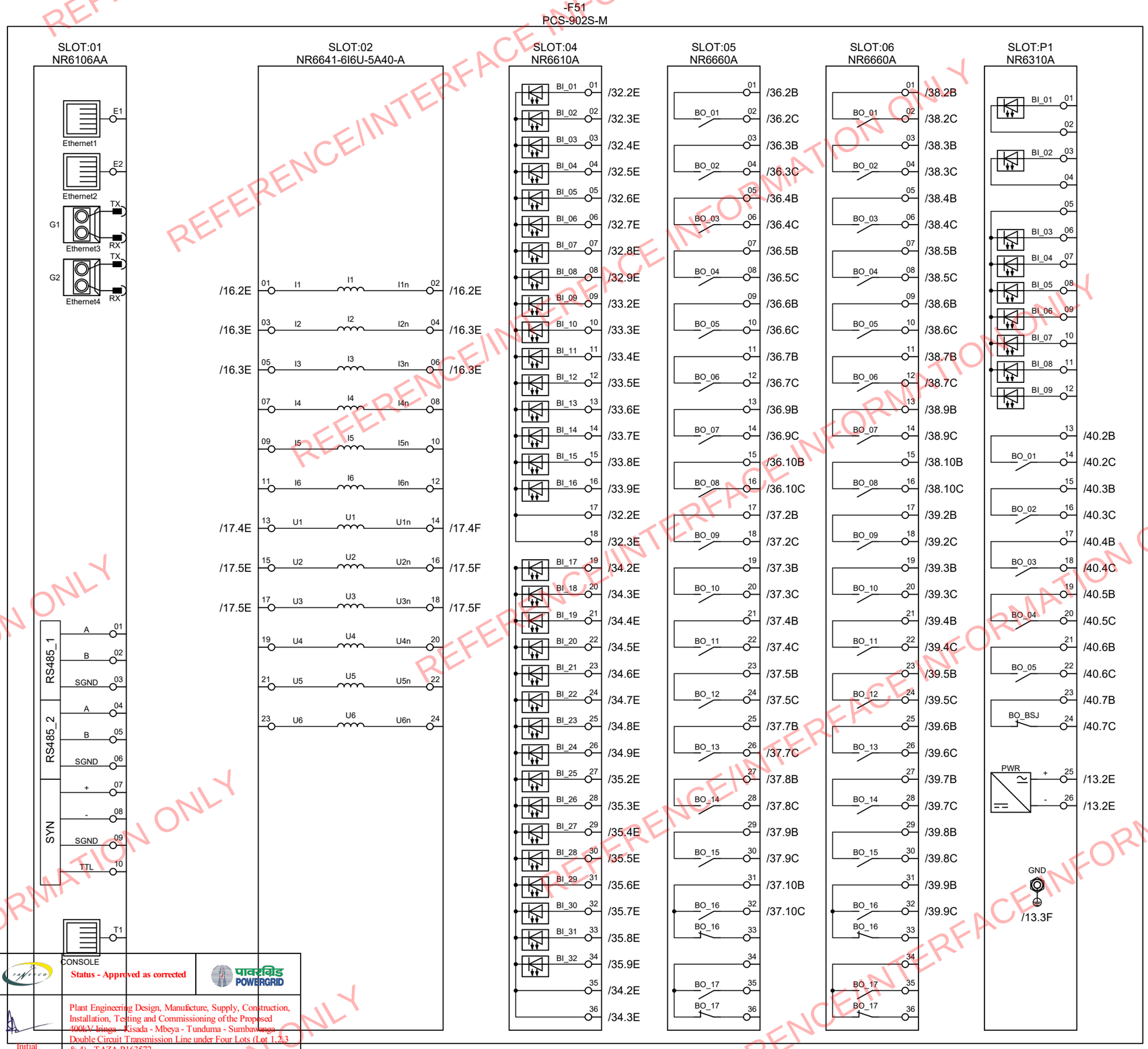
DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A
-F87L PCS-931S-M REAR VIEW

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	45
SIZE	A3	NEXT	46
REV.	0	TOTAL	57

REFERENCE/INTERFACE INFORMATION ONLY



Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A -F51 PCS-902S-M REAR VIEW

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	46
SIZE	A3	NEXT	47
REV.	0	TOTAL	57

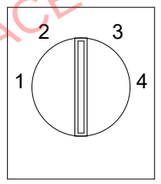
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

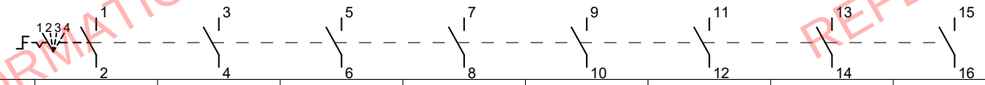
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

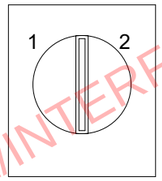
TYPE	DESCRIPTION	MATERIAL DIAGRAM
LW21-16/4.4115.4 M1(W) ELX	SELECTION SWITCH	
-SS79	AR MODE SWITCH	
LW21-16/9.0616.2 M1(W) ELX	SELECTION SWITCH	
-SS791	AR MAIN 1/MAIN 2 SWITCH	
ELXAL5-10-20/203-G+NONE ELX	PUSH BUTTON	
-PB51	RESET -F51	
-PB87	RESET -F87L	
TH-E-11/LED ODES	TEMP.& HUMIDITY CONTROLLER	
-C1		



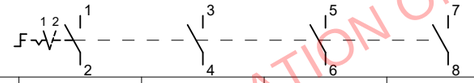
1	1PH AR				X	X			
2	3PH AR		X					X	
3	1/3PH AR			X			X		
4	OFF	X							X



		/26.7C	/26.5C	/26.6C	/26.4C

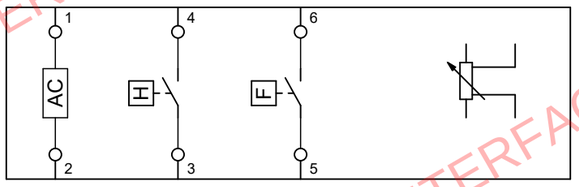


1	ENABLE MAIN 2 AR		X		X
2	ENABLE MAIN 1 AR	X		X	



		/26.3C	/43.6B		

-PB51	RESET -F51	/35.7C		
-PB87	RESET -F87L	/26.8C		

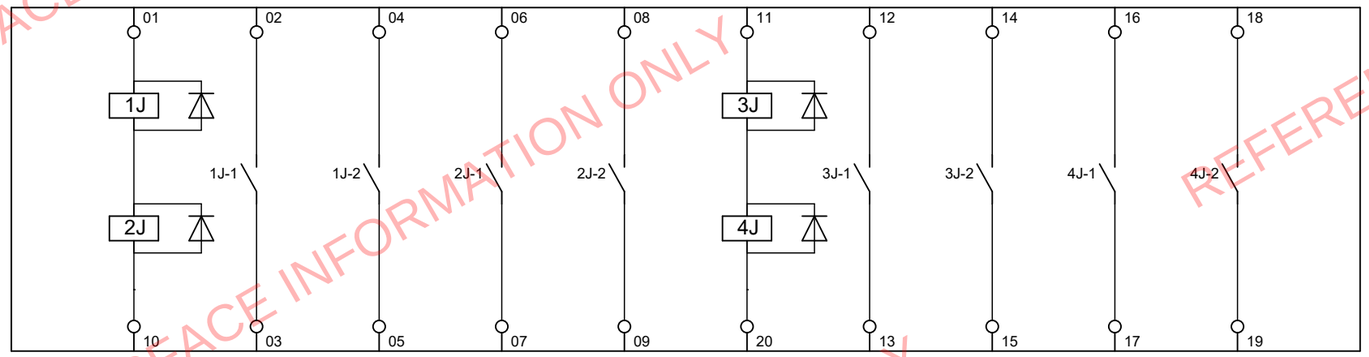
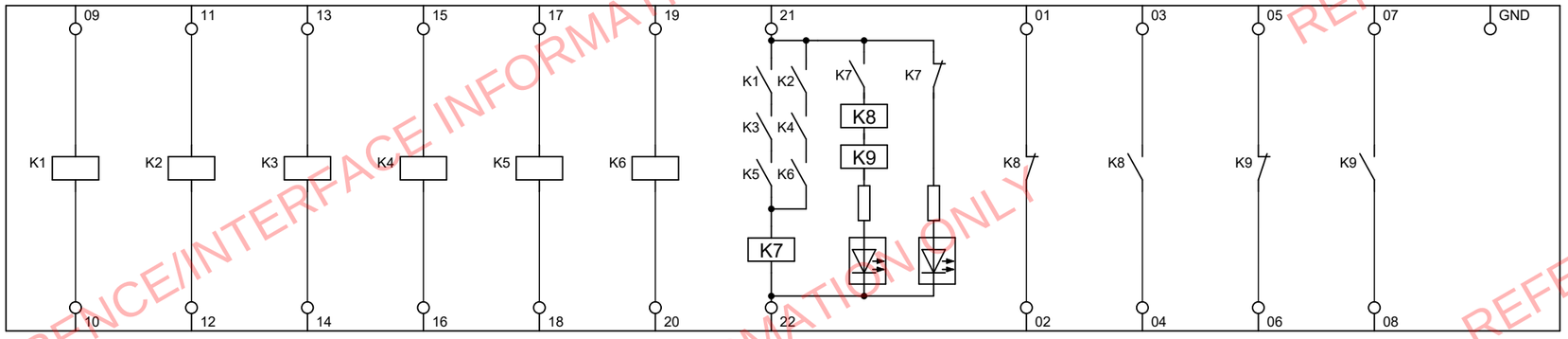
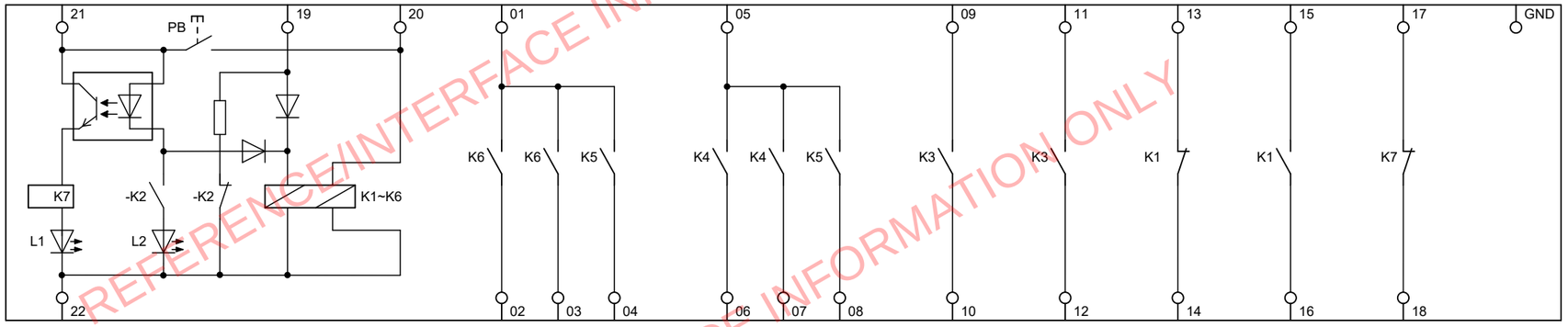


-C1		/11.4D		

Status - Approved as corrected		पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST	SCALE N/A	SHEET 47
		SIZE A3	NEXT 48
	DWG. NO. HQW46-4-TND-EQP-DWG-1331	REV. 0	TOTAL 57

TYPE	DESCRIPTION	MATERIAL DIAGRAM										
DSP2-4A-DC220V NR	RELAY											
-K52C1		/22.3E	/22.7B	/22.7B	/22.8B	/43.2B	/22.3E	/43.5B	/24.8C	/33.5C	/42.5C	
-K52T1		/22.2E	/22.9B	/22.9B	/22.10B		/22.2E					
MD1501-552-AAA NR	TCS RELAY											
-K741	CB TCS RELAY 1	/20.3B	/20.3B	/20.4B	/20.5B	/20.6B	/20.6B	/20.7B	/20.8B	/20.9B	/20.10B	/20.10E
MD1501-571-AAA NR	LOCKOUT RELAY											
-K861	LOCKOUT RELAY 1	/18.2E	/18.5D	/18.6D	/18.8D	/18.8D	/18.9D	/18.9D	/18.10D	/18.4F		

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST

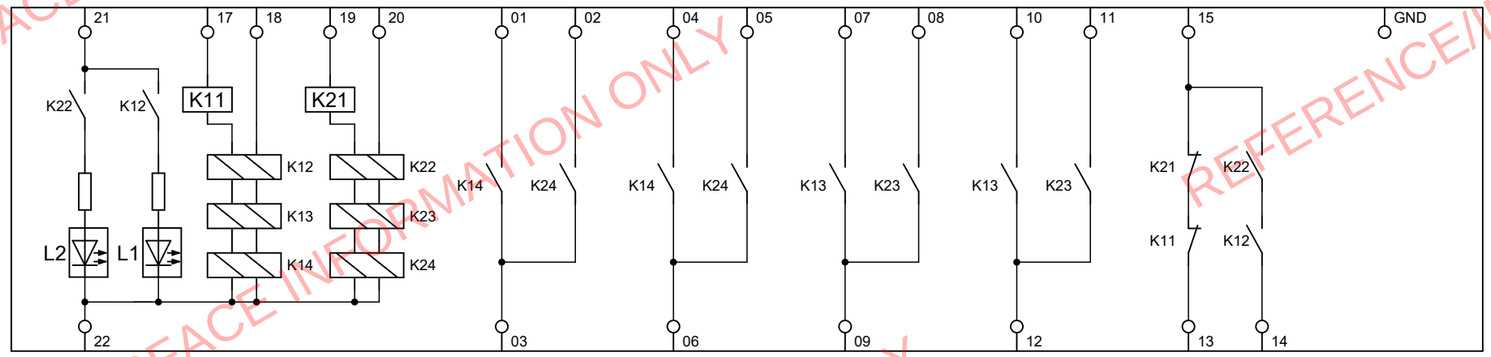
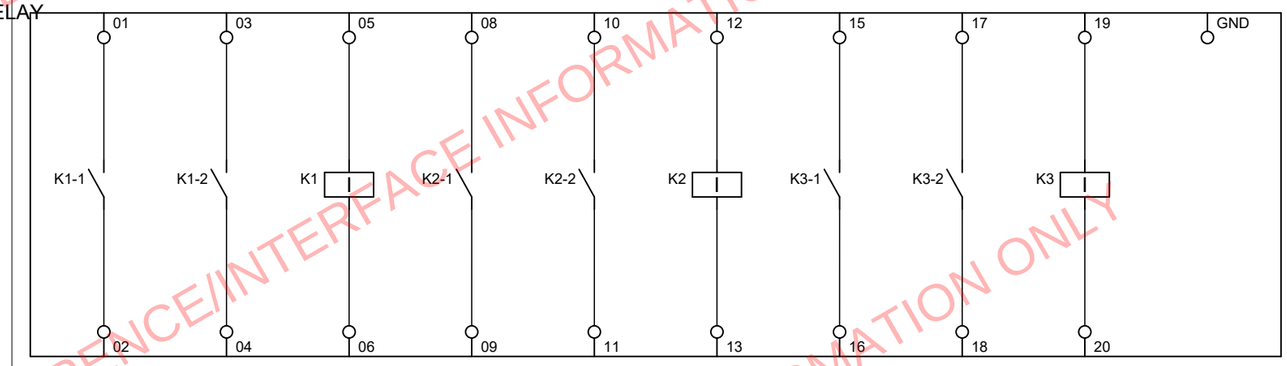
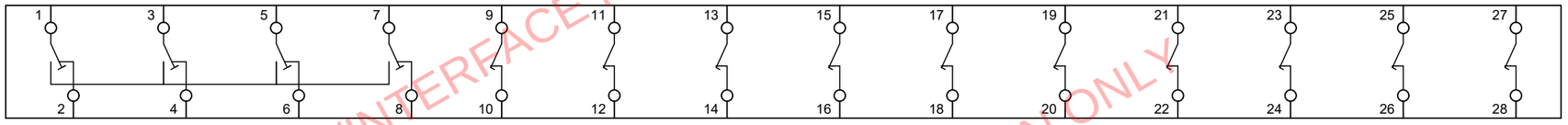
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	48
SIZE	A3	NEXT	49
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM												
MD1501-561-AAA NR	VOLTAGE SWITCHING RELAY													
-K941	BB VOLTAGE SELECTION RELAY 1	/14.2E			/14.5E	/14.6E	/14.7E	/14.8E	/14.9D	/14.10E				
-K942	BB VOLTAGE SELECTION RELAY 2	/15.2E			/15.5E	/15.6E	/15.7E	/15.8E	/15.9D	/15.10E				
MD1501-556-AAA NR	CURRENT OPERATED AUXILIARY RELAY													
-K961	CURRENT OPERATED RELAY	/19.4B		/19.4C	/19.7B		/19.7C	/19.10B		/19.10C	/19.9E			
MD1701S-1I10U NR	TEST BLOCK													
-TF51.1	TEST BLOCK 1 FOR -F51	/16.2D	/16.3D	/16.3D	/16.4D	/17.4D	/17.5D	/17.5D	/17.6D		/39.8D	/39.9D		
-TF87L.1	TEST BLOCK 1 FOR -F87L	/16.2C	/16.3C	/16.3C	/16.4C	/17.2D	/17.2D	/17.3D	/17.3D	/17.7D	/17.8D	/30.6C	/30.7C	/30.8C	/30.9C

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST

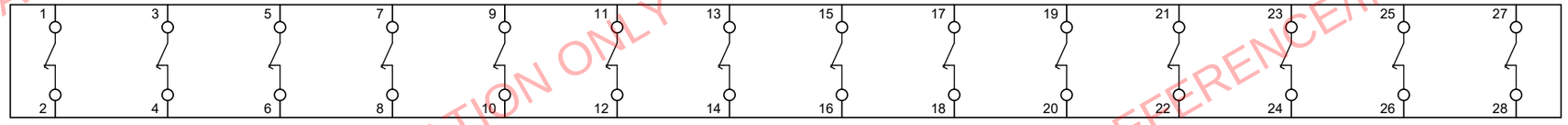
DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	49
SIZE	A3	NEXT	50
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM												
MD1701S-14U NR	TEST BLOCK													
-TF51.2	TEST BLOCK 2 FOR -F51	/36.2D	/36.5D	/36.8D	/36.9D	/37.1D	/37.3D	/37.6D	/37.9D	/38.2D	/38.5D	/38.8D	/38.9D	/39.2D	/39.5D
-TF87L.2	TEST BLOCK 2 FOR -F87L	/27.2D	/27.5D	/27.8D	/27.9D	/28.2C	/28.3C	/28.6C	/28.9C	/29.2C	/29.5C	/29.6C	/29.7C	/30.2C	/30.5C

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST

=D06+R1

SCALE	N/A	SHEET	50
SIZE	A3	NEXT	51
DWG. NO. HQW46-4-TND-EQP-DWG-1331		REV. 0	TOTAL 57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

NO.	SYMBOL	DESCRIPTION	TYPE	QTY.	MANUFACTURER	REMARK
29	-H1	LIGHTING LAMP	LED-8W	1	PHILIPS	
30	-LS1	LIMITED SWITCH	LX-19K	1	PGC	

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A BILL OF MATERIALS

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	51
SIZE	A3	NEXT	52
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM																
ST4L2A-DC220V NR	RELAY																	
-CBP1		/41.2D	/23.2B	/41.6D	/26.2C	/29.2D	/33.6C	/29.5D		/29.6D								
-CBP2		/41.3D	/32.2B	/30.2D		/38.5D		/38.9D		/30.5D								
-CBP3		/41.4D	/42.6C	/42.7C	/42.6C	/42.8C		/42.9C		/42.10C								
LED-8W PHILIPS	LIGHTING LAMP																	
-H1		/11.3E																
DRG570220L WEI FS 4CO	RELAY RELAY SOCKET																	
-KDC1		/12.7B	/44.2C															
-KDC2		/13.7B	/44.2C															
-KT11		/41.6D	/24.5C	/33.2C	/42.2C													
-KT12		/41.7D	/24.6C	/33.3C	/42.3C													
-KT13		/41.8D	/24.7C	/33.4C	/42.4C													
LX-19K PGC	LIMITED SWITCH																	
-LS1		/11.3D																
KDY-CZ-03 KEJIA	SOCKET																	
-PS1		/11.6E																

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

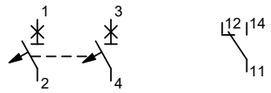
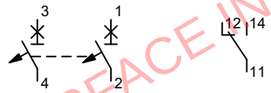
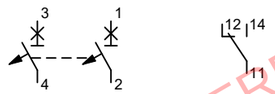
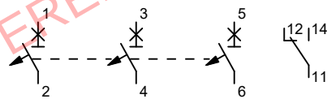
PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	52
SIZE	A3	NEXT	53
REV.	0	TOTAL	57

TYPE	DESCRIPTION	MATERIAL DIAGRAM																
NDB2LE-63C 16/2 Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)																	
-QA	MCB FOR AC POWER	/11.3C	/35.9C															
NDB2Z-63C 4A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)																	
-QD1	AUX. RELAY DC SUPPLY	/12.6D	/44.4C															
-QD51	-F51 DC SUPPLY	/13.2D	/44.3C															
-QD87L	-F87L DC SUPPLY	/12.4D	/44.3C															
-QD94	-K941 RELAY DC SUPPLY	/13.4D	/44.4C															
NDB2Z-63C 16A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)																	
-QD741	TRIP&TCS 1 DC SUPPLY	/12.2D	/44.3B															
NDB2-63C 1A/3P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)																	
-QV51.1	-F51 LINE VOLTAGE MCB	/17.4D	/35.8C															
-QV87L.1	-F87L LINE VOLTAGE MCB	/17.2D	/26.9C															
NDB2-63C 1A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)																	
-QV87L.2	-F87L BB VOLTAGE MCB	/17.7D	/26.9C															

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	53
SIZE	A3	NEXT	54
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM
JRD2-150W ODES	HEATER	
-R1		/11.5E

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A ACCESSORIES MATERIAL LIST

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	54
SIZE	A3	NEXT	55
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-XU3

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-K941:01	/14.5C
	2		/14.5C
	3	-K941:02	/14.5C
	4		/14.5C
	5	-K941:04	/14.6C
	6		/14.6C
	7	-K941:05	/14.6C
	8		/14.6C
	9	-K941:07	/14.7C
	10		/14.7C
	11	-K941:08	/14.7C
	12		/14.7C
	13	-K941:10	/14.8C
	14		/14.8C
	15	-K941:11	/14.8C
	16		/14.8C
-QV87L.2:1	17	-K941:03	/14.5E
	18		/14.5E
-QV87L.2:3	19	-K941:06	/14.6E
	20		/14.6E
	21	-K941:09	/14.7E
	22		/14.7E
	23	-K941:12	/14.8E
	24		/14.8E

-XU4

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-K942:01	/15.5C
	2		/15.5C
	3	-K942:02	/15.5C
	4		/15.5C
	5	-K942:04	/15.6C
	6		/15.6C
	7	-K942:05	/15.6C
	8		/15.6C
	9	-K942:07	/15.7C
	10		/15.7C
	11	-K942:08	/15.7C
	12		/15.7C
	13	-K942:10	/15.8C
	14		/15.8C
	15	-K942:11	/15.8C
	16		/15.8C
	17	-K942:03	/15.5E
	18		/15.5E
	19	-K942:06	/15.6E
	20		/15.6E
	21	-K942:09	/15.7E
	22		/15.7E
	23	-K942:12	/15.8E
	24		/15.8E

-XB3

EXTERNAL	NO.	INTERNAL	REFERENCE
-QD944:4	1	-K941:21	/14.2B

-XB3

EXTERNAL	NO.	INTERNAL	REFERENCE
	2		/14.2B
	3		/14.2B
	4		/14.3B
	5		/14.3B
	6	-K942:21	/15.2B
-K941:22	7	-QD94:2	/14.2E
	8		/14.2E
	9	-K942:22	/15.2E
	10		/15.2E
	11	-K941:17	/14.2C
	12		/14.2C
	13		/14.3B
	14	-K941:18	/14.3C
	15	-K941:19	/14.3C
	16	-K941:20	/14.4C
	17	-K941:15	/14.9C
	18	-K941:13	/14.9E
	19	-K941:14	/14.9E
	20	-K942:15	/15.9C
	21	-K942:13	/15.9E
	22	-K942:14	/15.9E

-XB81

EXTERNAL	NO.	INTERNAL	REFERENCE
-QD741:4	1	-K861:21	/18.2B
	2	-TF87L.2:6	/18.3B
	3		/18.3B
	4	-XC71:1	/18.4B
-K861:19	5	-F87L-05:14	/18.3D
	6		/18.3D
	7	-K861:20	/18.4D
	8		/18.4B
	9	-K861:05	/18.6D
	10	-K861:06	/18.6E
	11	-K861:07	/18.7E
	12	-K861:08	/18.7E

-XC71

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-XB81:4	/19.1A
	2	-K861:01	/19.2A
	3		/19.2A
	4	-TF87L.2:2	/19.3A
	5	-TF51.2:2	/19.3A
	6	-K961:01	/19.4A
	7	-K961:08	/19.7A
	8	-K961:15	/19.10A
	9		/20.1A
	10	-K741:09	/20.3A
	11	-K861:13	/21.2A
	12	-K52T1:02	/21.8A
	13		/22.2A
	14	-TF87L.2:10	/22.4A
	15		/22.5A
	16		/19.1D

-XC71

EXTERNAL	NO.	INTERNAL	REFERENCE
	17	-K861:02	/19.2D
	18	-K961:06	/19.4D
	19		/20.2D
-X1:??	20	-K741:10	/20.3D
	21		/19.2C
	22	-F87L-05:02	/19.3C
	23	-F51-05:02	/19.3C
-K961:05	24	-K961:02	/19.4C
	25		/19.5D
	26	-K861:03	/19.5D
	27	-K961:13	/19.7D
	28		/20.4D
-X1:??	29	-K741:14	/20.4D
	30		/19.5C
	31	-F87L-05:04	/19.6C
	32	-F51-05:04	/19.6C
-K961:12	33	-K961:09	/19.7C
	34		/19.8D
	35	-K861:04	/19.8D
	36	-K961:20	/19.10D
	37		/20.5D
-X1:??	38	-K741:18	/20.6D
	39		/19.9C
	40	-F87L-05:06	/19.9C
	41	-F51-05:06	/19.9C
-K961:19	42	-K961:16	/19.10C
	43	-K861:22	/20.1F
-K52T1:10	44	-K741:22	/20.7F
-X1:??	45	-K741:11	/20.3D
-X1: ?	46	-K741:12	/20.3D
-X1:??	47	-K741:15	/20.4D
-X1: ?	48	-K741:16	/20.5D
-X1:??	49	-K741:19	/20.6D
-X1: ?	50	-K741:20	/20.6D
	51		/20.6D
	52		/21.3A
	53		/21.4D
	54		/21.3C
	55	-K741:04	/21.3D
	56		/21.4A
	57	-K52C1:02	/21.5A
	58		/21.4C
	59	-K52C1:03	/21.5D
	60	-K52C1:05	/21.6D
	61	-K52C1:07	/21.7D
	62	-K52T1:03	/21.8D
	63	-K52T1:05	/21.9D
	64	-K52T1:07	/21.10D
	65	-K52T1:01	/22.2D
	66		/22.2D
	67		/22.3C
	68	-K52C1:01	/22.3D
	69	-F87L-05:27	/22.4D
	70	-F87L-05:18	/22.4D
	71		/22.5D
	72	-F87L-05:28	/22.4C

Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	55
SIZE	A3	NEXT	56
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-XB1

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QD1:4	/41.2B
	2		/41.3B
	3	-CBP1:1	/41.2D
	4	-CBP1:11	/41.3D
-XB50	5	-CBP1:4	/41.6D
	6		/41.6D
-XB50	7	-KT11:A1	/41.6D
	8		/41.7D
-XB50	9	-KT12:A1	/41.7D
	10		/41.8D
-XB50	11	-KT13:A1	/41.8D
	12		/41.9D
	13	-KT11:34	/42.1E
	14	-KT11:31	/42.2E
	15	-KT12:31	/42.3E
	16	-KT13:31	/42.4E
	17	-K52C1:19	/42.5E
	18	-CBP3:2	/42.5E
	19	-CBP3:3	/42.6E
	20	-CBP3:6	/42.6E
	21	-CBP3:7	/42.6E
	22	-CBP3:4	/42.7E
	23	-CBP3:5	/42.7E
	24	-CBP3:8	/42.8E
	25	-CBP3:9	/42.8E
	26	-CBP3:14	/42.9E
	27	-CBP3:15	/42.9E
	28	-CBP3:18	/42.10E
	29	-CBP3:19	/42.10E

-XR

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-KDC1:12	/44.2B
	2	-K741:01	/44.5B
	3	-KDC1:11	/44.2D
	4	-KDC2:11	/44.2D
	5	-QD741:11	/44.3D
	6	-K741:02	/44.5D
	7	-K861:16	/44.5D
	8	-K861:18	/44.6D
	9		/44.7D
	10	-F87L-P1:23	/44.7B
	11	-F87L-P1:24	/44.7D
	12	-F87L-P1:22	/44.8D
	13	-F87L-P1:20	/44.9D
	14	-F51-P1:24	/44.9D
	15	-F51-P1:22	/44.10D

-XD

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QD741:3	/12.2A
	2		/12.3A
	3	-KDC1:A2	/12.6A
	4	-QD741:1	/12.2B
	5		/12.3B
	6	-KDC1:A1	/12.7B
	7	-QD51:3	/13.2A
	8		/13.3A
	9	-KDC2:A2	/13.7A
	10	-QD51:1	/13.2B
	11		/13.3B
	12	-KDC2:A1	/13.7B

-XU87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QV87L.1:1	/17.2C
	2		/17.2C
	3	-QV87L.1:3	/17.2C
	4		/17.3C
	5	-QV87L.1:5	/17.3C
	6		/17.3C
	7	-TF87L.1:15	/17.3C
	8		/17.3C

-XI87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-TF87L.1:1	/16.2B
	2	-TF87L.1:3	/16.3B
	3	-TF87L.1:5	/16.3B
	4	-TF87L.1:7	/16.4B
	5		/16.4B
	6	-F51-02:02	/16.2F
	7	-F51-02:04	/16.3F
	8	-F51-02:06	/16.3F
	9	-TF51.1:8	/16.4F
	10		/16.4F
	11		/16.4F

-XB87L

EXTERNAL	NO.	INTERNAL	REFERENCE
-QD87L:4	1	-CBP1:2	/23.2B
	2		/23.5B
	3		/23.7B
	4		/23.8B
	5	-TF51.2:14	/24.2B
	6	-KT11:14	/24.5B
	7		/24.9B
	8		/25.2A
	9		/25.3A
	10		/25.6A
	11	-CBP1:6	/26.2B
	12	-SS791:1	/26.3B
	13		/26.4B
	14	-CBP1:3	/23.2B
	15	-F87L-04:01	/23.2D
	16	-F87L-04:02	/23.3D
	17	-F87L-04:03	/23.4D
	18	-F87L-04:04	/23.5D
	19	-F87L-04:05	/23.6D

-XB87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	20	-F87L-04:06	/23.7D
	21	-F87L-04:07	/23.8D
	22	-F87L-04:08	/23.9D
	23	-F87L-04:19	/25.2D
	24	-F87L-04:20	/25.3D
	25	-F87L-04:21	/25.4D
	26	-F87L-04:22	/25.5D
	27	-F87L-04:23	/25.6D
	28	-F87L-04:24	/25.7D
	29	-F87L-04:25	/25.8D
	30	-F87L-04:26	/25.9D

-XT87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-TF87L.2:4	/27.5E
	2		/27.5E
	3	-F87L-05:08	/27.5E
	4		/27.5E
	5	-F87L-05:10	/27.6E
	6		/27.6E
	7	-F87L-05:12	/27.7E
	8		/27.7E
	9	-TF87L.2:8	/27.9E
	10		/27.9E
	11	-F87L-05:16	/27.10E
	12		/27.10E
	13	-TF87L.2:12	/28.3D
	14	-TF51.2:12	/28.3D
	15	-F87L-05:20	/28.3D
	16	-F51-05:20	/28.3D
	17	-F87L-05:22	/28.4D
	18	-F51-05:22	/28.4D
	19	-F87L-05:24	/28.5D
	20	-F51-05:24	/28.5D
	21	-TF87L.2:14	/28.6D
	22	-F87L-05:25	/28.7D
	23	-F87L-05:30	/28.8D
	24	-F87L-05:29	/28.9D
	25	-TF87L.2:16	/28.9D
	26	-F87L-05:32	/28.10D
	27	-CBP1:9	/29.2E
	28		/29.2E
	29	-F87L-06:02	/29.2E
	30		/29.2E
	31	-F87L-06:04	/29.3E
	32	-F87L-06:06	/29.4E
	33	-CBP1:15	/29.5E
	34		/29.5E
	35	-F87L-06:08	/29.5E
	36		/29.5E
	37	-CBP1:19	/29.6E
	38	-F87L-06:10	/29.6E
	39	-TF87L.2:24	/29.7E
	40	-TF51.2:28	/29.7E
	41	-F87L-06:12	/29.7E
	42	-F51-06:24	/29.8E

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	56
SIZE	A3	NEXT	57
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-XT87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	43	-F87L-06:14	/29.8E
	44	-F51-06:26	/29.9E
	45	-F87L-06:16	/29.9E
	46	-F51-06:28	/29.10E
	47	-CBP2:5	/30.2E
	48		/30.2E
	49	-F87L-06:18	/30.2E
	50		/30.2E
	51	-F87L-06:19	/30.3E
	52	-F87L-06:20	/30.3E
	53	-F87L-06:21	/30.4E
	54	-F87L-06:22	/30.4E
	55	-CBP2:19	/30.5E
	56		/30.5E
	57	-F87L-06:24	/30.5E
	58		/30.5E
	59	-TF87L.1:22	/30.6E
	60		/30.6E
	61	-F87L-06:26	/30.6E
	62		/30.6E
	63	-TF87L.1:24	/30.7E
	64	-F87L-06:28	/30.7E
	65	-TF87L.1:26	/30.8E
	66	-F87L-06:30	/30.8E
	67	-TF87L.1:28	/30.9E
	68	-F87L-06:32	/30.9E
	69	-F87L-P1:13	/31.2D
	70	-F87L-P1:14	/31.2D
	71	-F87L-P1:15	/31.3D
	72	-F87L-P1:16	/31.3D
	73	-K52C1:08	/43.2D
	74	-K52C1:09	/43.2D
	75	-K52C1:12	/43.4D
	76	-K52C1:13	/43.5D
	77	-SS791:3	/43.6D
	78	-SS791:4	/43.6D
	79	-F87L-P1:17	/43.9D
	80	-F87L-P1:18	/43.9D
	81	-K861:10	/43.8D

-XB51

EXTERNAL	NO.	INTERNAL	REFERENCE
-QD51:4	1	-CBP2:2	/32.2B
	2		/32.5B
	3	-KT11:24	/33.2B
	4		/33.9B
2	5		/34.2A
	6		/34.3A
	7		/34.8A
	8		/35.2B
	9		/35.3B
	10	-PB51:13	/35.7B
	11	-CBP2:3	/32.2B
	12	-F51-04:01	/32.2D
	13	-F51-04:02	/32.3D
	14	-F51-04:03	/32.4D

-XB51

EXTERNAL	NO.	INTERNAL	REFERENCE
	15	-F51-04:04	/32.5D
	16	-F51-04:05	/32.6D
	17	-F51-04:06	/32.7D
	18	-F51-04:07	/32.8D
	19	-F51-04:08	/32.9D
	20	-F51-04:14	/33.7D
	21	-F51-04:15	/33.8D
	22	-F51-04:16	/33.9D
10	23	-F51-04:19	/34.2D
	24	-F51-04:20	/34.3D
	25	-F51-04:21	/34.4D
	26	-F51-04:22	/34.5D
	27	-F51-04:23	/34.6D
	28	-F51-04:24	/34.7D
	29	-F51-04:25	/34.8D
	30	-F51-04:26	/34.9D
	31	-F51-04:27	/35.2D
	32	-F51-04:28	/35.3D
	33	-F51-04:29	/35.4D
	34	-F51-04:30	/35.5D
	35	-F51-04:31	/35.6D

-XT51

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-TF51.2:4	/36.5D
	2	-F51-05:08	/36.5D
	3	-F51-05:10	/36.6D
	4	-F51-05:12	/36.7D
	5	-TF51.2:8	/36.9D
	6	-F51-05:16	/36.10D
	7	-TF51.2:10	/37.1D
	8	-F51-05:18	/37.2D
	9	-TF51.2:16	/37.9D
	10	-F51-05:32	/37.10D
	11	-CBP2:9	/38.5D
	12	-F51-06:08	/38.5D
	13	-F51-06:09	/38.6D
	14	-F51-06:10	/38.6D
	15	-F51-06:11	/38.7D
	16	-F51-06:12	/38.7D
	17	-CBP2:15	/38.9D
	18	-F51-06:16	/38.10D
	19	-TF51.2:26	/39.2D
	20		/39.2D
	21	-F51-06:18	/39.2D
	22		/39.2D
	23	-F51-06:20	/39.3D
	24		/39.3D
	25	-F51-06:22	/39.4D
	26		/39.4D
	27	-TF51.1:22	/39.8D
	28	-F51-06:30	/39.8D
	29	-TF51.1:24	/39.9D
	30	-F51-06:32	/39.9D
	31	-F51-P1:13	/40.2D
	32	-F51-P1:14	/40.2D

-XT51

EXTERNAL	NO.	INTERNAL	REFERENCE
	33	-F51-P1:15	/40.3D
	34	-F51-P1:16	/40.3D
	35	-F51-P1:17	/40.4D
	36	-F51-P1:18	/40.4D

-XA

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QA:1	/11.3B
	2		/11.4B
	3	-QA:3	/11.3B
	4		/11.4B
-QA:2	5	-C1:1	/11.4C
	6	-PS1:L	/11.7C
-QA:4	7	-C1:2	/11.4E
	8		/11.5E
	9	-PS1:N	/11.6E

-XS

EXTERNAL	NO.	INTERNAL	REFERENCE
	1		/44.2E
	2		/44.2E
	3		/44.2E
	4		/44.2E
	5		/44.3E
	6		/44.3E
	7		/44.3E
	8		/44.3E
	9		/44.3E
	10		/44.4E
	11		/44.2F
	12		/44.2F
	13		/44.2F
	14		/44.2F
	15		/44.3F
	16		/44.3F
	17		/44.3F
	18		/44.3F
	19		/44.3F
	20		/44.4F

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL A TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1331

=D06+R1

SCALE	N/A	SHEET	57
SIZE	A3	NEXT	
REV.	0	TOTAL	57

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

PROJECT NAME	400kV TUNDUMA SUBSTATION		
PANEL NO.	SJS25002395.PG276-PG277	DRAWING NO.	NR-D25-012572-C0009
TYPE	NR-G03 PANEL	QUANTITY	2
DIMENSION	2260*800*800(H*W*D)	PAINT	RAL7035
TECHNICAL RATING	POWER:DC220V CT:1A PT:110V f:50Hz		

=D06+R2

330kV NAKONDE1 LINE PROTECTION PANEL B

THIS DRAWING IS VALID FOR D06/D07 LINE

REV	DATE	DESCRIPTION	DESD.	CKD.	APPRD.
0	2025.08.09	FOR APPROVAL	XU	Sun Dexian	Zhong Siwei

CLIENT: TANZANIA ELECTRIC SUPPLY COMPANY LTD.
Plot 114, Block G, Dar es Salaam Road, P.O. Box 453, Dodoma, Tanzania

CONSULTANT: POWER GRID CORPORATION OF INDIA

CONTRACTOR: TBEA CO., LIMITED
Building 27, Block 18, Nansihuan West Road
Beijing, China

PROJECT : Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Proposed 400/330kV Tunduma Auto-Transformation Substation and 4km of 330kV Double Circuit Transmission Line from Tunduma Substation to the Border

CONTRACT NO. : PA/001/2020-2021/HQ/W/46

SUBSTATION: 400kV TUNDUMA SUBSTATION

RELEASED FOR: ☐ BASIC ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ AS BUILT REV.: 0

APRROVED	Zhong Siwei	SCALE	TITLE : 330kV NAKONDE1 LINE PROTECTION PANEL B COVER
CHECKED	Sun Dexian	N/A	
DESIGNED	XU	2025-06-19	
SIZE	A3		DWG. No. :HQW46-4-TND-EQP-DWG-1332 SHEET 01 OF 34

Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

NO.	SHEET	DWG. TITLE	REV.
1	01	COVER	0
2	02	INDEX	0
3	03	LEGEND	0
4	04	PANEL LAYOUT	0
5	05	BILL OF MATERIALS	0
6	06	SINGLE LINE DIAGRAM	0
7	07	TRIP MATRIX	0
8	08	PANEL STRUCTURE 1	0
9	09	PANEL STRUCTURE 2	0
10	10	PANEL DETAILED INFORMATION	0
11	11	AC POWER SUPPLY CIRCUIT	0
12	12	DC POWER SUPPLY CIRCUIT 1	0
13	13	-F87L CT CURRENT CIRCUIT	0
14	14	-F87L VT VOLTAGE CIRCUIT	0
15	15	LOCKOUT RELAY -K862 DIAGRAM	0
16	16	CB TRIP CIRCUIT 2 SCHEMATIC 1	0
17	17	CB TRIP CIRCUIT 2 SCHEMATIC 2	0
18	18	-F87L BINARY INPUT CIRCUIT 1	0
19	19	-F87L BINARY INPUT CIRCUIT 2	0
20	20	-F87L BINARY INPUT CIRCUIT 3	0
21	21	-F87L BINARY OUTPUT CIRCUIT 1	0
22	22	-F87L BINARY OUTPUT CIRCUIT 2	0
23	23	-F87L BINARY OUTPUT CIRCUIT 3	0
24	24	-F87L BINARY OUTPUT CIRCUIT 4	0
25	25	SIGNAL OUTPUT CIRCUIT	0
26	26	SIGNAL OUTPUT CIRCUIT	0
27	27	-F87L P543 REAR VIEW 1	0
28	28	-F87L P543 REAR VIEW 2	0
29	29	ACCESSORIES MATERIAL LIST	0
30	30	ACCESSORIES MATERIAL LIST	0

NO.	SHEET	DWG. TITLE	REV.
31	31	ACCESSORIES MATERIAL LIST	0
32	32	ACCESSORIES MATERIAL LIST	0
33	33	TERMINAL BLOCK	0
34	34	TERMINAL BLOCK	0

Status - Approved as corrected

पावरग्रिड POWERGRID

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Tunduma - Sinda - Kisada - Iringa - Kisada - Mbeya - Tunduma Double Circuit Transmission Line under Four Lots (Lot 1, 2, 3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B
INDEX

