

4/65/3/2013  
 P 10CN1017/CA-367301  
 01 of 01

Approved  
 NAME **MD HAMED A. AWAD**  
 DATE **11-2-14**  
 14/3417/30301

NOTES  
 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.  
 2. Saudi Electricity Company  
 No. Mohammed A. Awad  
 DATE 3/11/2013  
 13/19.521/34716.0101

- 132KV LEGEND**
- 132/20KV POWER TRANSFORMER
  - 132KV GIS CIRCUIT BREAKER
  - 132KV GIS DISCONNECTOR WITH MOTOR DRIVE OPERATION
  - 132KV GIS EARTH SWITCH SPRING OPERATED HIGH SPEED OPERATING MECHANISM
  - 132KV GIS 3 POSITION DISCONNECTOR WITH EARTH SWITCH MOTOR DRIVE OPERATION
  - 132KV EARTH SWITCH WITH MOTOR DRIVE OPERATION
  - SLUCE ARRESTER
  - 132KV GIS VOLTAGE TRANSFORMER
  - CURRENT TRANSFORMER

- MV VOLTAGE LEGEND**
- 20/13.8KV POWER TRANSFORMER
  - 11KV VOLTAGE TRANSFORMER
  - NEUTRAL EARTHING RESISTOR OVER
  - 20/13.8KV CIRCUIT BREAKER
  - AUXILIARY TRANSFORMER
  - 20/13.8KV EARTH SWITCH
  - 13KV SPIDER BUSING
  - CABLE CONNECTION
  - CAPACITIVE VOLTAGE INDICATOR

**REFERENCE DRAWINGS**

DRAWING TITLE	DRAWING NO.
DRAWING CONTROL SHEET	01-017708
PROJECT FEDERAL SPECIFICATION	10CN1017



**AS-BUILT**

NO	DATE	BY	REVISION	DESCRIPTION	CHKD.	CERT.	APPR.
01	09-2013	AW	01	AS PER SEC COMMENT	TAT	AW	AW
02	07-2013	AW	01	AS PER SEC COMMENT	TAT	AW	AW
03	09-2013	AW	01	ISSUED FOR APPROVAL	TAT	AW	AW

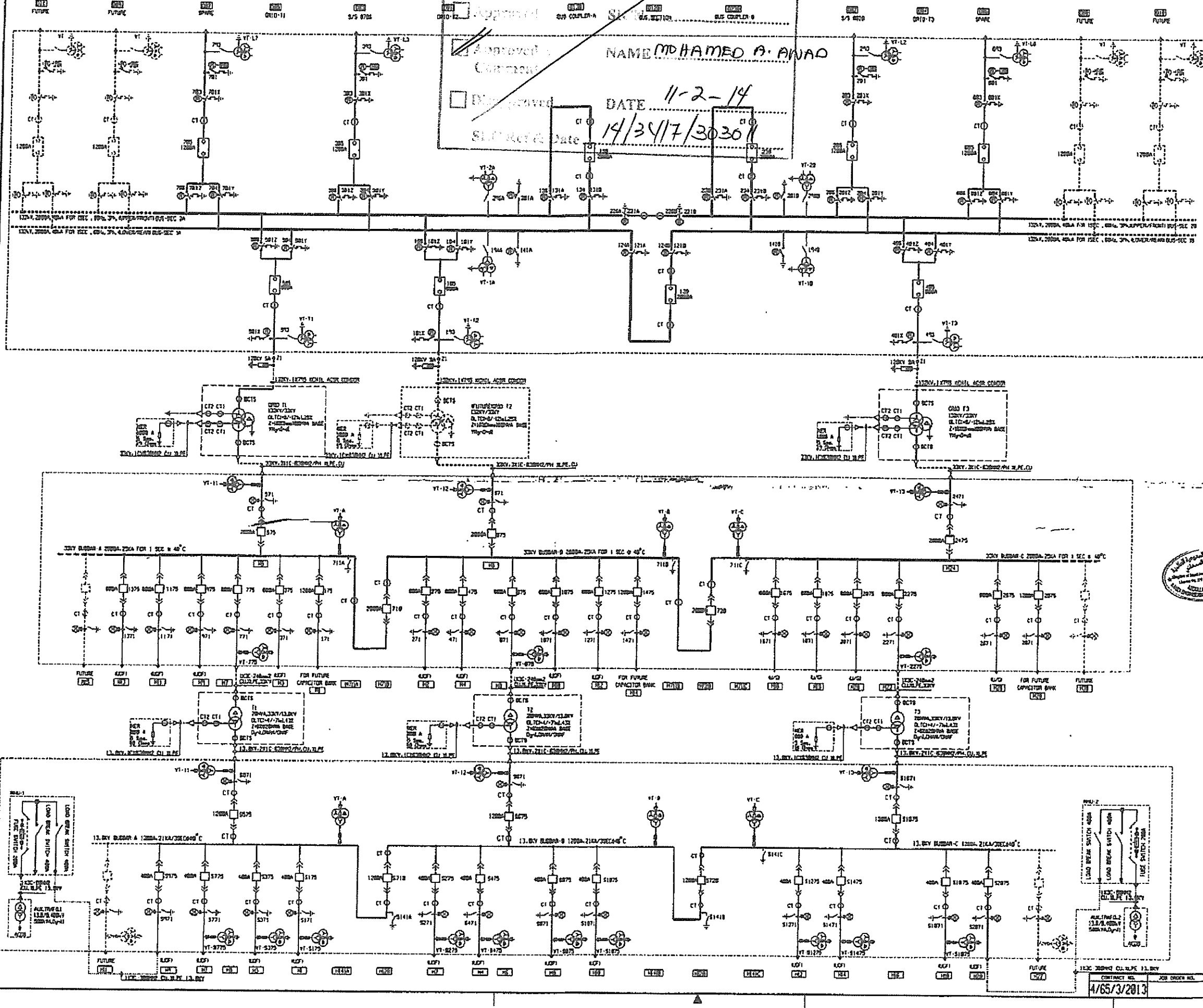
**DRAWING COMPLETION CERTIFICATE (CCC)**