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	02
SIZE	A3	NEXT	03
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MAKE CONTACT		RELAY COIL (1 COIL)		LIMITED SWITCH, NC		RESISTOR		TRANSFORMER WITH TWO WINDINGS
	BREAK CONTACT		RELAY COIL (1 ACTIVE COIL AND 1 RESET COIL)		PUSHING BUTTON, NO		HEATER		THREE PHASE WINDING STAR
	CHANGEOVER CONTACT		AC OR DC / DC CONVERTER		SELECTION SWITCH		PROBE TEMPERATURE AND HUMIDITY CONTROLLER		THREE PHASE WINDING DELTA
	ISOLATOR LINK		DC CONVERTER	123	SELECTION SWITCH, 3 POSITIONS	M 1~	AC MOTOR, VENTILATING FAN, SINGLE PHASE		CURRENT TRANSFORMER
	FEED-THROUGH TERMINAL BLOCK		TRANSDUCER		MINIATURE CIRCUIT BREAKER		ALARM / BELL		CIRCUIT BREAKER
	DISCONNECT WITH TEST PLUGS TERMINAL BLOCK		COAXIAL CABLE PORT		WINDING	A	AMP-METER		DISCONNECT SWITCH
	KNIFE DISCONNECT TERMINAL BLOCK		RJ45 ETHERNET PORT		OPTOCOUPLER	V	VOLT-METER	M	OPERATED BY MOTOR
	TEST BLOCK		LC FIBER OPTICAL PORT		DIODE	W	WATT-METER		LIGHTNING ARRESTER
	TERMINAL WITH PLUG-IN CONNECTION (FEMALE PIN)		FC/ST OPTICAL PORT		LAMP	VAR	VAR-METER		FUSE
	TERMINAL WITH PLUG-IN CONNECTION (MALE PIN)		CABLE		SOCKET	WH	WATT-HOUR-METER		GROUND

Status - Approved as corrected

Plant Engineering Design, Material Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B
LEGEND

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

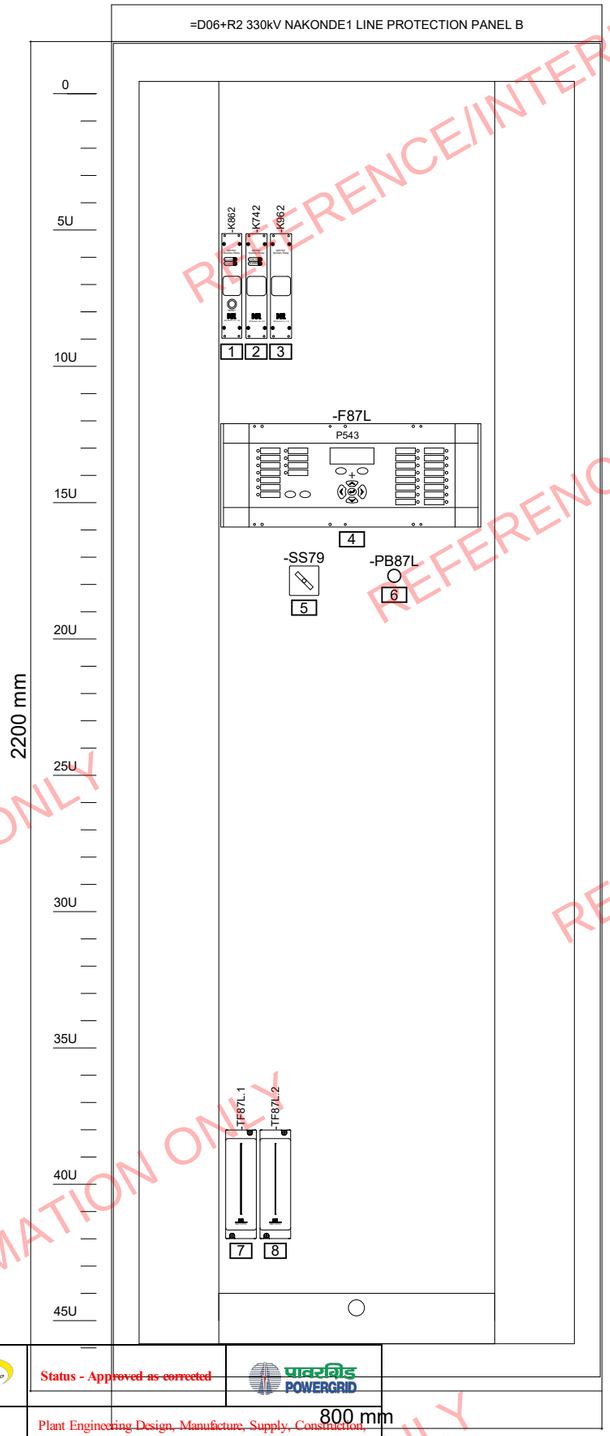
SCALE	N/A	SHEET	03
SIZE	A3	NEXT	04
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

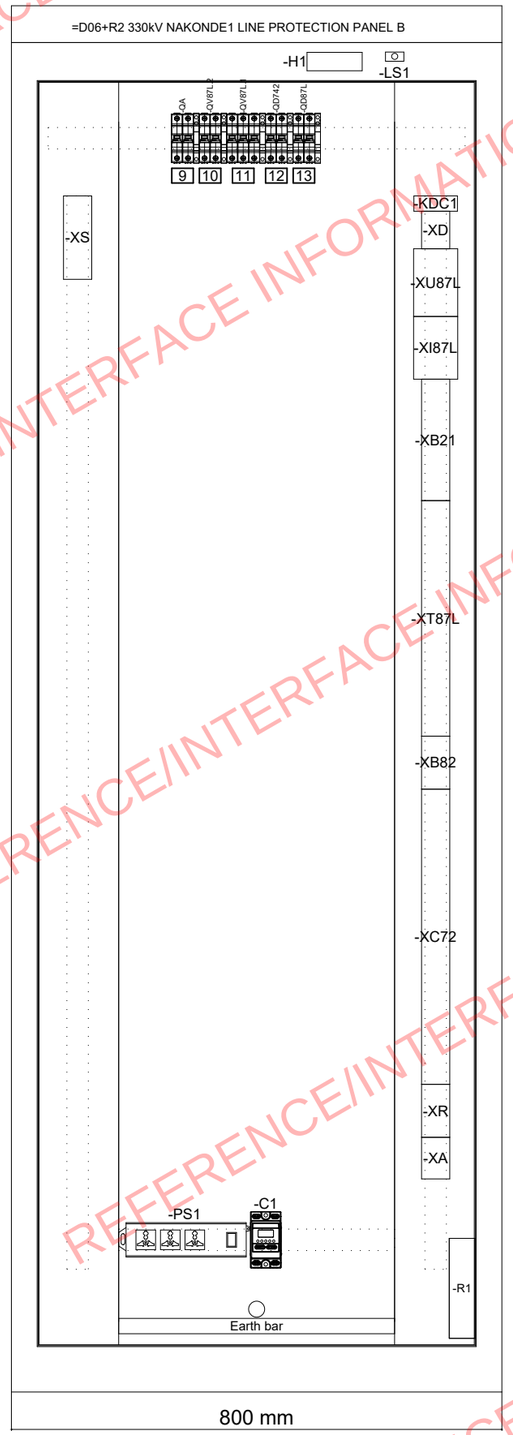
REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



FRONT VIEW



REAR VIEW

THIS DRAWING IS VALID FOR:

PANEL NO.	NAME PLATE	BAY NO.
PG276	=D06+R2 330kV NAKONDE1 LINE PROTECTION PANEL B	D06
PG277	=D07+R2 330kV NAKONDE2 LINE PROTECTION PANEL B	D07

NO.	LABEL
1	-K862 LOCKOUT RELAY 2
2	-K742 CB TCS RELAY 2
3	-K962 CURRENT OPERATED RELAY
4	-F87L LINE MAIN 2 DIFF. RELAY
5	-SS79 AR MODE SWITCH
6	-PB87L RESET -F87L
7	-TF87L.1 TEST BLOCK 1 FOR -F87L
8	-TF87L.2 TEST BLOCK 2 FOR -F87L
9	-QA MCB FOR AC POWER
10	-QV87L.2 -F87L BB VOLTAGE MCB
11	-QV87L.1 -F87L LINE VOLTAGE MCB
12	-QD742 TRIP&TCS 2 DC SUPPLY
13	-QD87L -F87L DC SUPPLY

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1, 2, 3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B PANEL LAYOUT

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2			
SCALE	N/A	SHEET	04
SIZE	A3	NEXT	05
REV.	0	TOTAL	34

NO.	SYMBOL	DESCRIPTION	TYPE	QTY.	MANUFACTURER	REMARK
1	-PB87L	PUSH BUTTON	ELXAL5-10-20/203-G+NONE	1	ELX	
2	-SS79	SELECTION SWITCH	LW21-16/4.4115.4 M1(W)	1	ELX	
3	-QA	MCB	NDB2LE-63C 16/2	1	Nader	Residual current operated circuit breakers prevent earth leakage;
4	-QD87L	MCB	NDB2Z-63C 4A/2P	1	Nader	
5	-QD742	MCB	NDB2Z-63C 16A/2P	1	Nader	
6	-QV87L.1	MCB	NDB2-63C 1A/3P	1	Nader	
7	-QV87L.2	MCB	NDB2-63C 1A/2P	1	Nader	
8	-QA;-QD87L;-QD742;-QV87L.1;-QV87L.2	AUXILIARY CONTACT (OF)	NDB2-OF2	5	Nader	
9	-XA;-XB21;-XB82;-XR;-XS;-XT87L	FEED-THROUGH TERMINAL BLOCK	UK 5 N	143	Phoenix Contact	
10	-XC72	FEED-THROUGH TERMINAL BLOCK	UK 10 N	46	Phoenix Contact	
11	-XD	FEED-THROUGH TERMINAL BLOCK	UK 6 N	6	Phoenix Contact	
12	-XI87L;-XU87L	TEST DISCONNECT TERMINAL BLOCK	URTK/S	23	Phoenix Contact	
13	-TF87L.1	TEST BLOCK	MD1701S-1I10U	1	NR	
14	-TF87L.2	TEST BLOCK	MD1701S-14U	1	NR	
15	-PS1	SOCKET	KDY-CZ-03	1	KEJIA	Support British standard plug;
16	-C1	TEMP.& HUMIDITY CONTROLLER	TH-E-11/LED	1	ODES	
17	-K742	TCS RELAY	MD1501-552-AAA	1	NR	
18	-K862	LOCKOUT RELAY	MD1501-571-AAA	1	NR	
19	-K962	CURRENT OPERATED AUXILIARY RELAY	MD1501-556-AAA	1	NR	
20	-KDC1	RELAY	DRG570220L	1	Weidmueller	
21	-KDC1	RELAY SOCKET	FS 4CO	1	Weidmueller	
22	-R1	HEATER	JRD2-150W	1	ODES	
23	-H1	LIGHTING LAMP	LED-8W	1	PHILIPS	
24	-F87L	LINE DIFF. RELAY	MICOM P543	1	ALSTOM	
25	-LS1	LIMITED SWITCH	LX-19K	1	PGC	

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

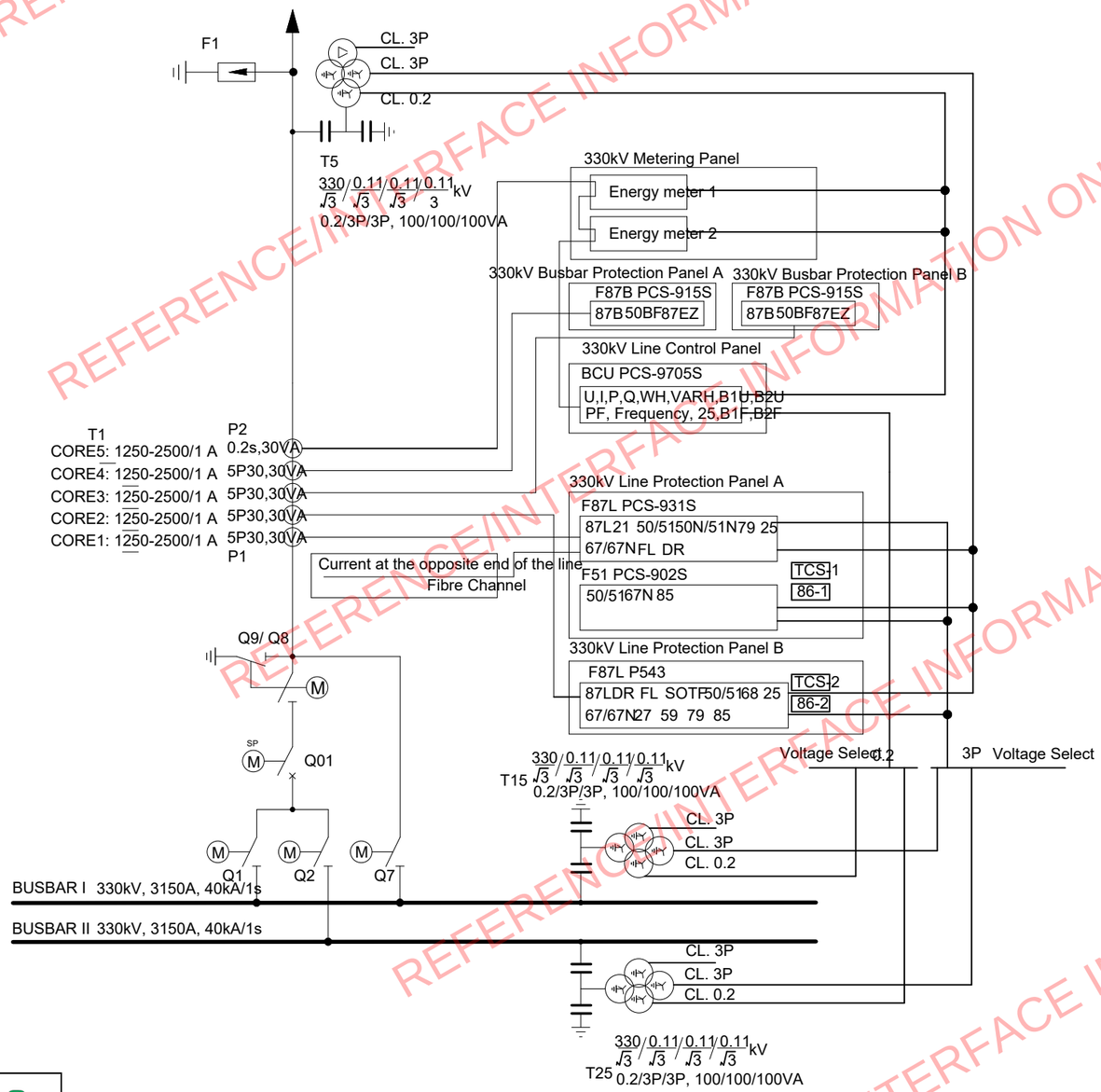
DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B
BILL OF MATERIALS

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	05
SIZE	A3	NEXT	06
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



LEGEND	DESCRIPTION
87L	Line Differential Protection
21	Distance Protection
68	Power Swing Blocking
50/51	Phase over current protection
50N/51N	Earth over current protection
67/67N	Directional over current/earth fault protection
25	Synchronizing check
79	Auto Reclose Relay
50BF	Breaker Failure Protection
27	Under Voltage Protection
59	Over Voltage Protection
DR	Disturbance Recorder
FL	Fault Location
TCS	Trip Circuit Failure Supervision
86	Tripping & Lockout Relay
87B	Bus bar differential protection(Centralized type)
87EZ	Bus bar end zone protection
SOTF	Switch Onto Fault Protection
85	Tele Protection
B1U	Busbar 1 Voltage
B2U	Busbar 2 Voltage
B1F	Busbar 1 Frequency
B2F	Busbar 2 Frequency

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B SINGLE LINE DIAGRAM	SCALE N/A	SHEET 06
		SIZE A3	NEXT 07
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

REFERENCE/INTERFACE INFORMATION ONLY

FROM		TO	LOCKOUT RELAY 1 (861) FOR LINE CB	LOCKOUT RELAY 2 (862) FOR LINE CB	INITIATE BFP OF LINE CB	INITIATE BFP OF LINE CB	START AR OF LINE CB	BLOCK AR OF LINE CB	TRIP CB COIL 1 OF LINE CB	TRIP CB COIL 2 OF LINE CB	BLOCK CB LINE CB CLOSE	AUTO-RECLOSE CB LINE CB	LOCKOUT RELAY 1 (861) FOR BC CB (BYPASS MODE)	LOCKOUT RELAY 2 (862) FOR BC CB (BYPASS MODE)	INITIATE BFP OF BC CB (BYPASS MODE)	START AR OF BC CB (BYPASS MODE)	BLOCK AR OF BC CB (BYPASS MODE)	TRIP CB COIL 1 OF BC CB (BYPASS MODE)	TRIP CB COIL 2 OF BC CB (BYPASS MODE)	BLOCK CB BC CB (BYPASS MODE) CLOSE	AUTO-RECLOSE CB BC CB (BYPASS MODE)	DIST. SENT (85Z) [FIBER OPTICAL CHANNEL]	DEF SENT (85DEF)[FIBER OPTICAL CHANNEL]	DTT SENT[FIBER OPTICAL CHANNEL]
RELAY	PROTECTION TRIP	LOCATION	=D06+R1	=D06+R2	=D08+R1	=D08+R2	=D06+R1	=D06+R1	=D06+R1	=D06+R2	=D06+R1	=D06+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	=D05+R1	SDH/PDH	SDH/PDH	SDH/PDH
F87L (NR PCS-931S) MANI-A	DIFFERENTIAL PROTECTION FOR LINE (87L)	=D06+R1			3		3		3						3	3		3						
	DISTANCE PROTECTION FOR LINE ZONE 2 / 3 /4 (21 Z2/Z3/Z4)	=D06+R1	X		X								X		X									
	DISTANCE PROTECTION FOR LINE ZONE 1 (21 Z1)	=D06+R1			3		3		3						3	3		3						
	DIRECTIONAL O/C EARTH FAULT PROTECTION FOR LINE (67N/85DEF)	=D06+R1			3		3		3						3	3		3					X	
	PILOT DISTANCE PROTECTION FOR LINE (85Z)	=D06+R1			3		3		3						3	3		3				X		
	INSTANTANEOUS O/C PROTECTION FOR LINE(50/50N)	=D06+R1	X		X								X		X									
	TIME O/C PROTECTION FOR LINE (51/51N)	=D06+R1	X		X								X		X									
	DTT RECEIVED (50BF BREAKER FAILURE)	=D06+R1	X		X								X		X									X
	OVER VOLTAGE PROTECTION (59)	=D06+R1	X		X								X		X									
	UNDER VOLTAGE PROTECTION (27)	=D06+R1	X		X								X		X									
	SOTF	=D06+R1	X		X								X		X									
	AUTO RECLOSE OF LINE CB (79)	=D06+R1										X												
F51 (NR PCS-902S) BACK UP	DIRECTIONAL O/C EARTH FAULT PROTECTION FOR LINE (67N/85DEF)	=D06+R1				3	3		3	3					3	3		3	3					
	PILOT DISTANCE PROTECTION FOR LINE (85Z)	=D06+R1				3	3		3	3					3	3		3	3					
	INSTANTANEOUS O/C PROTECTION FOR LINE(50/50N)	=D06+R1	X	X		X							X	X	X									
	TIME O/C PROTECTION FOR LINE (51/51N)	=D06+R1	X	X		X							X	X	X									
	DTT RECEIVED (50BF BREAKER FAILURE)	=D06+R1	X			X							X		X									X
F87 (Schneider P543) MANI-B	DIFFERENTIAL PROTECTION FOR LINE (87L)	=D06+R1			3		3		3						3	3		3						
	DISTANCE PROTECTION FOR LINE ZONE 2 / 3 /4 (21 Z2/Z3/Z4)	=D06+R1	X		X								X		X									
	DISTANCE PROTECTION FOR LINE ZONE 1 (21 Z1)	=D06+R1			3		3		3						3	3		3						
	DIRECTIONAL O/C EARTH FAULT PROTECTION FOR LINE (67N/85DEF)	=D06+R1			3		3		3						3	3		3					X	
	PILOT DISTANCE PROTECTION FOR LINE (85Z)	=D06+R1			3		3		3						3	3		3				X		
	INSTANTANEOUS O/C PROTECTION FOR LINE(50/50N)	=D06+R1	X		X								X		X									
	TIME O/C PROTECTION FOR LINE (51/51N)	=D06+R1	X		X								X		X									
	DTT RECEIVED (50BF BREAKER FAILURE)	=D06+R1	X		X								X		X									X
	OVER VOLTAGE PROTECTION (59)	=D06+R1	X		X								X		X									
	UNDER VOLTAGE PROTECTION (27)	=D06+R1	X		X								X		X									
	SOTF	=D06+R1	X		X								X		X									
	AUTO RECLOSE OF LINE CB (79)	=D06+R1										X												
K861	LOCKOUT RELAY 1 (86) FOR LINE CB	=D06+R1						X	X		X						X							
K862	LOCKOUT RELAY 2 (86) FOR LINE CB	=D06+R2						X		X	X						X							
K861	LOCKOUT RELAY 1 (86) FOR BUS COUPLER CB (BYPASS MODE)	=D05+R1																X		X				
K862	LOCKOUT RELAY 2 (86) FOR BUS COUPLER CB (BYPASS MODE)	=D05+R1																	X	X				

NOTE: X START FUNCTION OR RELAY

0 START FUNCTION OR RELAY (1 PER PHASE)

THE SAME WITH D07

=D06+R1 330kV NAKONDE 1 LINE MAIN1 PROTECTION PANEL
=D06+R2 330kV NAKONDE 1 LINE MAIN2 PROTECTION PANEL
=D08+R1 330kV BB MAIN1 PROTECTION PANEL
=D08+R2 330kV BB MAIN2 PROTECTION PANEL
=D05+R1 330kV BUS COUPLER PROTECTION PANEL

Status - Approved as Corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B TRIP MATRIX

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	07
SIZE	A3	NEXT	08
REV.	0	TOTAL	34

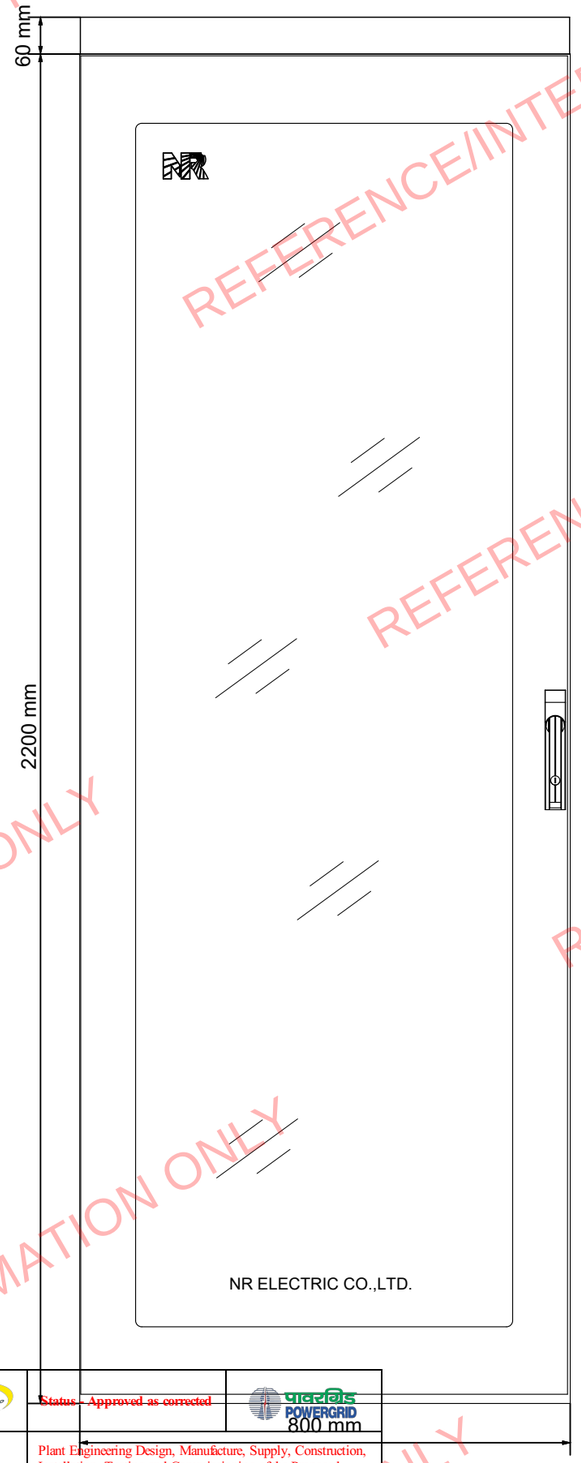
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

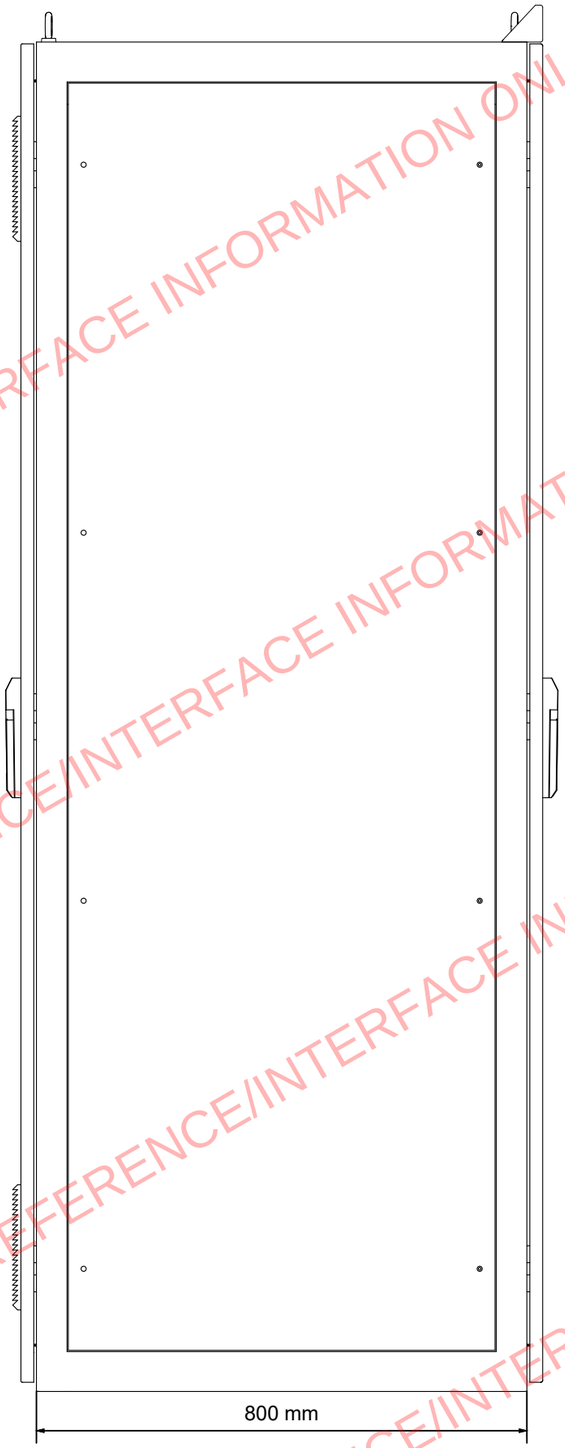
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

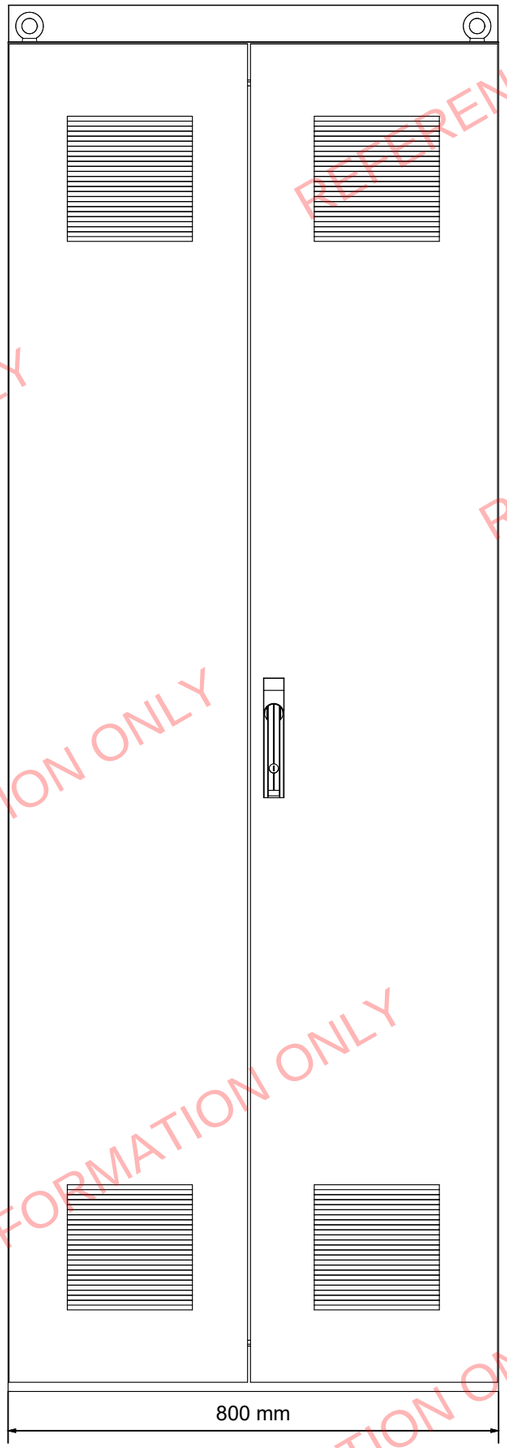
FRONT VIEW



SIDE VIEW



REAR VIEW



	Status : Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

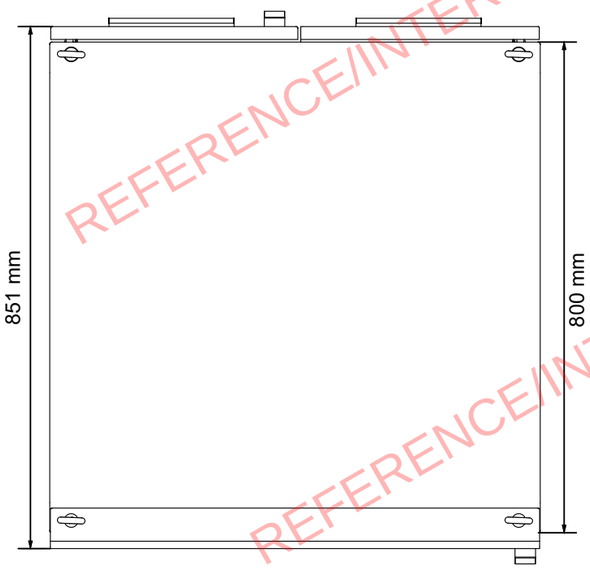
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B PANEL STRUCTURE 1	SCALE N/A	SHEET 08
		SIZE A3	NEXT 09
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

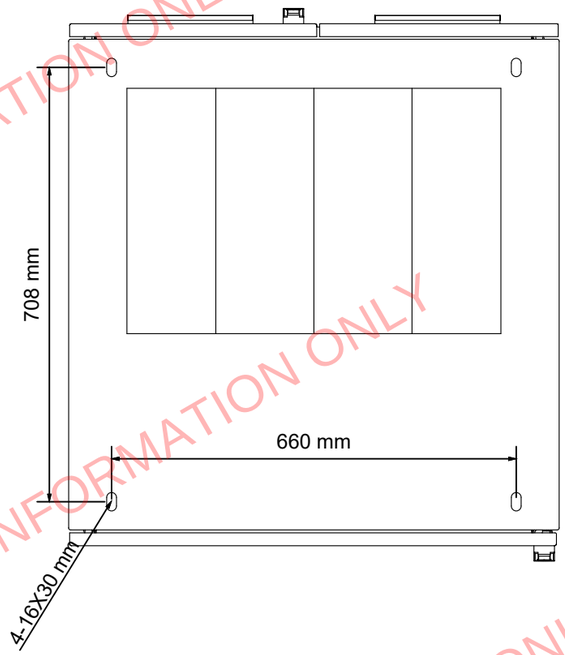
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TOP VIEW



BOTTOM VIEW



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE PROTECTION PANEL B PANEL STRUCTURE 2	=D06+R2	
			SCALE N/A	SHEET 09
			SIZE A3	NEXT 10
		DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

PANEL MECHANICAL CHARACTERISTICS:

ITEM	DESCRIPTION	PARAMETER
1	TYPE	NR-G03 PANEL
2	DIMENSION	2260*800*800(H*W*D)
3	COLOR	EXTERIOR: RAL7035 INTERIOR: RAL7035
4	PROTECTION DEGREE	IP54
5	MATERIAL	SHEET STEEL
6	PLATE THICKNESS	2.5mm
7	MOUNTING	FLOOR MOUNTING, BOTTOM ENTRY OF POWER AND MULTI-CORE CABLES
8	EARTH BAR	COPPER STRIP: 485(L)×25(W)×4(D)mm

PANEL INFORMATION:

1. The colour of MIMIC is required as below:
   - 400kV--Purple
   - 330kV--Red
   - 220kV--Yellow
   - 132kV--Blue
   - 33kV--Green
   - Ground-Black
2. The width of MIMIC lines is 4mm, 6mm for busbar.

TERMINAL BLOCK:

NAME	DESCRIPTION	NOTE
XA:	TERMINAL BLOCK FOR AC POWER SUPPLY CIRCUIT.	UK5N
XD:	TERMINAL BLOCK FOR DC POWER SUPPLY CIRCUIT.	UK6N
XI:	TERMINAL BLOCK FOR CT CIRCUIT.	URTK/S
XU:	TERMINAL BLOCK FOR VT CIRCUIT.	URTK/S
XW:	TERMINAL BLOCK FOR DC ANALOG CIRCUIT.	UK5N
XB:	TERMINAL BLOCK FOR BINARY INPUT.	UK5N
XT:	TERMINAL BLOCK FOR TRIPPING CIRCUIT.	UK5N
XC:	TERMINAL BLOCK FOR TRIP SUPERVISION OR CONTROL CIRCUIT.	UK10N
XR:	TERMINAL BLOCK FOR REMOTE SIGNAL CIRCUIT.	UK5N
XH:	TERMINAL BLOCK FOR ANNUNCIATOR CIRCUIT.	UK5N
XF:	TERMINAL BLOCK FOR RECORD SIGNAL CIRCUIT.	UK5N
XM:	TERMINAL BLOCK FOR COMMUNICATION CIRCUIT.	UK5N
XS:	TERMINAL BLOCK FOR SPARE.	UK5N

WIRING CHARACTERISTICS:

1. 4mm² multistrands insulated copper conductor for CT circuits.
2. 2.5mm² multistrands insulated copper conductor for VT circuits.
3. 4mm² multistrands insulated copper conductor for earthing circuits.
4. 1.5mm² multistrands insulated copper conductor for all other circuits.

WIRING COLOR:

Red	— Phase R CT&VT Circuit
Yellow	— Phase Y CT&VT Circuit
Blue	— Phase B CT&VT Circuit
Black	— AC Current And Voltage Neutral Circuit.
Yellow/green	— Earthing Circuit
Grey	— All Other Circuits

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Substations and 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

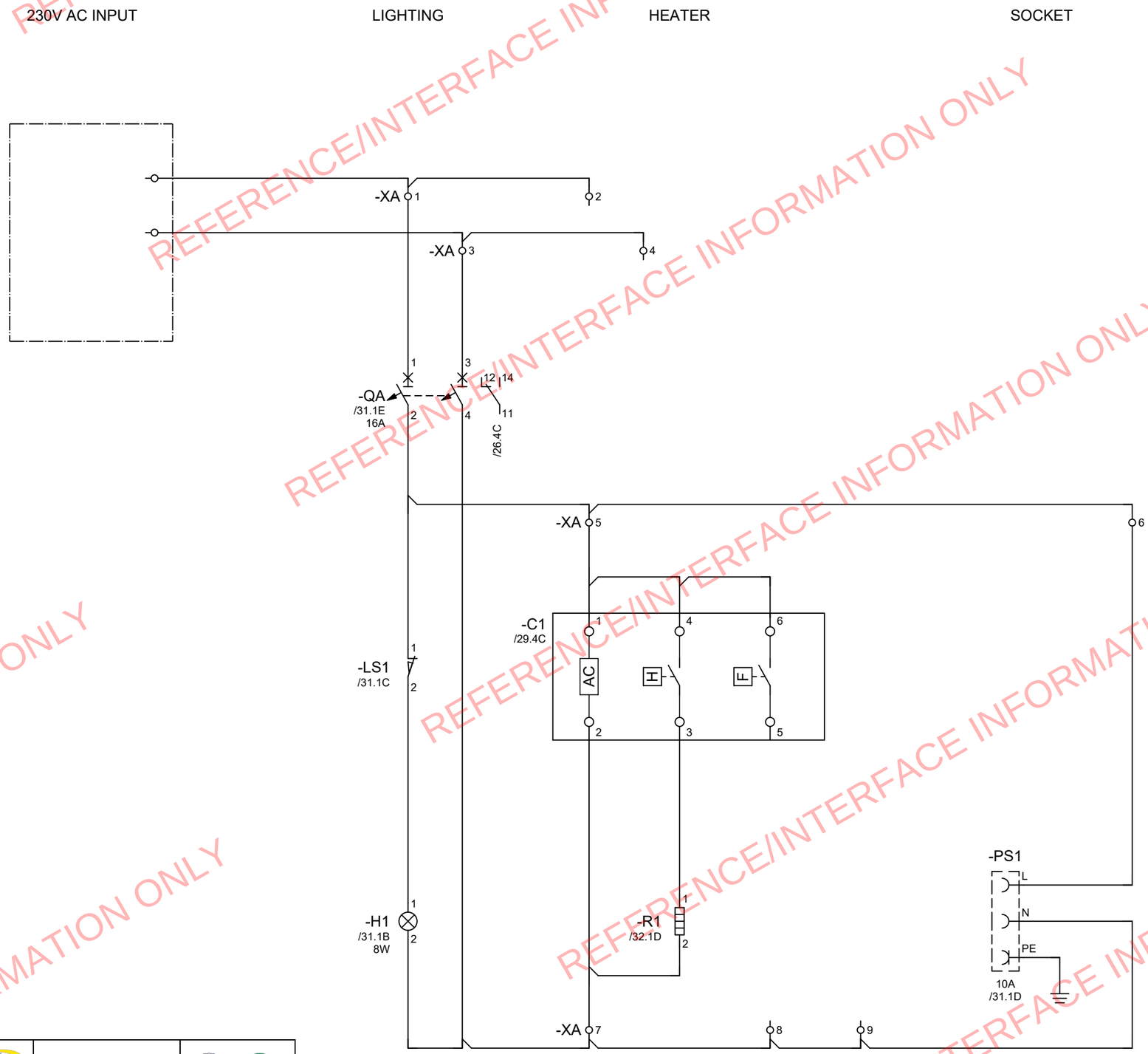
HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B PANEL DETAILED INFORMATION	SCALE N/A	SHEET 10
		SIZE A3	NEXT 11
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

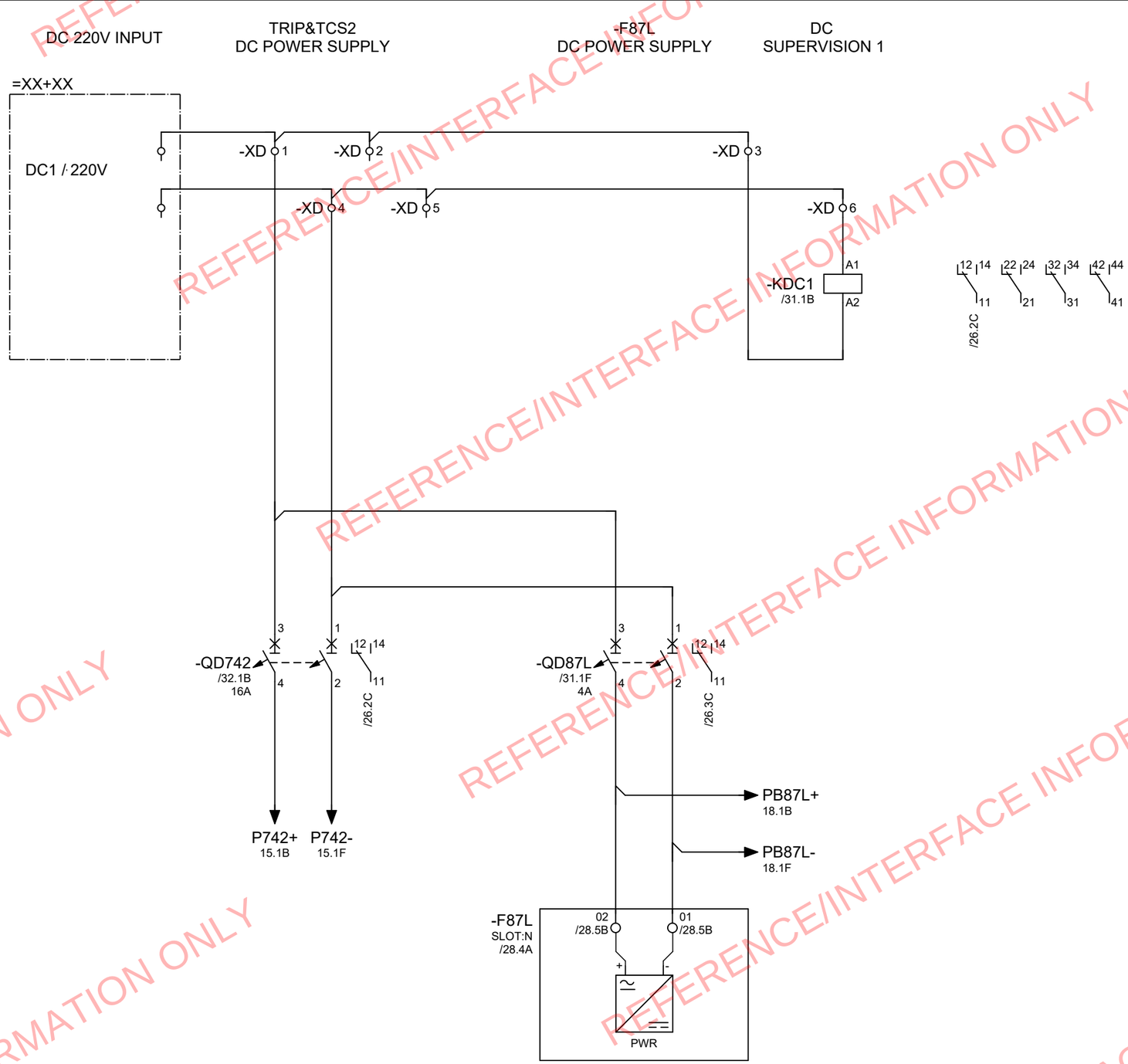


	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 11
	AC POWER SUPPLY CIRCUIT	SIZE A3	NEXT 12
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