DRAMA BY: M. DRAMA, CHECKED BY: T. THAMER, SCALE: NONE  
 DATE STARTED: MAY 2013, DATE COMPLETED: \_\_\_\_\_  
 DWG. DEPT.: \_\_\_\_\_, ENG. DEPT.: \_\_\_\_\_

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OR FOR ISSUING MATERIALS UNLESS CERTIFIED AND SIGNED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**SWITCHING SINGLE LINE DIAGRAM**  
**AL KHARJ NEW 132/33/13.8KV S/S • 8716**  
**MILITARY INDUSTRIES**

AL KHARJ J SAUDI ARABIA  
 CONTRACT NO. 4/65/3/2013  
 P 10CN1017/CA-367301 01 of 01



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF DELTA COMPANY SA NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

Comments: Interlock Table shall be submitted to review / approval

FOR TR FEEDER NO.2 (GT2) BAY  
GIS BAY REF. = D01

State Electricity Company  
ETA Projects Department

Approved  
 Approved by  
Contractor  
 Withdrawn


SIGN: MOHAMMED A. AWD  
NAME: MOHAMMED A. AWARD  
DATE: 11-2-14  
Serial No. Date: 14/34/7/303011

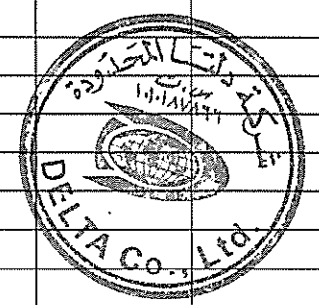
132kV GIS LCC  
SCHEMATIC DRAWINGS


SUBSTATION 8716



A	PAGE :	DESIGNATION	REVISION AND DATE										
			REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H		
	0	COVER	25.SEP.12										
	1	LIST OF CONTENTS											
	1A	LIST OF CONTENTS											
	2	LEGEND OF SYMBOLS											
	3	GAS SCHEME DIAGRAM											
	4	LIST OF APPARATUS, LCC											
	4A	LIST OF APPARATUS, LCC											
B	4B	LIST OF APPARATUS, LCC											
	4C	LIST OF APPARATUS, LCC											
	5	LIST OF APPARATUS, MECHANISM											
	6	OUTLINE OF LCC											
	6A	INTERNAL ARRANGEMENT OF LCC											
	7	FRONT ARRANGEMENT OF LCC											
	8	OPERATION ONE LINE DIAGRAM											
C	9	INTERLOCK DIAGRAM											
	10	MAIN CIRCUIT											
	11	SWITCHING DIAGRAM											
	12	AC POWER SUPPLY & HEATING/LIGHTING CIRCUIT											
	13	DC POWER SUPPLY											
	14	LOCAL POSITION INDICATOR											
	15	OPERATION INTERLOCK											
D	16	MOTOR DRIVE CIRCUIT											
	17	INTERLOCK OF BUSBAR DISCONNECTOR(104/106)											
	18	BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(104/101Y): CONTROLLING											
	19	BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(106/101Z): CONTROLLING											
	21	LINE EARTH SWITCH(101X): CONTROLLING/ BUSBAR DISCONNECTOR(104/106): AUX. RELAY											
	22	SIGNALLING FOR BCU 1											
	22A	SIGNALLING FOR BCU 2											
E	23	SIGNALLING FOR BCU 3											
	23A	SIGNALLING FOR BCU 4											
	23B	SIGNALLING FOR BCU 5											
	23C	SIGNALLING FOR INTERFACING SIGNAL LIST											
	24	CB ANTI-PUMPING/CLOSE/TRIP CIRCUIT											
	25	CB CONTROLLING & PT SELECTION											
	26	AUXILIARY CONTACTS 1											
	27	AUXILIARY CONTACTS 2											
F	28	DS/ES SWITCHING INCOMPLETE & GAS PRESSURE METERING											
	29	SIGNALLING : INPUT ANUNCIATOR 1											
	30	SIGNALLING : INPUT ANUNCIATOR 2											
	31	SIGNALLING : OUTPUT ANUNCIATOR 1											
	31A	SIGNALLING : OUTPUT ANUNCIATOR 2	25.SEP.12										


**Saudi Electricity Company**  
 Project: D/11/1001  
 Approved by: MUHAMMAD A. AWAD  
 NAME: MUHAMMAD A. AWAD  
 DATE: 11-2-14  
 Ref & Date: 14/347/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		 <b>نقل الكهرباء</b> National Grid SA		SHEET NO.
01	01.JUL.13	FOR APPROVAL	DRAWN BY: <u>D.H.HAH</u>	CHECKED BY: <u>C.Y.HONG</u>	LIST OF CONTENTS		CONTRACT NO. _____		INDEX	01 of 38
00	25.SEP.12	FOR APPROVAL	DATE STARTED: <u>25.SEP.12</u>	DATE COMPLETED: _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		PLANT NO.	DRAWING NUMBER	REV. NO.	NEXT 01A
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		P	10CN1017 CD -367820	01	01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

A	PAGE :	DESIGNATION	REVISION AND DATE										
			REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H		
	32	SIGNALLING : VIEW/FRONT ANUNCIATOR 1,2	25.SEP.12										
	33	SIGNALLING : FRONT COMMENT ANUNCIATOR 1,2											
	34,34A	SHORT CIRCUIT AND DISCONNECTING CT'S(CT1) & CT SECONDARY BOX TERMINAL/LABELLING											
	35	CT SWITCHING & CT BUS WIRE ARRANGEMENT											
	35A	CT SWITCHING & CT BUS WIRE ARRANGEMENT											
	36	VOLTAGE TRANSFORMER(VT-T2)											
	37	TERMINAL BOX OF VT-T2											
B	37A	BUSBAR PROTECTION CT LOOPING											
	37B	BUSBAR PROTECTION CT LOOPING											
	38	CT SWITCHING & DS/ES SWITCHING INCOMPLETE	25.SEP.12										
C													
D													
E													
F													

**Saudi Electricity Company**  
Projects Department

Approved  
 Approved  
 Not Approved

NAME: MOHAMMED A. ANAD  
 DATE: 11-2-14  
14/347/303011



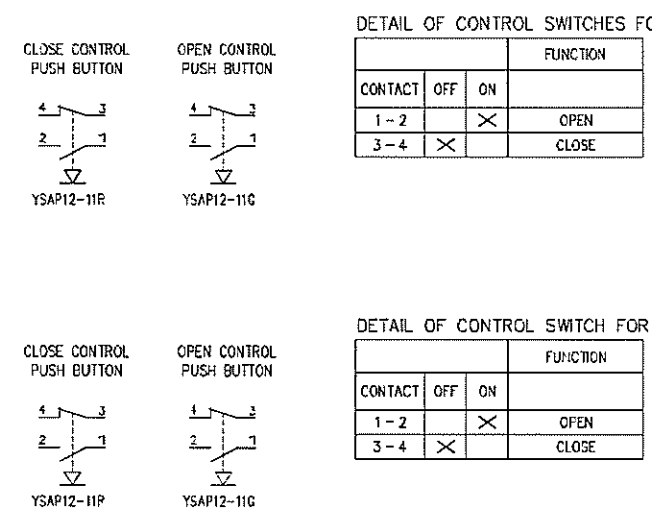
AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>الشركة الوطنية لنقل الكهرباء</b>		<b>نقل الكهرباء</b> National Grid SA		SHEET NO. 01 of 38	
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAN</u>	CHECKED BY <u>C.Y.HONG</u>	LIST OF CONTENTS		CONTRACT NO. _____	INDEX	PLANT NO	DRAWING NUMBER	REV. NO.
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u>	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		_____	P	10CN1017	CD -367820	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		_____	_____	_____	_____	_____

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

1.LEGEND OF SYMBOLS

	M	MINIATURE CIRCUIT BREAKER		S	BREAK CONTACT GAS DENSITY METER		CT	CURRENT TRANSFORMER
	F	THERMAL RELAY		S	REED BREAKING CONTACT NOT OPERATED		VT	VOLTAGE TRANSFORMER
	S	LATE MAKE CONTACT		-	MOTOR OPERATED			
	S	EARLY BREAK CONTACT		-	EARTH			
	S	EARLY MAKE CONTACT		Y	OPERATING MAGNET COIL			
	S	LATE BREAK CONTACT		M	MOTOR AC 3 PHASE			
	S	CHANGE OVER SWITCH		T	RELAY SLOW OPERATING			
	S	PUSH BUTTON MAKE CONTACT		-	OP-AMP			
	S	PUSH BUTTON BREAK CONTACT		P	CONNECTING POINT CT'S			
	S	DOOR SWITCH		T	MAKE CONTACT DELAYED WHEN OPERATING			
	S	BLOCKING CONTACT		T	BREAK CONTACT DELAYED WHEN OPERATING			
	-	CHANGE OVER CONTACT OPERATED BY UNDER PRESSURE		T	MAKE CONTACT DELAYED WHEN RELEASING			
	S	CONTROL SWITCH		T	BREAK CONTACT DELAYED WHEN RELEASING			
	S	MAKE CONTACT GAS DENSITY METER						

2.DETAIL OF CONTROL SWITCHES



Electricity Company  
Projects Department

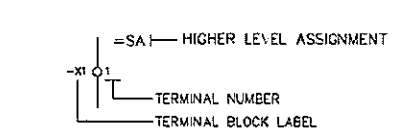
NAME: MOHAMED A. AWAD

DATE: 11-2-14

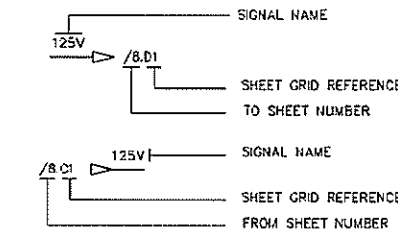
SEC. NO. & Date: 14/347/203011

3.DRAWING PRINCIPLES

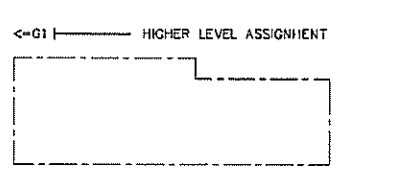
PRESENTATION OF TERMINALS



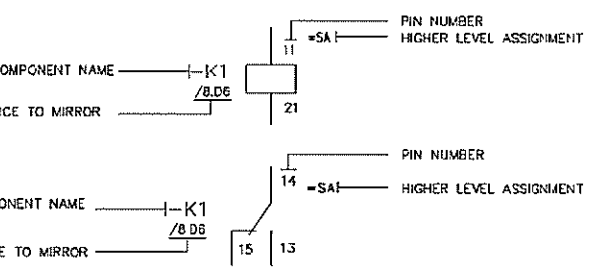
PRESENTATION OF SHEET TO SHEET REFERENCE