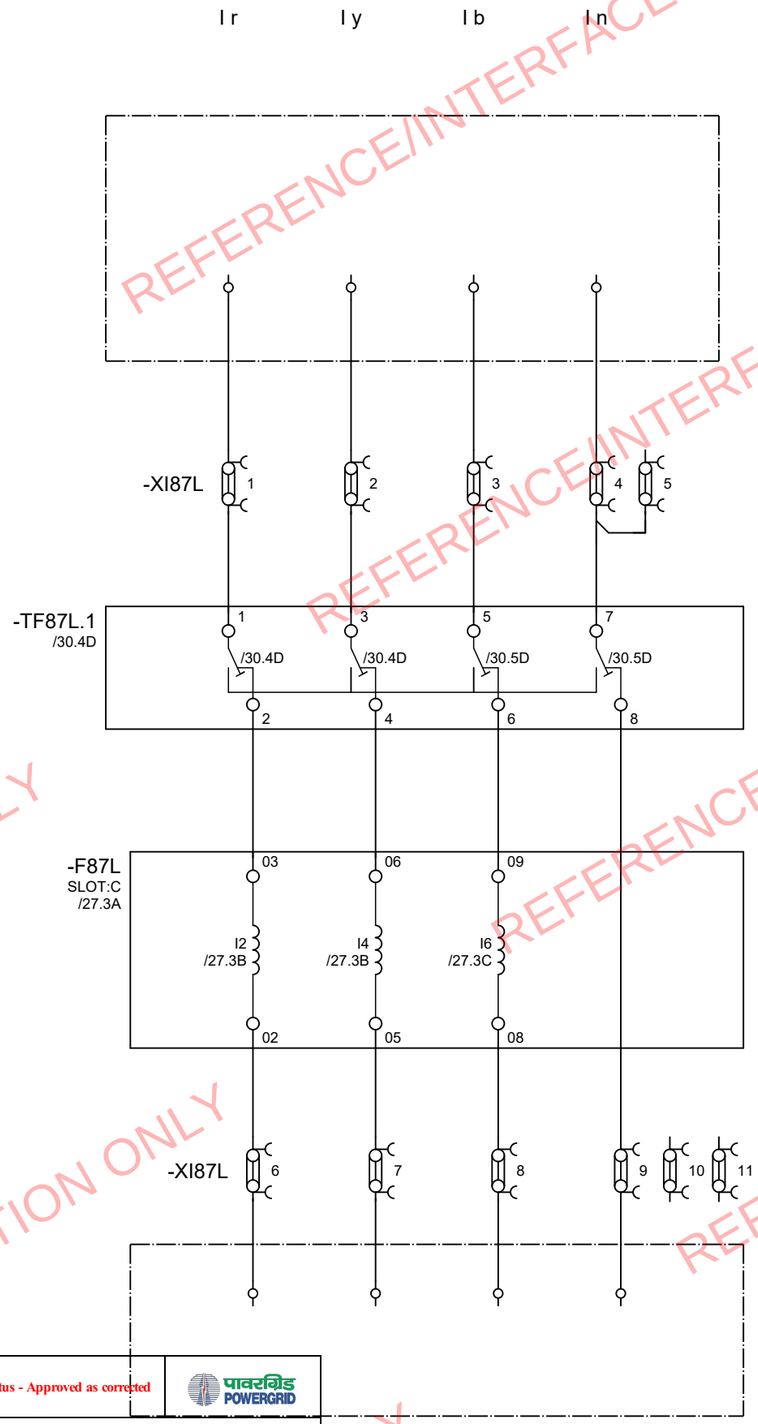
PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 12
	DC POWER SUPPLY CIRCUIT 1	SIZE A3	NEXT 13
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

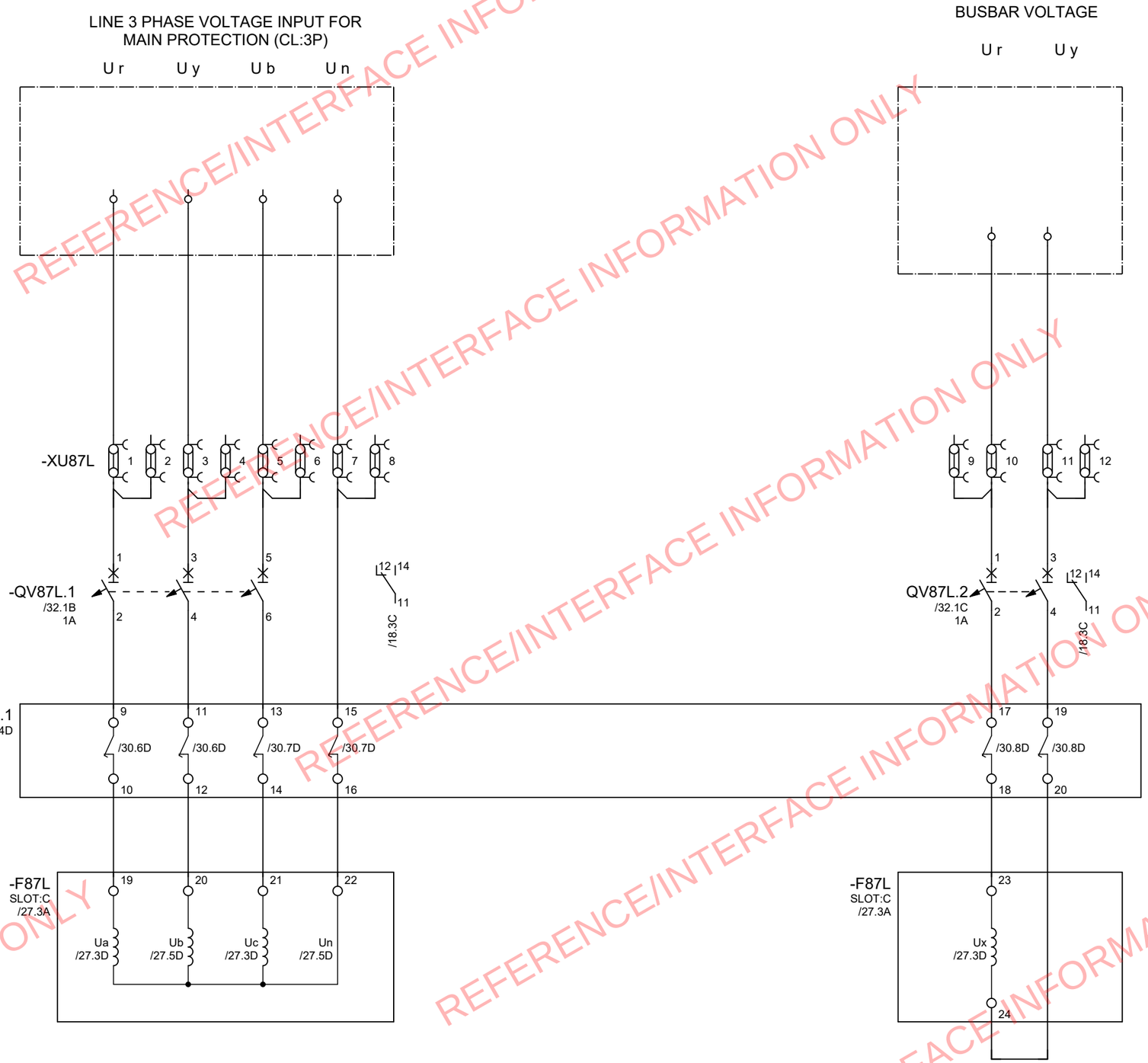
REFERENCE/INTERFACE INFORMATION ONLY

3 PHASE CURRENT INPUT
FOR MAIN2 PROTECTION



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT	DWG. TITLE	=D06+R2	
	400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 13
		-F87L CT CURRENT CIRCUIT	SIZE A3	NEXT 14
		DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B
-F87L VT VOLTAGE CIRCUIT

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

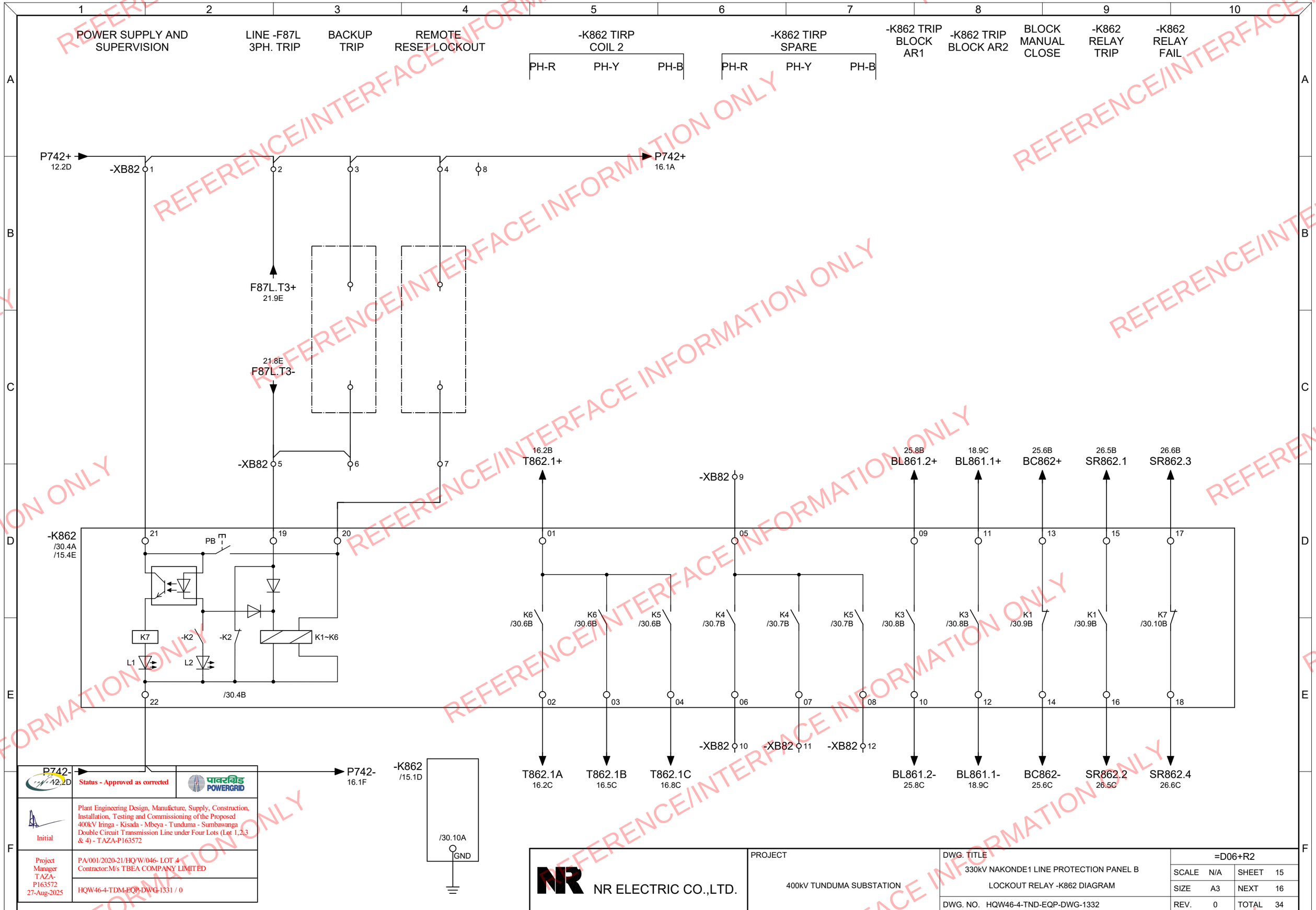
SCALE	N/A	SHEET	14
SIZE	A3	NEXT	15
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

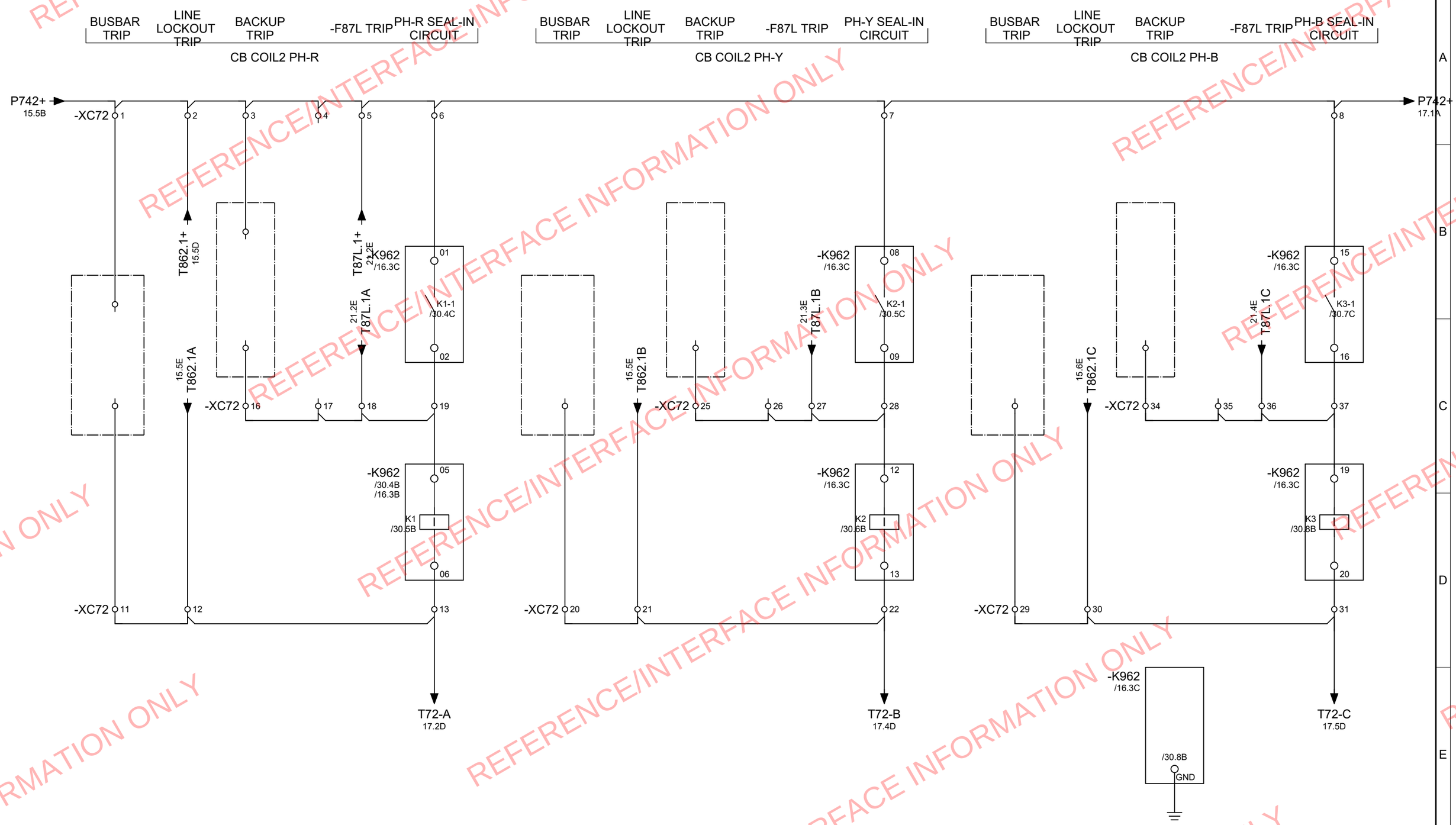
REFERENCE/INTERFACE INFORMATION ONLY



Status - Approved as corrected		पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 15
	LOCKOUT RELAY -K862 DIAGRAM	SIZE A3	NEXT 16
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34



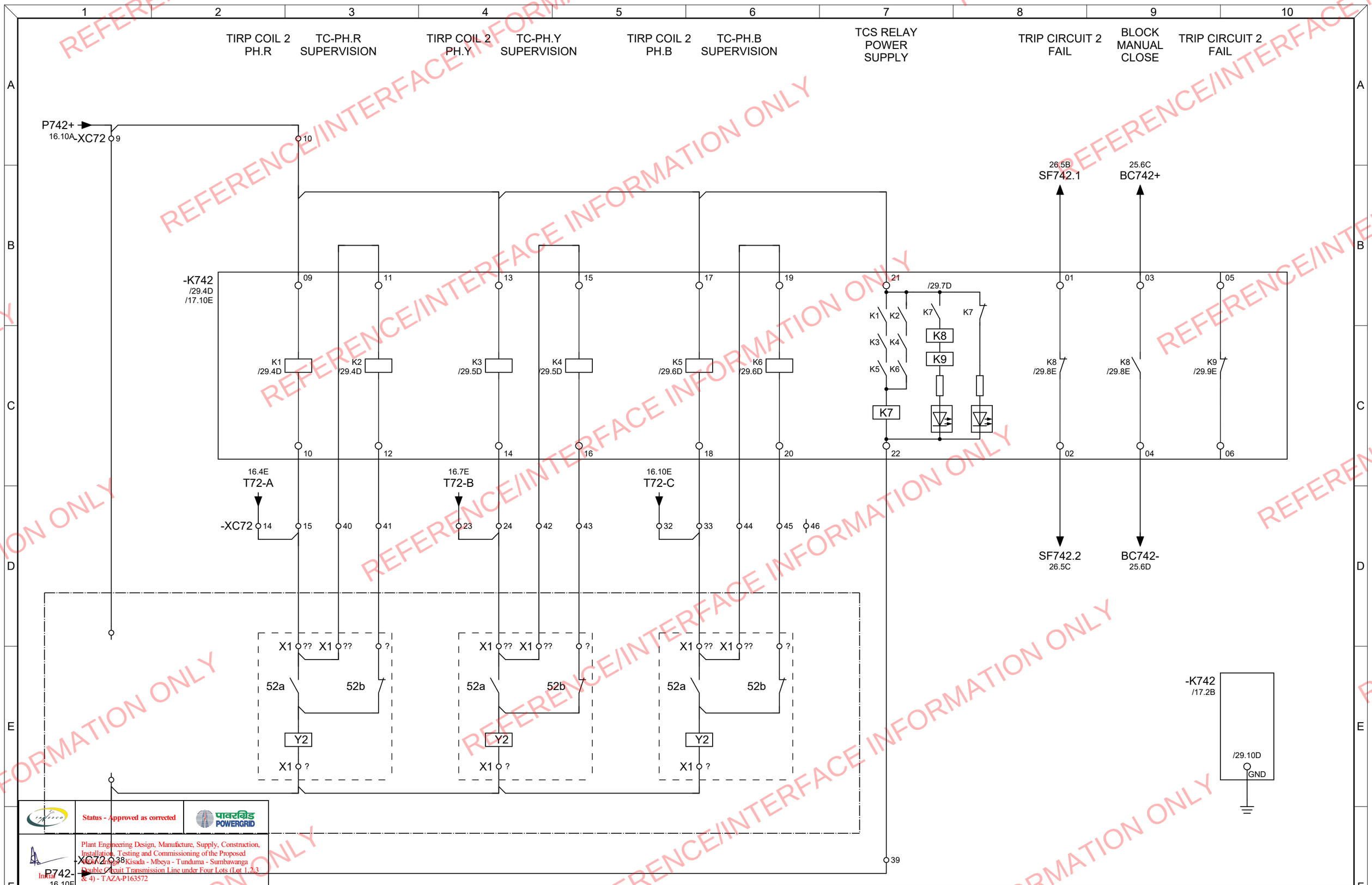
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 16
	CB TRIP CIRCUIT 2 SCHEMATIC 1	SIZE A3	NEXT 17
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

Status - Approved as corrected

पावरग्रिड POWERGRID

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Lines Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

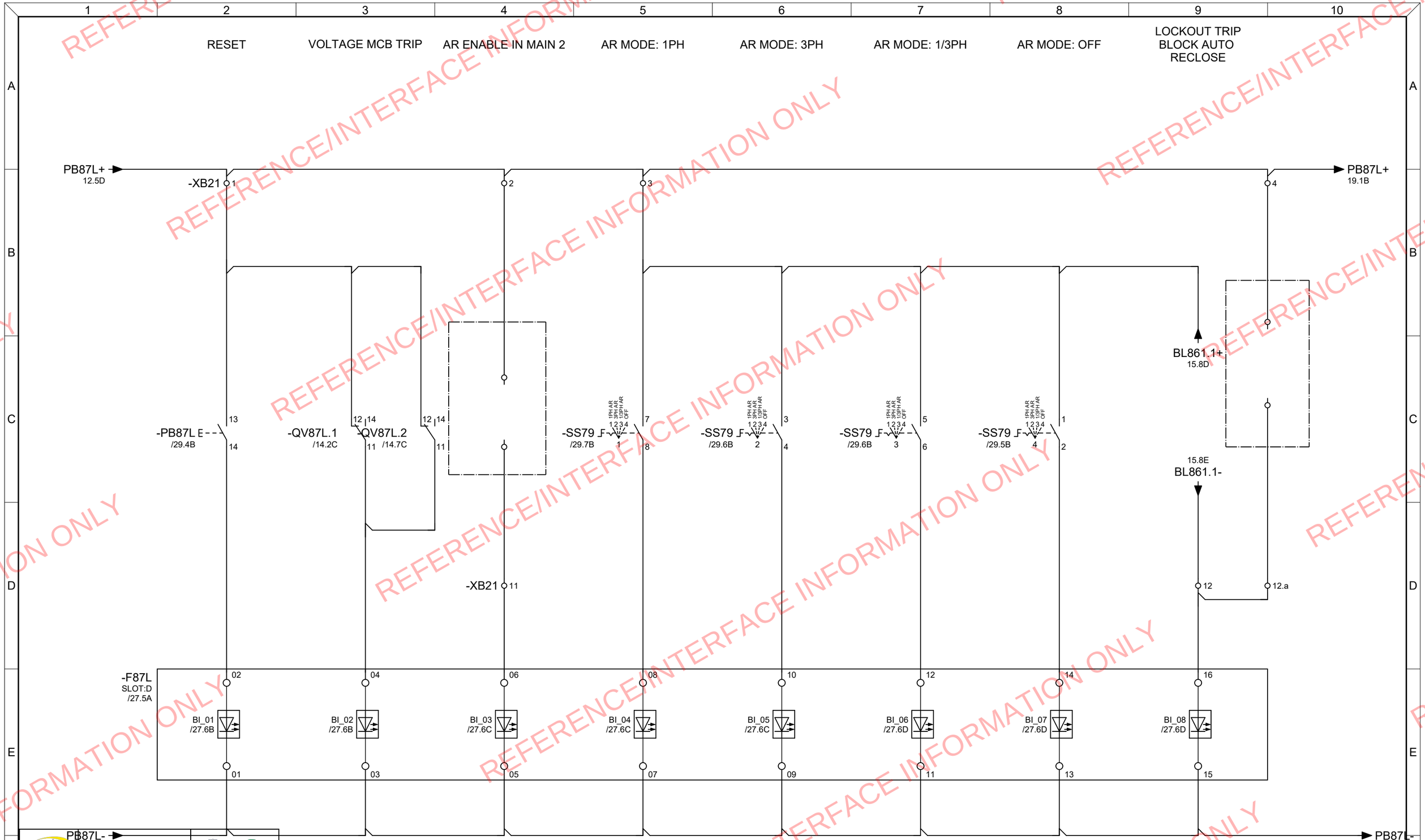
Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	400kV TUNDUMA SUBSTATION
DWG. TITLE	330kV NAKONDE1 LINE PROTECTION PANEL B CB TRIP CIRCUIT 2 SCHEMATIC 2
DWG. NO.	HQW46-4-TND-EQP-DWG-1332
=D06+R2	
SCALE N/A	SHEET 17
SIZE A3	NEXT 18
REV. 0	TOTAL 34



	12.5D - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B -F87L BINARY INPUT CIRCUIT 1

DWG. NO. HQW46-4-TND-EQP-DWG-1332

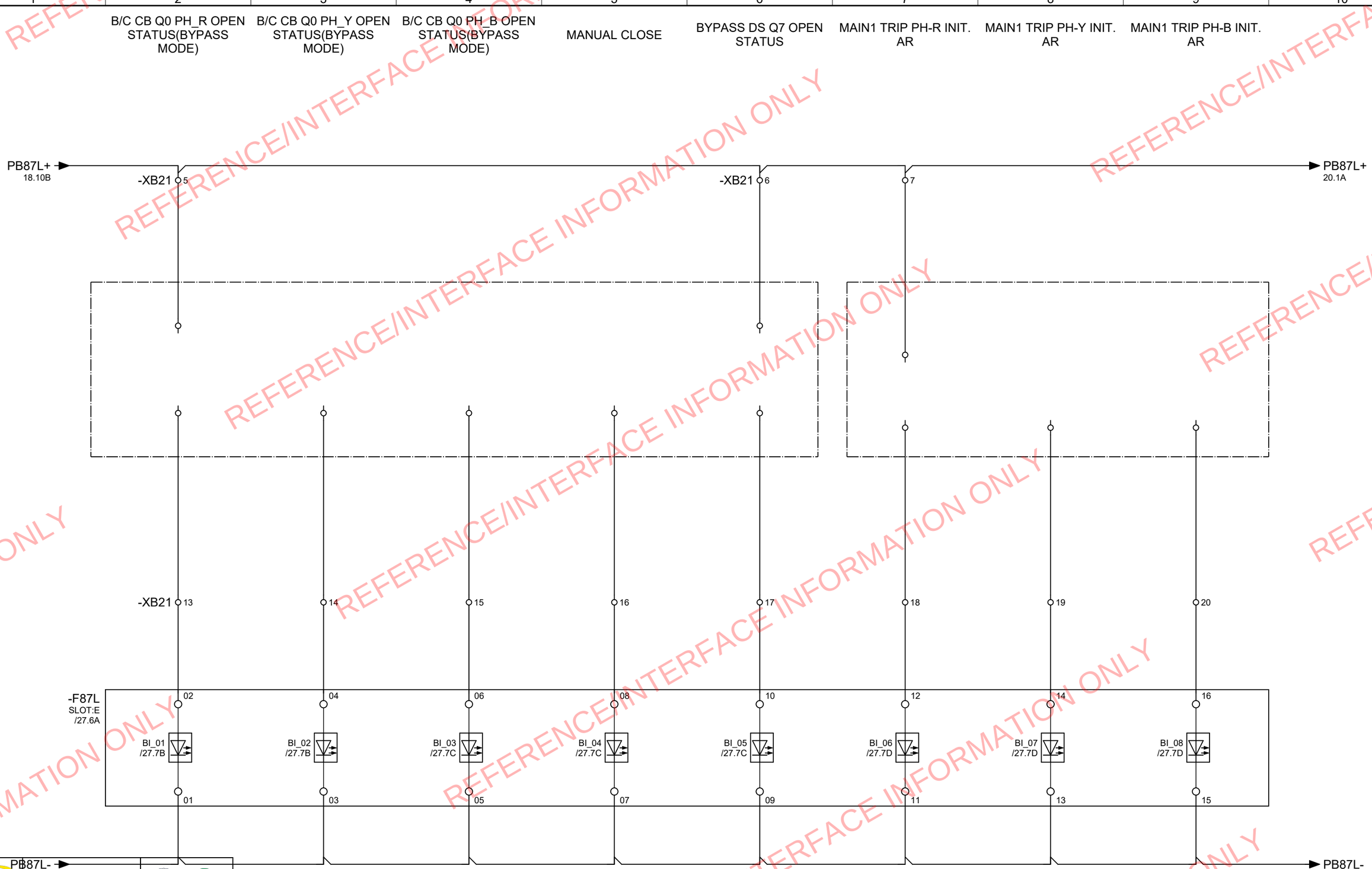
=D06+R2

SCALE	N/A	SHEET	18
SIZE	A3	NEXT	19
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

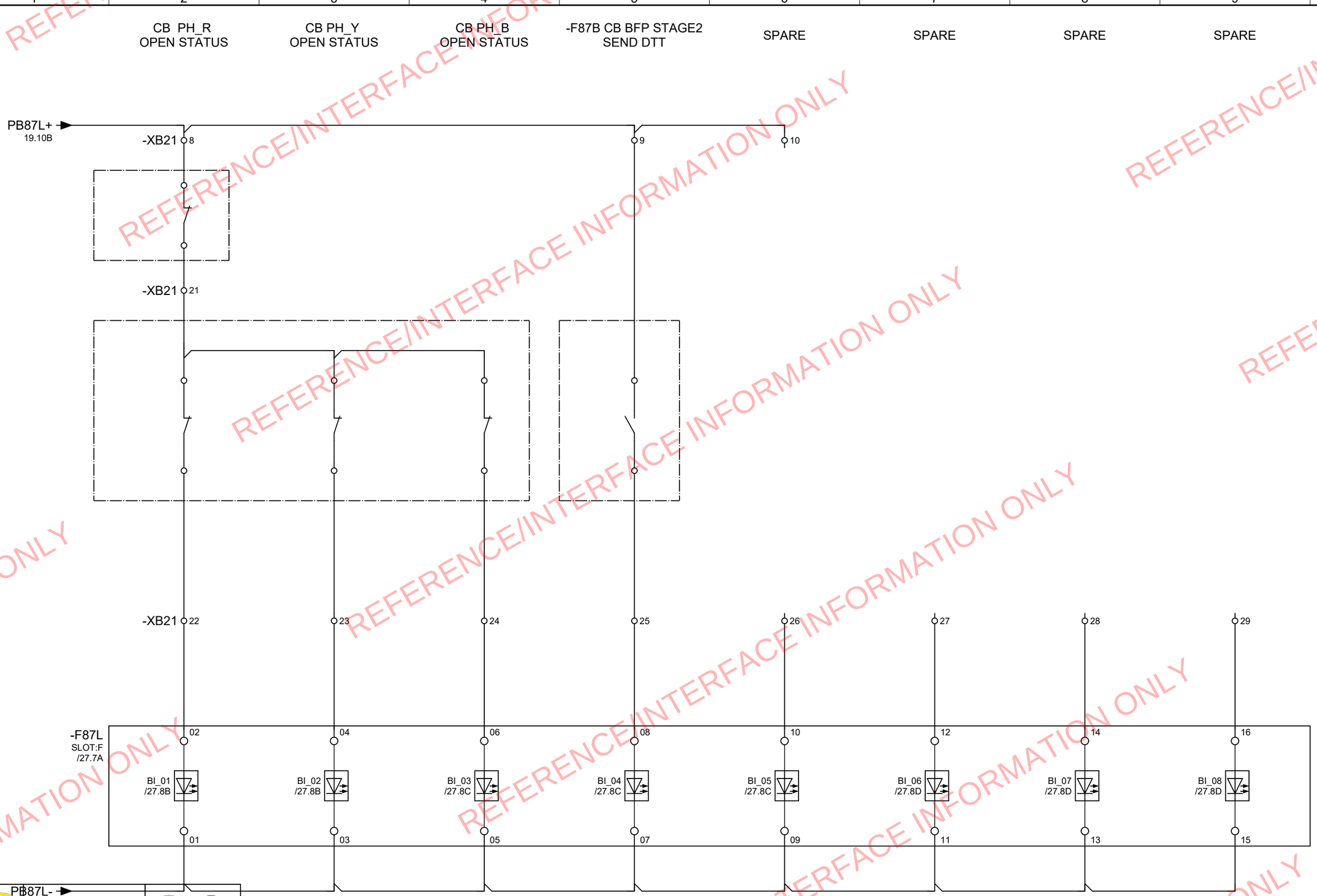


	18.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 19
	-F87L BINARY INPUT CIRCUIT 2	SIZE A3	NEXT 20
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

REFERENCE/INTERFACE INFORMATION ONLY



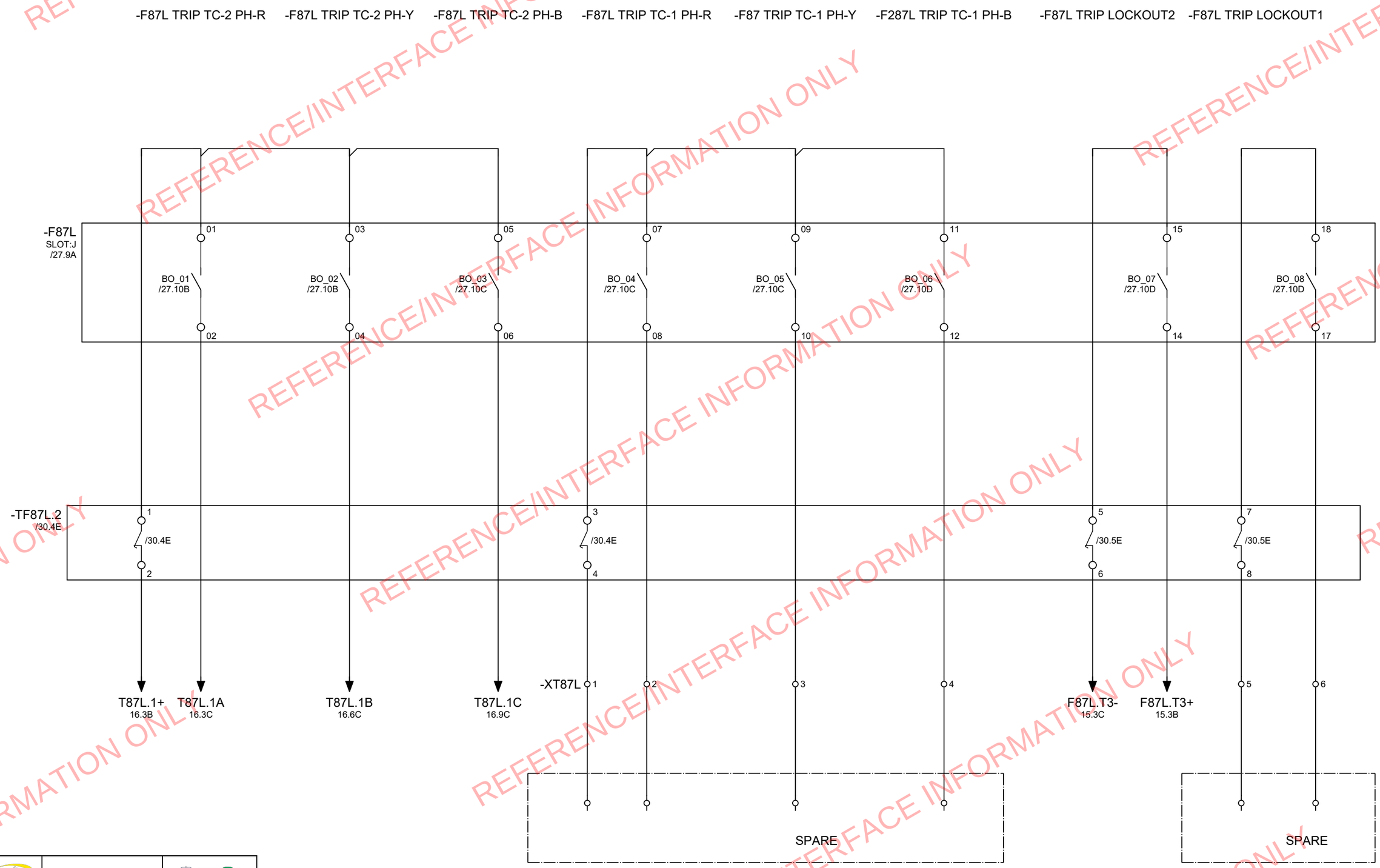
	Issued - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B -F87L BINARY INPUT CIRCUIT 3	SCALE N/A	SHEET 20
		SIZE A3	NEXT 21
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

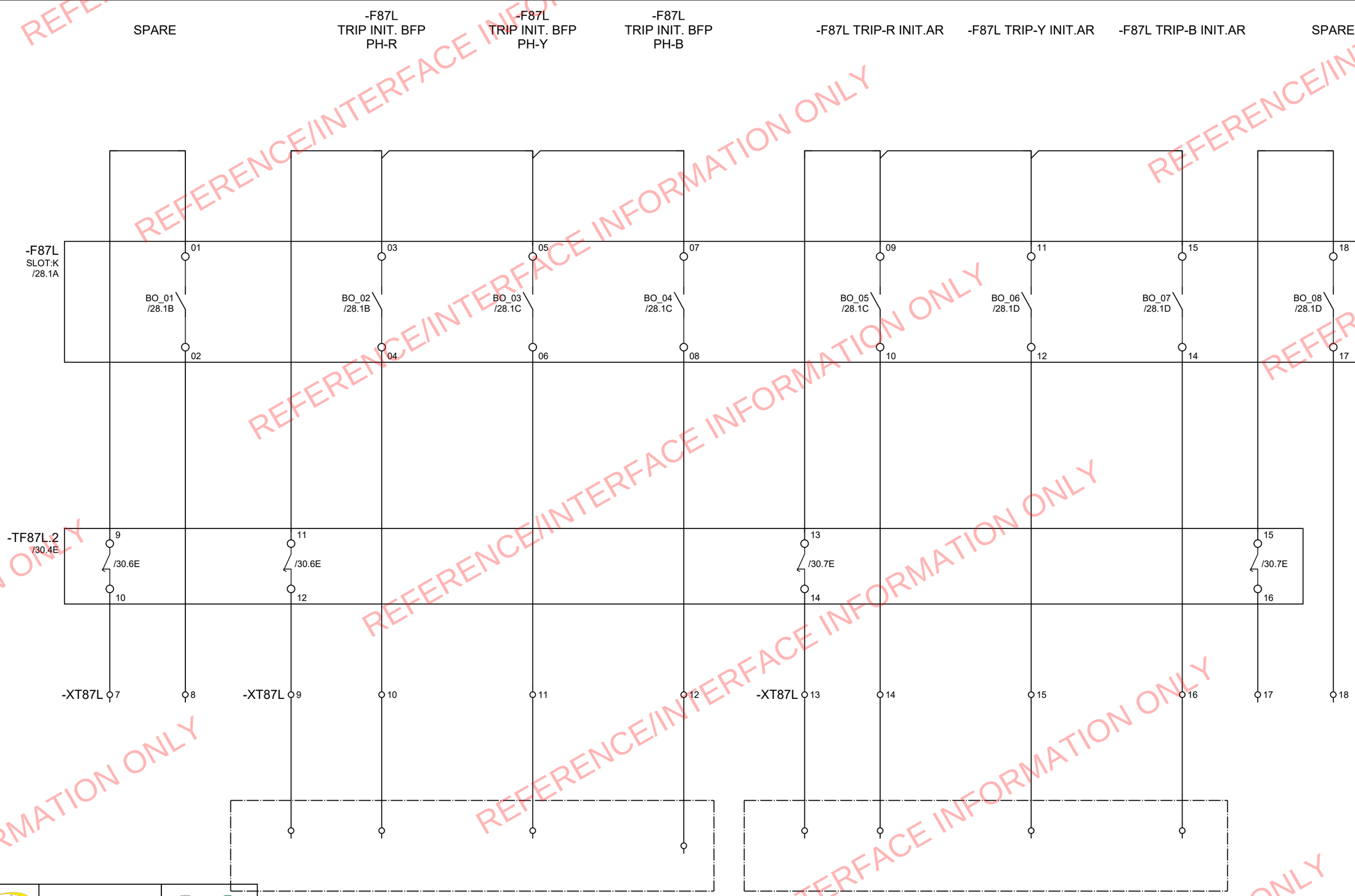
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B -F87L BINARY OUTPUT CIRCUIT 1	SCALE N/A	SHEET 21
		SIZE A3	NEXT 22
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



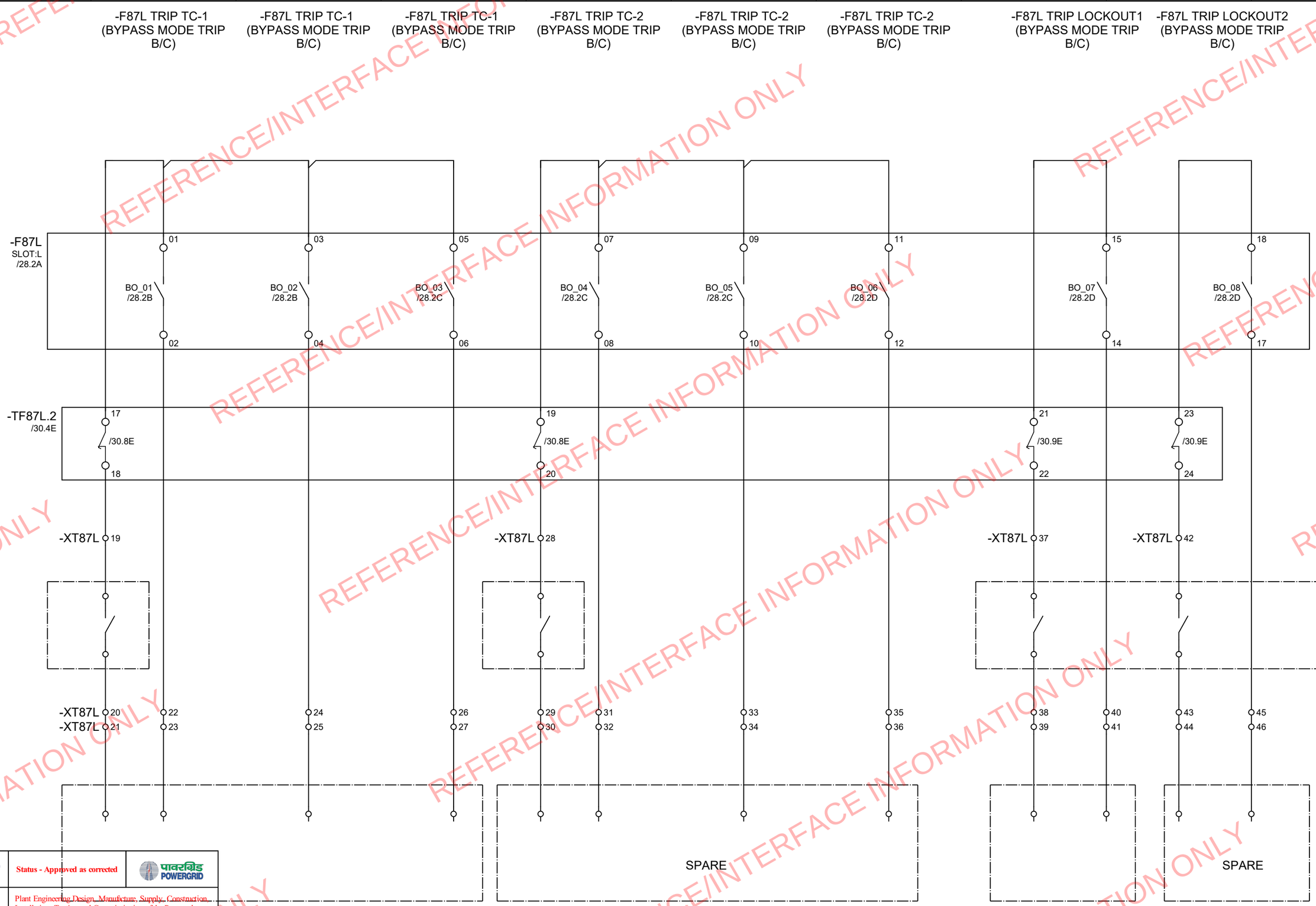
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT: 400kV TUNDUMA SUBSTATION	DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B -F87L BINARY OUTPUT CIRCUIT 2	=D06+R2
		SCALE N/A	SHEET 22
		SIZE A3	NEXT 23
		DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0 / TOTAL 34