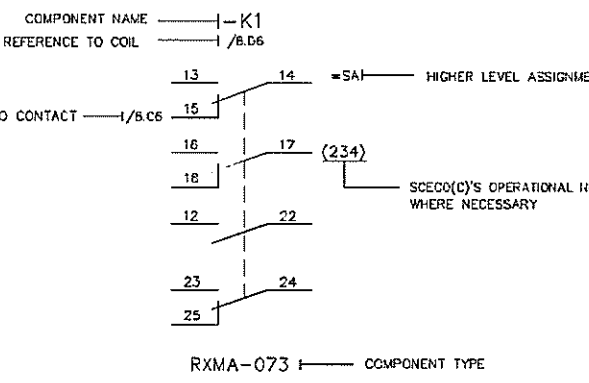
PRESENTATION OF THE MIRROR



PRESENTATION OF COMPONENTS



PRESENTATION OF THE MIRROR

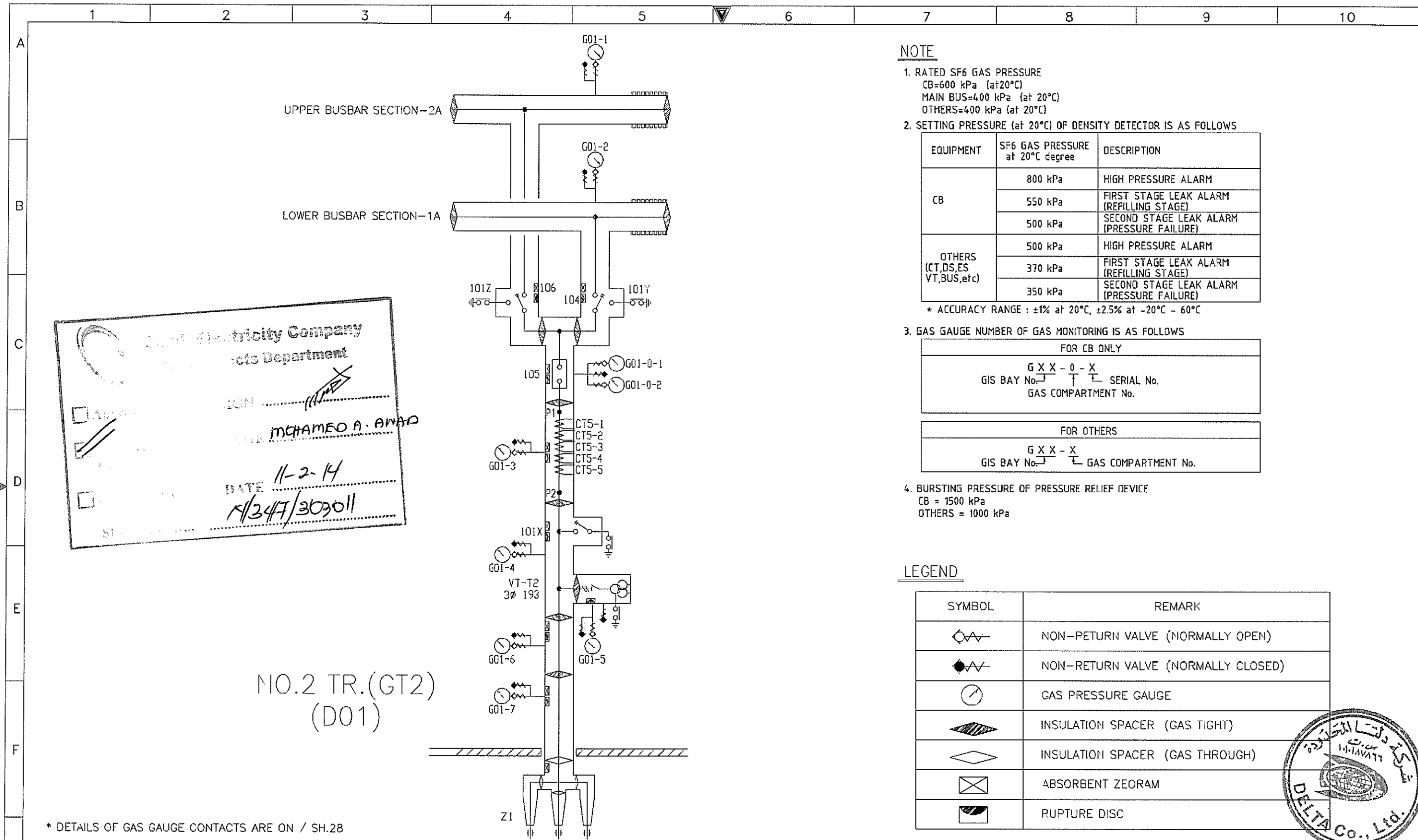


	K	RELAY		-	DISCONNECTOR WITH MOTOR MECHANISM			
	k	FLAG RELAY		-	EARTH SWITCH WITH MOTOR MECHANISM			
	Y	CLOSING OR TRIPPING COIL		-	CIRCUIT BREAKER			
	P	PULSE COUNTER		CT	CURRENT TRANSFORMER			
	K	LATCHING RELAY		-	CABLE HEAD			
	M	DC - MOTOR		-	BUSHING			
	-	ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET		VT	3 PHASE INDUCTIVE TYPE VOLTAGE TRANSFORMER			
	H	ANNUNCIATOR		-	TERMINAL (NORMAL TYPE)			
	-	OPTO - COUPLER		-	TERMINAL (KNIFE TYPE)			
	R	RESISTOR		IT	ISOLATING TERMINAL			
	D	RECTIFYING FUNCTION		-	BRIDGE OVER TERMINALS			
	H	SIGNAL LAMP & DISCREPANCY SWITCH LAMP		-	SEPARATE PLATE NEXT TO TERMINALS			
	E	FLUORESCENT LAMP		-	GAS GAUGE (GAS FILLED STATE)			
	H	DISCREPANCY SWITCH LAMP (FOR CB)						



AS-BUILT BY _____ DATE _____			DRAWN BY D.H.HAH CHECKED BY C.Y.HONG		SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		SHEET NO. 02 of 38	
01 01.JUL.13 FOR APPROVAL			DATE STARTED 25.SEP.12 DATE COMPLETED _____		LEGEND OF SYMBOLS		National Grid sa		NEXT G3	
00 25.SEP.12 FOR APPROVAL			OPRG. DEPT. _____ ENG. DEPT. _____		LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO. _____ INDEX P PLANT NO. 10CN1017 DRAWING NUMBER CD -367820		REV. NO. 01	
REV. NO. DATE DESCRIPTION					ALKHARJ SAUDI ARABIA					

NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF



Saudi Electricity Company  
 Projects Department  
 PROJECT NO. \_\_\_\_\_  
 DATE 11-2-14  
 1/347/303011

NO.2 TR.(GT2)  
(D01)

\* DETAILS OF GAS GAUGE CONTACTS ARE ON / SH.28

**NOTE**

- RATED SF6 GAS PRESSURE  
 CB=600 kPa (at 20°C)  
 MAIN BUS=400 kPa (at 20°C)  
 OTHERS=400 kPa (at 20°C)
- SETTING PRESSURE (at 20°C) OF DENSITY DETECTOR IS AS FOLLOWS

EQUIPMENT	SF6 GAS PRESSURE at 20°C degree	DESCRIPTION
CB	800 kPa	HIGH PRESSURE ALARM
	550 kPa	FIRST STAGE LEAK ALARM (REFILLING STAGE)
	500 kPa	SECOND STAGE LEAK ALARM (PRESSURE FAILURE)
OTHERS (CT,DS,ES VT,BUS,etc)	500 kPa	HIGH PRESSURE ALARM
	370 kPa	FIRST STAGE LEAK ALARM (REFILLING STAGE)
	350 kPa	SECOND STAGE LEAK ALARM (PRESSURE FAILURE)

\* ACCURACY RANGE : ±1% at 20°C, ±2.5% at -20°C ~ 60°C

- GAS GAUGE NUMBER OF GAS MONITORING IS AS FOLLOWS

FOR CB ONLY	
GIS BAY No. $\frac{G \ X \ X}{-}$	SERIAL No. $\frac{0 - X}{-}$ GAS COMPARTMENT No. $\frac{- X}{-}$
FOR OTHERS	
GIS BAY No. $\frac{G \ X \ X}{-}$	GAS COMPARTMENT No. $\frac{- X}{-}$

- BURSTING PRESSURE OF PRESSURE RELIEF DEVICE

CB = 1500 kPa  
 OTHERS = 1000 kPa

**LEGEND**

SYMBOL	REMARK
	NON-PETURN VALVE (NORMALLY OPEN)
	NON-RETURN VALVE (NORMALLY CLOSED)
	GAS PRESSURE GAUGE
	INSULATION SPACER (GAS TIGHT)
	INSULATION SPACER (GAS THROUGH)
	ABSORBENT ZEORAM
	RUPTURE DISC



AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HANI CHECKED BY C.Y.HONG
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG-DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 GAS SCHEME DIAGRAM  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid SA		SHEET NO. 03 of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
-----	P	10CN1017	CD -367820	01

SEC-D (2004/10)

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1	2	3	4	5	6	7	8	9	10
SER.NO.	DESIGNATION	DESCRIPTION			SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
1	-F0	MINIATURE CIRCUIT BREAKER, DOUBLE POLE 16A, SHUNT TRIP FOR ES/DS MOTOR PROTECTION			/13.A7	1	S202P-K16+S2C-A2 +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200909R0002 + 2CES200912R0001 *2
2	-F1	MINIATURE CIRCUIT BREAKER,1NO+2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BUSBAR DISCONNECTOR WITH EARTH SWITCH(104/101Y) MOTOR DC SUPPLY			/13.A8	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *3
3	-F2	MINIATURE CIRCUIT BREAKER,1NO+2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BUSBAR DISCONNECTOR WITH EARTH SWITCH(106/101Z) MOTOR DC SUPPLY			/13.A8	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *3
4		(BLANK)							
5	-F4	MINIATURE CIRCUIT BREAKER,1NO+2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR WORK EARTH SWITCH(101X) MOTOR DC SUPPLY			/13.A10	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *3
6	-F5	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR DS / ES DC CONTROL SUPPLY FOR FRONT BUSBAR			/13.B7	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
7	-F8	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR SIGNALING ALARMS DC SUPPLY			/13.B8	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
8	-F9	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR CB(105) PUMP MOTOR DC CONTROL SUPPLY			/13.B9	1	S202P-K16 +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
9	-F10	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR CB(105) ANTI-PUMPING DC CONTROL SUPPLY			/13.B9	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001
10	-F11	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR CB(105) CLOSING / OPENING OPERATIONS DC SUPPLY			/13.B10	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
11	-F12	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR CB(105) TRIP CIRCUIT 1 DC SUPPLY			/13.C7	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
12	-F13	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR CB(105) TRIP CIRCUIT 2 DC SUPPLY			/13.C8	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
13	-F14	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR ANNUNCIATOR AC 230V SUPPLY			/12.D2	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
14	-F15	MINIATURE CIRCUIT BREAKER,2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR LCC LIGHTING AC 230V SUPPLY			/12.D3	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
15	-K4	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET			/16	1	RXSF1	ABB	RK 271 019-AN
16	-F50	THERMAL RELAY FOR CB SPRING CHARGING MOTOR. SETTING RANGE 10A (SET: 8.5A)			/16.F7	1	MT	LS	MT-32/2H8.5
17	-E1,-E2	FLUORESCENCE LAMP. AC 230V. 20W			/12.B4	2		PHILIPS	PHILIPS
18	-H1	ANNUNCIATOR FOR LCC AND SIGNALING TO CONTROL ROOM VOLTAGE 125VDC & 220VAC, SILENCE / ACKNOWLEDGE / RESET OPTIONS, TESTING OPTION. DELAY OPTIONS 5ms TO 5s, 40 INPUT/OUTPUT			/29/29A, 31	1	UC625	RTK	UC625-40/W-HH-024-R-M3
19	-H2	ANNUNCIATOR FOR LCC AND SIGNALING TO CONTROL ROOM VOLTAGE 125VDC & 220VAC, SILENCE / ACKNOWLEDGE / RESET OPTIONS, TESTING OPTION. DELAY OPTIONS 5ms TO 5s, 32 INPUT/OUTPUT			/30/31A	1	UC625	RTK	UC625-32/W-HH-024-R-M3
20	-H40	SIGNALING LAMP FOR LOCAL CONTROL,LED TYPE,YELLOW LAMP,WHITE CAP,25ø DC 125V/24V			/14.C2	1	KGPH	KG AUTO	KGPH-D1Y/W
21	-K2	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET			/13.C9	1	RXSF1	ABB	RK 271 019-AN
22	-K3	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET			/24.F10	1	RXSF1	ABB	RK 271 019-A11
23									
24									
25	-K6,-K7	AUXILIARY RELAY FOR LAMP TEST, POWER CONSUMPTION 5W, DC 125V, 4NO CONTACT WITH 4NO AUXILIARY CONTACT			/14.D1	2	MR	LS	MR-4D(40)+UA-4(40)
26	-K10	AUXILIARY RELAY FOR LAMP TEST, POWER CONSUMPTION 5W, DC 125V, 4NO CONTACT			/14.F1	1	MR	LS	MR-4D(40)
27	-K8	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR POWER SUPPLY 1NO+2NC AUXILIARY CONTACT, SELF RESET			/21.F10	1	RXSF1	ABB	RK 271 019-AN
28	-K9	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR POWER SUPPLY 1NO+2NC AUXILIARY CONTACT, SELF RESET			/36.E10	1	RXSF1	ABB	RK 271019-AN
29	-K11	CONTACTOR FOR BUSBAR DISCONNECTOR (104) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W			/18.F8	1	MC	LS	MC-9b+UA-4(31)
30	-K12	CONTACTOR FOR BUSBAR DISCONNECTOR (104) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W			/18.F8	1	MC	LS	MC-9b+UA-4(31)
31	-K14C -K15C -K14D	LATCHING RELAY FOR MULTIPLYING AUXILIARY CONTACT OF EQUIPMENT (BUSBAR DISCONNECTOR,104) 3NO+1NC WITH 4NO AUXILIARY CONTACT, POWER CONSUMPTION 5W.			/21.C6	3	MR	LS	HR-4D(31)+UA-4(40)