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

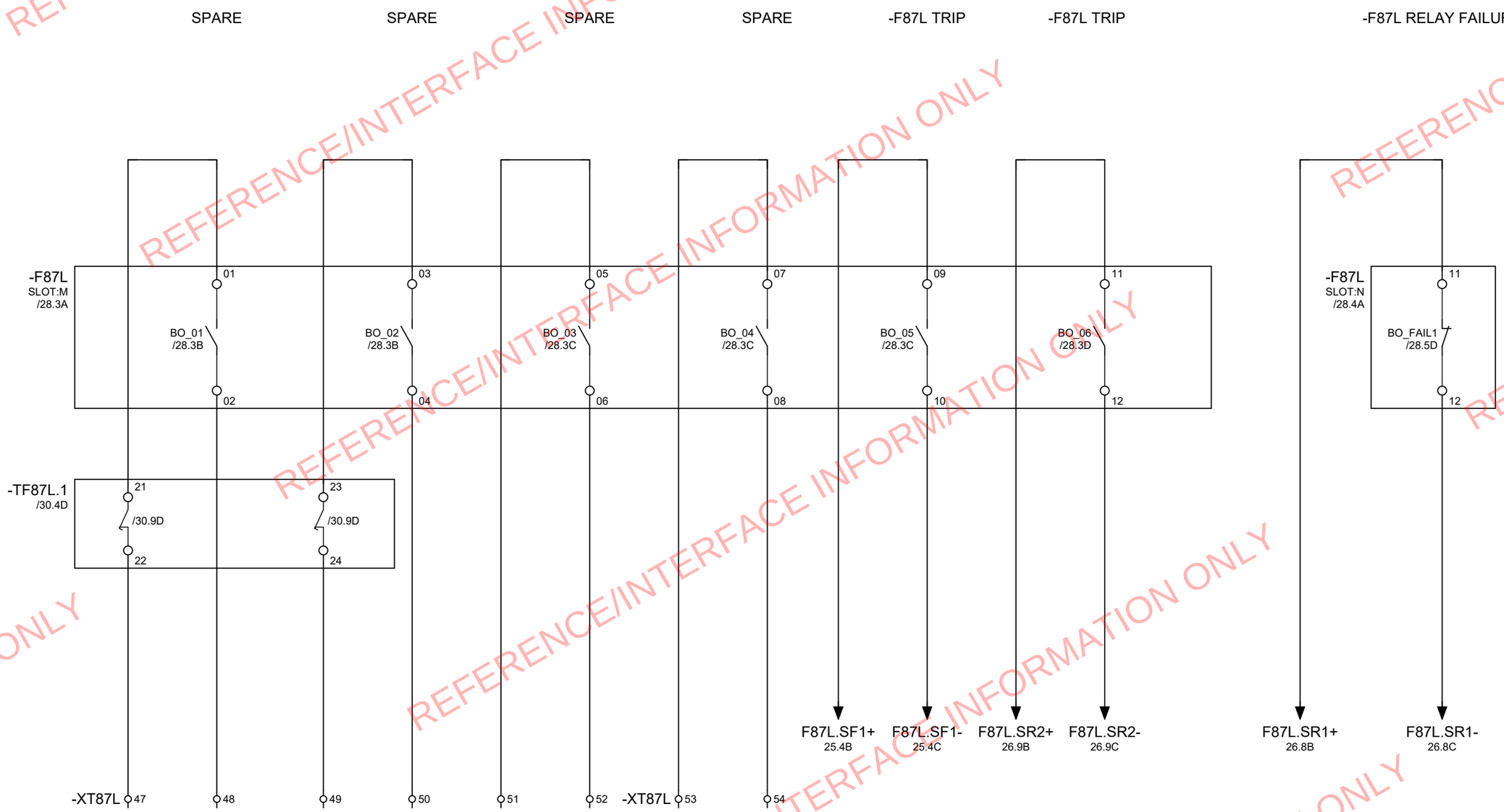


	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B -F87L BINARY OUTPUT CIRCUIT 3	SCALE N/A	SHEET 23
		SIZE A3	NEXT 24
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



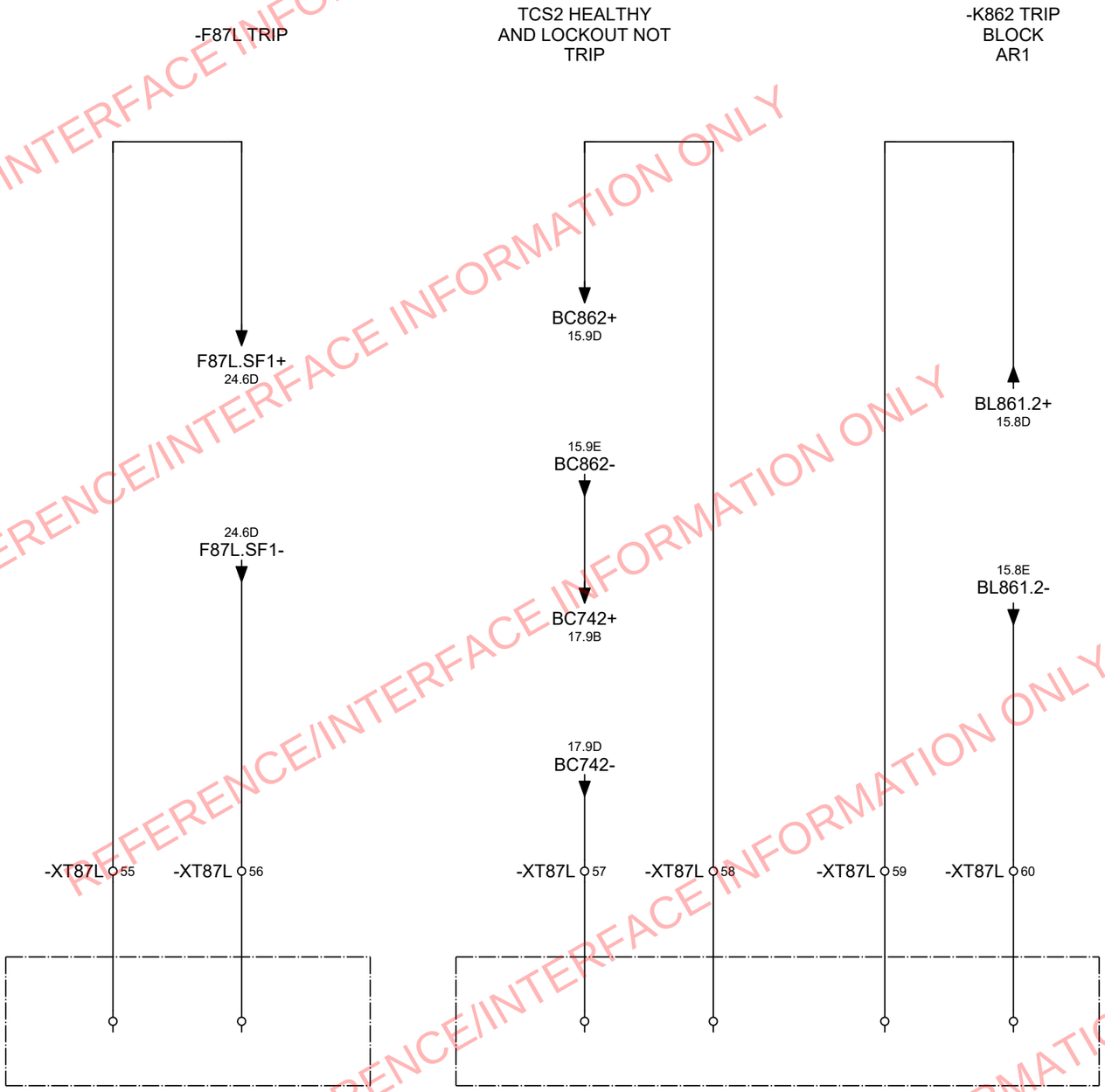
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE PROTECTION PANEL B -F87L BINARY OUTPUT CIRCUIT 4	=D06+R2
			SCALE N/A SHEET 24
			SIZE A3 NEXT 25
		DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0 TOTAL 34

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

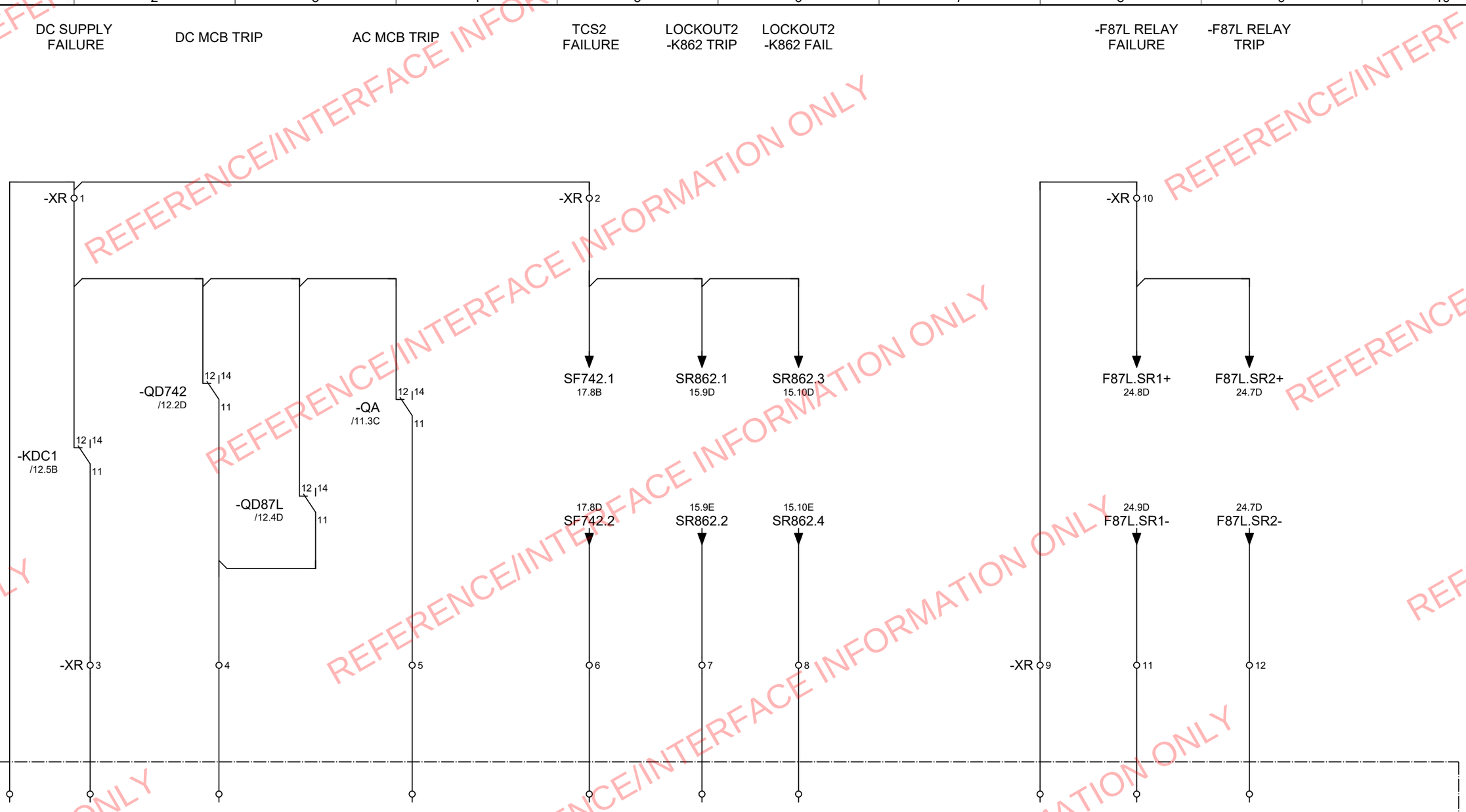
DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B SIGNAL OUTPUT CIRCUIT

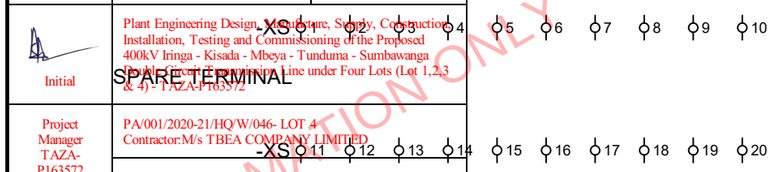
=D06+R2

SCALE	N/A	SHEET	25
SIZE	A3	NEXT	26
DWG. NO. HQW46-4-TND-EQP-DWG-1332		REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY





	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

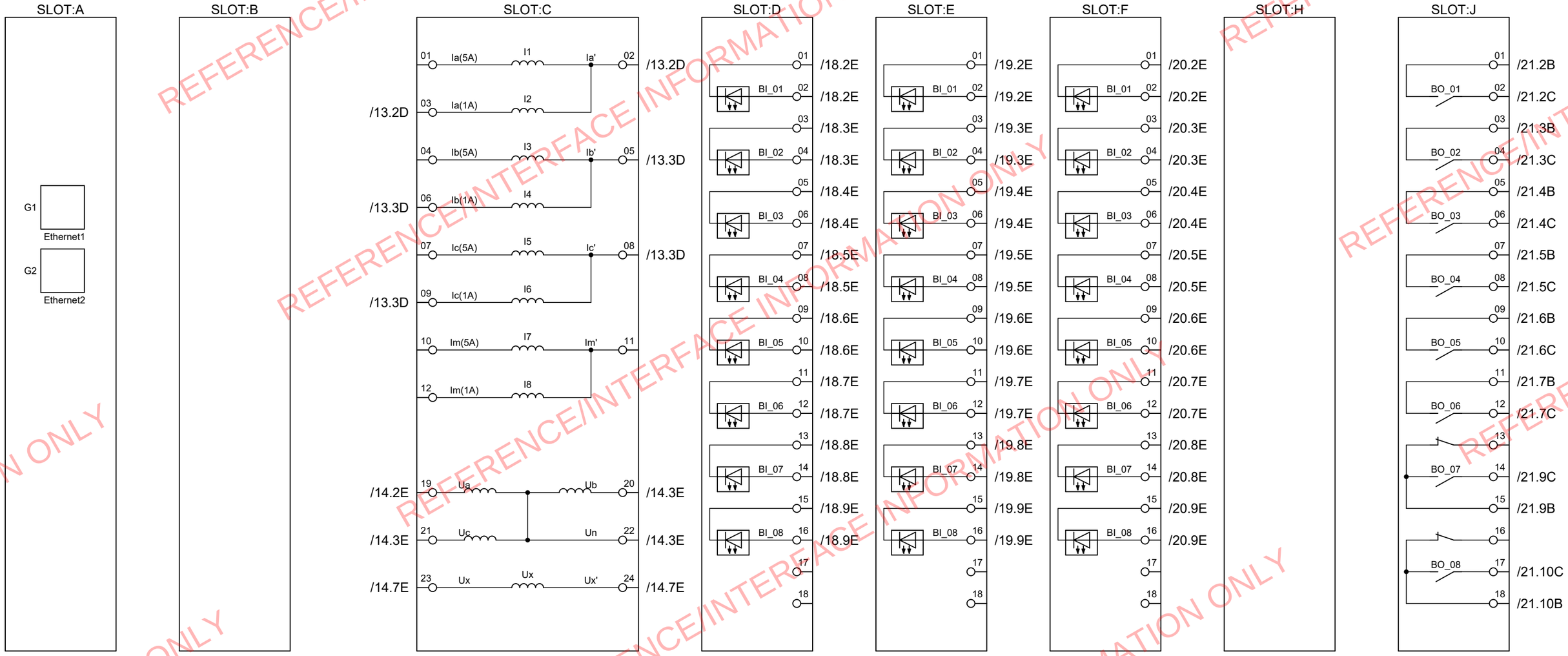
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 26
	SIGNAL OUTPUT CIRCUIT	SIZE A3	NEXT 27
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

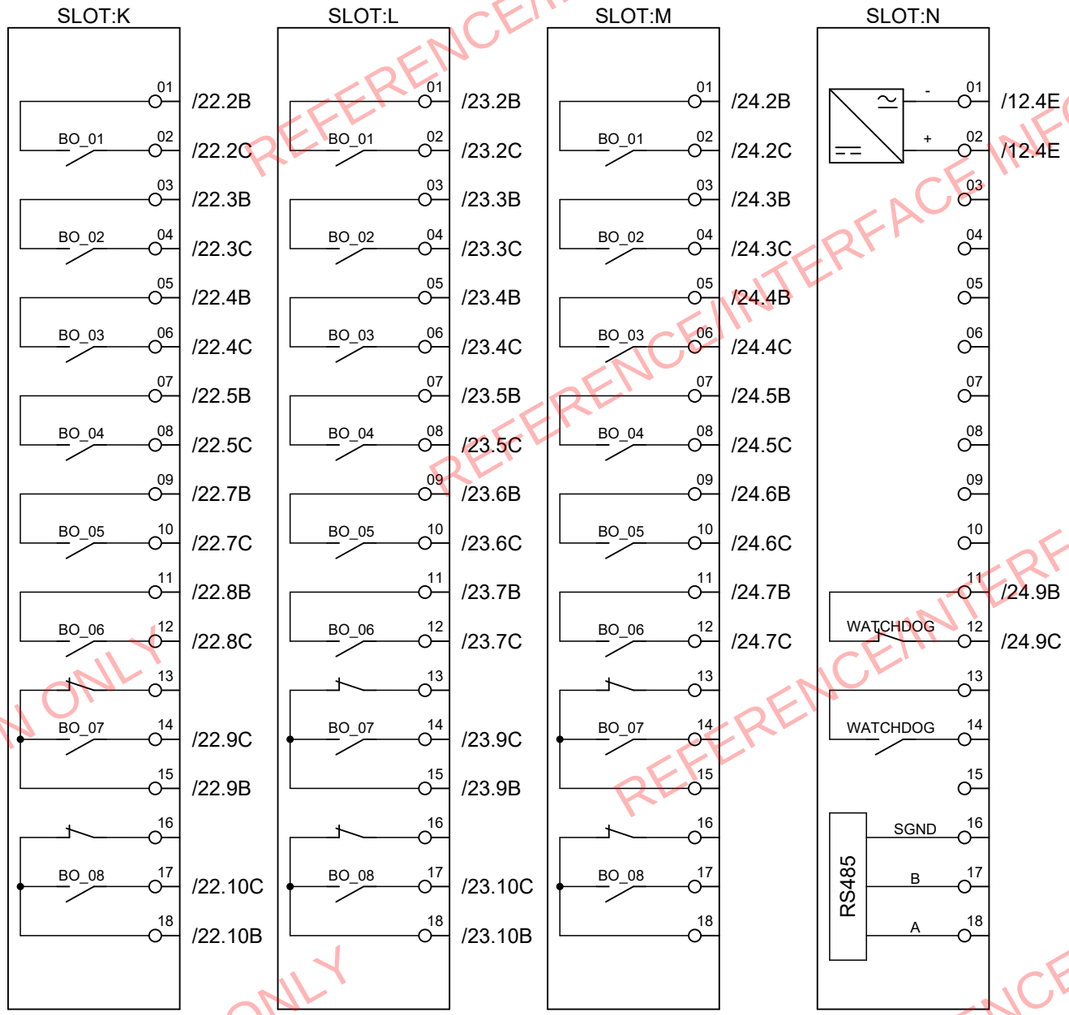
-F87L
P543



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT: 400kV TUNDUMA SUBSTATION	DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B -F87L P543 REAR VIEW 1	=D06+R2
		SCALE N/A	SHEET 27
		SIZE A3	NEXT 28
		DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0 / TOTAL 34

-F87L
P543



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

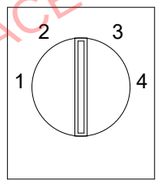
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+R2	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE PROTECTION PANEL B	SCALE N/A	SHEET 28
	-F87L P543 REAR VIEW 2	SIZE A3	NEXT 29
	DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0	TOTAL 34

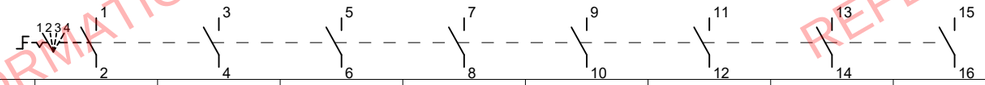
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM
LW21-16/4.4115.4 M1(W) ELX	SELECTION SWITCH	



1	1PH AR				X	X			
2	3PH AR		X					X	
3	1/3PH AR			X			X		
4	OFF	X							X

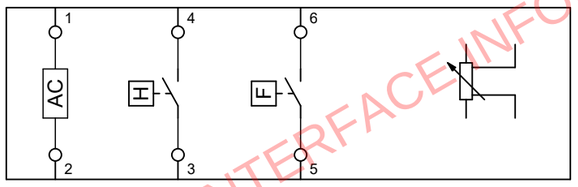


-SS79	AR MODE SWITCH	/18.8C	/18.6C	/18.7C	/18.5C						

ELXAL5-10-20/203-G+NONE ELX	PUSH BUTTON	

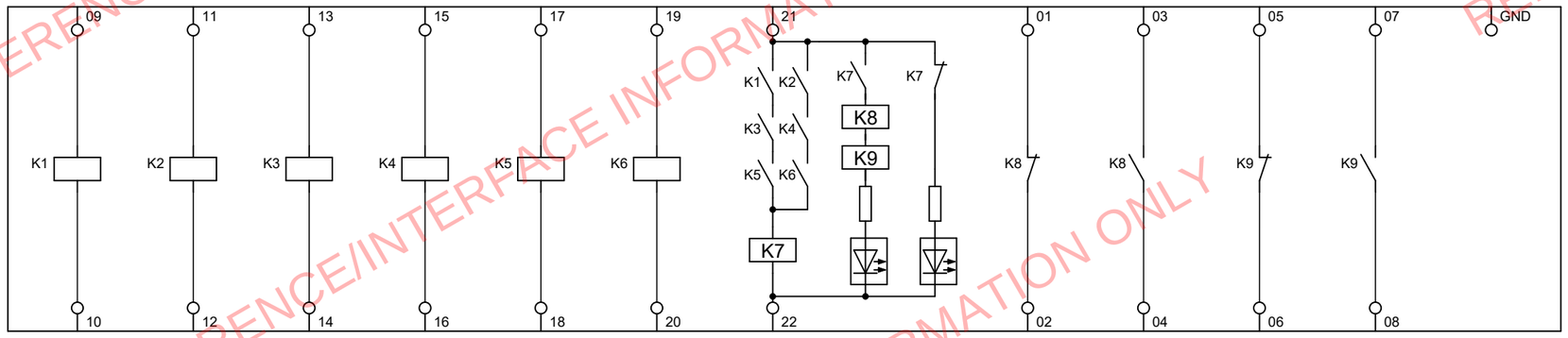
-PB87L	RESET -F87L	/18.2C	

TH-E-11/LED ODES	TEMP.& HUMIDITY CONTROLLER	



-C1		/11.4D

MD1501-552-AAA NR	TCS RELAY	



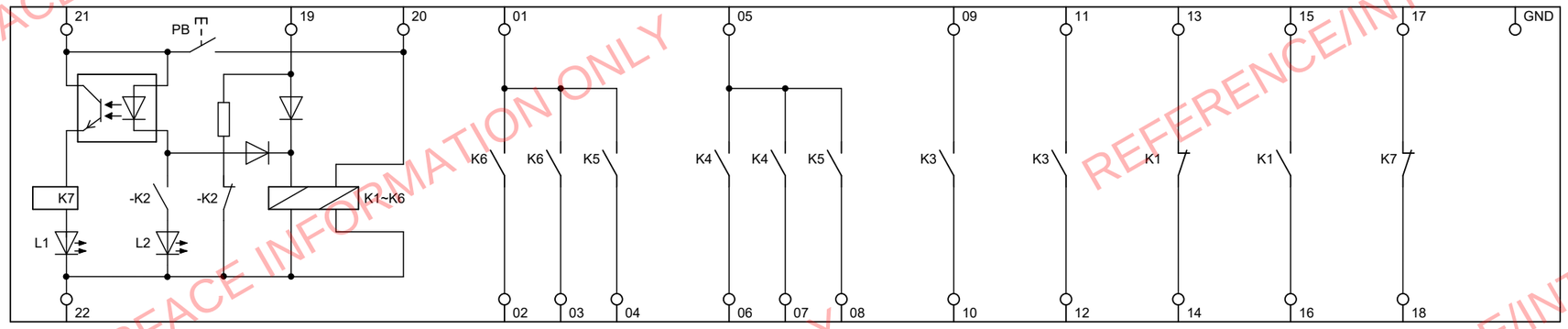
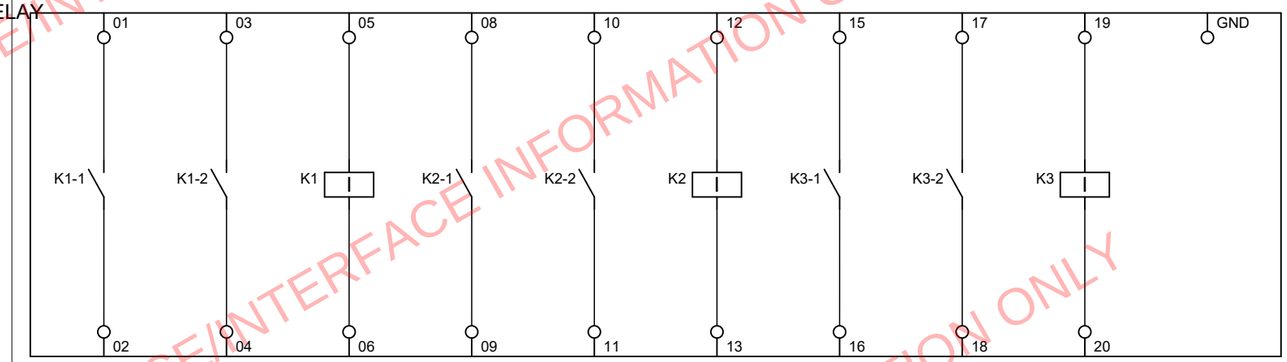
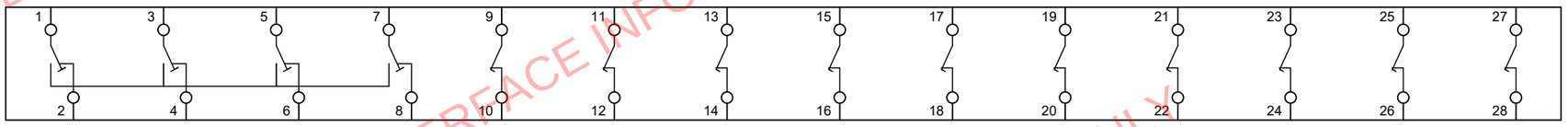
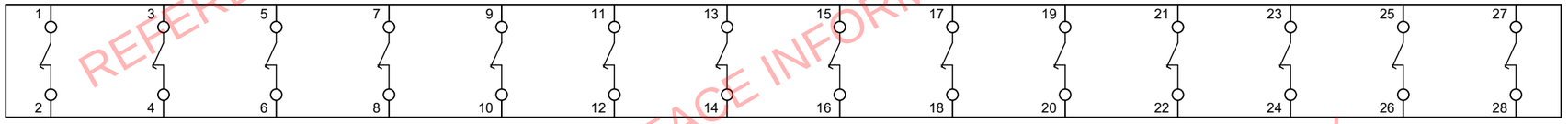
-K742	CB TCS RELAY 2	/17.3B	/17.3B	/17.4B	/17.5B	/17.6B	/17.6B	/17.7B	/17.8B	/17.9B	/17.10B		/17.10E

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE PROTECTION PANEL B ACCESSORIES MATERIAL LIST	=D06+R2
			SCALE N/A SHEET 29
			SIZE A3 NEXT 30
		DWG. NO. HQW46-4-TND-EQP-DWG-1332	REV. 0 TOTAL 34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM									
MD1501-571-AAA NR	LOCKOUT RELAY										
-K862	LOCKOUT RELAY 2	/15.2E	/15.5D	/15.6D	/15.8D	/15.8D	/15.9D	/15.9D	/15.10D	/15.4F	
MD1501-556-AAA NR	CURRENT OPERATED AUXILIARY RELAY										
-K962	CURRENT OPERATED RELAY	/16.4B		/16.4C	/16.7B		/16.7C	/16.10B		/16.10C	/16.9E
MD1701S-1I10U NR	TEST BLOCK										
-TF87L.1	TEST BLOCK 1 FOR -F87L	/13.2C	/13.3C	/13.3C	/13.4C	/14.2D	/14.3D	/14.3D	/14.3D	/14.7D	/14.7D	/24.2C	/24.3C
MD1701S-14U NR	TEST BLOCK										
-TF87L.2	TEST BLOCK 2 FOR -F87L	/21.2D	/21.5D	/21.8D	/21.9D	/22.1D	/22.3D	/22.6D	/22.9D	/23.2C	/23.5C	/23.8C	/23.9C

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B ACCESSORIES MATERIAL LIST

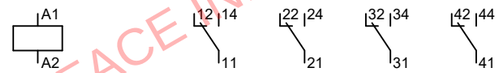
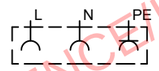
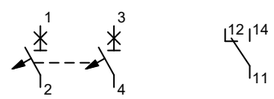
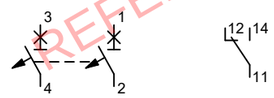
DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	30
SIZE	A3	NEXT	31
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM		
LED-8W PHILIPS	LIGHTING LAMP			
-H1		/11.3E		
DRG570220L WEI FS 4CO	RELAY RELAY SOCKET			
-KDC1		/12.5B	/26.2C	
LX-19K PGC	LIMITED SWITCH			
-LS1		/11.3D		
KDY-CZ-03 KEJIA	SOCKET			
-PS1		/11.6E		
NDB2LE-63C 16/2 Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QA	MCB FOR AC POWER	/11.3C	/26.4C	
NDB2Z-63C 4A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QB67L	-F87L DC SUPPLY	/12.4D	/26.3C	

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B ACCESSORIES MATERIAL LIST

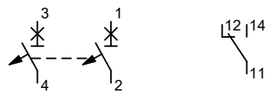
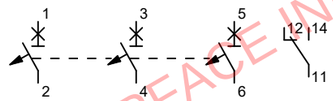
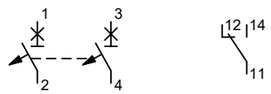
DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	31
SIZE	A3	NEXT	32
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM		
NDB2Z-63C 16A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QD742	TRIP&TCS 2 DC SUPPLY	/12.2D	/26.2C	
NDB2-63C 1A/3P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QV87L.1	-F87L LINE VOLTAGE MCB	/14.2C	/18.3C	
NDB2-63C 1A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QV87L.2	-F87L BB VOLTAGE MCB	/14.7C	/18.3C	
JRD2-150W ODES	HEATER			
-R1		/11.5E		

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B ACCESSORIES MATERIAL LIST

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	32
SIZE	A3	NEXT	33
REV.	0	TOTAL	34

-XS

EXTERNAL	NO.	INTERNAL	REFERENCE
	1		/26.2F
	2		/26.2F
	3		/26.2F
	4		/26.2F
	5		/26.3F
	6		/26.3F
	7		/26.3F
	8		/26.3F
	9		/26.3F
	10		/26.4F
	11		/26.2F
	12		/26.2F
	13		/26.2F
	14		/26.2F
	15		/26.3F
	16		/26.3F
	17		/26.3F
	18		/26.3F
	19		/26.3F
	20		/26.4F

-XD

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QD742:3	/12.2A
	2		/12.3A
	3	-KDC1:A2	/12.5A
	4	-QD742:1	/12.2B
	5		/12.3B
	6	-KDC1:A1	/12.5B

-XU87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QV87L.1:1	/14.2C
	2		/14.2C
	3	-QV87L.1:3	/14.3C
	4		/14.3C
	5	-QV87L.1:5	/14.3C
	6		/14.3C
	7	-TF87L.1:15	/14.3C
	8		/14.4C
	9		/14.7C
	10	-QV87L.2:1	/14.7C
	11	-QV87L.2:3	/14.7C
	12		/14.7C

-XI87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-TF87L.1:1	/13.2C
	2	-TF87L.1:3	/13.3C
	3	-TF87L.1:5	/13.3C
	4	-TF87L.1:7	/13.4C
	5		/13.4C
	6	-F87L-C:02	/13.2E
	7	-F87L-C:05	/13.3E

-XI87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	8	-F87L-C:08	/13.3E
	9	-TF87L.1:8	/13.4E
	10		/13.4E
	11		/13.4E

-XB21

EXTERNAL	NO.	INTERNAL	REFERENCE
-QD87L:4	1	-PB87L:13	/18.2B
	2		/18.4B
	3	-SS79:7	/18.5B
	4		/18.10B
	5		/19.2B
	6		/19.6B
	7		/19.7B
	8		/20.2A
	9		/20.5A
	10		/20.6A
	11	-F87L-D:06	/18.4D
-K862:12	12	-F87L-D:16	/18.9D
	12.a		/18.10D
	13	-F87L-E:02	/19.2D
	14	-F87L-E:04	/19.3D
	15	-F87L-E:06	/19.4D
	16	-F87L-E:08	/19.5D
	17	-F87L-E:10	/19.6D
	18	-F87L-E:12	/19.7D
	19	-F87L-E:14	/19.8D
	20	-F87L-E:16	/19.9D
	21		/20.2B
	22	-F87L-F:02	/20.2D
	23	-F87L-F:04	/20.3D
	24	-F87L-F:06	/20.4D
	25	-F87L-F:08	/20.5D
	26	-F87L-F:10	/20.6D
	27	-F87L-F:12	/20.7D
	28	-F87L-F:14	/20.8D
	29	-F87L-F:16	/20.9D

-XT87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-TF87L.2:4	/21.5E
	2	-F87L-J:08	/21.5E
	3	-F87L-J:10	/21.6E
	4	-F87L-J:12	/21.7E
	5	-TF87L.2:8	/21.9E
	6	-F87L-J:17	/21.10E
	7	-TF87L.2:10	/22.1D
	8	-F87L-K:02	/22.2D
	9	-TF87L.2:12	/22.3D
	10	-F87L-K:04	/22.3D
	11	-F87L-K:06	/22.4D
	12	-F87L-K:08	/22.5D
	13	-TF87L.2:14	/22.6D
	14	-F87L-K:10	/22.7D
	15	-F87L-K:12	/22.8D

-XT87L

EXTERNAL	NO.	INTERNAL	REFERENCE
	16	-F87L-K:14	/22.9D
	17	-TF87L.2:16	/22.9D
	18	-F87L-K:17	/22.10D
	19	-TF87L.2:18	/23.2D
	20		/23.2E
	21		/23.2E
	22	-F87L-L:02	/23.2E
	23		/23.2E
	24	-F87L-L:04	/23.3E
	25		/23.3E
	26	-F87L-L:06	/23.4E
	27		/23.4E
	28	-TF87L.2:20	/23.5D
	29		/23.5E
	30		/23.5E
	31	-F87L-L:08	/23.5E
	32		/23.5E
	33	-F87L-L:10	/23.6E
	34		/23.6E
	35	-F87L-L:12	/23.7E
	36		/23.7E
	37	-TF87L.2:22	/23.8D
	38		/23.8E
	39		/23.8E
	40	-F87L-L:14	/23.9E
	41		/23.9E
	42	-TF87L.2:24	/23.9D
	43		/23.9E
	44		/23.9E
	45	-F87L-L:17	/23.10E
	46		/23.10E
	47	-TF87L.1:22	/24.2D
	48	-F87L-M:02	/24.2D
	49	-TF87L.1:24	/24.3D
	50	-F87L-M:04	/24.3D
	51	-F87L-M:05	/24.4D
	52	-F87L-M:06	/24.4D
	53	-F87L-M:07	/24.5D
	54	-F87L-M:08	/24.5D
	55	-F87L-M:09	/25.3D
	56	-F87L-M:10	/25.4D
	57	-K742:04	/25.6D
	58	-K862:13	/25.6D
	59	-K862:09	/25.7D
	60	-K862:10	/25.8D

-XB82

EXTERNAL	NO.	INTERNAL	REFERENCE
-QD742:4	1	-K862:21	/15.2B
	2	-F87L-J:14	/15.3B
	3		/15.3B
	4	-XC72:1	/15.4B
-K862:19	5	-TF87L.2:6	/15.3D
	6		/15.3D
	7	-K862:20	/15.4D
	8		/15.4B

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	33
SIZE	A3	NEXT	34
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-XB82

EXTERNAL	NO.	INTERNAL	REFERENCE
	9	-K862:05	/15.6D
	10	-K862:06	/15.6E
	11	-K862:07	/15.7E
	12	-K862:08	/15.7E

-XC72

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-XB82:4	/16.1A
	2	-K862:01	/16.2A
	3		/16.2A
	4		/16.3A
	5	-TF87L.2:2	/16.3A
	6	-K962:01	/16.4A
	7	-K962:08	/16.7A
	8	-K962:15	/16.10A
	9		/17.1A
	10	-K742:09	/17.3A
	11		/16.1D
	12	-K862:02	/16.2D
	13	-K962:06	/16.4D
	14		/17.2D
-X1:??	15	-K742:10	/17.3D
	16		/16.2C
	17		/16.3C
	18	-F87L-J:02	/16.3C
-K962:05	19	-K962:02	/16.4C
	20		/16.5D
	21	-K862:03	/16.5D
	22	-K962:13	/16.7D
	23		/17.4D
-X1:??	24	-K742:14	/17.4D
	25		/16.5C
	26		/16.6C
	27	-F87L-J:04	/16.6C
-K962:12	28	-K962:09	/16.7C
	29		/16.8D
	30	-K862:04	/16.8D
	31	-K962:20	/16.10D
	32		/17.5D
-X1:??	33	-K742:18	/17.6D
	34		/16.9C
	35		/16.9C
	36	-F87L-J:06	/16.9C
-K962:19	37	-K962:16	/16.10C
	38	-K862:22	/17.1F
	39	-K742:22	/17.7F
-X1:??	40	-K742:11	/17.3D
-X1: ?	41	-K742:12	/17.3D
-X1:??	42	-K742:15	/17.4D
-X1: ?	43	-K742:16	/17.5D
-X1:??	44	-K742:19	/17.6D
-X1: ?	45	-K742:20	/17.6D
	46		/17.6D

-XR

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-KDC1:12	/26.2B
	2	-K742:01	/26.5B
	3	-KDC1:11	/26.2D
	4	-QD742:11	/26.2D
	5	-QA:11	/26.4D
	6	-K742:02	/26.5D
	7	-K862:16	/26.5D
	8	-K862:18	/26.6D
	9		/26.8D
	10	-F87L-N:11	/26.8B
	11	-F87L-N:12	/26.8D
	12	-F87L-M:12	/26.9D

-XA

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QA:1	/11.3B
	2		/11.4B
	3	-QA:3	/11.3B
	4		/11.4B
-QA:2	5	-C1:1	/11.4C
	6	-PS1:L	/11.7C
-QA:4	7	-C1:2	/11.4E
	8		/11.5E
	9	-PS1:N	/11.6E

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE PROTECTION PANEL B TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1332

=D06+R2

SCALE	N/A	SHEET	34
SIZE	A3	NEXT	
REV.	0	TOTAL	34

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

PROJECT NAME	400kV TUNDUMA SUBSTATION		
PANEL NO.	SJS25002395.PG278-PG279	DRAWING NO.	NR-D25-012572-C0010
TYPE	NR-G03 PANEL	QUANTITY	2
DIMENSION	2260*800*800(H*W*D)	PAINT	RAL7035
TECHNICAL RATING	POWER:DC220V CT:1A PT:110V f:50Hz		

=D06+W1

330kV NAKONDE1 LINE CONTROL PANEL

THIS DRAWING IS VALID FOR D06/D07 LINE

REV	DATE	DESCRIPTION	DESD.	CKD.	APPRD.
0	2025.08.09	FOR APPROVAL	XU	Sun Dexian	Zhong Siwei

CLIENT: TANZANIA ELECTRIC SUPPLY COMPANY LTD.
Plot 114, Block G, Dar es Salaam Road, P.O. Box 453,
Dodoma, Tanzania

CONSULTANT: POWER GRID CORPORATION OF INDIA

CONTRACTOR: TBEA CO., LIMITED
Building 27, Block 18, Nansihuan West Road
Beijing, China

PROJECT : Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Proposed 400/330kV Tunduma Auto-Transformation Substation and 4km of 330kV Double Circuit Transmission Line from Tunduma Substation to the Border

CONTRACT NO. : PA/001/2020-2021/HQ/W/46

SUBSTATION: 400kV TUNDUMA SUBSTATION

RELEASED FOR: ☐ BASIC ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ AS BUILT REV.: 0

APRROVED	Zhong Siwei	SCALE	TITLE : 330kV NAKONDE1 LINE CONTROL PANEL COVER
CHECKED	Sun Dexian	N/A	
DESIGNED	XU	2025-06-19	
SIZE	A3		DWG. No. :HQW46-4-TND-EQP-DWG-1333 SHEET 01 OF 54

	Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

NO.	SHEET	DWG. TITLE	REV.
1	01	COVER	0
2	02	INDEX	0
3	03	LEGEND	0
4	04	PANEL LAYOUT	0
5	05	BILL OF MATERIALS	0
6	06	PANEL STRUCTURE 1	0
7	07	PANEL STRUCTURE 2	0
8	08	PANEL DETAILED INFORMATION	0
9	09	AC POWER SUPPLY CIRCUIT	0
10	10	DC POWER SUPPLY CIRCUIT 1	0
11	11	DC POWER SUPPLY CIRCUIT 2	0
12	12	-BCU1 CT&VT CURRENT CIRCUIT	0
13	13	-BCU1 BINARY INPUT CIRCUIT 1	0
14	14	-BCU1 BINARY INPUT CIRCUIT 2	0
15	15	-BCU1 BINARY INPUT CIRCUIT 3	0
16	16	-BCU1 BINARY INPUT CIRCUIT 4	0
17	17	-BCU1 BINARY INPUT CIRCUIT 5	0
18	18	-BCU1 BINARY INPUT CIRCUIT 6	0
19	19	-BCU1 BINARY INPUT CIRCUIT 7	0
20	20	-BCU1 BINARY INPUT CIRCUIT 8	0
21	21	-BCU1 BINARY INPUT CIRCUIT 9	0
22	22	-BCU1 BINARY INPUT CIRCUIT 10	0
23	23	-BCU1 BINARY INPUT CIRCUIT 11	0
24	24	-BCU1 BINARY INPUT CIRCUIT 12	0
25	25	-BCU1 BINARY INPUT CIRCUIT 13	0
26	26	-BCU1 BINARY OUTPUT CIRCUIT 1	0
27	27	-BCU1 BINARY OUTPUT CIRCUIT 2	0
28	28	-BCU1 BINARY OUTPUT CIRCUIT 3	0
29	29	SWITCHGEAR POSITION INDICATION	0
30	30	CB Q01 CONTROL DIAGRAM	0

NO.	SHEET	DWG. TITLE	REV.
31	31	BUS1 DS Q1 CONTROL DIAGRAM	0
32	32	BUS2 DS Q2 CONTROL DIAGRAM	0
33	33	LINE DS Q9 CONTROL DIAGRAM	0
34	34	BYPASS Q7 CONTROL DIAGRAM	0
35	35	LINE ES Q8 CONTROL DIAGRAM	0
36	36	-H11 BINARY INPUT CIRCUIT 1	0
37	37	-H11 BINARY INPUT CIRCUIT 2	0
38	38	-H11 BINARY INPUT CIRCUIT 3	0
39	39	-H11 BINARY INPUT CIRCUIT 4	0
40	40	-H11 BINARY INPUT CIRCUIT 5	0
41	41	-H11 BINARY INPUT CIRCUIT 6	0
42	42	-H11 BINARY INPUT CIRCUIT 7	0
43	43	-H11 BINARY INPUT CIRCUIT 8	0
44	44	SIGNAL OUTPUT CIRCUIT	0
45	45	-BCU1 PCS-9705S-L REAR VIEW 1	0
46	46	-BCU1 PCS-9705S-L REAR VIEW 2	0
47	47	-H11 ANNUNCIATOR REAR VIEW	0
48	48	ACCESSORIES MATERIAL LIST	0
49	49	ACCESSORIES MATERIAL LIST	0
50	50	ACCESSORIES MATERIAL LIST	0
51	51	ACCESSORIES MATERIAL LIST	0
52	52	TERMINAL BLOCK	0
53	53	TERMINAL BLOCK	0
54	54	TERMINAL BLOCK	0

Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Tunduma - Sumbawanga - Kisada - Mbeya - Tunduma Transmission Line in Double Circuit Transmission Line under Four Lots (Lot 1, 2, 3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL INDEX

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	02
SIZE	A3	NEXT	03
REV.	0	TOTAL	54