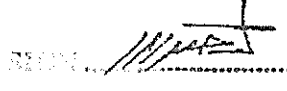
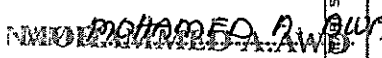
Saudi Electricity Company  
 Electrical Department  
 MOHAMMED A. WAD  
 MOHAMMED A. WAD  
 DATE 11-2-14  
 14/3417/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		SHEET NO. 04 of 38		
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	LIST OF APPARATUS, LCC		CONTRACT NO.		INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		P		10CN1017	CD -367820	01	
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT.	ENG. DEPT.	ALKHARJ SAUDI ARABIA		P		10CN1017	CD -367820	01	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PART THEREOF SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1	2	3	4	5	6	7	8	9	10
SER.NO.	DESIGNATION	DESCRIPTION	SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION		
31	-K21	CONTACTOR FOR MAINTENANCE EARTH SWITCH (101Y) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F9	1	MC	LS	MC-9b+UA-4(22)		
32	-K22	CONTACTOR FOR MAINTENANCE EARTH SWITCH (101Y) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F10	1	MC	LS	MC-9b+UA-4(22)		
33	-K31	CONTACTOR FOR BUSBAR DISCONNECTOR (106) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F8	1	MC	LS	MC-9b+UA-4(31)		
34	-K32	CONTACTOR FOR BUSBAR DISCONNECTOR (106) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F8	1	MC	LS	MC-9b+UA-4(31)		
35	-K34C -K35C -K340	LATCHING RELAY FOR MULTIPLYING AUXILIARY CONTACT OF EQUIPMENT (BUSBAR DISCONNECTOR,106) 3NO+1NC WITH 4NO AUXILIARY CONTACT, POWER CONSUMPTION 5W.	/21.F6	3	MR	LS	MR-4D(31)+UA-4(40)		
36	-K41	CONTACTOR FOR MAINTENANCE EARTH SWITCH (101Z) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F9	1	MC	LS	MC-9b+UA-4(22)		
37	-K42	CONTACTOR FOR MAINTENANCE EARTH SWITCH (101Z) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F10	1	MC	LS	MC-9b+UA-4(22)		
38	-K51	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (105), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/25.E2	1	MR	LS	MR-4D(22)		
39	-K52	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (105), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/25.E2	1	MR	LS	MR-4D(22)		
40	-K43	AUXILIARY RELAY FOR CHECKING MOTOR OVER-TIME RUNNING (ABOVE 15MIN), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/16.F3	1	MR	LS	MR-4D(22)+AU4(22)		
41	-K44	CONTACTOR FOR MOTOR OF CB, POWER CONSUMPTION 5W, DC 125V,4NO+1NC	/16.F4	1	MC	LS	MC-22b		
42	-K37	AUXILIARY RELAY FOR ANTI-PUMPING OF CIRCUIT BREAKER (105), POWER CONSUMPTION 9W, DC 125V, 2NO+2NC	/24.F2	1	HMT	HYUNDAI	HMT22R(22)		
43	-K45	AUXILIARY RELAY FOR CB GAS PRESSURE CLOSING LOCKOUT(550 kPa) POWER CONSUMPTION 5W, DC 125V, 2NO+2NC WITH 2NC AUXILIARY CONTACT	/25.E6	1	MR	LS	MR-4D(22)+UA-2(02)		
44	-K46	AUXILIARY RELAY FOR CB GAS PRESSURE TRIPPING LOCKOUT/TRIP COIL2, 500 kPa) POWER CONSUMPTION 5W DC 125V, 2NO+2NC WITH 2NC AUXILIARY CONTACT	/24.F7	1	MR	LS	MR-4D(22)+UA-2(02)		
45	-K47	AUXILIARY RELAY FOR CB GAS PRESSURE TRIPPING LOCKOUT(TRIP COIL2, 500 kPa) POWER CONSUMPTION 5W DC 125V, 2NO+2NC WITH 2NC AUXILIARY CONTACT	/24.F10	1	MR	LS	MR-4D(22)+UA-2(02)		
46	-K33	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (105), POWER CONSUMPTION 5W, DC 125V, 2NO+2NC	/24.F3	1	MR	LS	MR-4D(22)		
47	-K61	CONTACTOR FOR LINE DISCONNECTOR (101X) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/21.F1	1	MC	LS	MC-9b+UA-4(31)		
48	-K62	CONTACTOR FOR LINE DISCONNECTOR (101X) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/21.F2	1	MC	LS	MC-9b+UA-4(31)		
49	-K3A, K3B	AUXILIARY RELAY FOR CB ANTI-PUMPING/CLOSE/TRIP CIRCUIT POWER CONSUMPTION 5W, DC 125V, 2NO+2NC	/24.F6	2	MR	LS	MC-4D(22)		
50		(BLANK)							
51		(BLANK)							
52		(BLANK)							
53		(BLANK)							
54		(BLANK)							
55		(BLANK)							
56		(BLANK)							


**Saudi Electricity Company**  
**Projects Department**  
 SIGN:   
 APPROVED:   
 DATE: 11-2-14  
 14/347/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		SHEET NO. 04A of 38	
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	LIST OF APPARATUS, LCC		NEXT 04B
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		REV. NO. 01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ	SAUDI ARABIA	
				CONTRACT NO. _____	INDEX P	PLANT NO 10CN1017	DRAWING NUMBER CD -367820

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



1	2	3	4	5	6	7	8	9	10
SER.NO.	DESIGNATION	DESCRIPTION			SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
57		(BLANK)							
58	-DS5	DOOR LIMIT SWITCH FOR LCC ILLUMINATION, 250V, 15A, 1NO+1NC			/12.D4	1	YSR	YONG SUNG	YSR12156W-B
59	-DS6	DOOR LIMIT SWITCH FOR LCC ILLUMINATION, 250V, 15A, 1NO+1NC			/12.D4	1	YSR	YONG SUNG	YSR12156W-B
60	-S40	OFF/LOCAL/BCU/REMOTE SELECTOR SWITCH, R-TYPE, MANUAL-RETURN			/14.A10	1	A14	KRAUS&NAIMER	RK-4257
61	-S41	PUSH BUTTON SWITCH FOR LAMP TEST, 1NO+1NC			/14.E2	1	KGF	KG AUTO	KGFH-CM1BK
62	-S42	PUSH BUTTON SWITCH FOR LONG RUN ALARM STOP OF SPRING CHARGING MOTOR, 1NO+1NC			/16.F6	1	KGF	KG AUTO	KGFH-CM1R
63	-S43	CHARGE/OVER SWITCH FOR LOCK-USE OF CB MOTOR, K10B-TYPE, MANUAL-RETURN			/16.F5	1	CHR10	KRAUS&NAIMER	RK 6754
64	-K44A	AUXILIARY RELAY FOR SPRING NOT FULLY CHARGED POWER CONSUMPTION 5W, DC 125V, 2NO+2NC.			/24.E3	1	MR	LS	MR-4D(22)
65	-K45A	AUXILIARY RELAY FOR CB GAS PRESSURE CLOSING LOCK-OUT(550 kPa) POWER CONSUMPTION 5W, DC 125V, 2NO+2NC.			/25.C7	1	MR	LS	MR-4D(22)
66									
67									
68									
69		(BLANK)							
70		(BLANK)							
71									
72	-K1M	CONTACTOR FOR BUSBAR DISCONNECTOR WITH MAINTENANCE ES(104/101Y) MOTOR OPERATION, DC 125V, 3NO+1NC CONTACT, POWER CONSUMPTION 3W			/16.E1	1	GMD	LS	GMD-9M(b)
73	-Y2M	CONTACTOR FOR BUSBAR DISCONNECTOR WITH MAINTENANCE ES(106/101Z) MOTOR OPERATION, DC 125V, 3NO+1NC CONTACT, POWER CONSUMPTION 3W			/16.E2	1	GMD	LS	GMD-9M(b)
74		(BLANK)							
75	-S45	3POSITION SWITCH MANUAL OPERATION SELECTION (DS-LOCK-ES) KEY SWITCH MANUAL RETURN			/18.F1	1	CHR16	KRAUS&NAIMER	RK-8350
76	-K37A	AUXILIARY RELAY FOR SYNCHRO CHECK. POWER CONSUMPTION 5W, DC 125V, 2NC+2NC.			/25.E3	1	MR	LS	MR-4D(22)
77	-33T/-34T	ON DELAY TIMER, DC 125V, 3 TO 30 MIN. 2NC+2NC (SETTING TIME : 1 min)(A MODE)			/16.F5,/24.E4	2		OMRON	H3CR-A8
78	-X0,-X1	TERMINAL BLOCKS FOR AC POWER SUPPLY			/12, 14	-	URTK/S	PHOENIX	0311087
79	-X2,-X3	TERMINAL BLOCKS FOR DC POWER SUPPLY			/13	-	URTK/S	PHOENIX	0311087
80	-X4	TERMINAL BLOCKS FOR LOCAL INDICATIONS			/14, 36	-	USST4	PHOENIX	3070338
81	-X5,-X6,-X6A,-X7	TERMINAL BLOCKS FOR BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH (104/101Y)			16 TO 27	-	USST4	PHOENIX	3070338
82	-X8,-X9,-X9A,-X10	TERMINAL BLOCKS FOR BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH (106/101Z)			16 TO 27	-	USST4	PHOENIX	3070338
83	-X11,-X12	TERMINAL BLOCKS FOR CIRCUIT BREAKER (105)			16 TO 27	-	USST4	PHOENIX	3070338
84		(BLANK)							
85	-X16,-X17	TERMINAL BLOCKS FOR LINE EARTH SWITCH (101X)			16 TO 27	-	USST4	PHOENIX	3070338
86	-X21,-X22	TERMINAL BLOCKS WITH KNIFE TYPE TERMINALS FOR ANNUNCIATOR INPUT SIGNALS ANNUNCIATOR SIDE			/29, 30	-	UT4-MT	PHOENIX	3046139
87	-X23	TERMINAL BLOCKS WITH KNIFE TYPE TERMINAL			/22, 23	-	UT4-MT	PHOENIX	3046139
88	-X24	TERMINAL BLOCKS WITH KNIFE TYPE TERMINALS FOR ANNUNCIATOR GROUPPED OUTPUT SIGNALS			/31	-	UT4-MT	PHOENIX	3046139
89	-X26A	BOLT CONNECTING TERMINAL BLOCK FOR CT IN LCC			/34, 35	-	OTTA6-T-P/P	PHOENIX	0710462
90	-X26B	BOLT CONNECTING TERMINAL BLOCK FOR CT IN LCC.			/34, 35	-	OTTA6	PHOENIX	0710433
91	-X26C	BOLT CONNECTING TERMINAL BLOCK FOR CT IN LCC			/34, 35	-	OTTA6	PHOENIX	0710433
92	OUTLET	23D', 15A			/12.B10	1	-	LEGRAND	-
93	-K201,-K202,-K203 -K104	AUXILIARY RELAY FOR DS & ES OPERATION INTERLOCK, POWER CONSUMPTION 5W, DC 125V, 4NC.			/15.E2	4	MR	LS	MR-4D(04)
94	-TEL	DEK301-6C. TELE106 JACK.			/12.B9	1	DEK301-6C	DAE-EUN	DEK301-6C
95	-XT	TERMINAL BLOCKS FOR TELE106 JACK			/12.B9	1	USST4	PHOENIX	3070338
96	TH	THERMOSTAT -10~50DEG C			/12.D5	1	PLS-050A	RUN ELEC	-
97	HT	AL-MOLE HEATER, 500ohm, MAX 200W			/12.C5	1	RSHT-200	RAPA	-