REFERENCE/INTERFACE INFORMATION ONLY

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	MAKE CONTACT		RELAY COIL (1 COIL)		LIMITED SWITCH, NC		RESISTOR		TRANSFORMER WITH TWO WINDINGS
	BREAK CONTACT		RELAY COIL (1 ACTIVE COIL AND 1 RESET COIL)		PUSHING BUTTON, NO		HEATER		THREE PHASE WINDING STAR
	CHANGEOVER CONTACT		AC OR DC / DC CONVERTER		SELECTION SWITCH		PROBE TEMPERATURE AND HUMIDITY CONTROLLER		THREE PHASE WINDING DELTA
	ISOLATOR LINK		DC CONVERTER	123	SELECTION SWITCH, 3 POSITIONS	M 1~	AC MOTOR, VENTILATING FAN, SINGLE PHASE		CURRENT TRANSFORMER
	FEED-THROUGH TERMINAL BLOCK		TRANSDUCER		MINIATURE CIRCUIT BREAKER		ALARM / BELL		CIRCUIT BREAKER
	DISCONNECT WITH TEST PLUGS TERMINAL BLOCK		COAXIAL CABLE PORT		WINDING	A	AMP-METER		DISCONNECT SWITCH
	KNIFE DISCONNECT TERMINAL BLOCK		RJ45 ETHERNET PORT		OPTOCOUPLER	V	VOLT-METER	M	OPERATED BY MOTOR
	TEST BLOCK		LC FIBER OPTICAL PORT		DIODE	W	WATT-METER		LIGHTNING ARRESTER
	TERMINAL WITH PLUG-IN CONNECTION (FEMALE PIN)		FC/ST OPTICAL PORT		LAMP	VAR	VAR-METER		FUSE
	TERMINAL WITH PLUG-IN CONNECTION (MALE PIN)		CABLE		SOCKET	WH	WATT-HOUR-METER		GROUND

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
LEGEND

=D06+W1

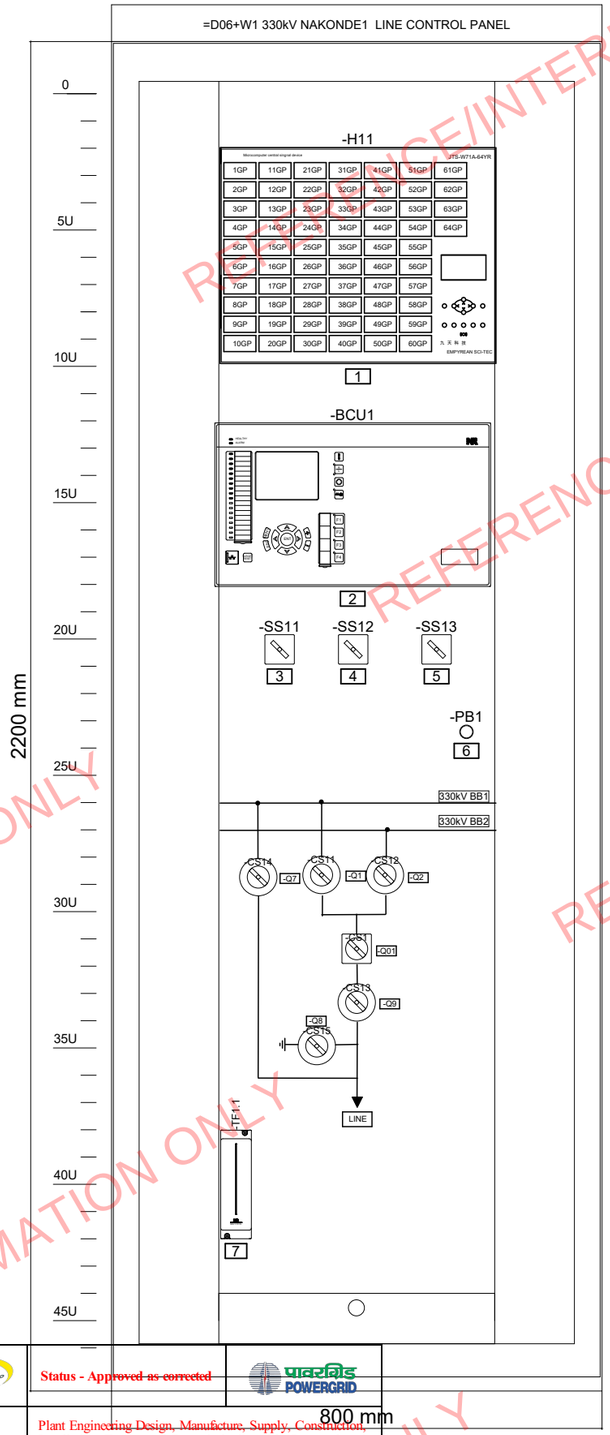
SCALE	N/A	SHEET	03
SIZE	A3	NEXT	04
REV.	0	TOTAL	54

DWG. NO. HQW46-4-TND-EQP-DWG-1333

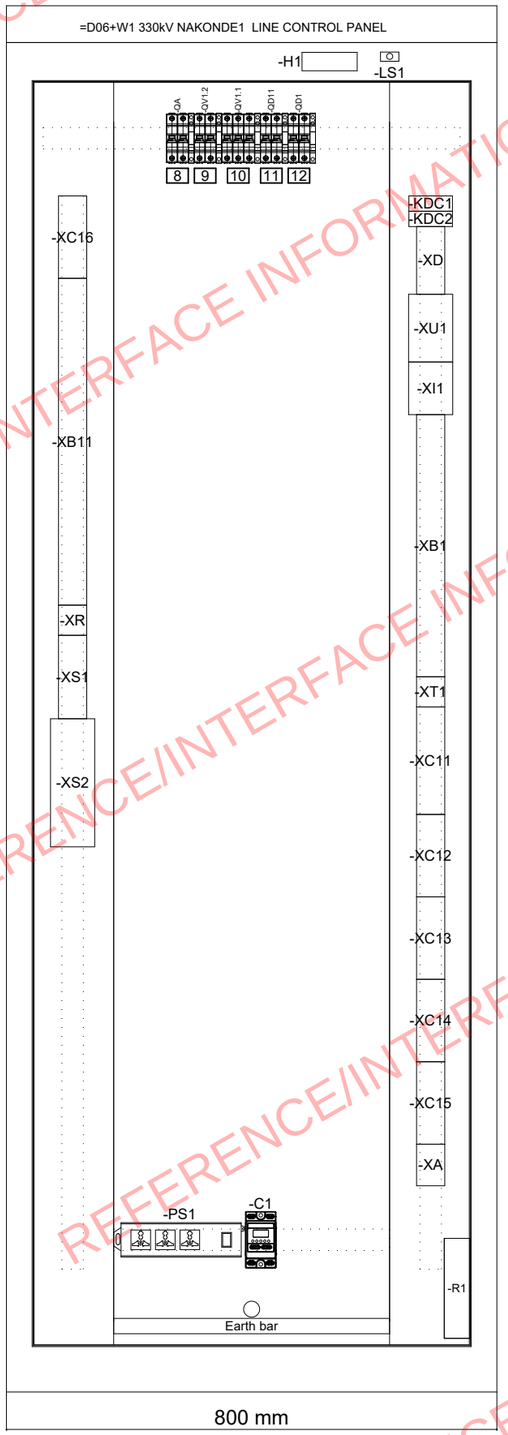
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



FRONT VIEW



REAR VIEW

THIS DRAWING IS VALID FOR:

PANEL NO.	NAME PLATE	BAY NO.
PG278	=D06+W1 220kV NAKONDE1 LINE CONTROL PANEL	D06
PG279	=D07+W1 220kV NAKONDE2 LINE CONTROL PANEL	D07

NO.	LABEL
1	-H11 ANNUNCIATOR
2	-BCU1 BAY CONTROL UNIT FOR LINE
3	-SS11 BAY CONTROL MODE SWITCH FOR -BCU1
4	-SS12 INTERLOCK MODE SWITCH FOR -BCU1
5	-SS13 SYN.CHECK SELECT SWITCH FOR -BCU1
6	-PB1 LAMP TEST
7	-TF1.1 TEST BLOCK 1 FOR -BCU1
8	-QA MCB FOR AC POWER
9	-QV1.2 -BCU1 VOLTAGE MCB 2
10	-QV1.1 -BCU1 VOLTAGE MCB 1
11	-QD11 -H11 DC SUPPLY
12	-QD1 -BCU1 DC SUPPLY

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1, 2, 3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
PANEL LAYOUT

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	04
SIZE	A3	NEXT	05
REV.	0	TOTAL	54

REFERENCE/INTERFACE INFORMATION ONLY

NO.	SYMBOL	DESCRIPTION	TYPE	QTY.	MANUFACTURER	REMARK
1	-BCU1	BAY CONTROL UNIT	PCS-9705S-L	1	NR	MOT:PCS-9705S-A-AA-RX.XX-ACBA-CCAAC-A-CXBXXXEEEXXXFXX-R1;
2	-PB1	PUSH BUTTON	ELXAL5-10-20/203-G+NONE	1	ELX	
3	-CS1	SELECTION SWITCH	LW21-16DM:DLYFHD/39.N011.3(T) DC 220V-F	1	ELX	
4	-CS11...-CS15	SELECTION SWITCH	LW21-16DM:DLYFHD/39.N011.3(T) DC 220V-Y	5	ELX	
5	-SS11	SELECTION SWITCH	LW21-16/4.7955.12 M1(W)	1	ELX	
6	-SS12;-SS13	SELECTION SWITCH	LW21-16/9.0932.3 M1(W)	2	ELX	
7	-QA	MCB	NDB2LE-63C 16/2	1	Nader	Residual current operated circuit breakers prevent earth leakage;
8	-QD1;-QD11	MCB	NDB2Z-63C 4A/2P	2	Nader	
9	-QV1.1	MCB	NDB2-63C 1A/3P	1	Nader	
10	-QV1.2	MCB	NDB2-63C 1A/2P	1	Nader	
11	-QA;-QD1;-QD11;-QV1.1;-QV1.2	AUXILIARY CONTACT (OF)	NDB2-OF2	5	Nader	
12	-XA;-XB1;-XB11;-XR;-XS1;-XT1	FEED-THROUGH TERMINAL BLOCK	UK 5 N	192	Phoenix Contact	
13	-XC11...-XC16	FEED-THROUGH TERMINAL BLOCK	UK 10 N	76	Phoenix Contact	
14	-XD	FEED-THROUGH TERMINAL BLOCK	UK 6 N	12	Phoenix Contact	
15	-XI1;-XS2;-XU1	TEST DISCONNECT TERMINAL BLOCK	URTK/S	45	Phoenix Contact	
16	-TF1.1	TEST BLOCK	MD1701S-1I10U	1	NR	
17	-PS1	SOCKET	KDY-CZ-03	1	KEJIA	Support British standard plug;
18	-C1	TEMP.& HUMIDITY CONTROLLER	TH-E-11/LED	1	ODES	
19	-KDC1;-KDC2	RELAY	DRG570220L	2	Weidmueller	
20	-KDC1;-KDC2	RELAY SOCKET	FS 4CO	2	Weidmueller	
21	-R1	HEATER	JRD2-150W	1	ODES	
22	-H1	LIGHTING LAMP	LED-8W	1	PHILIPS	
23	-H11	CENTRAL ALARM DEVICE	JTS-W71A-64YR	1	EMPYREAN	
24	-LS1	LIMITED SWITCH	LX-19K	1	PGC	

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

Status - Approved as corrected

पावरग्रिड POWERGRID

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL BILL OF MATERIALS

DWG. NO. HQW46-4-TND-EQP-DWG-1333

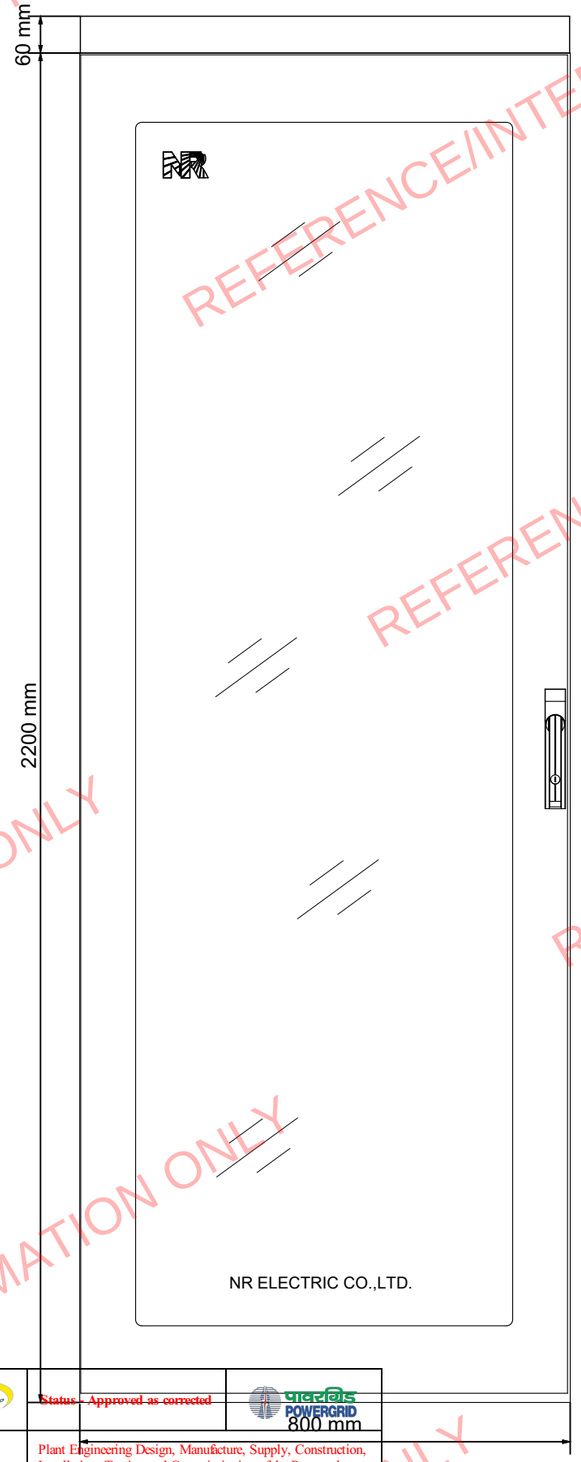
=D06+W1

SCALE	N/A	SHEET	05
SIZE	A3	NEXT	06
REV.	0	TOTAL	54

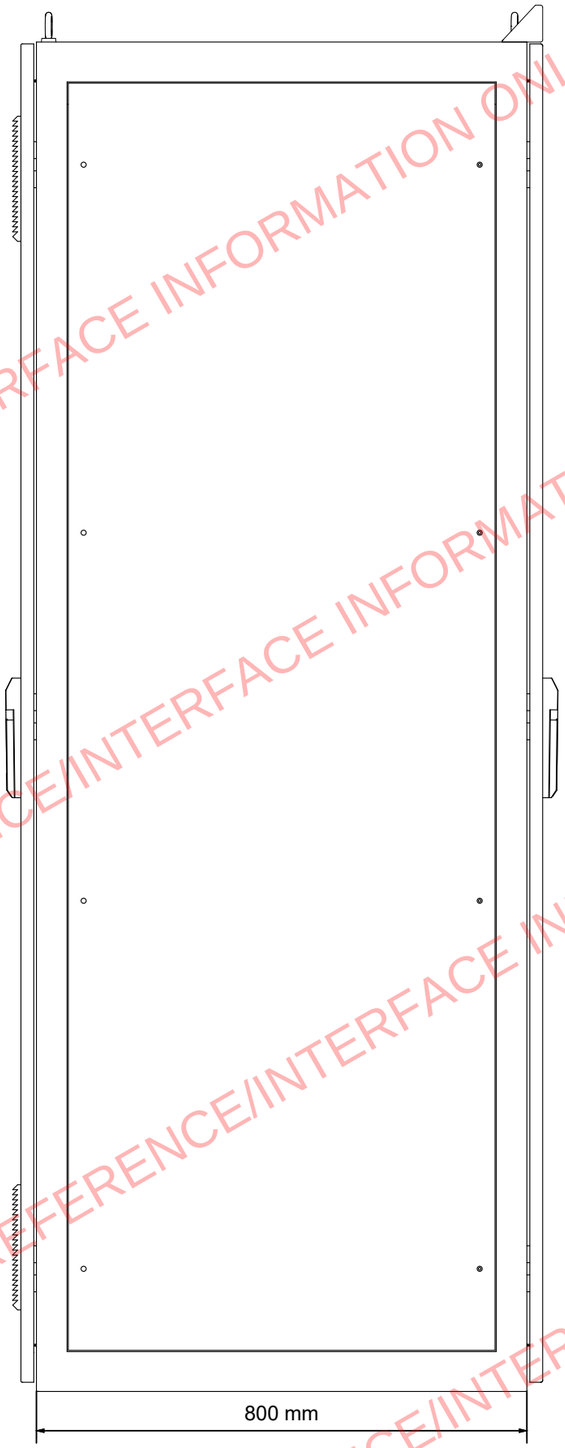
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

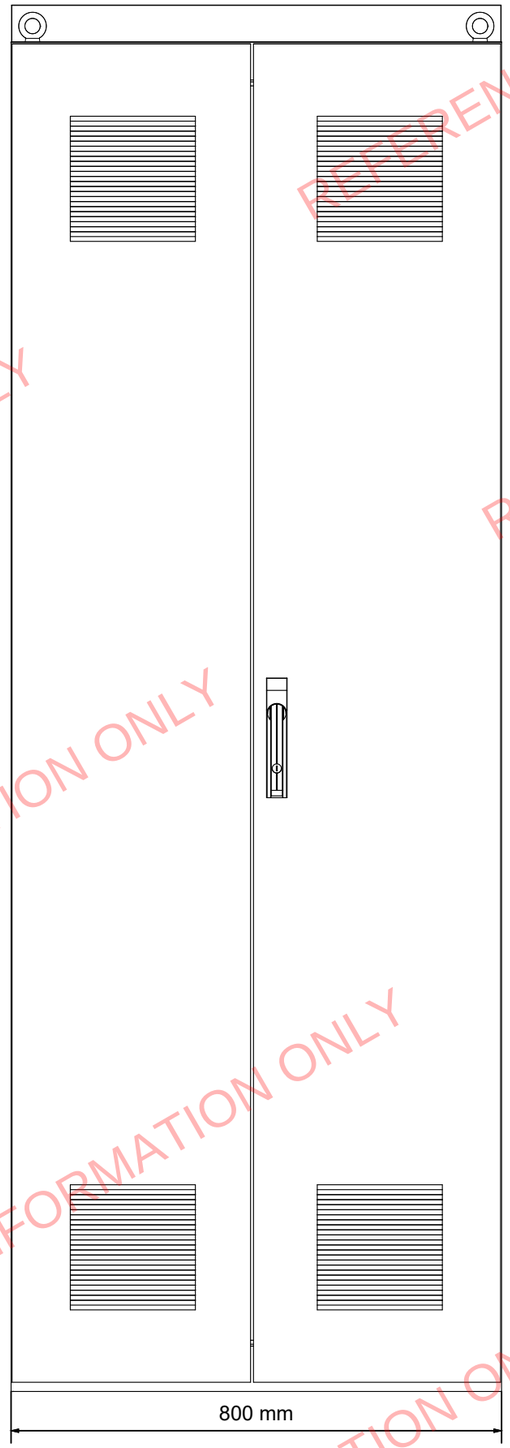
FRONT VIEW



SIDE VIEW



REAR VIEW



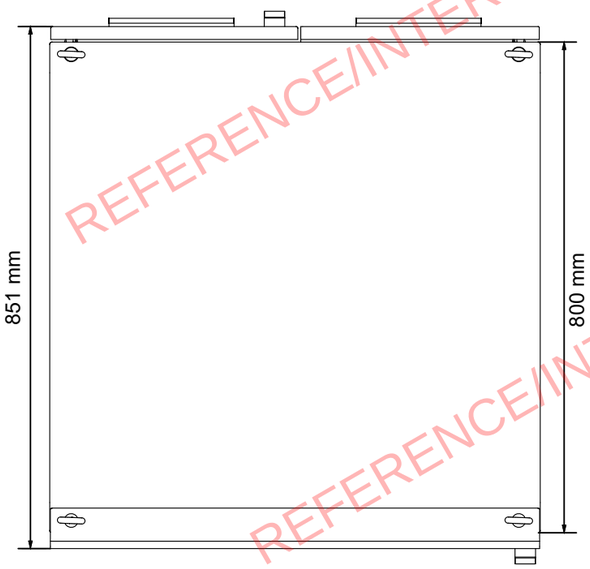
	Status : Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE CONTROL PANEL PANEL STRUCTURE 1	=D06+W1	
			SCALE N/A	SHEET 06
			SIZE A3	NEXT 07
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

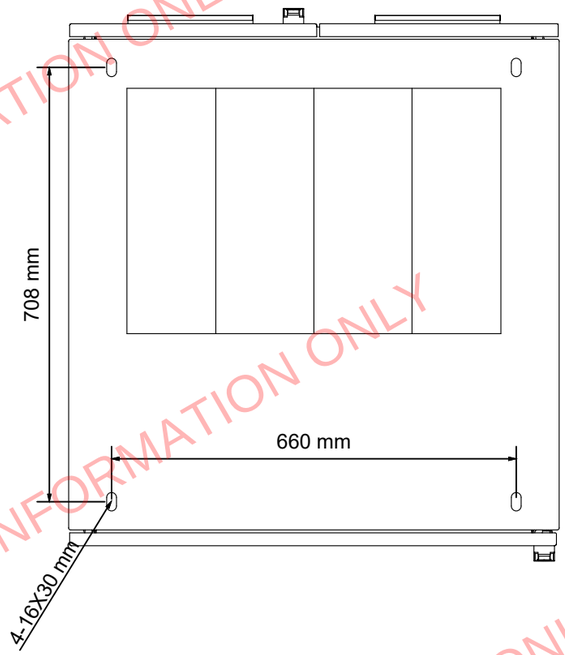
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TOP VIEW



BOTTOM VIEW



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE CONTROL PANEL PANEL STRUCTURE 2	=D06+W1	
			SCALE N/A	SHEET 07
			SIZE A3	NEXT 08
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

PANEL MECHANICAL CHARACTERISTICS:

ITEM	DESCRIPTION	PARAMETER
1	TYPE	NR-G03 PANEL
2	DIMENSION	2260*800*800(H*W*D)
3	COLOR	EXTERIOR: RAL7035 INTERIOR: RAL7035
4	PROTECTION DEGREE	IP54
5	MATERIAL	SHEET STEEL
6	PLATE THICKNESS	2.5mm
7	MOUNTING	FLOOR MOUNTING, BOTTOM ENTRY OF POWER AND MULTI-CORE CABLES
8	EARTH BAR	COPPER STRIP: 485(L)×25(W)×4(D)mm

PANEL INFORMATION:

1. The colour of MIMIC is required as below:
   - 400kV--Purple
   - 330kV--Red
   - 220kV--Yellow
   - 132kV--Blue
   - 33kV--Green
   - Ground-Black
2. The width of MIMIC lines is 4mm, 6mm for busbar.

TERMINAL BLOCK:

NAME	DESCRIPTION	NOTE
XA:	TERMINAL BLOCK FOR AC POWER SUPPLY CIRCUIT.	UK5N
XD:	TERMINAL BLOCK FOR DC POWER SUPPLY CIRCUIT.	UK6N
XI:	TERMINAL BLOCK FOR CT CIRCUIT.	URTK/S
XU:	TERMINAL BLOCK FOR VT CIRCUIT.	URTK/S
XW:	TERMINAL BLOCK FOR DC ANALOG CIRCUIT.	UK5N
XB:	TERMINAL BLOCK FOR BINARY INPUT.	UK5N
XT:	TERMINAL BLOCK FOR TRIPPING CIRCUIT.	UK5N
XC:	TERMINAL BLOCK FOR TRIP SUPERVISION OR CONTROL CIRCUIT.	UK10N
XR:	TERMINAL BLOCK FOR REMOTE SIGNAL CIRCUIT.	UK5N
XH:	TERMINAL BLOCK FOR ANNUNCIATOR CIRCUIT.	UK5N
XF:	TERMINAL BLOCK FOR RECORD SIGNAL CIRCUIT.	UK5N
XM:	TERMINAL BLOCK FOR COMMUNICATION CIRCUIT.	UK5N
XS:	TERMINAL BLOCK FOR SPARE.	UK5N

WIRING CHARACTERISTICS:

1. 4mm² multistrands insulated copper conductor for CT circuits.
2. 2.5mm² multistrands insulated copper conductor for VT circuits.
3. 4mm² multistrands insulated copper conductor for earthing circuits.
4. 1.5mm² multistrands insulated copper conductor for all other circuits.

WIRING COLOR:

Red	— Phase R CT&VT Circuit
Yellow	— Phase Y CT&VT Circuit
Blue	— Phase B CT&VT Circuit
Black	— AC Current And Voltage Neutral Circuit.
Yellow/green	— Earthing Circuit
Grey	— All Other Circuits

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of Transmission Lines for 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

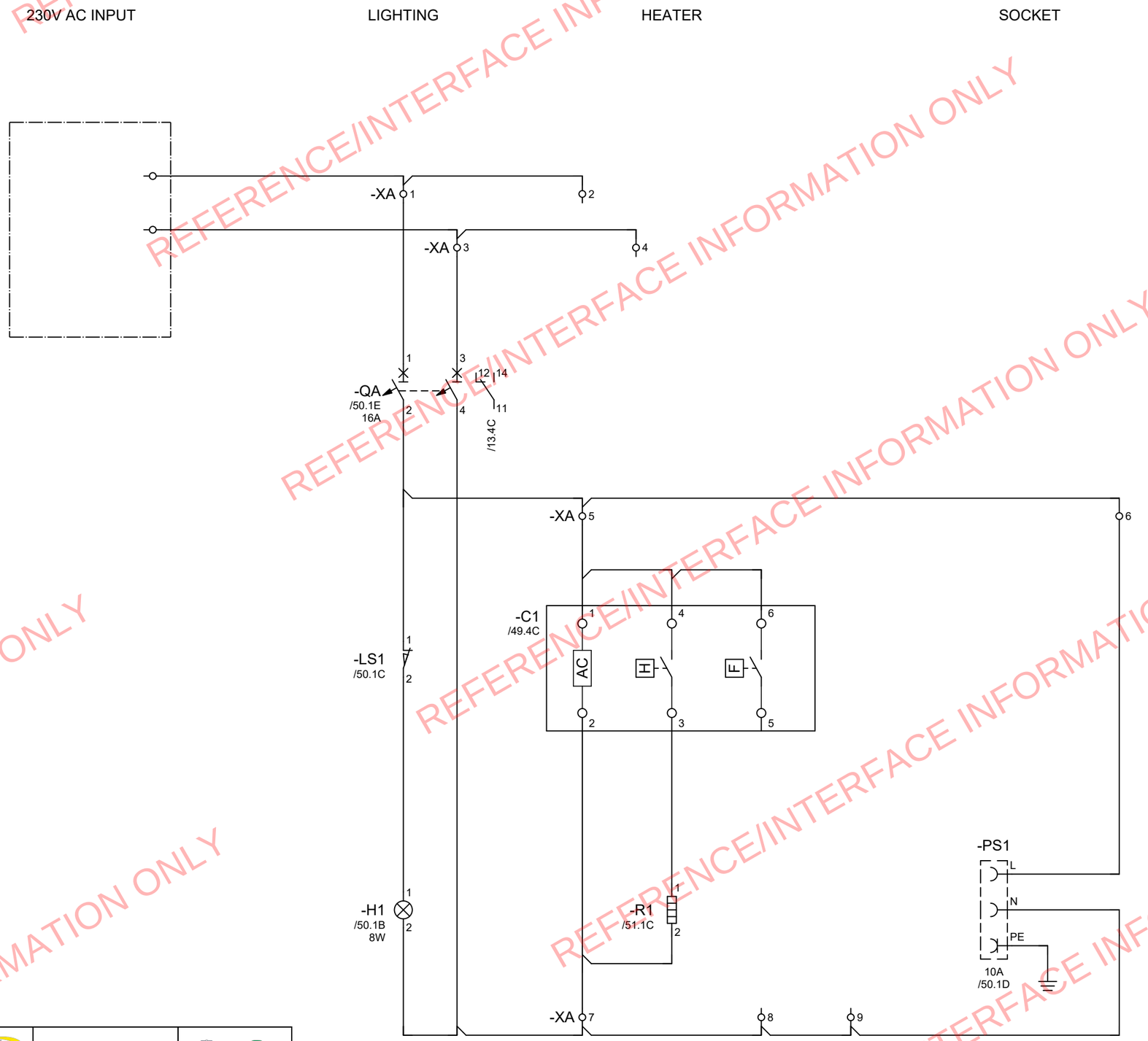
HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL PANEL DETAILED INFORMATION	SCALE N/A	SHEET 08
		SIZE A3	NEXT 09
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE CONTROL PANEL AC POWER SUPPLY CIRCUIT	=D06+W1
		SCALE N/A	SHEET 09
		SIZE A3	NEXT 10
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 / TOTAL 54

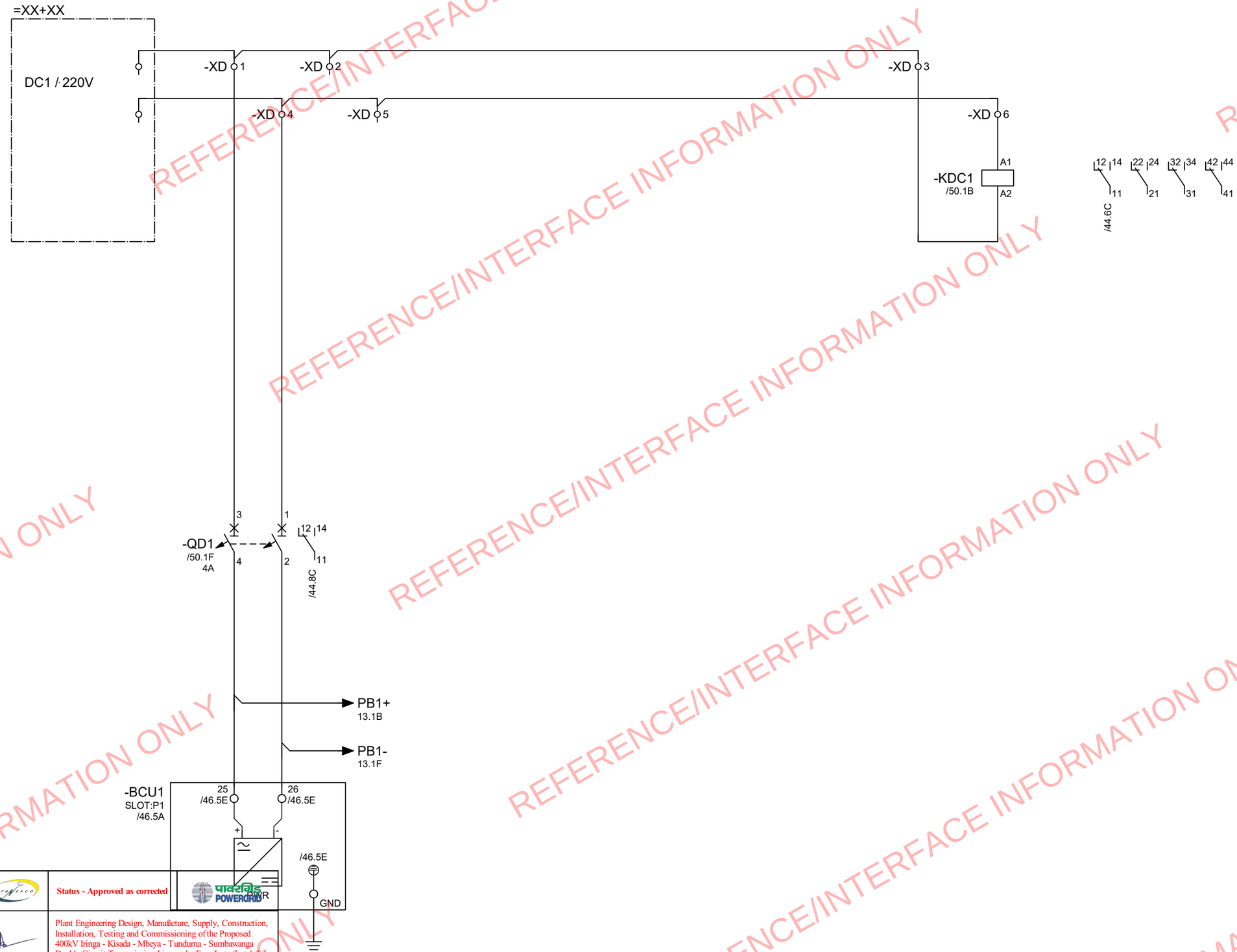
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

DC 220V INPUT

-BCU1
DC POWER SUPPLY

DC
SUPERVISION 1



	Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL DC POWER SUPPLY CIRCUIT 1	SCALE N/A	SHEET 10
		SIZE A3	NEXT 11
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

DC 220V INPUT

-H11
DC POWER SUPPLY

DC
SUPERVISION 2

=XX+XX

DC2 / 220V

-XD 7
-XD 8
-XD 9
-XD 10
-XD 11
-XD 12

-KDC2
/50.1B
A1
A2

12 14 22 24 32 34 42 44
11 21 31 41
/44.7C

3 1
-QD11
/50.1F
4A
4 2
12 14
11
/44.9C

PB11+
36.1B

PB11-
36.1F

-H11
/47.1A
JTS-W71A-64YR

A05
/47.1B
+

A03
/47.1A
-

PWR

A01
/47.1A

-GND1

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/PMC/LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT
400kV TUNDUMA SUBSTATION

DWG. TITLE
330kV NAKONDE1 LINE CONTROL PANEL
DC POWER SUPPLY CIRCUIT 2

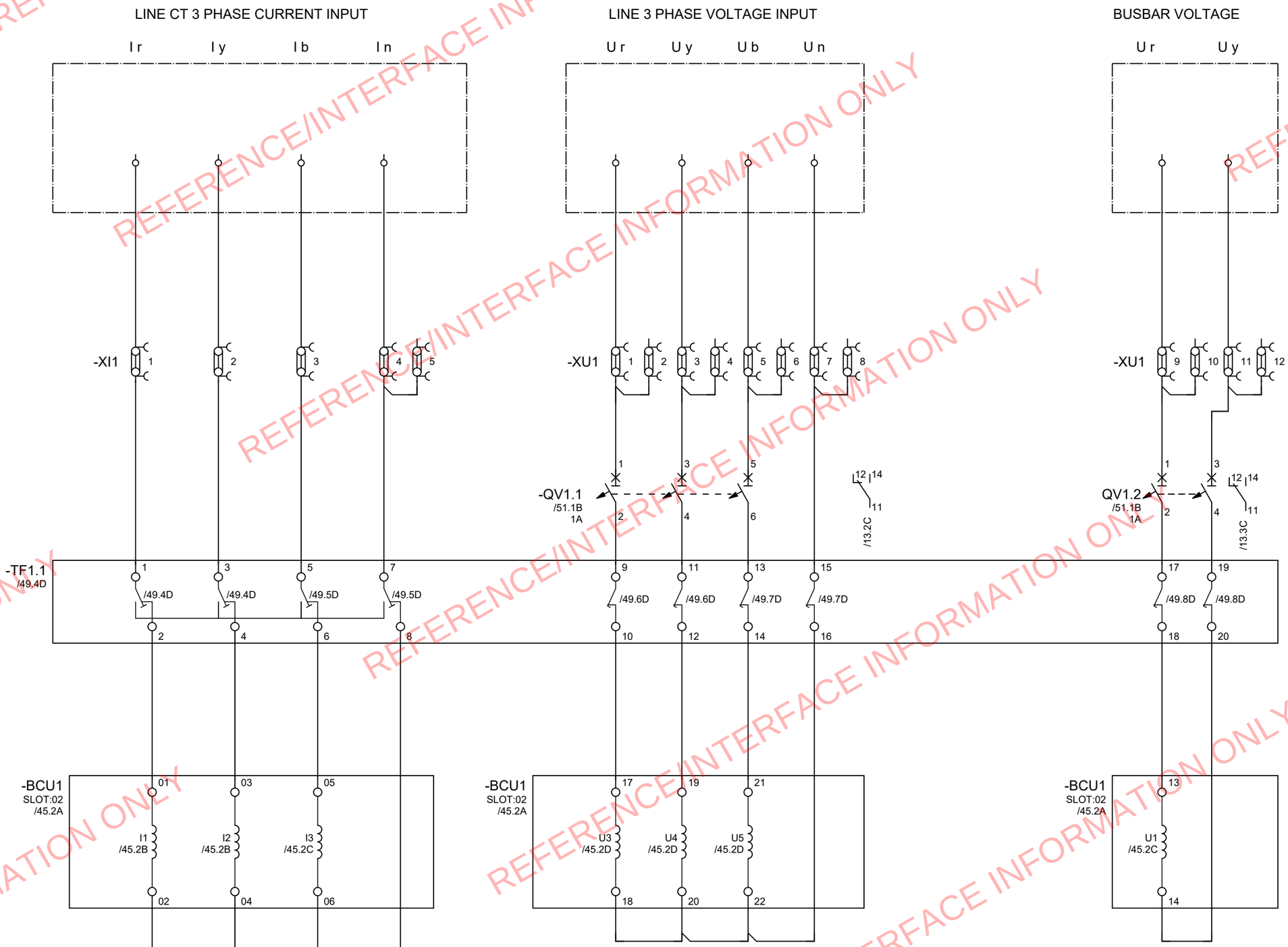
DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	11
SIZE	A3	NEXT	12
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

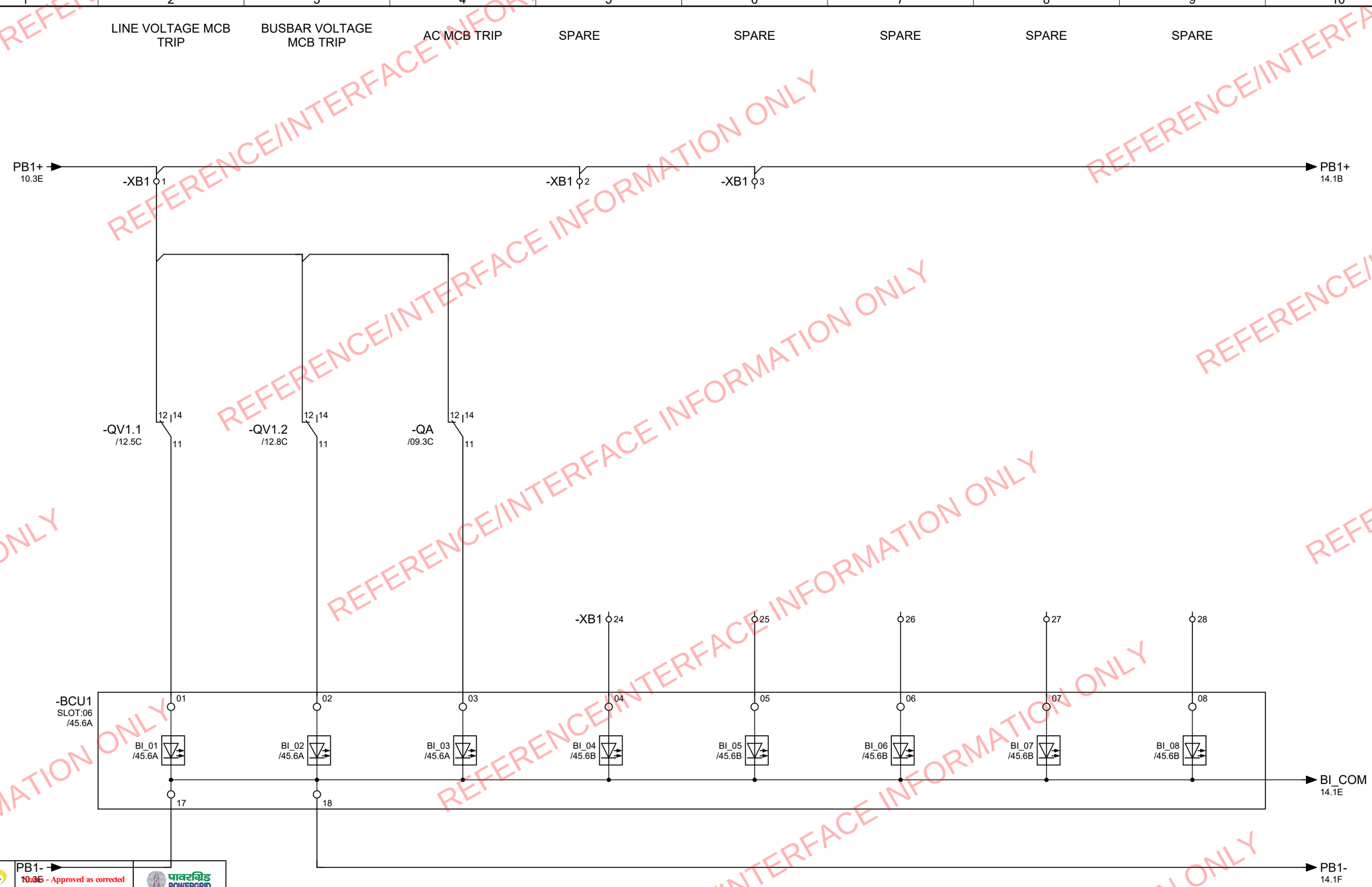
REFERENCE/INTERFACE INFORMATION ONLY



Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL -BCU1 CT&VT CURRENT CIRCUIT	SCALE N/A	SHEET 12
		SIZE A3	NEXT 13
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54



	PB1- 10.3E - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

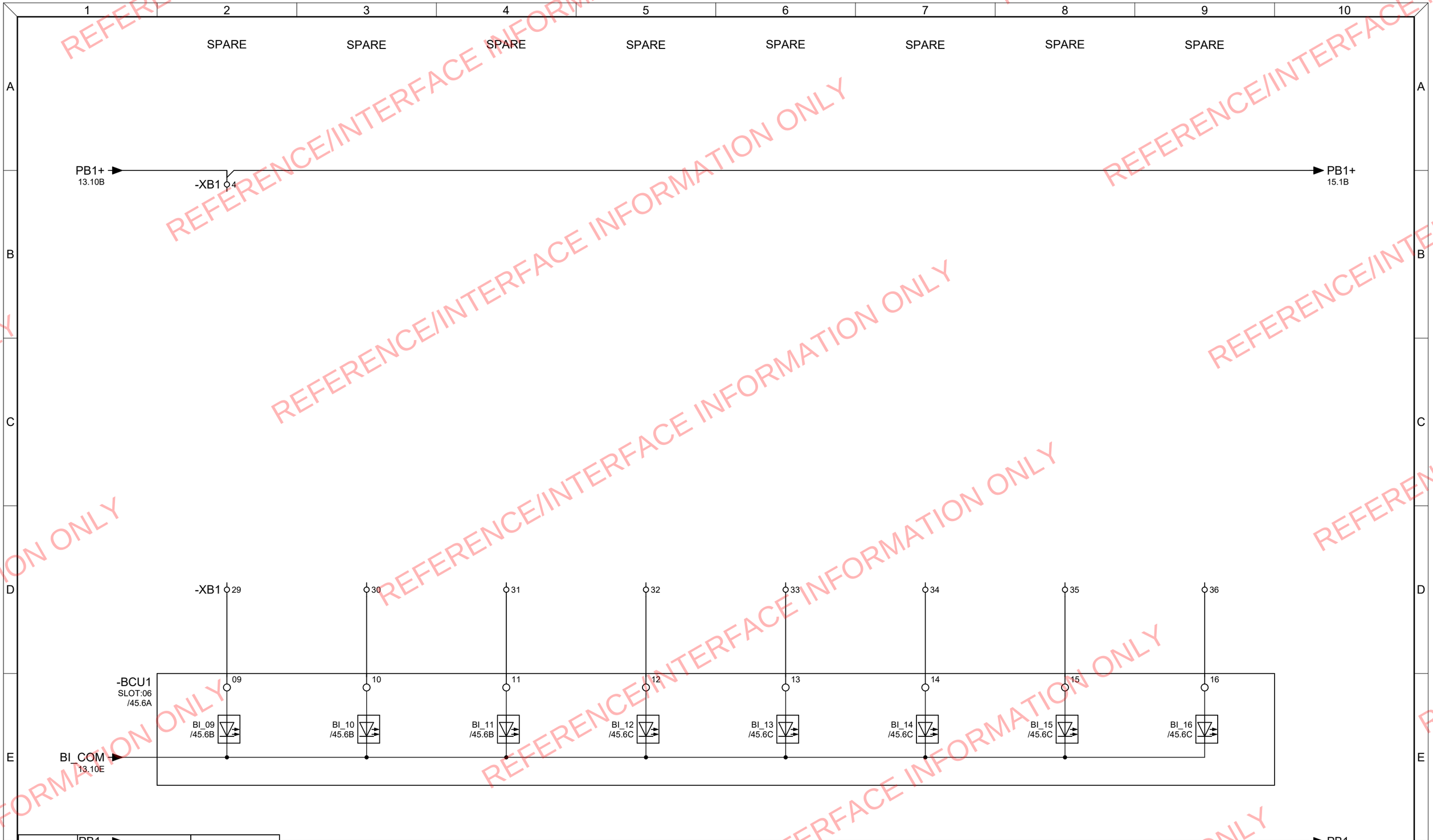
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 13
	-BCU1 BINARY INPUT CIRCUIT 1	SIZE A3	NEXT 14
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	1105 - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 14
	-BCU1 BINARY INPUT CIRCUIT 2	SIZE A3	NEXT 15
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB1+ 14.10B → -XB1 5 — -XB1 6 → PB1+ 16.1B

-XB1 37 38 39 40 41 42 43 44

-BCU1
SLOT:06
/45.6A

19	20	21	22	23	24	25	26
BI_17 /45.6D	BI_18 /45.6D	BI_19 /45.6D	BI_20 /45.6D	BI_21 /45.6D	BI_22 /45.6D	BI_23 /45.6D	BI_24 /45.6D

35 36

BI_COM → 16.1E

PB1- 14.10F → PB1- 16.1F

	PB1- 14.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 15
	-BCU1 BINARY INPUT CIRCUIT 3	SIZE A3	NEXT 16
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB1+ 15.10B → -XB1 7 → PB1+ 17.1B

-XB1 45 46 47 48 49 50 51 52

-BCU1
SLOT:06
/45.6A

27	28	29	30	31	32	33	34
BI_25 /45.6E	BI_26 /45.6E	BI_27 /45.6E	BI_28 /45.6E	BI_29 /45.6E	BI_30 /45.6E	BI_31 /45.6E	BI_32 /45.6F

BI_COM 15.10E

PB1- 15.10F → PB1- 17.1F

	Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
-BCU1 BINARY INPUT CIRCUIT 4

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	16
SIZE	A3	NEXT	17
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB1+ 16.10B → PB1+ 18.1B

-XB1 8

C 18.1C

C09 C10

BO_01 /47.10A — C01
BO_02 /47.10A — C02
BO_03 /47.10A — C03
BO_04 /47.10B — C04
BO_05 /47.10B — C05
BO_06 /47.10B — C06
BO_07 /47.10B — C07
BO_08 /47.10B — C08

-H11
/47.1A
JTS-W71A-64YR

-BCU1
SLOT:07
/45.7A

01 02 03 04 05 06 07 08

BI_01 /45.7A
BI_02 /45.7A
BI_03 /45.7A
BI_04 /45.7B
BI_05 /45.7B
BI_06 /45.7B
BI_07 /45.7B
BI_08 /45.7B

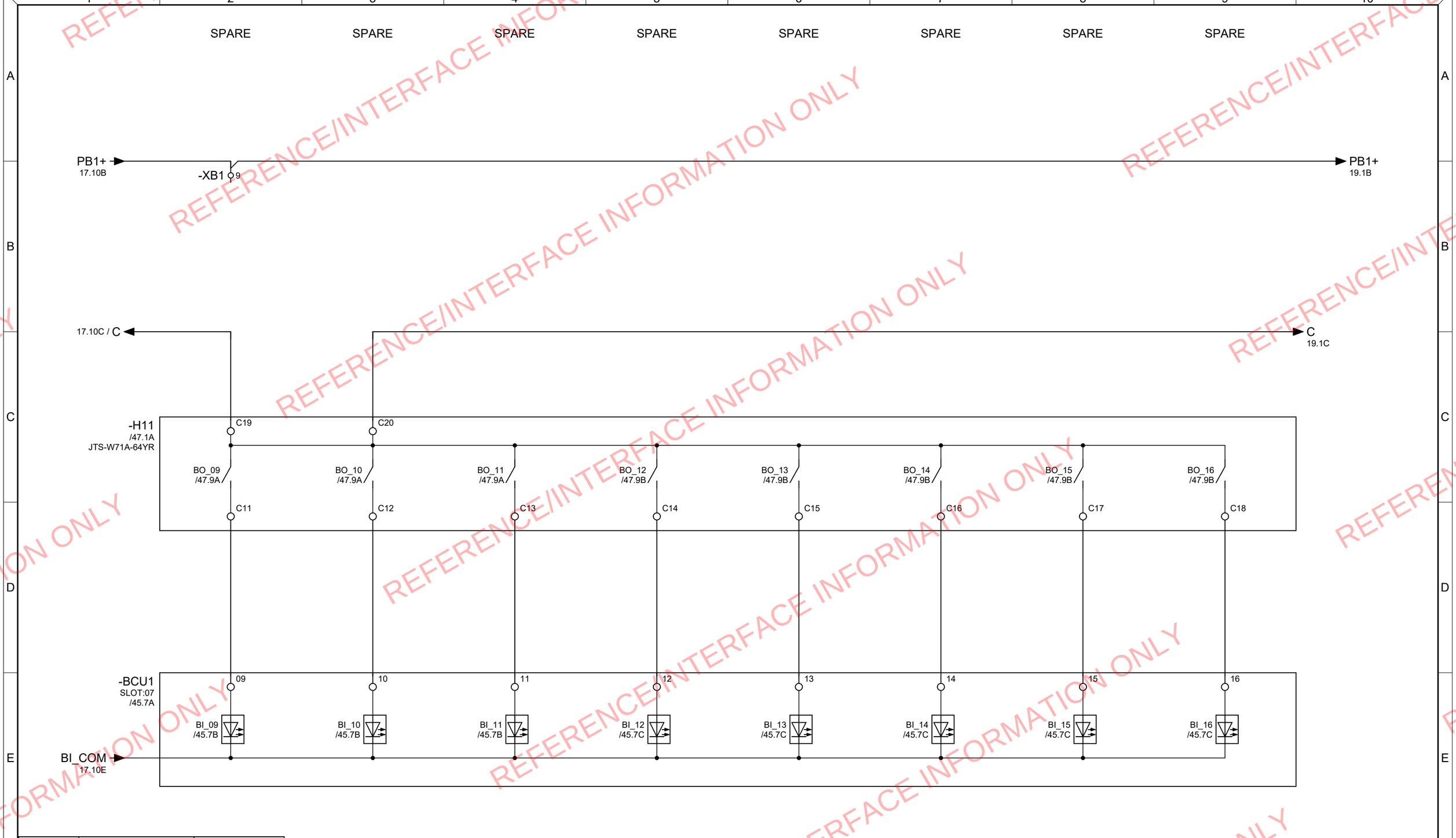
BI_COM 18.1E

17 18

PB1- 16.10F → PB1- 18.1F

	PB1- 16.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT: 400kV TUNDUMA SUBSTATION	DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -BCU1 BINARY INPUT CIRCUIT 5	=D06+W1
			SCALE N/A · SHEET 17
			SIZE A3 · NEXT 18
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 · TOTAL 54



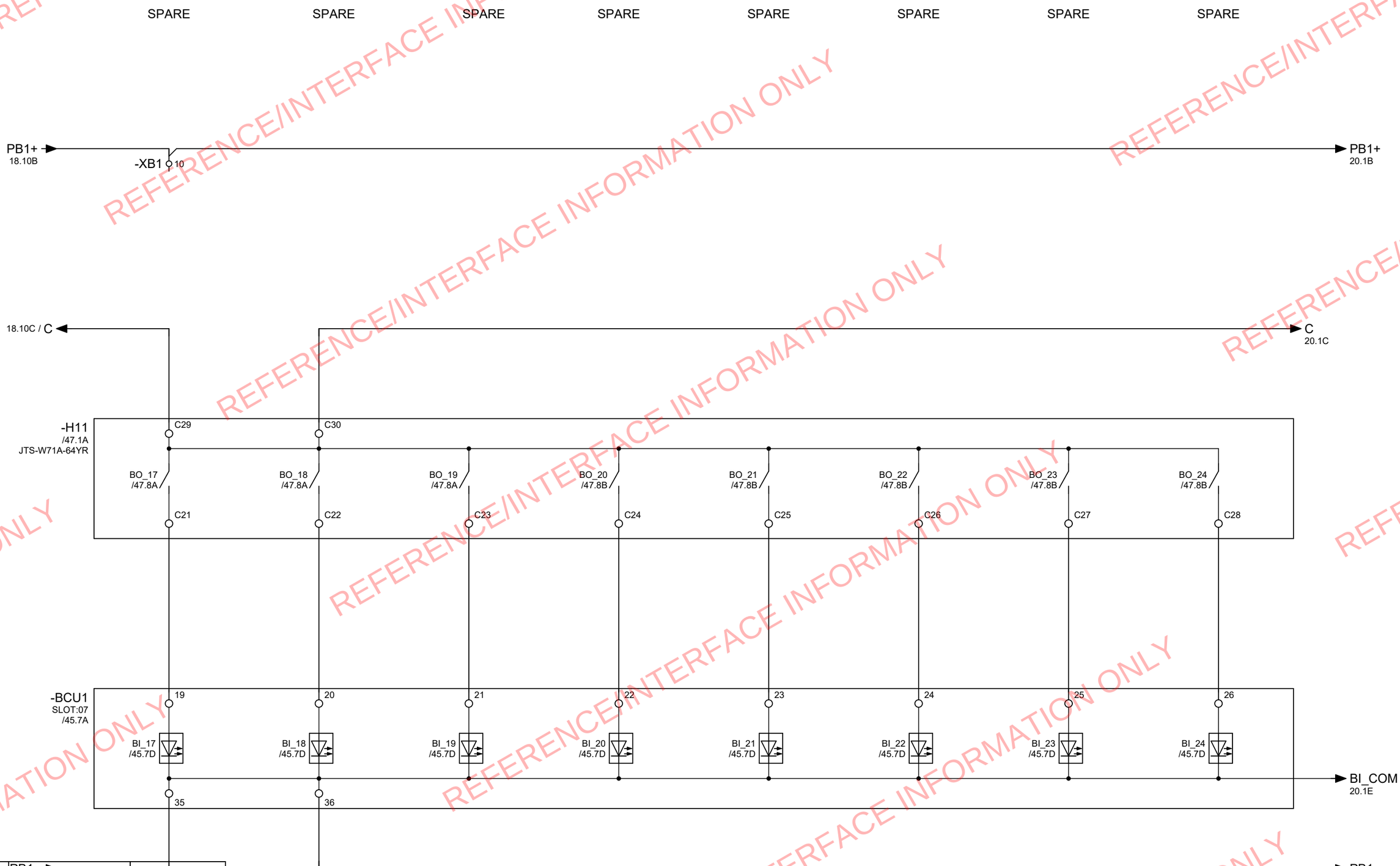
	PB1- 17.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 18
	-BCU1 BINARY INPUT CIRCUIT 6	SIZE A3	NEXT 19
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



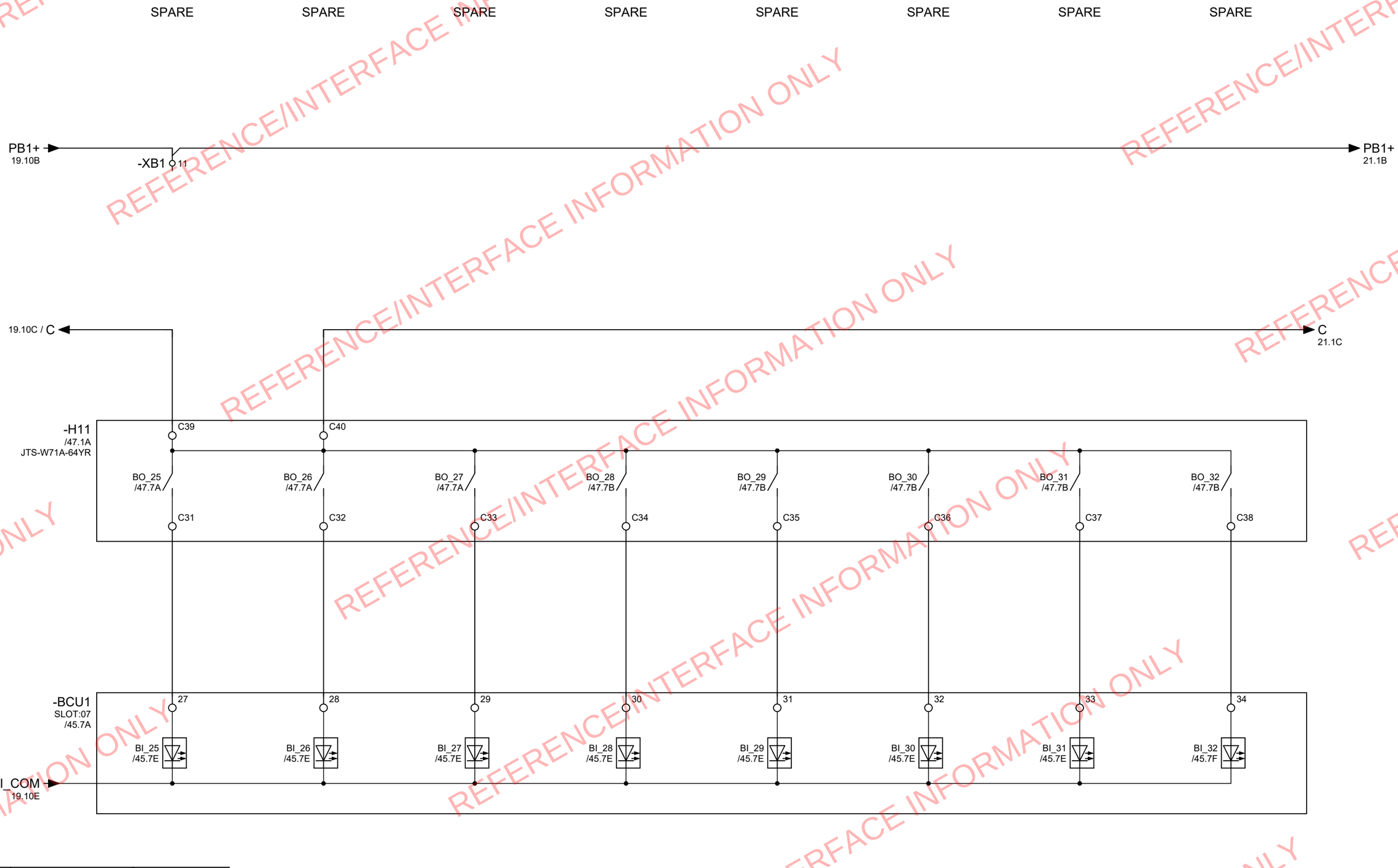
	PB1- 18.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 19
	-BCU1 BINARY INPUT CIRCUIT 7	SIZE A3	NEXT 20
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	PB1- 19.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 20
	-BCU1 BINARY INPUT CIRCUIT 8	SIZE A3	NEXT 21
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB1+ 20.10B → -XB1 12 → PB1+ 22.1B

20.10C / C → C 22.1C

-H11
/47.1A
JTS-W71A-64YR

C49	C50						
BO_33 /47.6A	BO_34 /47.6A	BO_35 /47.6A	BO_36 /47.6B	BO_37 /47.6B	BO_38 /47.6B	BO_39 /47.6B	BO_40 /47.6B
C41	C42	C43	C44	C45	C46	C47	C48

-BCU1
SLOT:08
/45.7A

01	02	03	04	05	06	07	08
BI_01 /45.8A	BI_02 /45.8A	BI_03 /45.8A	BI_04 /45.8B	BI_05 /45.8B	BI_06 /45.8B	BI_07 /45.8B	BI_08 /45.8B
17	18						

BI_COM 22.1E

PB1- 20.10F → PB1- 22.1F

	PB1- 20.10F - Approved as corrected
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL -BCU1 BINARY INPUT CIRCUIT 9	SCALE N/A	SHEET 21
		SIZE A3	NEXT 22
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB1+ 21.10B → -XB1 13 → PB1+ 23.1B

21.10C / C → C 23.1C

-H11
/47.1A
JTS-W71A-64YR

C59	C60						
BO_41 /47.5A	BO_42 /47.5A	BO_43 /47.5A	BO_44 /47.5B	BO_45 /47.5B	BO_46 /47.5B	BO_47 /47.5B	BO_48 /47.5B
C51	C52	C53	C54	C55	C56	C57	C58

-BCU1
SLOT:08
/45.7A

09	10	11	12	13	14	15	16
BI_09 /45.8B	BI_10 /45.8B	BI_11 /45.8B	BI_12 /45.8C	BI_13 /45.8C	BI_14 /45.8C	BI_15 /45.8C	BI_16 /45.8C

BI_COM 21.10E

PB1- 21.10F → PB1- 23.1F

	21.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

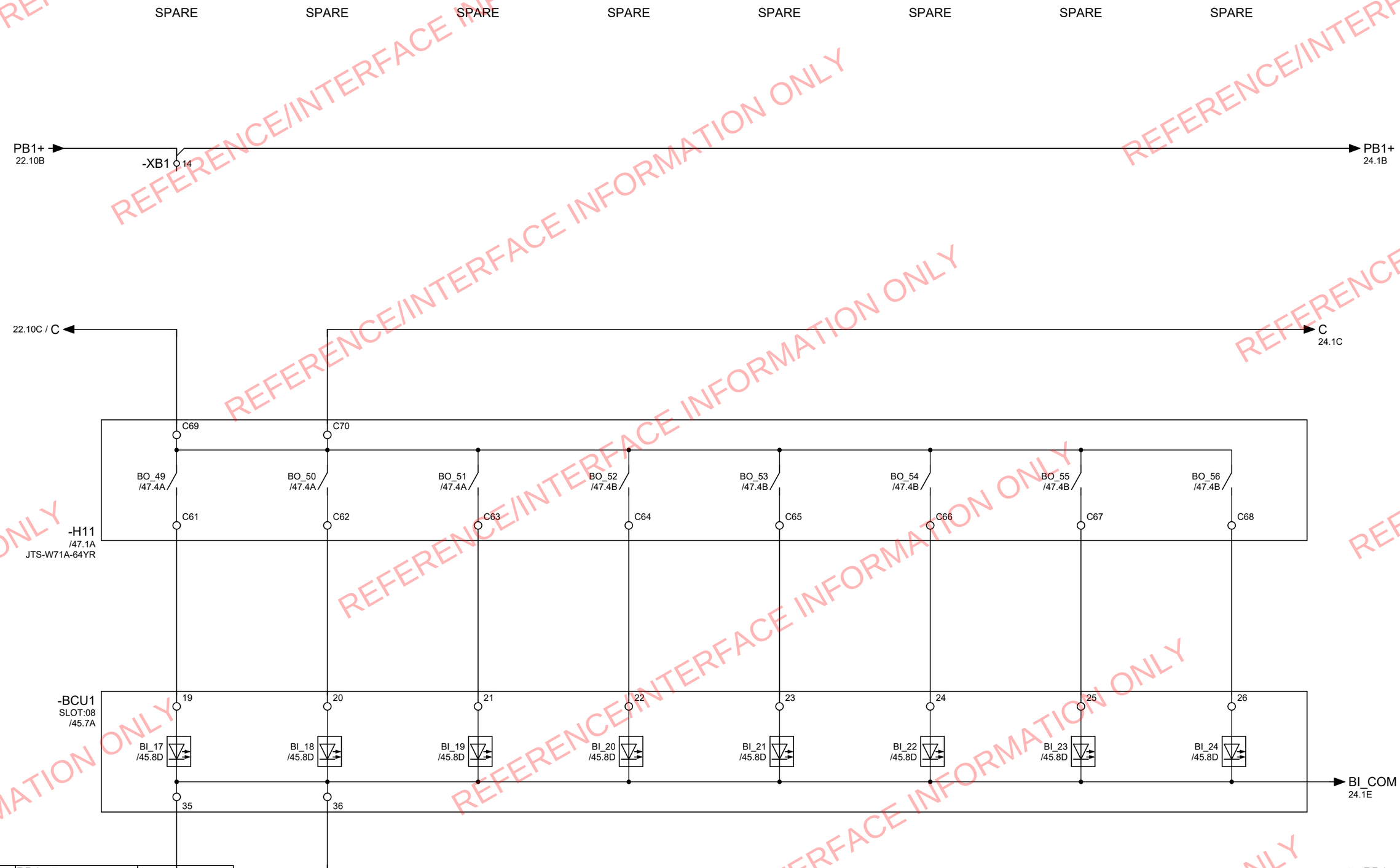
PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
-BCU1 BINARY INPUT CIRCUIT 10

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	22
SIZE	A3	NEXT	23
REV.	0	TOTAL	54



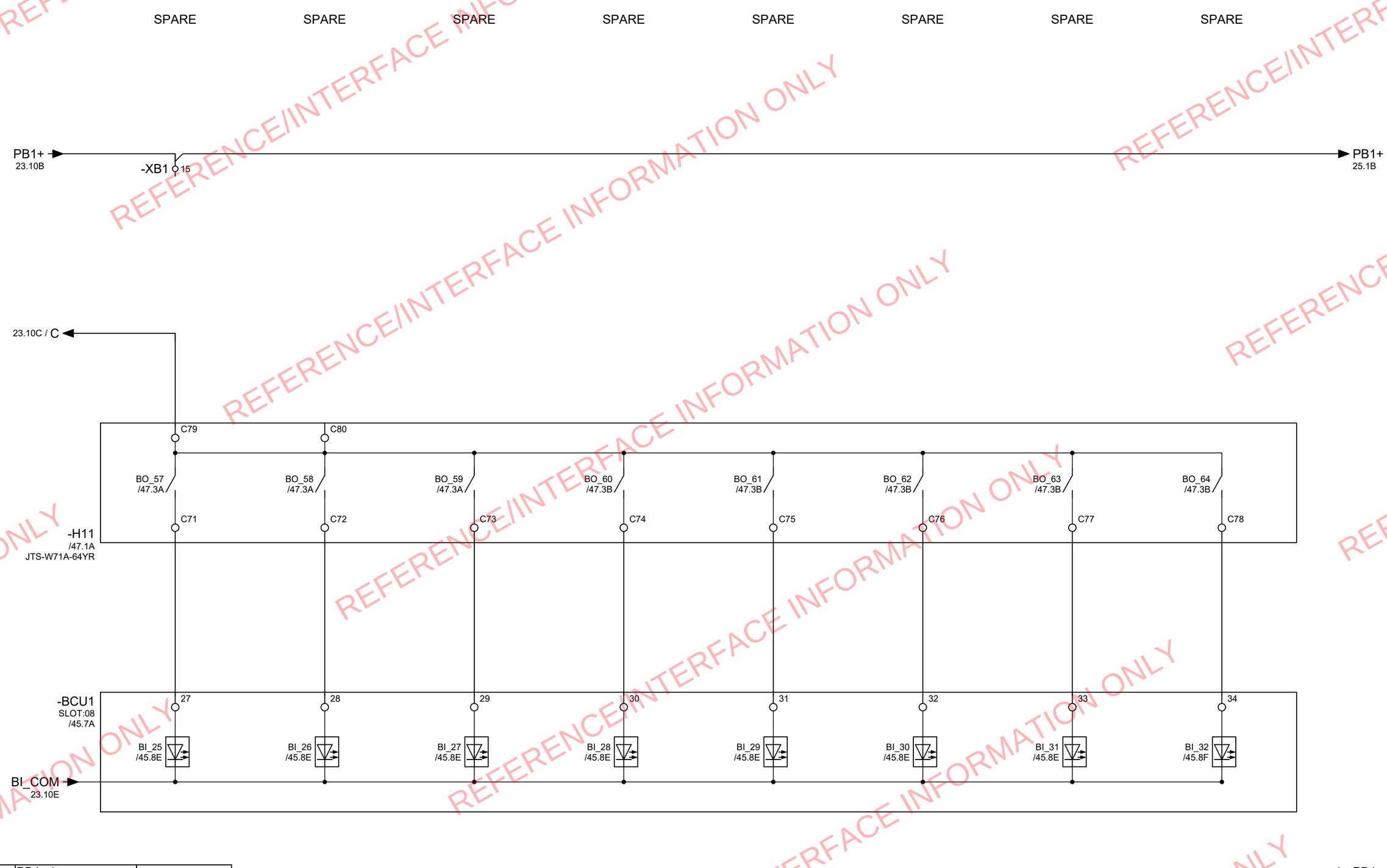
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

	PB1- 22.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 23
	-BCU1 BINARY INPUT CIRCUIT 11	SIZE A3	NEXT 24
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54



	PB1- 23.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

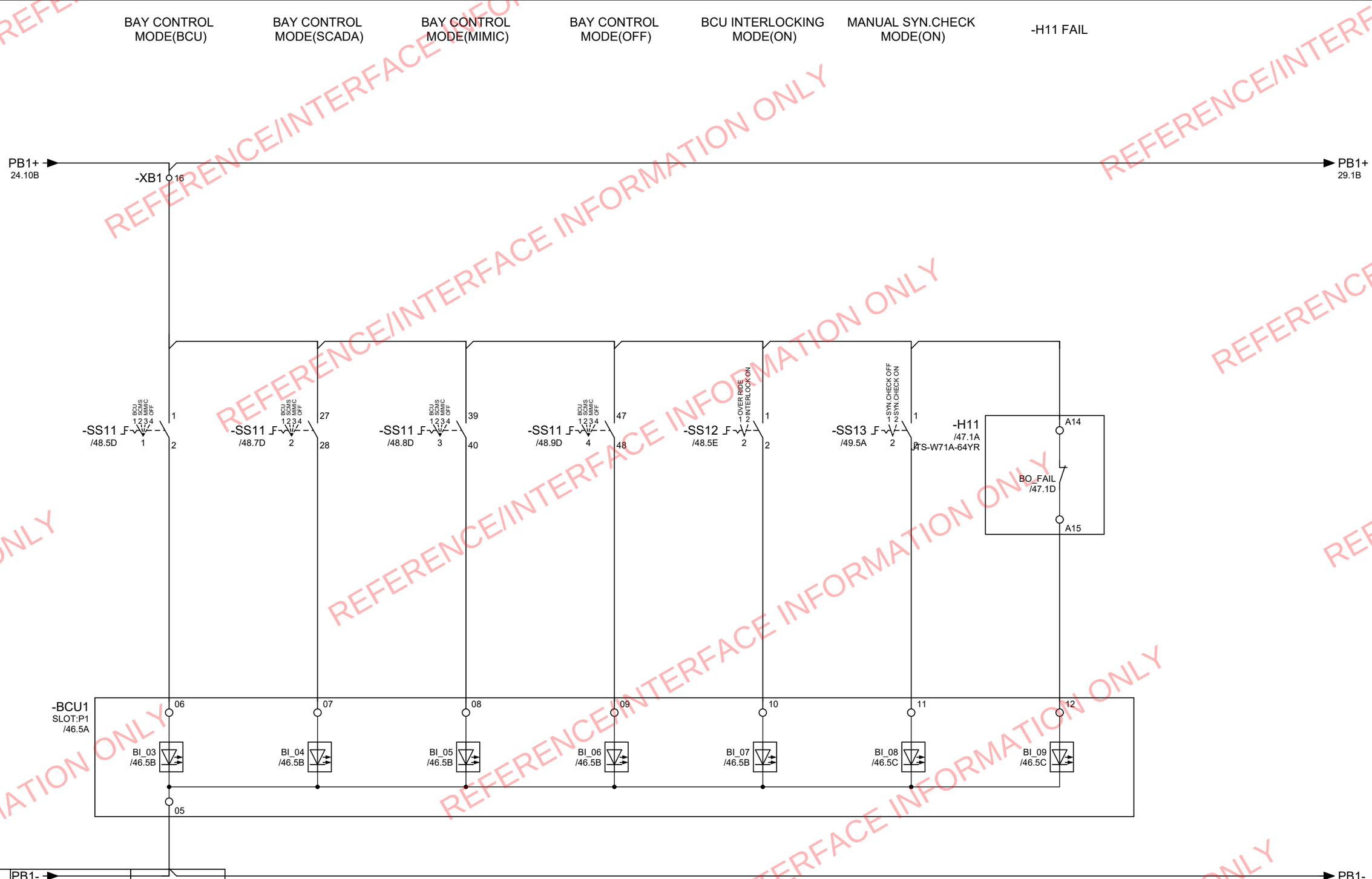
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 24
	-BCU1 BINARY INPUT CIRCUIT 12	SIZE A3	NEXT 25
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



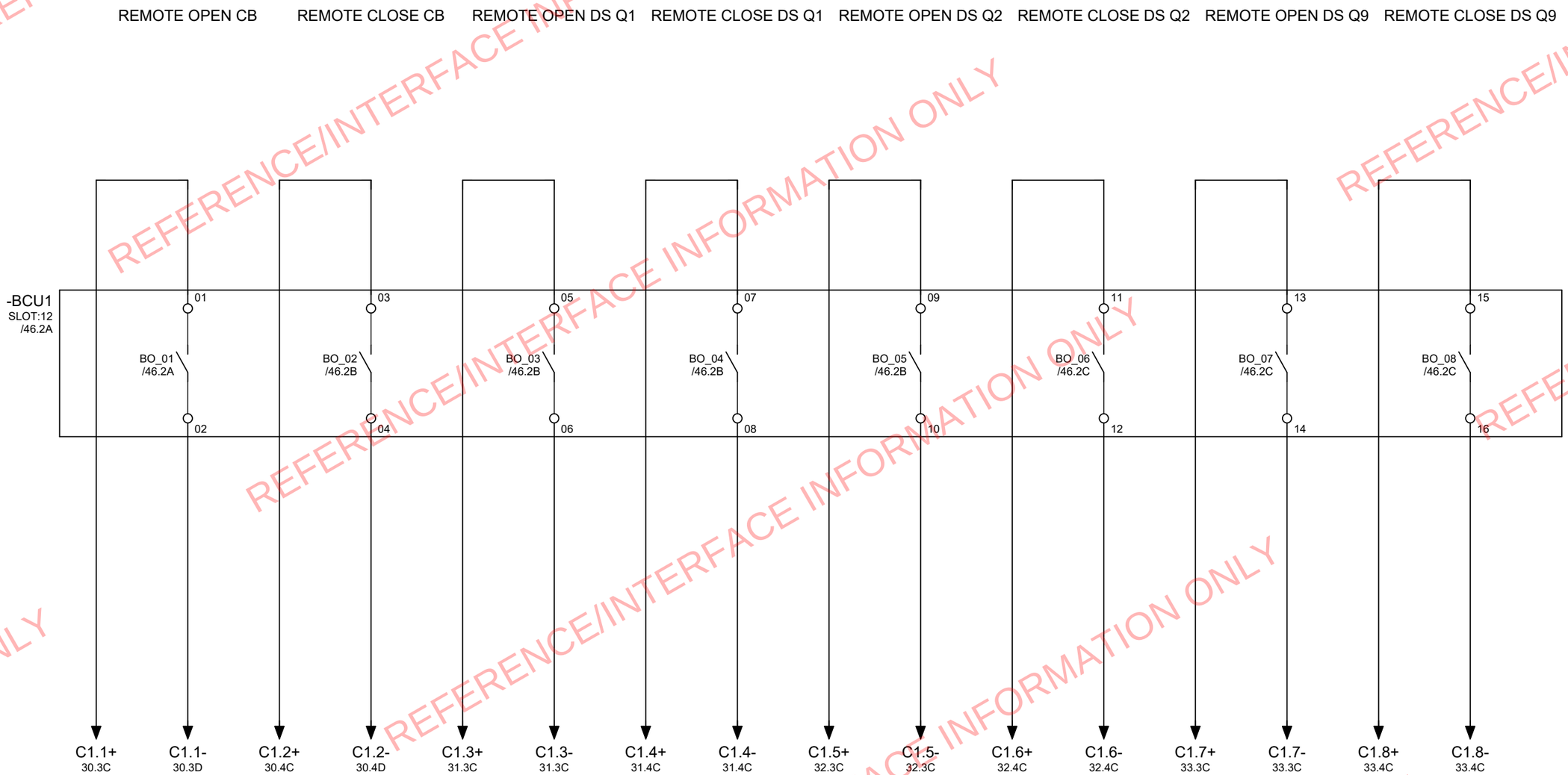
	PB1- 24.10F - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 25
	-BCU1 BINARY INPUT CIRCUIT 13	SIZE A3	NEXT 26
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

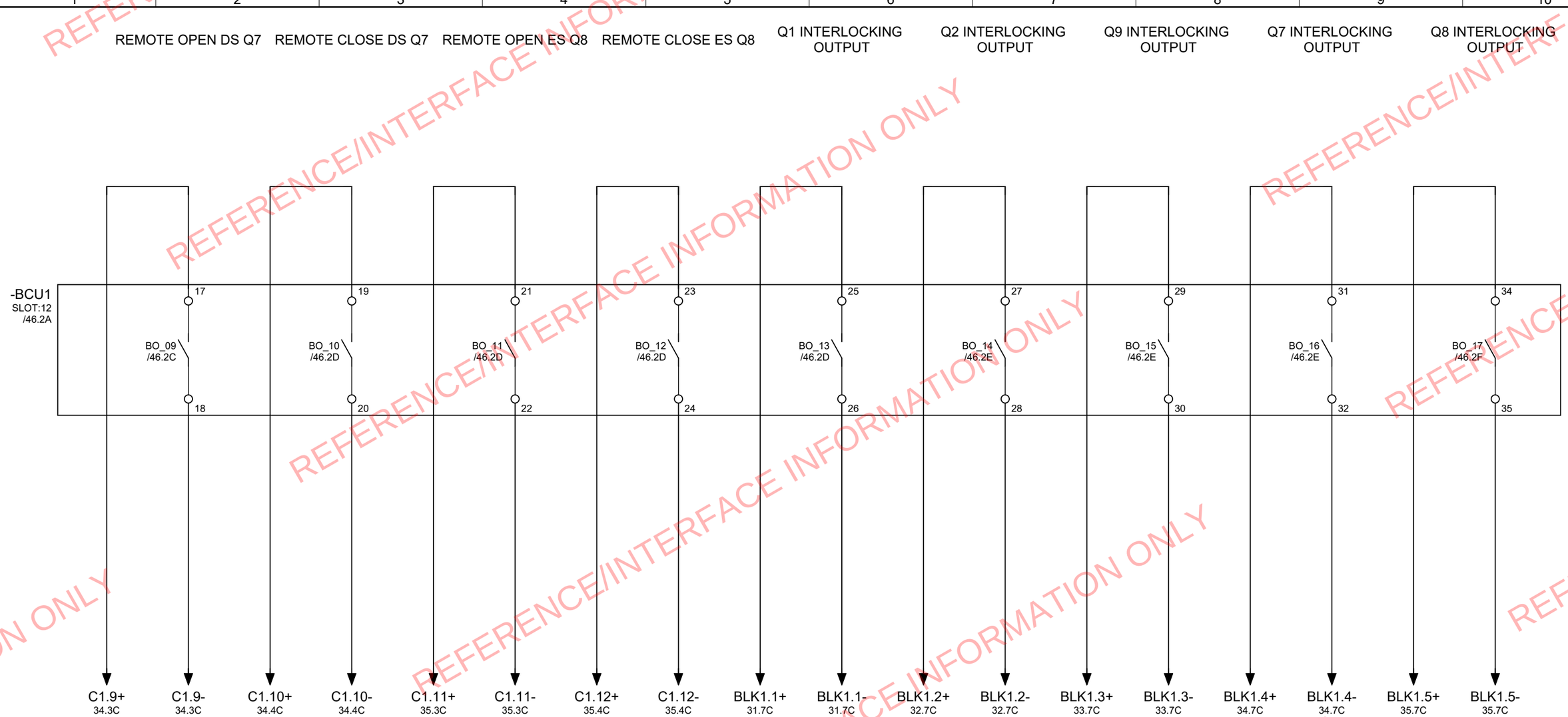
DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -BCU1 BINARY OUTPUT CIRCUIT 1

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	26
SIZE	A3	NEXT	27
REV.	0	TOTAL	54

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -BCU1 BINARY OUTPUT CIRCUIT 2

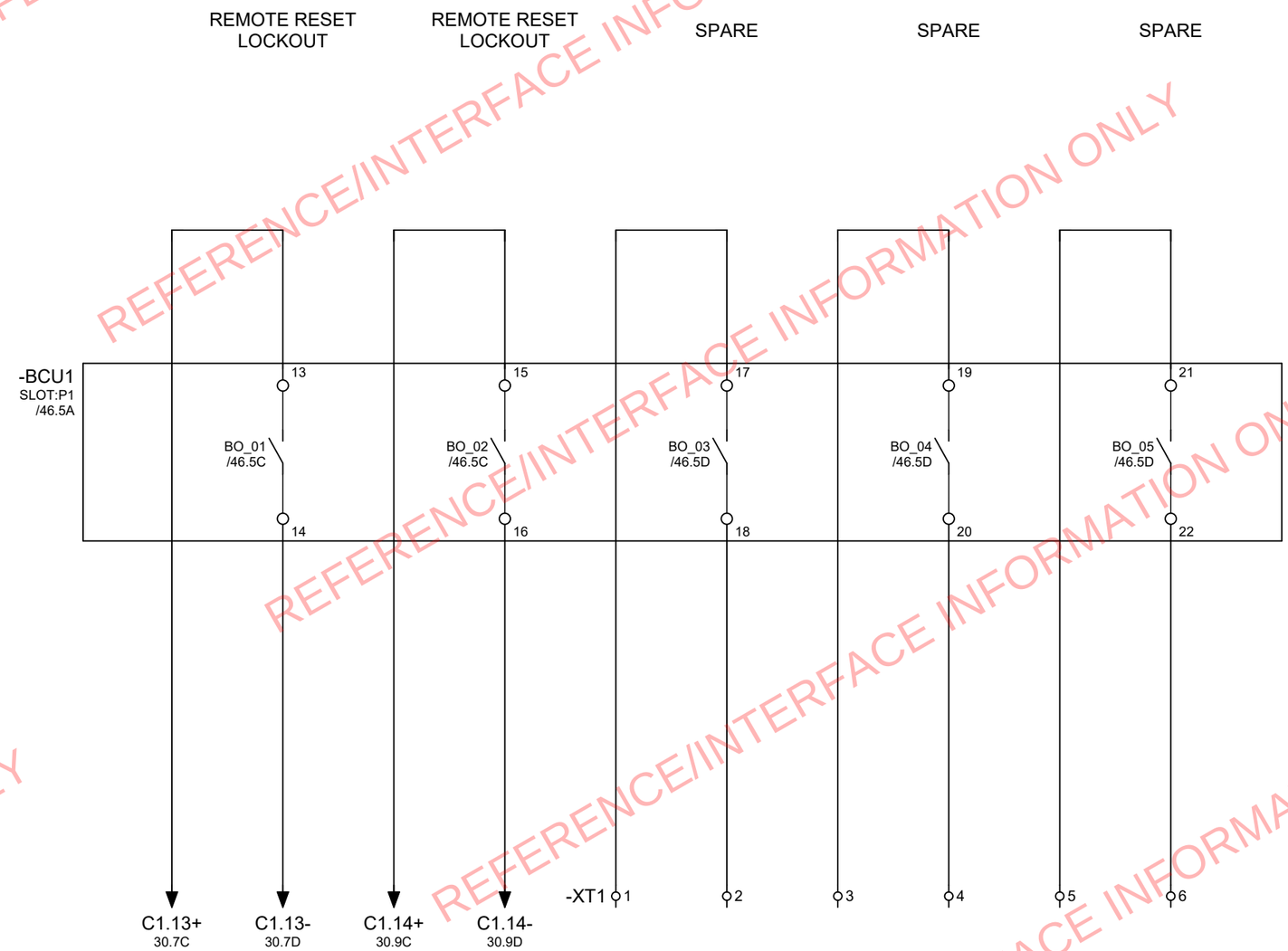
DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	27
SIZE	A3	NEXT	28
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -BCU1 BINARY OUTPUT CIRCUIT 3

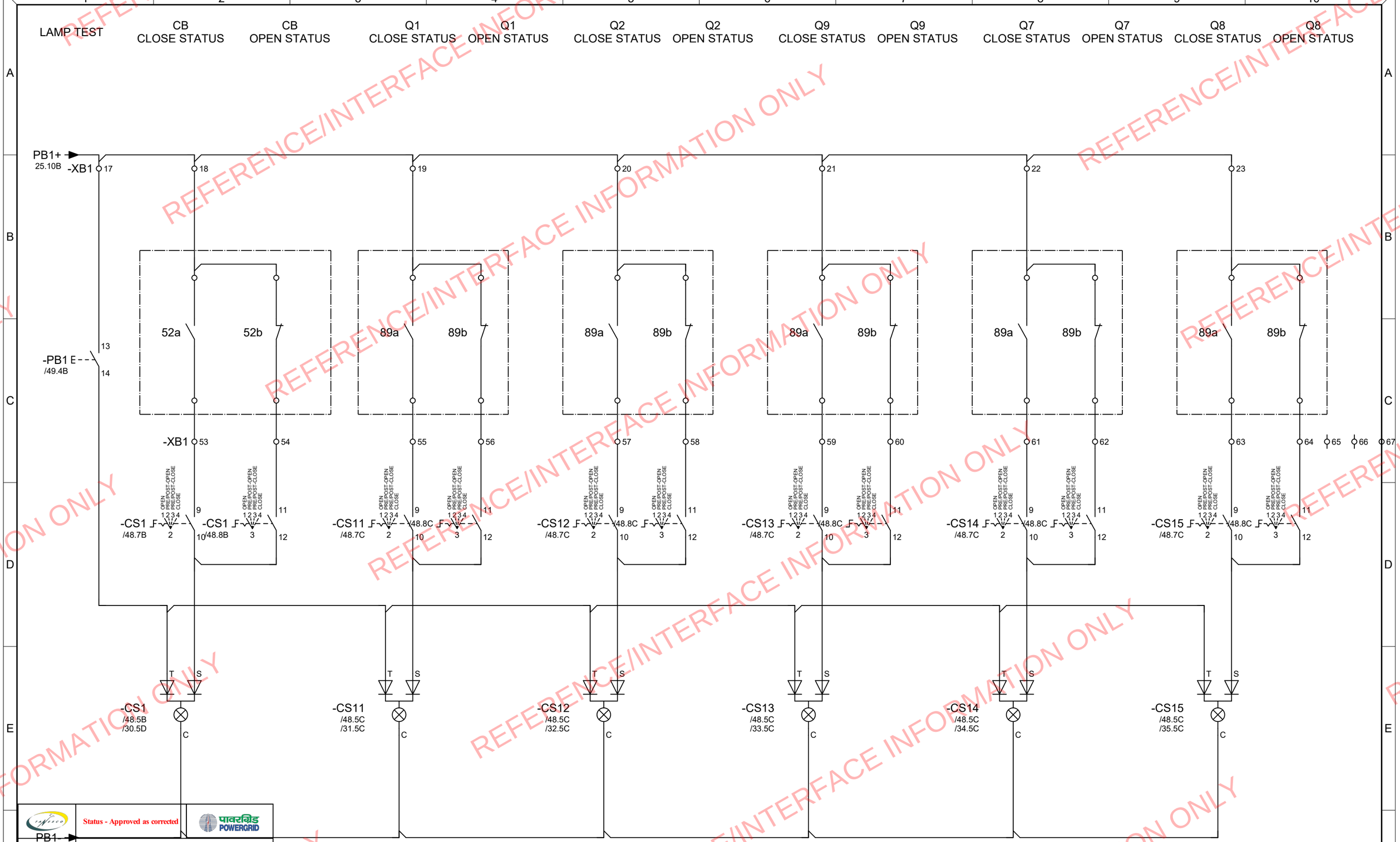
DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	28
SIZE	A3	NEXT	29
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
PB1 25.10F Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL SWITCHGEAR POSITION INDICATION

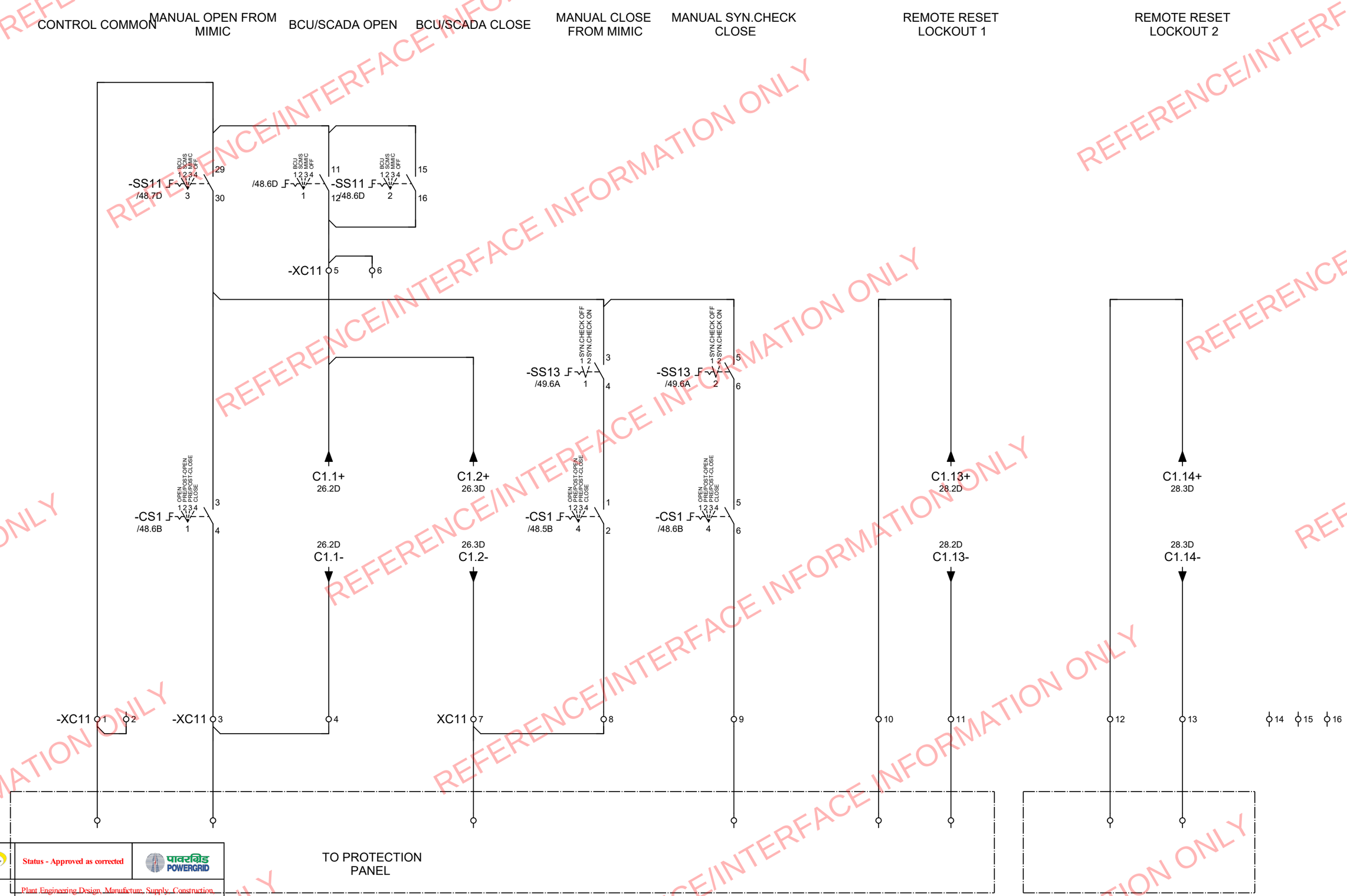
DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	29
SIZE	A3	NEXT	30
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



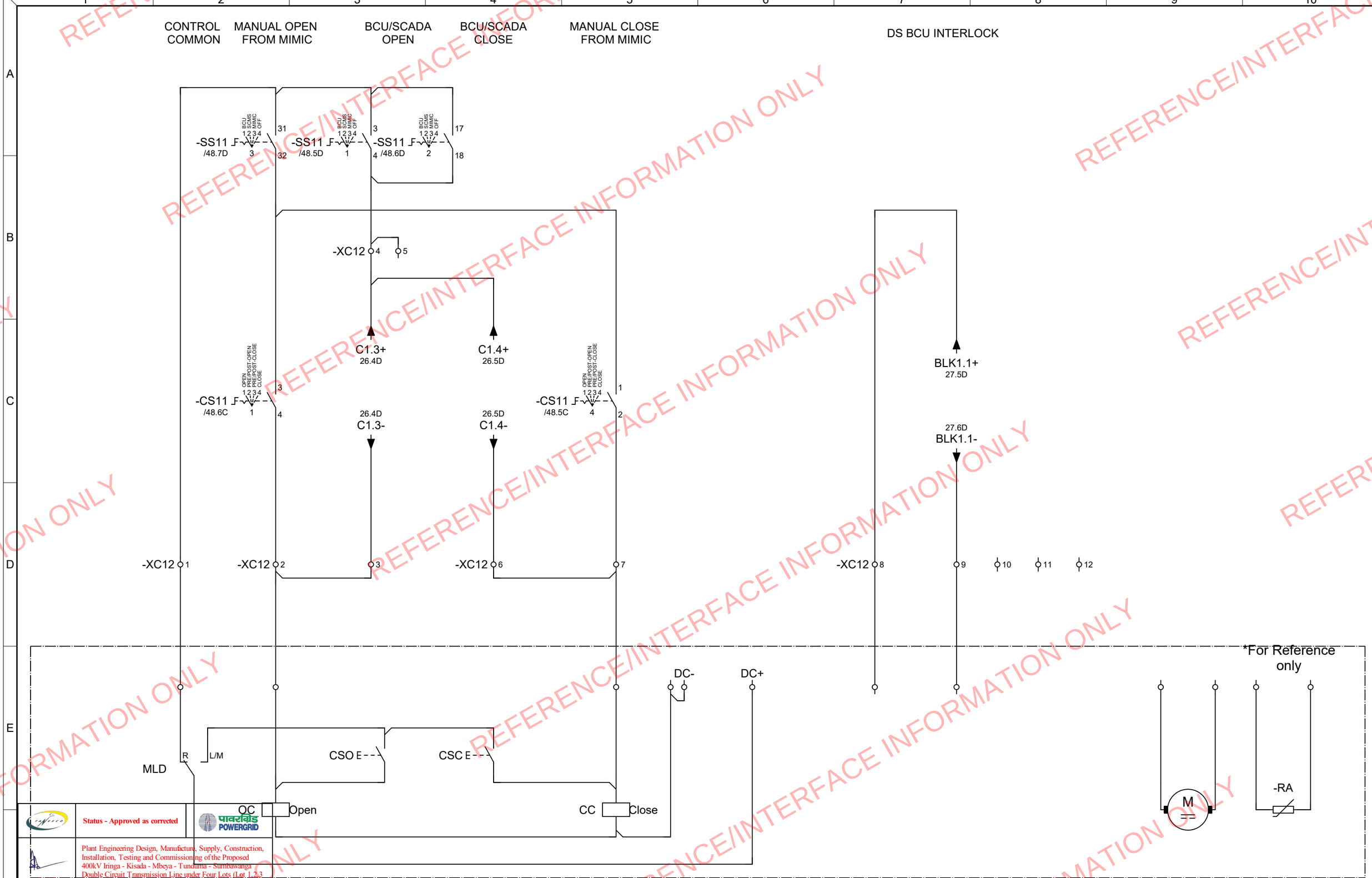
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 30
	CB Q01 CONTROL DIAGRAM	SIZE A3	NEXT 31
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



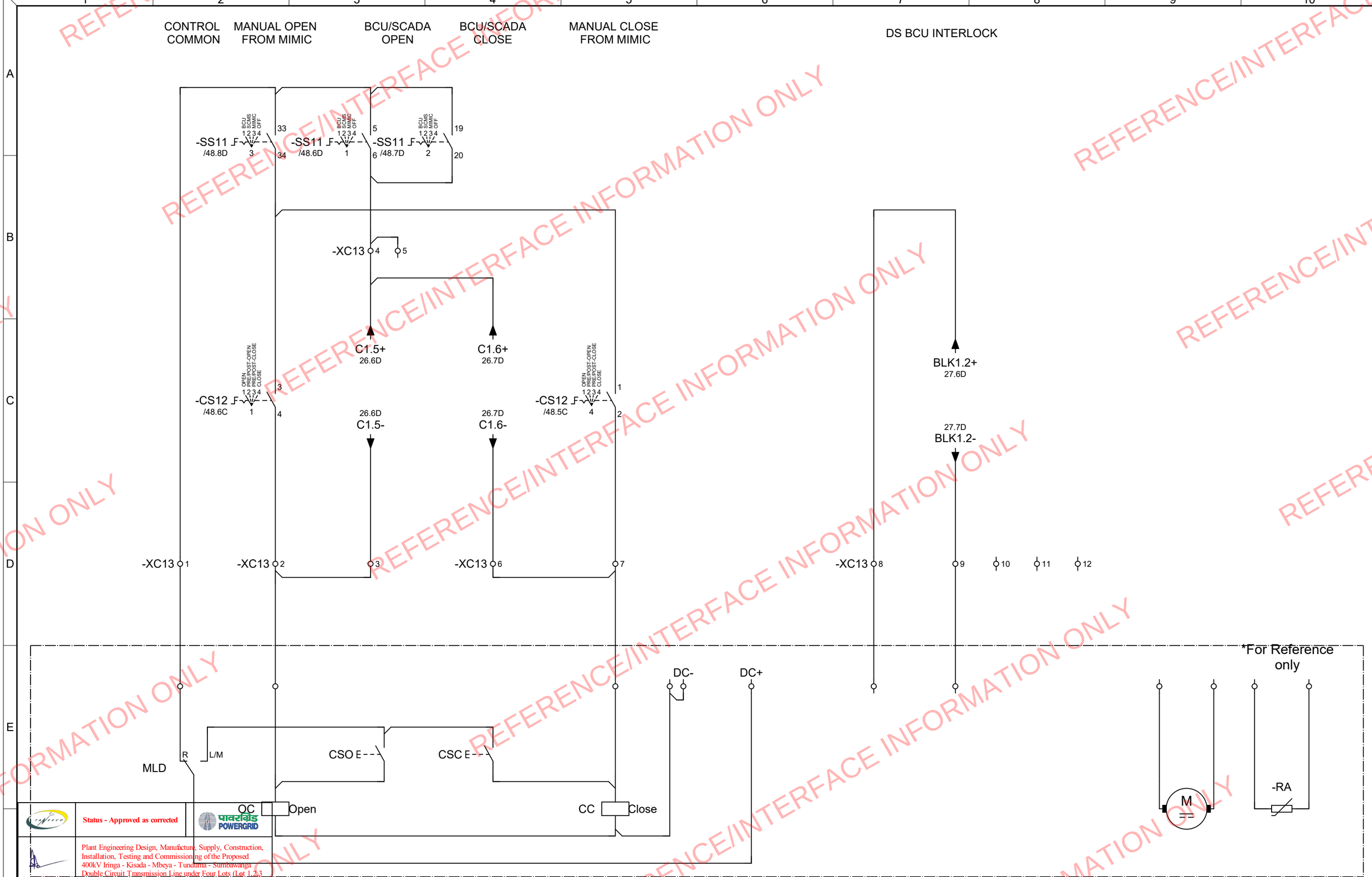
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 31
	BUS1 DS Q1 CONTROL DIAGRAM	SIZE A3	NEXT 32
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



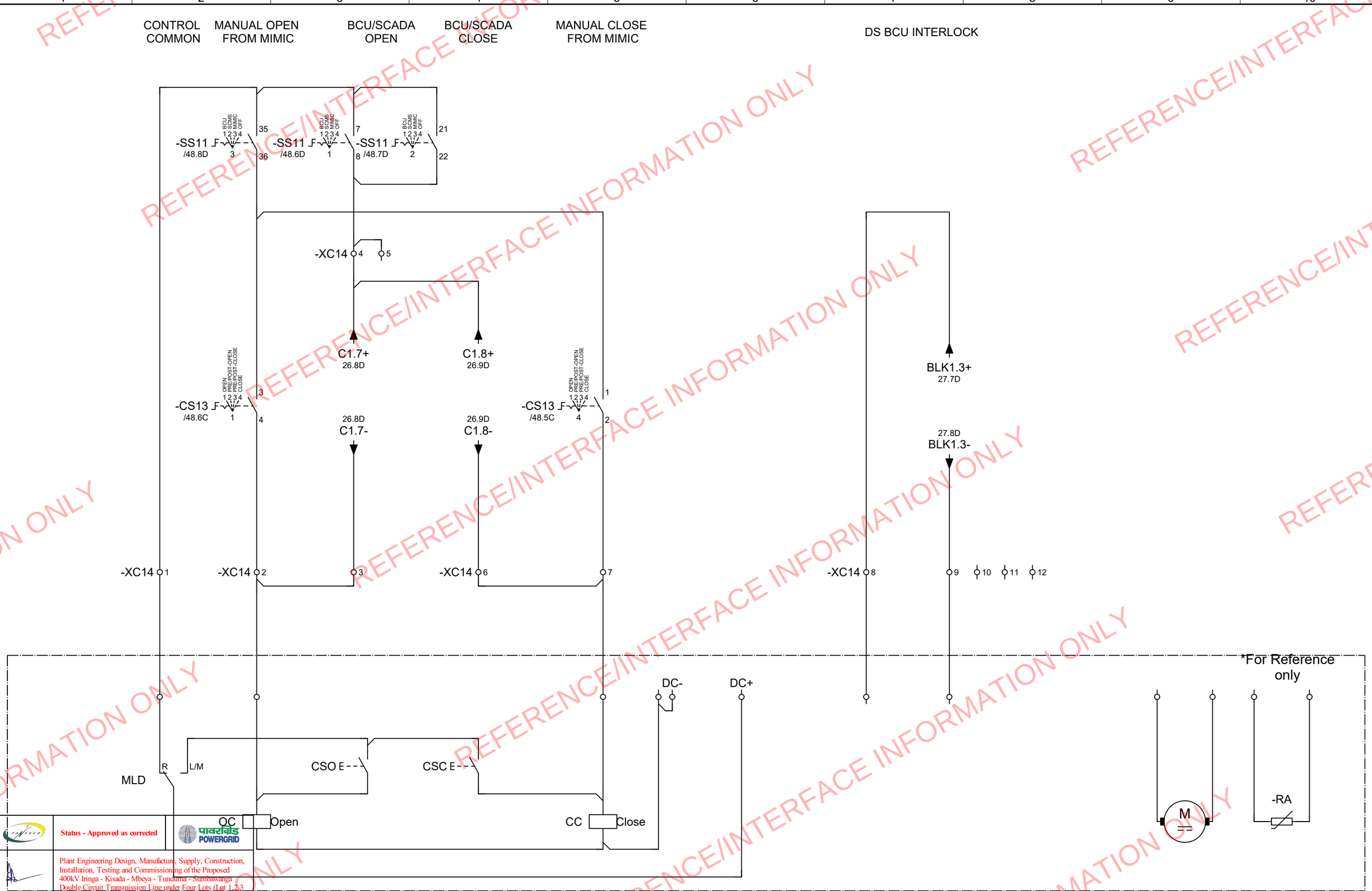
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 32
	BUS2 DS Q2 CONTROL DIAGRAM	SIZE A3	NEXT 33
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



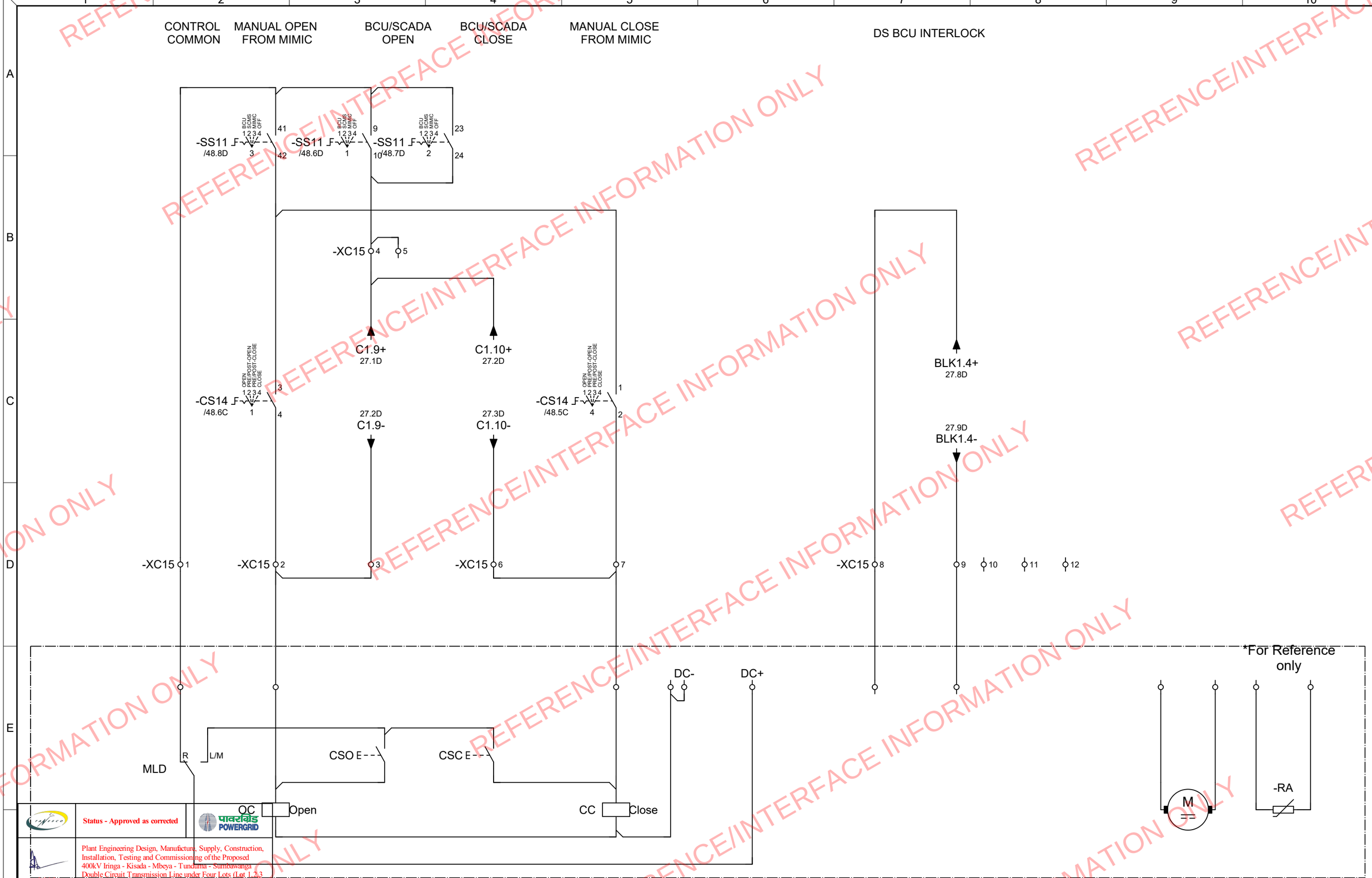
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 33
	LINE DS Q9 CONTROL DIAGRAM	SIZE A3	NEXT 34
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



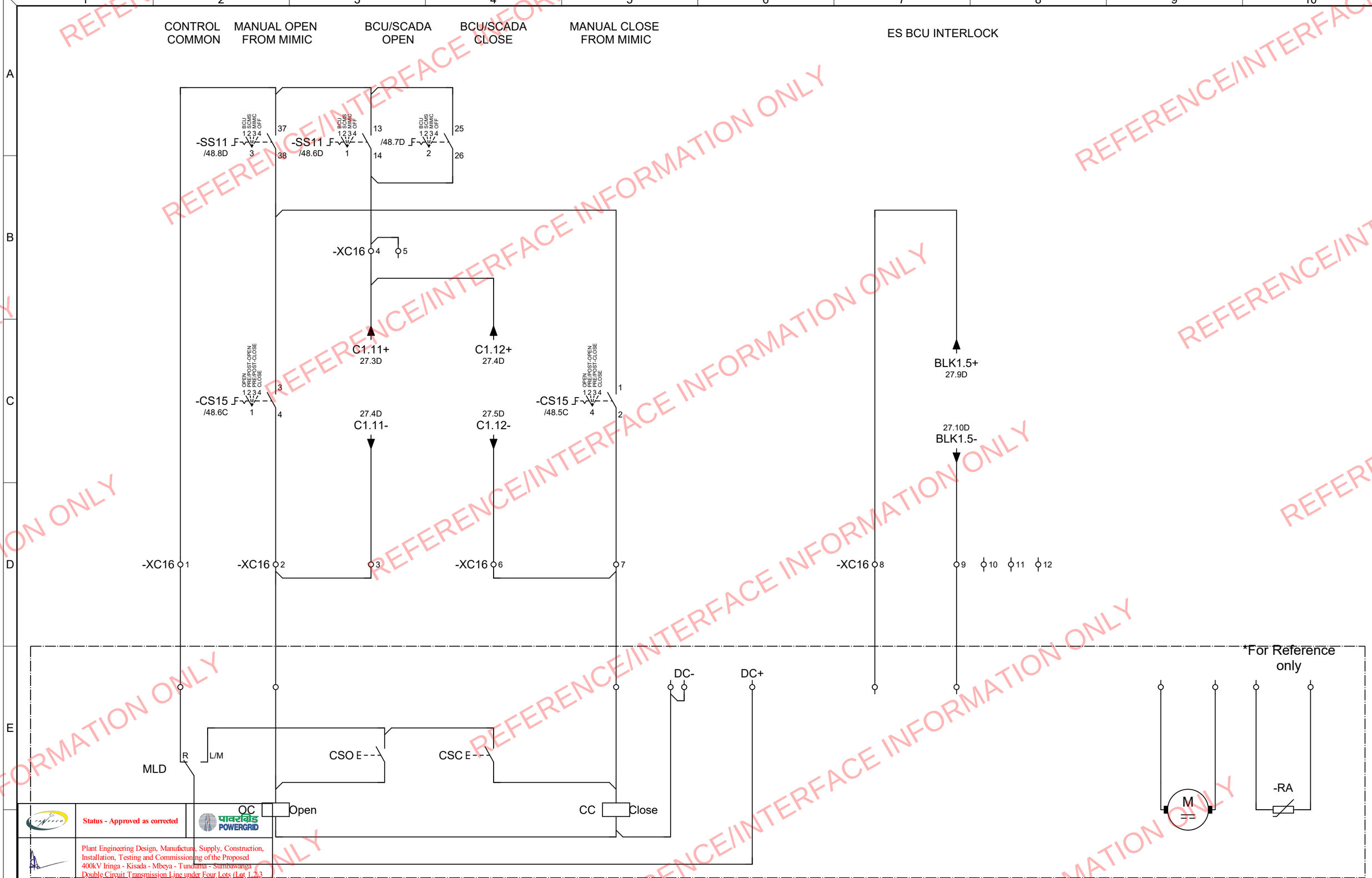
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 34
	BYPASS Q7 CONTROL DIAGRAM	SIZE A3	NEXT 35
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY



	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

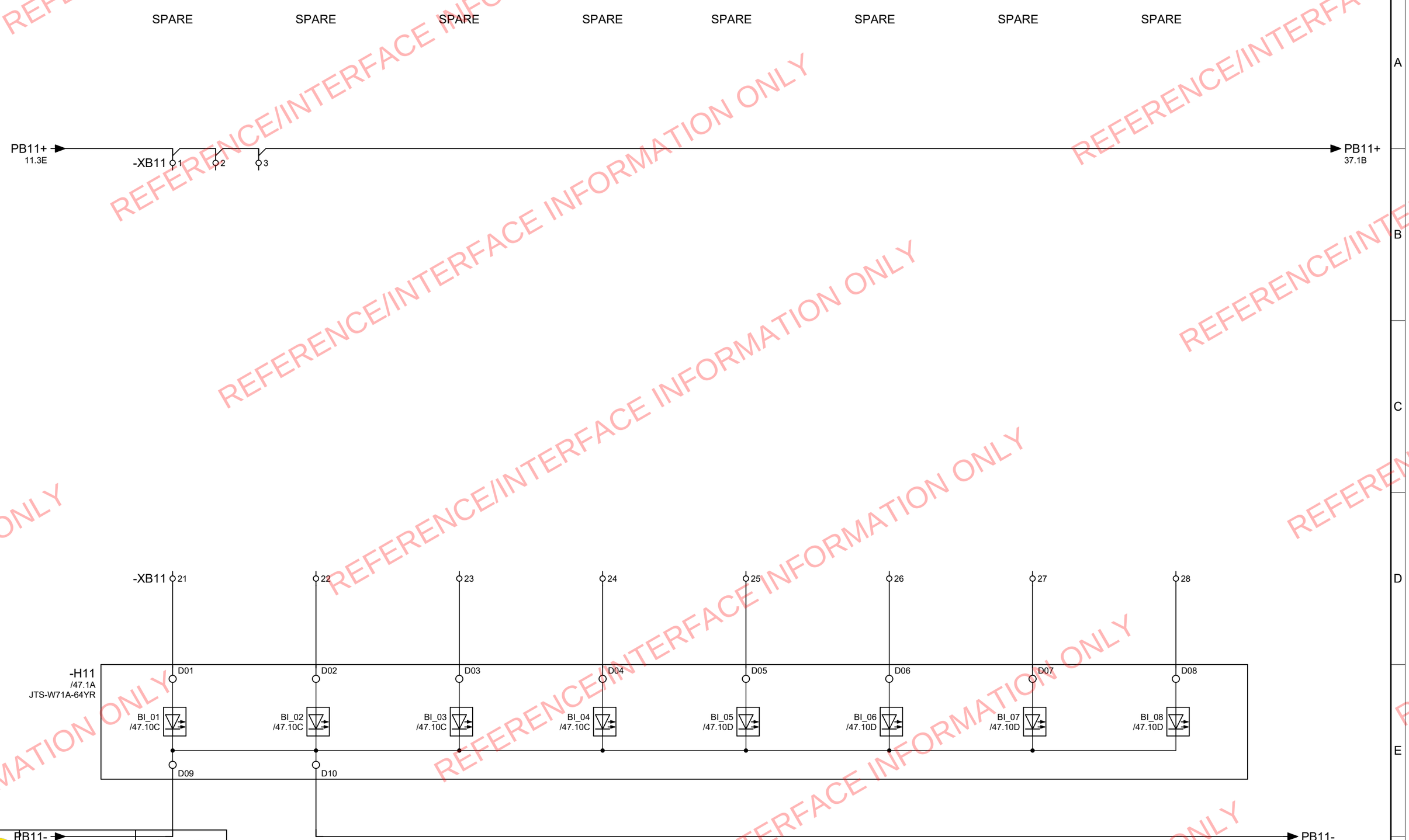
NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 35
	LINE ES Q8 CONTROL DIAGRAM	SIZE A3	NEXT 36
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



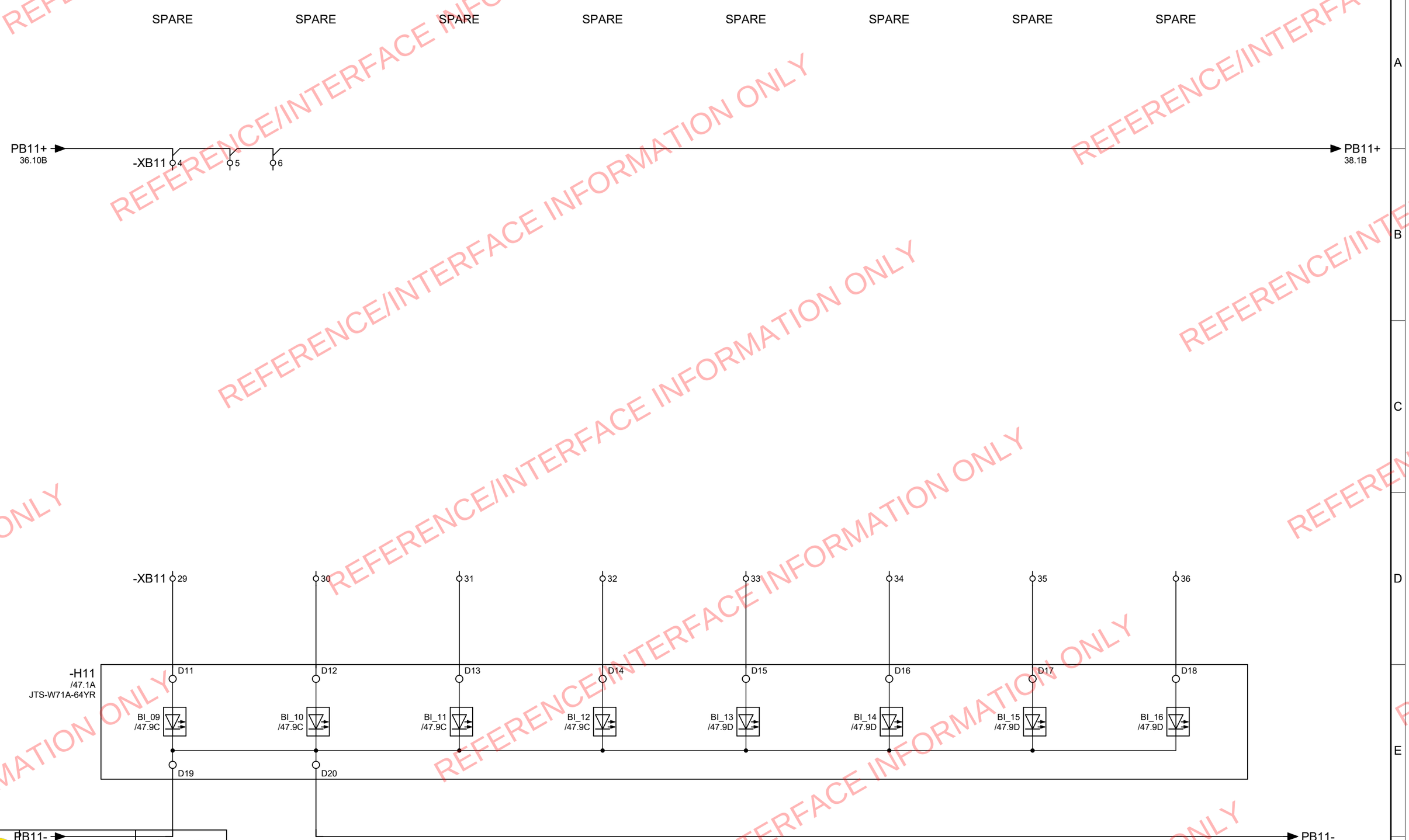
REFERENCE/INTERFACE INFORMATION ONLY

	Note - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL	SCALE N/A	SHEET 36
	-H11 BINARY INPUT CIRCUIT 1	SIZE A3	NEXT 37
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



	1105 - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

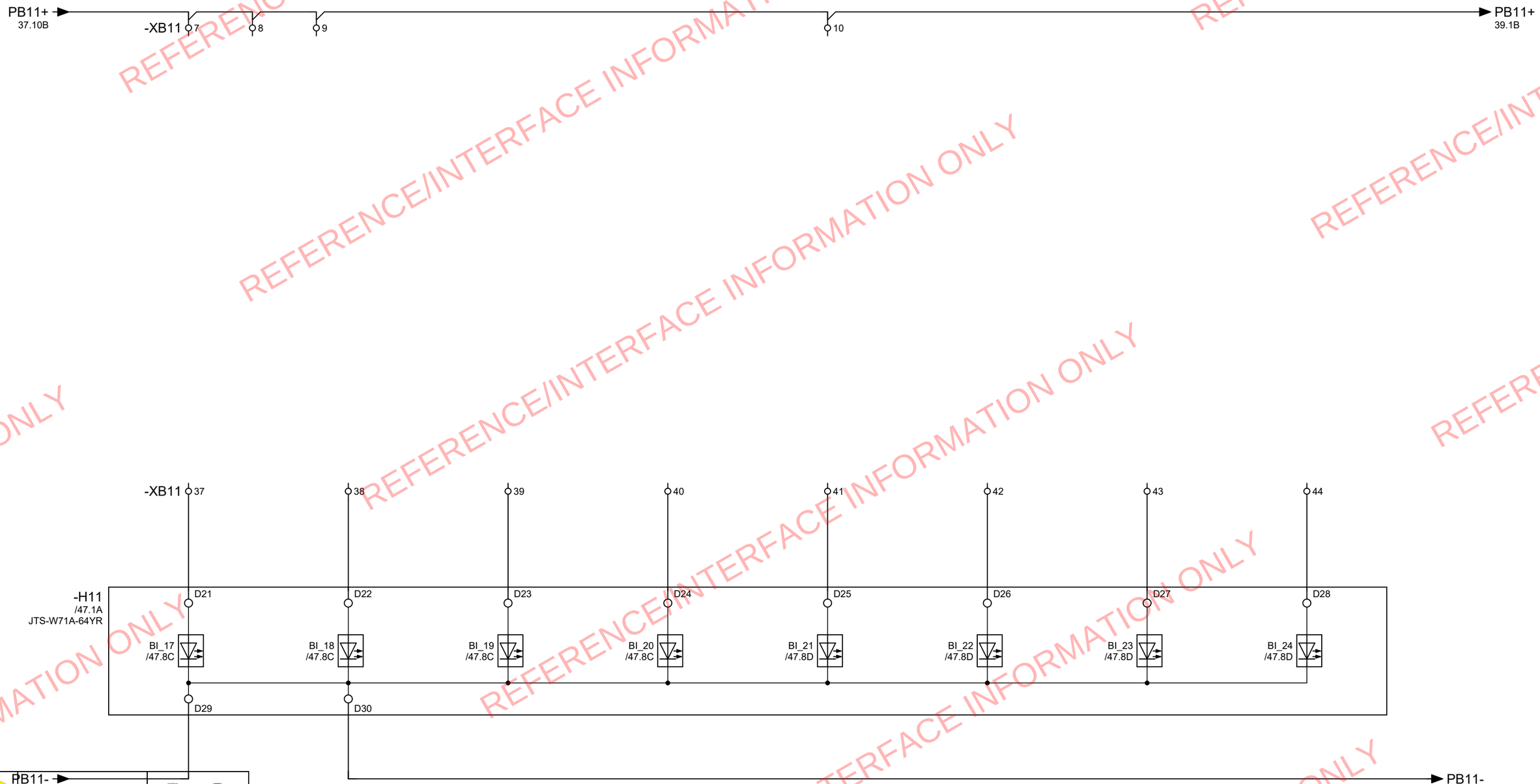
NR ELECTRIC CO.,LTD.	PROJECT: 400kV TUNDUMA SUBSTATION	DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -H11 BINARY INPUT CIRCUIT 2	=D06+W1
			SCALE N/A · SHEET 37
			SIZE A3 · NEXT 38
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 · TOTAL 54

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

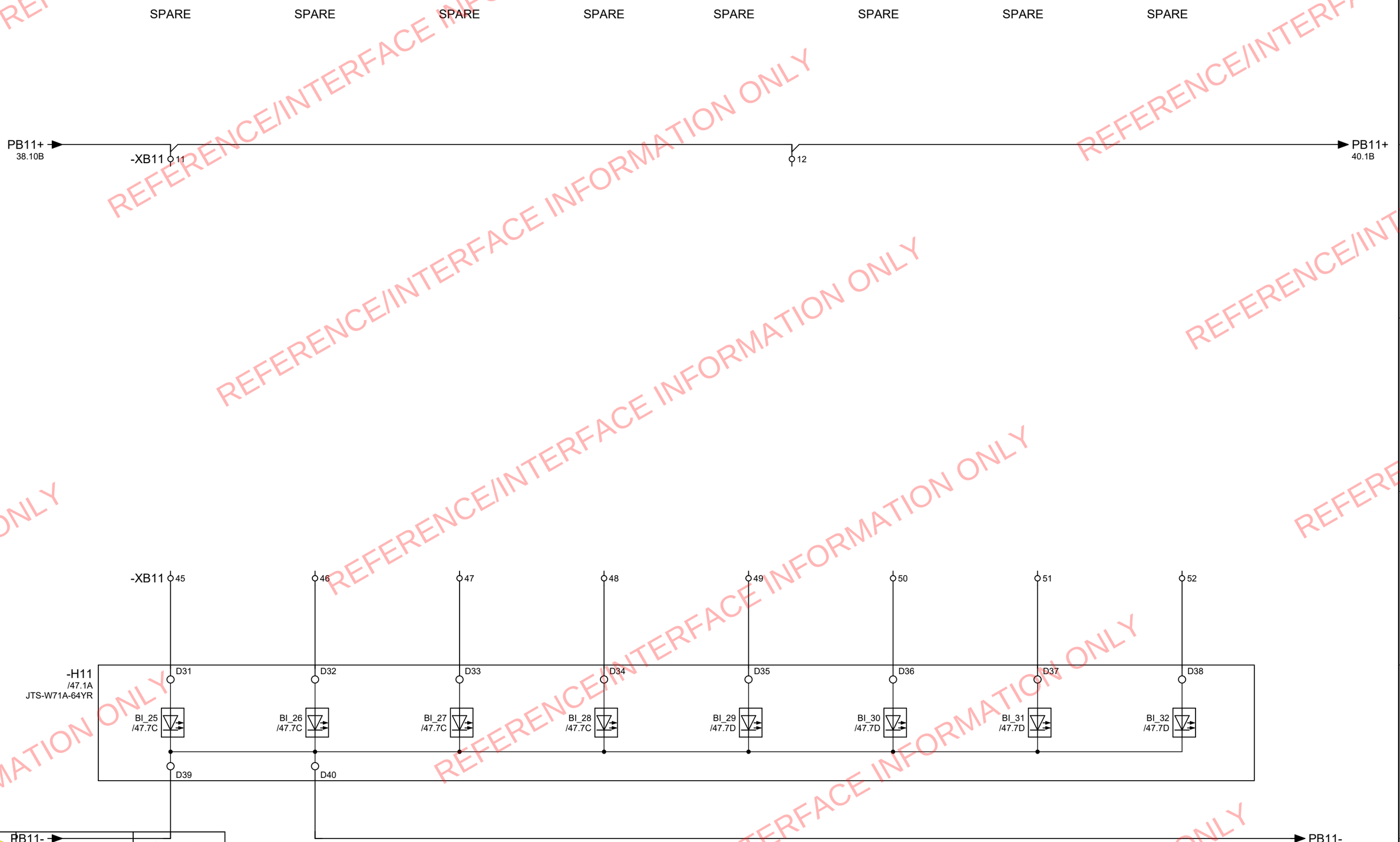
SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE



	Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE CONTROL PANEL -H11 BINARY INPUT CIRCUIT 3	=D06+W1
			SCALE N/A SHEET 38
			SIZE A3 NEXT 39
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

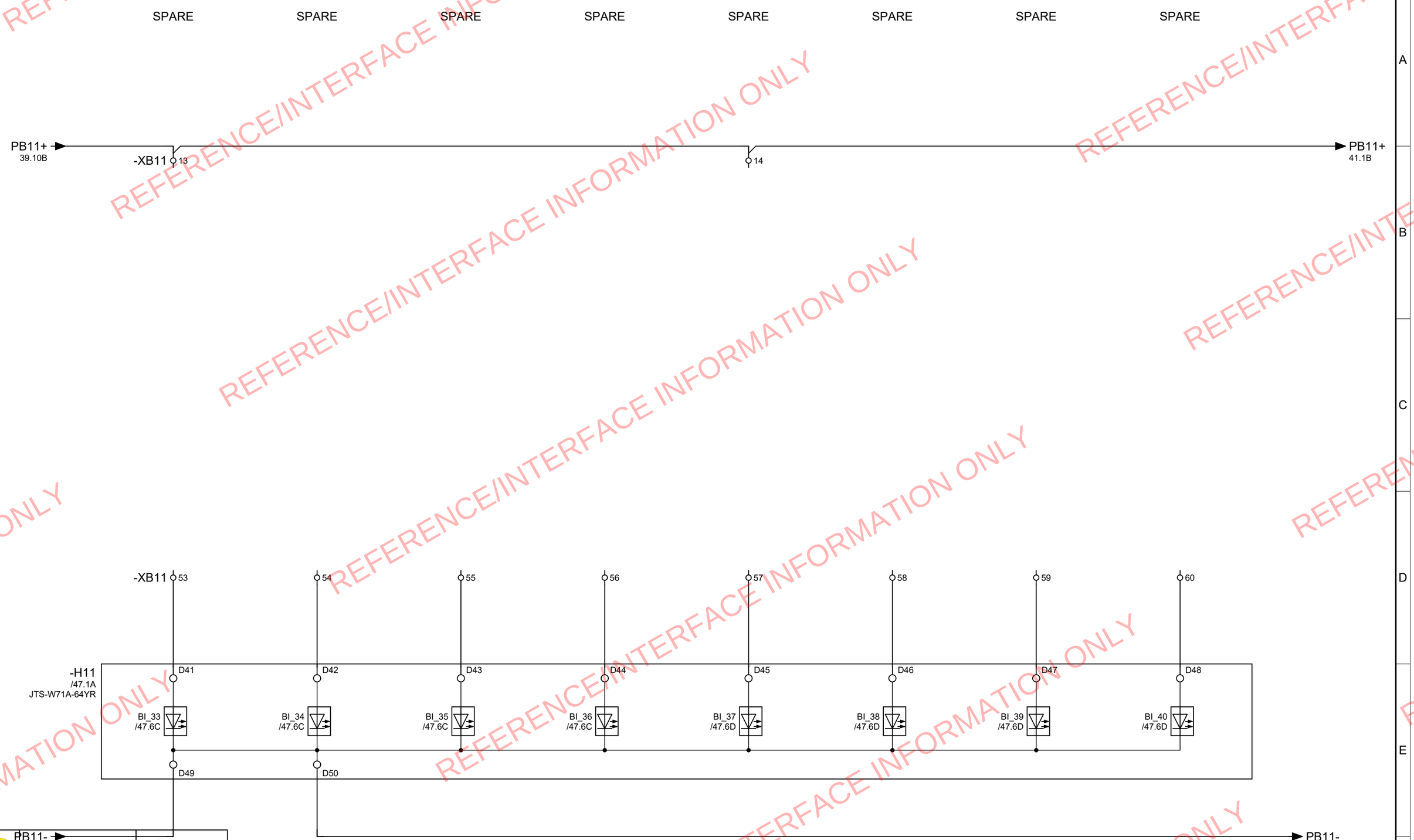


	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE CONTROL PANEL -H11 BINARY INPUT CIRCUIT 4	=D06+W1
			SCALE N/A SHEET 39
			SIZE A3 NEXT 40
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 TOTAL 54

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

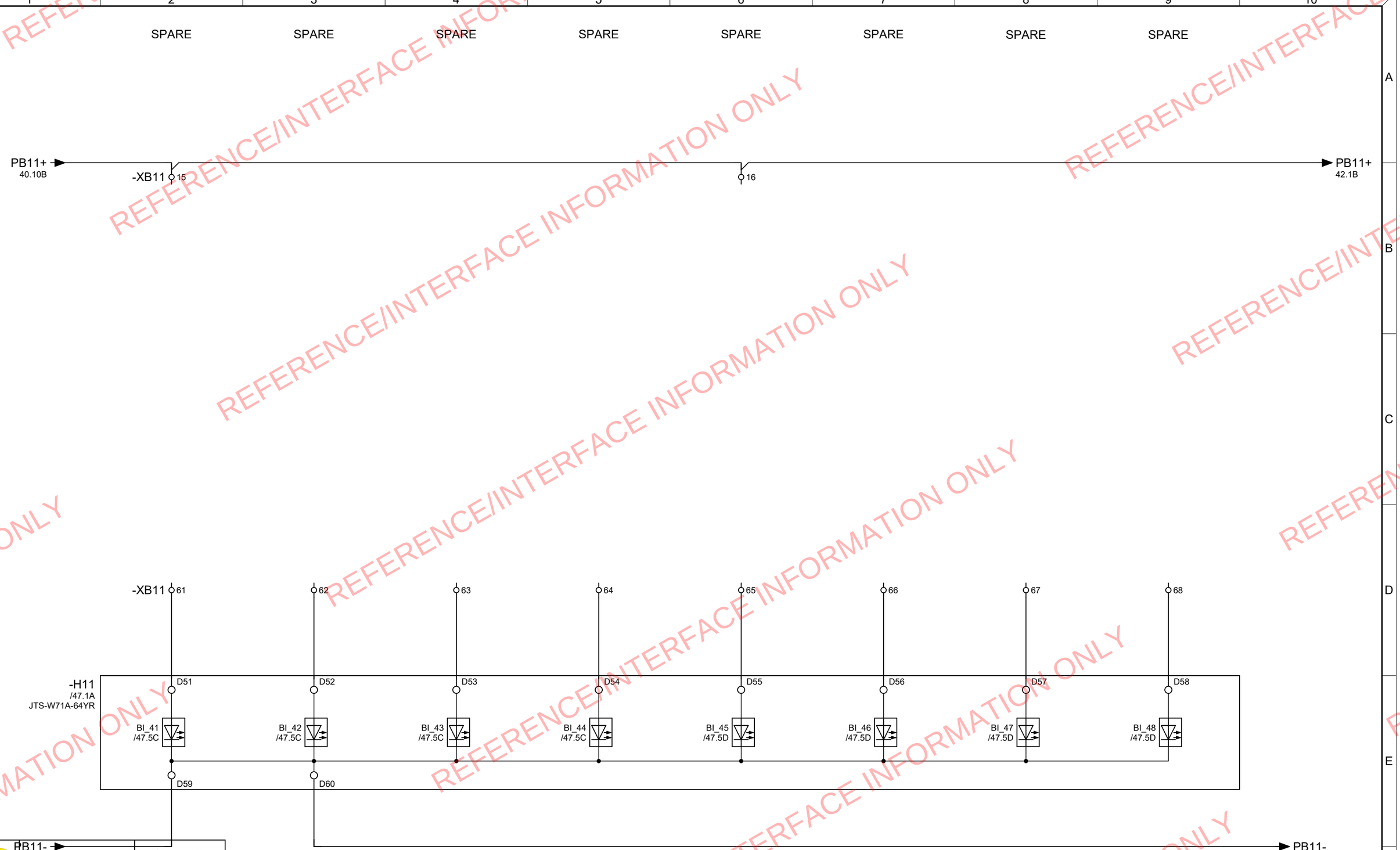


	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT 400kV TUNDUMA SUBSTATION	DWG. TITLE 330kV NAKONDE1 LINE CONTROL PANEL -H11 BINARY INPUT CIRCUIT 5	=D06+W1
			SCALE N/A SHEET 40
			SIZE A3 NEXT 41
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 TOTAL 54

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.



REFERENCE/INTERFACE INFORMATION ONLY

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.	PROJECT: 400kV TUNDUMA SUBSTATION	DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -H11 BINARY INPUT CIRCUIT 6	=D06+W1
			SCALE N/A / SHEET 41
			SIZE A3 / NEXT 42
		DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0 / TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB11+ 41.10B → -XB11 17 — 18 → PB11+ 43.1B

-XB11 69 70 71 72 73 74 75 76

-H11
/47.1A
JTS-W71A-64YR

D61	D62	D63	D64	D65	D66	D67	D68
BI_49 /47.4C	BI_50 /47.4C	BI_51 /47.4C	BI_52 /47.4C	BI_53 /47.4D	BI_54 /47.4D	BI_55 /47.4D	BI_56 /47.4D

D69 D70

PB11- 41.10F → PB11- 43.1F

	Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
-H11 BINARY INPUT CIRCUIT 7

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	42
SIZE	A3	NEXT	43
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

SPARE SPARE SPARE SPARE SPARE SPARE SPARE SPARE

PB11+
42.10B

-XB11 19 — 20

-XB11 77 78 79 80 81 82 83 84

-H11
/47.1A
JTS-W71A-64YR

D71	D72	D73	D74	D75	D76	D77	D78
BI_57 /47.3C	BI_58 /47.3C	BI_59 /47.3C	BI_60 /47.3C	BI_61 /47.3D	BI_62 /47.3D	BI_63 /47.3D	BI_64 /47.3D

D79 D80

PB11-
42.10F

	1 - Approved as corrected
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

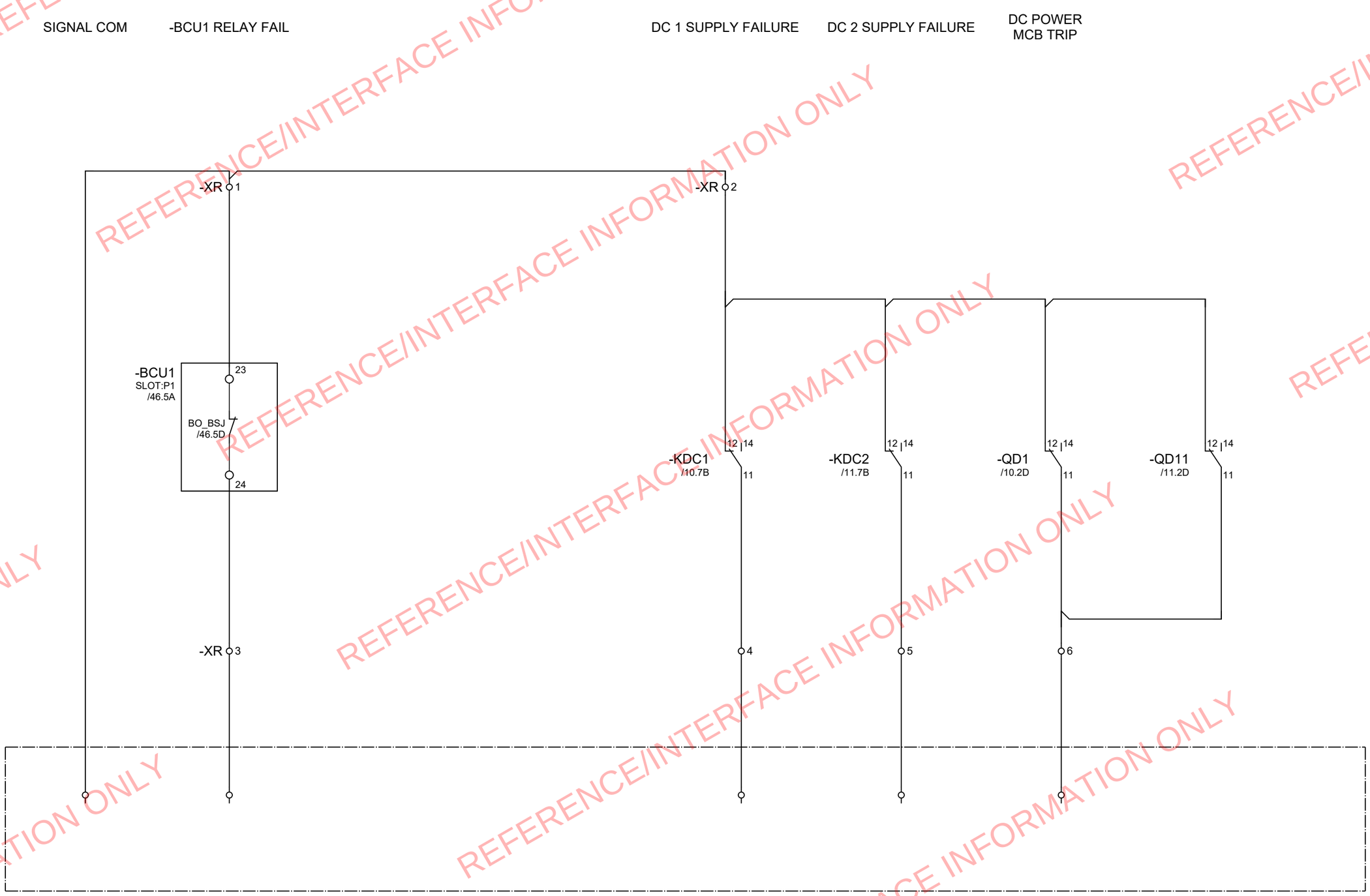
PROJECT: 400kV TUNDUMA SUBSTATION

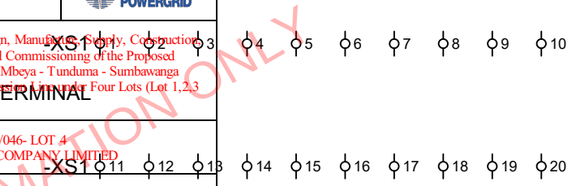
DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
-H11 BINARY INPUT CIRCUIT 8

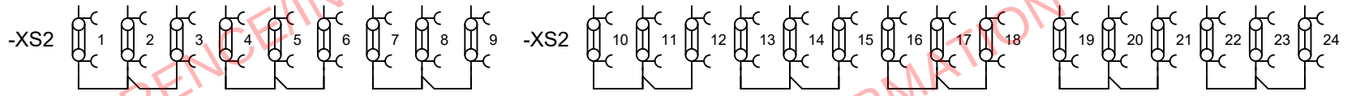
DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	43
SIZE	A3	NEXT	44
REV.	0	TOTAL	54







	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
SIGNAL OUTPUT CIRCUIT

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	44
SIZE	A3	NEXT	45
REV.	0	TOTAL	54

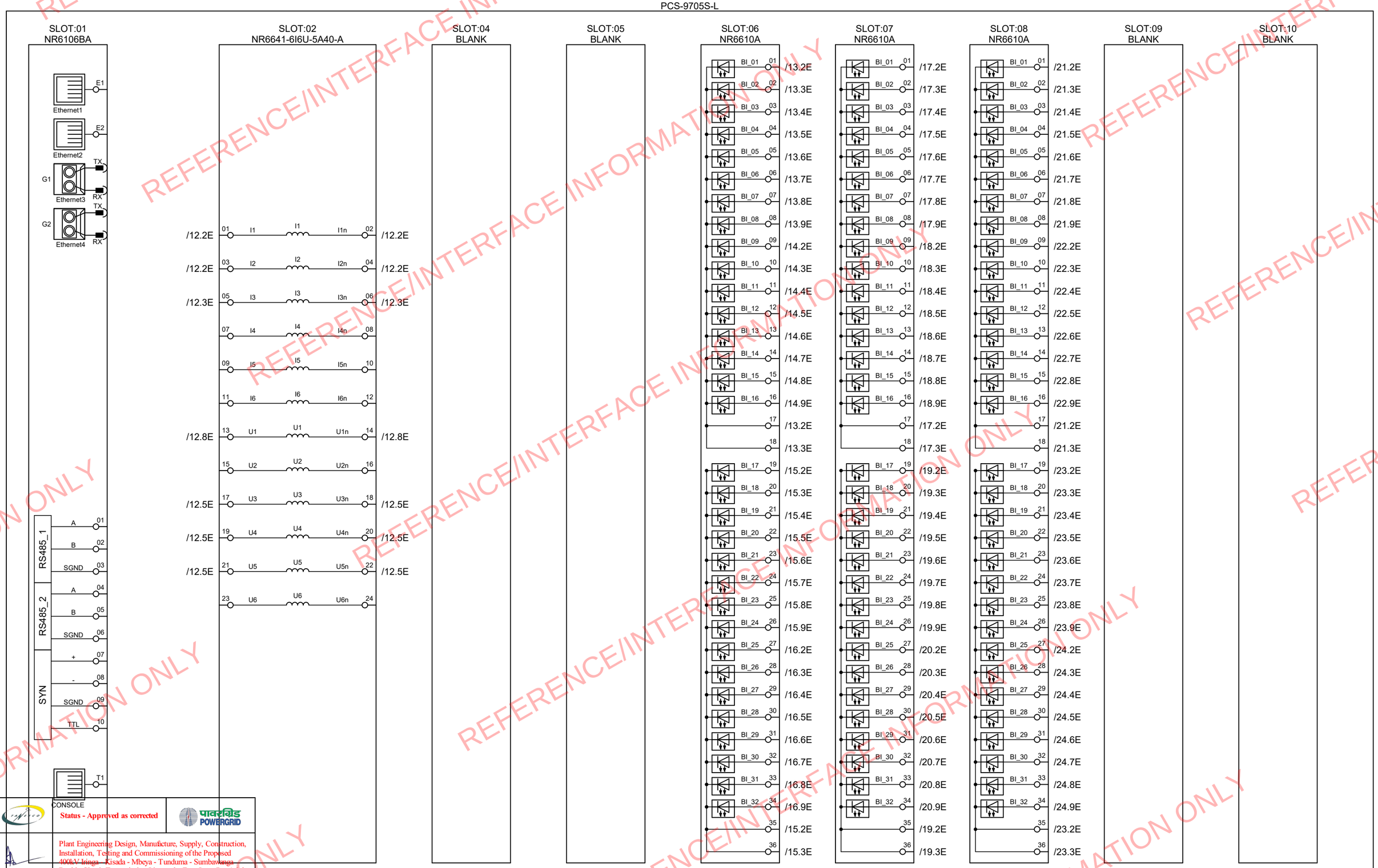
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-BCU1
PCS-9705S-L



Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

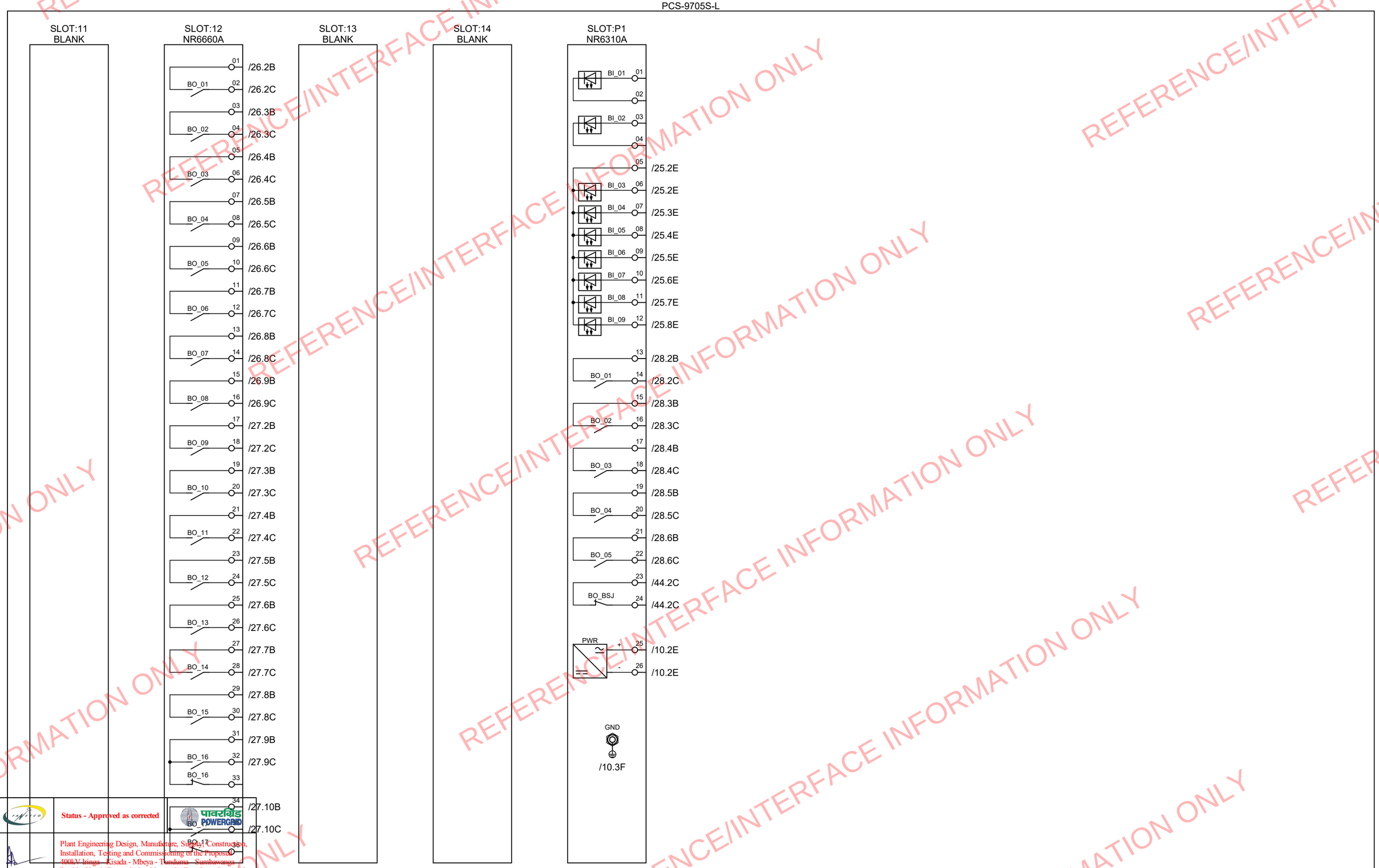
DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -BCU1 PCS-9705S-L REAR VIEW 1

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	45
SIZE	A3	NEXT	46
REV.	0	TOTAL	54

-BCU1
PCS-9705S-L



Status - Approved as corrected	
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED
	HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL -BCU1 PCS-9705S-L REAR VIEW 2

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	46
SIZE	A3	NEXT	47
REV.	0	TOTAL	54

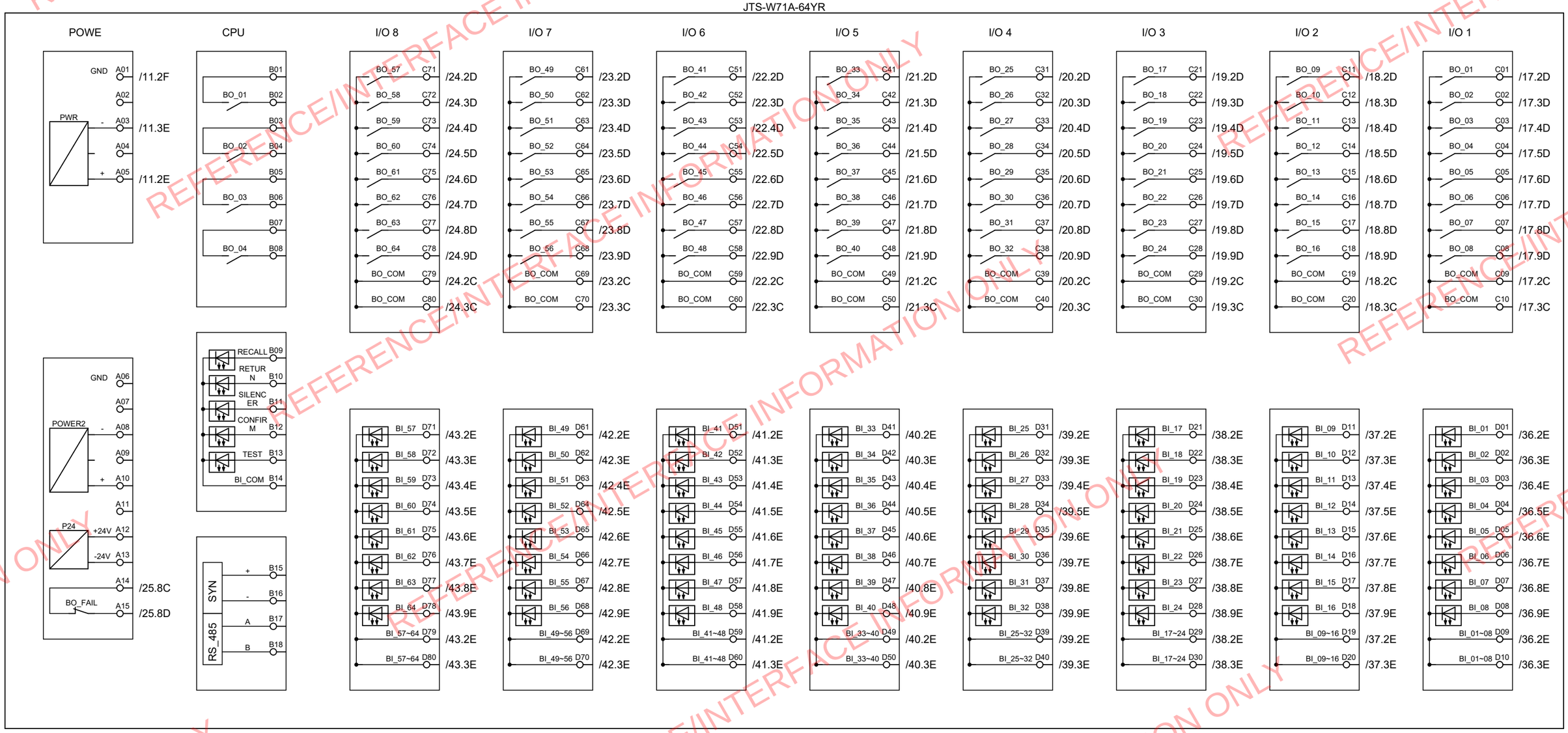
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-H11
JTS-W71A-64YR

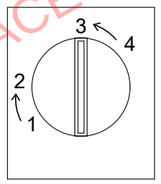


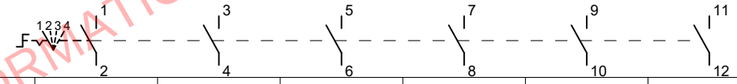
	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

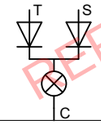
NR ELECTRIC CO.,LTD.

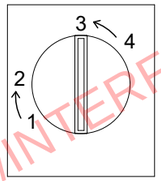
PROJECT	DWG. TITLE	=D06+W1	
400kV TUNDUMA SUBSTATION	330kV NAKONDE1 LINE CONTROL PANEL -H11 ANNUNCIATOR REAR VIEW	SCALE N/A	SHEET 47
		SIZE A3	NEXT 48
	DWG. NO. HQW46-4-TND-EQP-DWG-1333	REV. 0	TOTAL 54

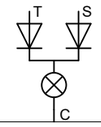
TYPE	DESCRIPTION	MATERIAL DIAGRAM																							
LW21-16DM:DLYFHD/39.N011.3 (T) DC220V-F ELX	SELECTION SWITCH	1	OPEN		X		X																		
		2	PRE/POST-OPEN					X																	
		3	PRE/POST-CLOSE						X																
		4	CLOSE	X		X																			
-CS1				/30.5D	/30.2D	/30.6D		/29.2D	/29.2D	/29.2E															
LW21-16DM:DLYFHD/39.N011.3 (T) DC220V-Y ELX	SELECTION SWITCH	1	OPEN		X		X																		
		2	PRE/POST-OPEN					X																	
		3	PRE/POST-CLOSE						X																
		4	CLOSE	X		X																			
-CS11				/31.5C	/31.2C			/29.3D	/29.4D	/29.3E															
-CS12				/32.5C	/32.2C			/29.5D	/29.5D	/29.5E															
-CS13				/33.5C	/33.2C			/29.6D	/29.7D	/29.6E															
-CS14				/34.5C	/34.2C			/29.8D	/29.8D	/29.8E															
-CS15				/35.5C	/35.2C			/29.9D	/29.10D	/29.9E															
LW21-16/4.7955.12 M1(W) ELX	SELECTION SWITCH	1	BCU	X	X	X	X	X	X	X															
		2	SCMS								X	X	X	X	X	X	X								
		3	MIMIC															X	X	X	X	X	X	X	
		4	OFF																						X
-SS11	BAY CONTROL MODE SWITCH FOR -BCU1			/25.2C	/31.3A	/32.3A	/33.3A	/34.3A	/30.3B	/35.3A	/30.4B	/31.4A	/32.4A	/33.4A	/34.4A	/35.4A	/25.3C	/30.2B	/31.2A	/32.2A	/33.2A	/35.2A	/25.4C	/34.2A		
LW21-16/9.0932.3 M1(W) ELX	SELECTION SWITCH	1	OVER RIDE		X		X		X																
		2	INTERLOCK ON	X		X		X																	
SS12	INTERLOCK MODE SWITCH FOR -BCU1			/25.6C																					

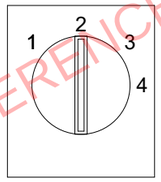


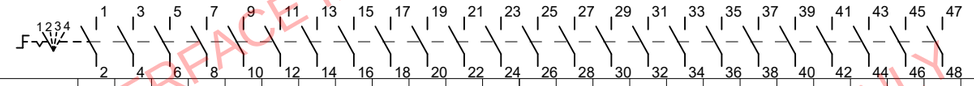


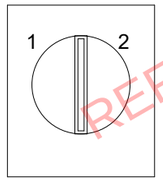


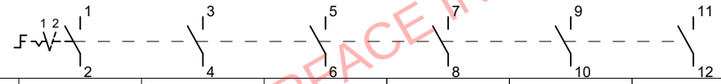












Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL ACCESSORIES MATERIAL LIST

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

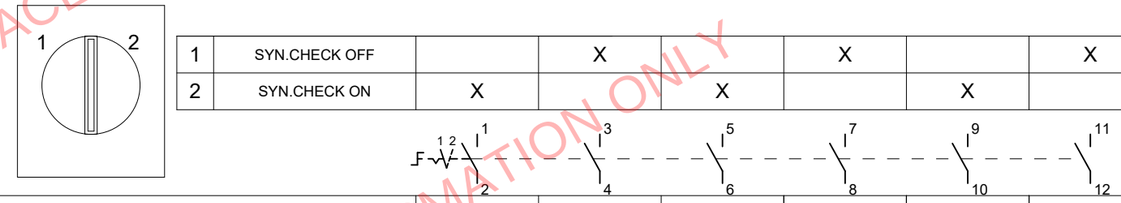
SCALE	N/A	SHEET	48
SIZE	A3	NEXT	49
REV.	0	TOTAL	54

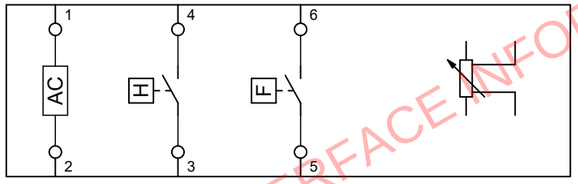
We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

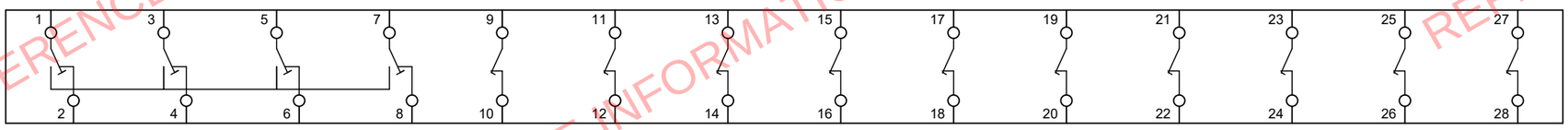
REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM												
LW21-16/9.0932.3 M1(W) ELX	SELECTION SWITCH													
-SS13	SYN.CHECK SELECT SWITCH FOR -BCU1	/25.7C	/30.5C	/30.6C										
ELXAL5-10-20/203-G+NONE ELX	PUSH BUTTON													
-PB1	LAMP TEST	/29.1C												
TH-E-11/LED ODES	TEMP.& HUMIDITY CONTROLLER													
-C1		/09.4D												
MD1701S-1I10U NR	TEST BLOCK													
-TF1.1	TEST BLOCK 1 FOR -BCU1	/12.2D	/12.2D	/12.3D	/12.3D	/12.5D	/12.5D	/12.5D	/12.6D	/12.8D	/12.8D			

	1	2	3	4	5	6
1	SYN.CHECK OFF		X		X		X
2	SYN.CHECK ON	X		X		X	







Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL ACCESSORIES MATERIAL LIST

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	49
SIZE	A3	NEXT	50
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM		
LED-8W PHILIPS	LIGHTING LAMP			
-H1		/09.3E		
DRG570220L WEI FS 4CO	RELAY RELAY SOCKET			
-KDC1		/10.7B	/44.6C	
-KDC2		/11.7B	/44.7C	
LX-19K PGC	LIMITED SWITCH			
-LS1		/09.3D		
KDY-CZ-03 KEJIA	SOCKET			
-PS1		/09.6E		
NDB2LE-63C 16/2 Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QA	MCB FOR AC POWER	/09.3C	/13.4C	
NDB2Z-63C 4A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QD1	-BCU1 DC SUPPLY	/10.2D	/44.8C	
-QD11	-H11 DC SUPPLY	/11.2D	/44.9C	

Status - Approved as corrected

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Initial

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL ACCESSORIES MATERIAL LIST

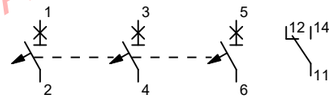
DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	50
SIZE	A3	NEXT	51
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

TYPE	DESCRIPTION	MATERIAL DIAGRAM		
NDB2-63C 1A/3P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QV1.1	-BCU1 VOLTAGE MCB 1	/12.5C	/13.2C	
NDB2-63C 1A/2P Nader NDB2-OF2	MCB AUXILIARY CONTACT (OF)			
-QV1.2	-BCU1 VOLTAGE MCB 2	/12.8C	/13.3C	
JRD2-150W ODES	HEATER			
-R1		/09.5E		

	Status - Approved as corrected	पावरग्रिड POWERGRID
Initial	Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572	
Project Manager TAZA-P163572 27-Aug-2025	PA/001/2020-21/HQ/W/046- LOT 4 Contractor:M/s TBEA COMPANY LIMITED	
	HQW46-4-TDM-EQP-DWG-1331 / 0	

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL ACCESSORIES MATERIAL LIST

=D06+W1

SCALE	N/A	SHEET	51
SIZE	A3	NEXT	52
DWG. NO. HQW46-4-TND-EQP-DWG-1333		REV. 0	TOTAL 54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-XC16

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-SS11:37	/35.2D
	2	-CS15:4	/35.2D
	3	-BCU1-12:22	/35.3D
-SS11:14	4	-BCU1-12:21	/35.3B
	5		/35.3B
	6	-BCU1-12:24	/35.4D
	7	-CS15:2	/35.5D
	8	-BCU1-12:34	/35.7D
	9	-BCU1-12:35	/35.7D
	10		/35.8D
	11		/35.8D
	12		/35.8D

-XB11

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QD11:4	/36.2B
	2		/36.2B
	3		/36.3B
	4		/37.2B
	5		/37.2B
	6		/37.3B
	7		/38.2B
	8		/38.2B
	9		/38.3B
	10		/38.6B
	11		/39.2B
	12		/39.6B
	13		/40.2B
	14		/40.6B
	15		/41.2B
	16		/41.6B
	17		/42.2B
	18		/42.6B
	19		/43.2B
	20		/43.6B
	21	-H11:D01	/36.2D
	22	-H11:D02	/36.3D
	23	-H11:D03	/36.4D
	24	-H11:D04	/36.5D
	25	-H11:D05	/36.6D
	26	-H11:D06	/36.7D
	27	-H11:D07	/36.8D
	28	-H11:D08	/36.9D
	29	-H11:D11	/37.2D
	30	-H11:D12	/37.3D
	31	-H11:D13	/37.4D
	32	-H11:D14	/37.5D
	33	-H11:D15	/37.6D
	34	-H11:D16	/37.7D
	35	-H11:D17	/37.8D
	36	-H11:D18	/37.9D
	37	-H11:D21	/38.2D
	38	-H11:D22	/38.3D
	39	-H11:D23	/38.4D
	40	-H11:D24	/38.5D
	41	-H11:D25	/38.6D

-XB11

EXTERNAL	NO.	INTERNAL	REFERENCE
	42	-H11:D26	/38.7D
	43	-H11:D27	/38.8D
	44	-H11:D28	/38.9D
	45	-H11:D31	/39.2D
	46	-H11:D32	/39.3D
	47	-H11:D33	/39.4D
	48	-H11:D34	/39.5D
	49	-H11:D35	/39.6D
	50	-H11:D36	/39.7D
	51	-H11:D37	/39.8D
	52	-H11:D38	/39.9D
	53	-H11:D41	/40.2D
	54	-H11:D42	/40.3D
	55	-H11:D43	/40.4D
	56	-H11:D44	/40.5D
	57	-H11:D45	/40.6D
	58	-H11:D46	/40.7D
	59	-H11:D47	/40.8D
	60	-H11:D48	/40.9D
	61	-H11:D51	/41.2D
	62	-H11:D52	/41.3D
	63	-H11:D53	/41.4D
	64	-H11:D54	/41.5D
	65	-H11:D55	/41.6D
	66	-H11:D56	/41.7D
	67	-H11:D57	/41.8D
	68	-H11:D58	/41.9D
	69	-H11:D61	/42.2D
	70	-H11:D62	/42.3D
	71	-H11:D63	/42.4D
	72	-H11:D64	/42.5D
	73	-H11:D65	/42.6D
	74	-H11:D66	/42.7D
	75	-H11:D67	/42.8D
	76	-H11:D68	/42.9D
	77	-H11:D71	/43.2D
	78	-H11:D72	/43.3D
	79	-H11:D73	/43.4D
	80	-H11:D74	/43.5D
	81	-H11:D75	/43.6D
	82	-H11:D76	/43.7D
	83	-H11:D77	/43.8D
	84	-H11:D78	/43.9D

-XR

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-BCU1-P1:23	/44.2B
	2	-KDC1:12	/44.6B
	3	-BCU1-P1:24	/44.2D
	4	-KDC1:11	/44.6D
	5	-KDC2:11	/44.7D
	6	-QD1:11	/44.8D

-XS1

EXTERNAL	NO.	INTERNAL	REFERENCE
	1		/44.2F
	2		/44.2F
	3		/44.2F
	4		/44.3F
	5		/44.3F
	6		/44.3F
	7		/44.3F
	8		/44.3F
	9		/44.4F
	10		/44.4F
	11		/44.2F
	12		/44.2F
	13		/44.2F
	14		/44.3F
	15		/44.3F
	16		/44.3F
	17		/44.3F
	18		/44.3F
	19		/44.4F
	20		/44.4F

-XS2

EXTERNAL	NO.	INTERNAL	REFERENCE
	1		/44.5F
	2		/44.5F
	3		/44.5F
	4		/44.6F
	5		/44.6F
	6		/44.6F
	7		/44.6F
	8		/44.6F
	9		/44.7F
	10		/44.7F
	11		/44.7F
	12		/44.7F
	13		/44.8F
	14		/44.8F
	15		/44.8F
	16		/44.8F
	17		/44.8F
	18		/44.9F
	19		/44.9F
	20		/44.9F
	21		/44.9F
	22		/44.10F
	23		/44.10F
	24		/44.10F

-XD

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QD1:3	/10.2A
	2		/10.3A
	3	-KDC1:A2	/10.6A
	4	-QD1:1	/10.2B
	5		/10.3B

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	52
SIZE	A3	NEXT	53
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. © NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY

-XD

EXTERNAL	NO.	INTERNAL	REFERENCE
	6	-KDC1:A1	/10.7B
	7	-QD11:3	/11.2A
	8		/11.3A
	9	-KDC2:A2	/11.7A
	10	-QD11:1	/11.2B
	11		/11.3B
	12	-KDC2:A1	/11.7B

-XU1

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QV1.1:1	/12.5C
	2		/12.5C
	3	-QV1.1:3	/12.5C
	4		/12.5C
	5	-QV1.1:5	/12.5C
	6		/12.6C
	7	-TF1.1:15	/12.6C
	8		/12.6C
	9	-QV1.2:1	/12.8C
	10		/12.8C
	11	-QV1.2:3	/12.8C
	12		/12.9C

-XI1

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-TF1.1:1	/12.2C
	2	-TF1.1:3	/12.2C
	3	-TF1.1:5	/12.3C
	4	-TF1.1:7	/12.3C
	5		/12.3C
	6	-BCU1-02:02	/12.2F
	7	-BCU1-02:04	/12.2F
	8	-BCU1-02:06	/12.3F
	9	-TF1.1:8	/12.3F

-XB1

EXTERNAL	NO.	INTERNAL	REFERENCE
-QV1.1:12	1	-QD1:4	/13.2B
	2		/13.5B
	3		/13.6B
	4		/14.2B
	5		/15.2B
	6		/15.4B
	7		/16.2B
	8	-H11:C09	/17.2B
	9		/18.2B
	10		/19.2B
	11		/20.2B
	12		/21.2B
	13		/22.2B
	14		/23.2B
	15		/24.2B
	16	-SS11:1	/25.2B
	17	-PB1:13	/29.1B

-XB1

EXTERNAL	NO.	INTERNAL	REFERENCE
	18		/29.2B
	19		/29.3B
	20		/29.5B
	21		/29.6B
	22		/29.8B
	23		/29.9B
	24	-BCU1-06:04	/13.5D
	25	-BCU1-06:05	/13.6D
	26	-BCU1-06:06	/13.7D
	27	-BCU1-06:07	/13.8D
	28	-BCU1-06:08	/13.9D
	29	-BCU1-06:09	/14.2D
	30	-BCU1-06:10	/14.3D
	31	-BCU1-06:11	/14.4D
	32	-BCU1-06:12	/14.5D
	33	-BCU1-06:13	/14.6D
	34	-BCU1-06:14	/14.7D
	35	-BCU1-06:15	/14.8D
	36	-BCU1-06:16	/14.9D
	37	-BCU1-06:19	/15.2D
	38	-BCU1-06:20	/15.3D
	39	-BCU1-06:21	/15.4D
	40	-BCU1-06:22	/15.5D
	41	-BCU1-06:23	/15.6D
	42	-BCU1-06:24	/15.7D
	43	-BCU1-06:25	/15.8D
	44	-BCU1-06:26	/15.9D
	45	-BCU1-06:27	/16.2D
	46	-BCU1-06:28	/16.3D
	47	-BCU1-06:29	/16.4D
	48	-BCU1-06:30	/16.5D
	49	-BCU1-06:31	/16.6D
	50	-BCU1-06:32	/16.7D
	51	-BCU1-06:33	/16.8D
	52	-BCU1-06:34	/16.9D
	53	-CS1:9	/29.2C
	54	-CS1:11	/29.2C
	55	-CS11:9	/29.3C
	56	-CS11:11	/29.4C
	57	-CS12:9	/29.5C
	58	-CS12:11	/29.5C
	59	-CS13:9	/29.6C
	60	-CS13:11	/29.7C
	61	-CS14:9	/29.8C
	62	-CS14:11	/29.8C
	63	-CS15:9	/29.9C
	64	-CS15:11	/29.10C
	65		/29.10C
	66		/29.10C
	67		/29.10C

-XT1

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-BCU1-P1:17	/28.4D
	2	-BCU1-P1:18	/28.4D
	3	-BCU1-P1:19	/28.5D

-XT1

EXTERNAL	NO.	INTERNAL	REFERENCE
	4	-BCU1-P1:20	/28.5D
	5	-BCU1-P1:21	/28.6D
	6	-BCU1-P1:22	/28.6D

-XC11

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-SS11:29	/30.2E
	2		/30.2E
	3	-CS1:4	/30.2E
	4	-BCU1-12:02	/30.3E
-SS11:12	5	-BCU1-12:01	/30.3B
	6		/30.3B
	7	-BCU1-12:04	/30.4E
	8	-CS1:2	/30.5E
	9	-CS1:6	/30.6E
	10	-BCU1-P1:13	/30.7E
	11	-BCU1-P1:14	/30.7E
	12	-BCU1-P1:15	/30.9E
	13	-BCU1-P1:16	/30.9E
	14		/30.10E
	15		/30.10E
	16		/30.10E

-XC12

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-SS11:31	/31.2D
	2	-CS11:4	/31.2D
	3	-BCU1-12:06	/31.3D
-SS11:4	4	-BCU1-12:05	/31.3B
	5		/31.3B
	6	-BCU1-12:08	/31.4D
	7	-CS11:2	/31.5D
	8	-BCU1-12:25	/31.7D
	9	-BCU1-12:26	/31.7D
	10		/31.8D
	11		/31.8D
	12		/31.8D

-XC13

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-SS11:33	/32.2D
	2	-CS12:4	/32.2D
	3	-BCU1-12:10	/32.3D
-SS11:6	4	-BCU1-12:09	/32.3B
	5		/32.3B
	6	-BCU1-12:12	/32.4D
	7	-CS12:2	/32.5D
	8	-BCU1-12:27	/32.7D
	9	-BCU1-12:28	/32.7D
	10		/32.8D
	11		/32.8D
	12		/32.8D

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	53
SIZE	A3	NEXT	54
REV.	0	TOTAL	54

-XC14

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-SS11:35	/33.2D
	2	-CS13:4	/33.2D
	3	-BCU1-12:14	/33.3D
-SS11:8	4	-BCU1-12:13	/33.3B
	5		/33.3B
	6	-BCU1-12:16	/33.4D
	7	-CS13:2	/33.5D
	8	-BCU1-12:29	/33.7D
	9	-BCU1-12:30	/33.7D
	10		/33.8D
	11		/33.8D
	12		/33.8D

-XC15

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-SS11:41	/34.2D
	2	-CS14:4	/34.2D
	3	-BCU1-12:18	/34.3D
-SS11:10	4	-BCU1-12:17	/34.3B
	5		/34.3B
	6	-BCU1-12:20	/34.4D
	7	-CS14:2	/34.5D
	8	-BCU1-12:31	/34.7D
	9	-BCU1-12:32	/34.7D
	10		/34.8D
	11		/34.8D
	12		/34.8D

-XA

EXTERNAL	NO.	INTERNAL	REFERENCE
	1	-QA:1	/09.3B
	2		/09.4B
	3	-QA:3	/09.3B
	4		/09.4B
-QA:2	5	-C1:1	/09.4C
	6	-PS1:L	/09.7C
-QA:4	7	-C1:2	/09.4E
	8		/09.5E
	9	-PS1:N	/09.6E

Status - Approved as corrected

Initial

Plant Engineering Design, Manufacture, Supply, Construction, Installation, Testing and Commissioning of the Proposed 400kV Iringa - Kisada - Mbeya - Tunduma - Sumbawanga Double Circuit Transmission Line under Four Lots (Lot 1,2,3 & 4) - TAZA-P163572

Project Manager TAZA-P163572 27-Aug-2025

PA/001/2020-21/HQ/W/046- LOT 4
Contractor:M/s TBEA COMPANY LIMITED

HQW46-4-TDM-EQP-DWG-1331 / 0

NR ELECTRIC CO.,LTD.

PROJECT: 400kV TUNDUMA SUBSTATION

DWG. TITLE: 330kV NAKONDE1 LINE CONTROL PANEL
TERMINAL BLOCK

DWG. NO. HQW46-4-TND-EQP-DWG-1333

=D06+W1

SCALE	N/A	SHEET	54
SIZE	A3	NEXT	
REV.	0	TOTAL	54

We reserve all rights in this document and in the information contained herein. Reproduction,use or disclosure to third paties without express authority is strictly forbidden. ©NR ELECTRIC CO.,LTD.

REFERENCE/INTERFACE INFORMATION ONLY