Saudi Electricity Company  
 CTR Projects Department  
 MOHAMMED AWAD  
 DATE 11-2-14  
 14/3417/303011



AS-BUILT		BY	DATE	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		SHEET NO. 04B of 38	
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	LIST OF APPARATUS, LCC				NEXT 04C		
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO	DRAWING NUMBER	REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT.	ENG DEPT.	ALKHARJ	SAUDI ARABIA		P	10CN1017	CD -367820	01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1	2	3	4	5	6	7	8	9	10
SER.NO.	DESIGNATION	DESCRIPTION			SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
98	HST	HUMIDISTAT FOR PANEL HUMIDITY CONTROL, 20~80%, RH			/12.B6	1	RHC	RUN ELEC	RHC-80
99	-R2,R3,R4	RESISTORS FOR MOTOR OPERATION MECHANISM, 100Kohm			/16.D2,D4,D6	3	IRH	RARA	IRH-100
100	-T1	ON DELAY TIMER, DC 125V, 2NO+2NC, 1 TO 10 sec. (SETTING TIME:5sec)(A MODE)			/15.E5	1	H3CR	OMRON	H3CR-AB
101	-TT1, TT2	TEST TERMINAL FOR METERING			/23.34	2	2RMLG02	SIEMENS	
102									
103	-VX1	AUXILIARY RELAY FOR VT-T1 MCB TRIP CHECK POWER CONSUMPTION 5W, DC 125V, 2NO+2NC			/37.F6	1	MR	LS	MR-4D(22)
104	-UR1	AUXILIARY RELAY FOR VT-T1 ENERGIZING CONDITION(AC 70V) POWER CONSUMPTION 5W, AC 70V, 2NO+2NC			/34.D9	1	MR	LS	MR-4(22)
105	-UY1	AUXILIARY RELAY FOR VT-T1 ENERGIZING CONDITION(AC 70V) POWER CONSUMPTION 5W, AC 70V, 2NC+2NC			/34.D9	1	MR	LS	MR-4(22)
106	-UB1	AUXILIARY RELAY FOR VT-T1 ENERGIZING CONDITION(AC 70V) POWER CONSUMPTION 5W, AC 70V, 2NO+2NC			/34.E9	1	MR	LS	MR-4(22)
107	-T14/-T34	ON DELAY TIMER, DC 125V, 2NO+2NC, 1 TO 10 sec. (SETTING TIME:5sec)(A MODE)			/21.CB,FB	2	H3CR	OMRON	H3CR-AB
108	-KB	AUXILIARY RELAY FOR BCU FAULTY POWER CONSUMPTION 5W, AC 70V, 2NO+2NC			/23	1	MR	LS	MR-4(22)
109	-F21	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F1	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
110	-F22	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F2	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
111	-F23	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F3	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
112	-F24	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F3	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
113	-F25	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F4	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
114	-F26	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F5	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
115	-F27	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F6	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
116	-F28	MINIATURE CIRCUIT BREAKER, 1NC+1NO AUXILIARY CONTACT, TRIPLE POLE 2A WITH DISCONNECTING NEUTRAL			/37.F6	1	S203P-K2NA +S2C-H6R+S2C-H6R	ABB	2CES 283 103 RG277 + 2CES200912R0001 *2
117									
118	-F17	MINIATURE CIRCUIT BREAKER, 2NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BCU DC SUPPLY			/13.A10	1	S202P-KG +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
119	-REC.	AC 230V,15A			/12.E4	1	74180	LEGRAND	74180
120	-K4B	AUXILIARY RELAY FOR SPRING CHARGE MOTOR THERMAL FAULT DC125V, 2NO+2NC CONTACT			/16.E4	1	MR	LS	MR-4D(22)
121	-K210	AUXILIARY RELAY FOR DS & ES OPERATION INTERLOCK, POWER CONSUMPTION 5W, DC 125V, 4NO.			/15.E7	1	MR	LS	MR-4D(40)
122	-L10	SEMAPHORE INDICATOR FOR BUSBAR DISCONNECTOR (104) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.C4	1	AD16	APT	AD16-22W/G
123	-L11	SEMAPHORE INDICATOR FOR MAINTENANCE EARTH SWITCH (101Y) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.C5	1	AD16	APT	AD16-22W/G
124	-L12	SEMAPHORE INDICATOR FOR BUSBAR DISCONNECTOR (106) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.C6	1	AD16	APT	AD16-22W/G
125	-L13	SEMAPHORE INDICATOR FOR MAINTENANCE EARTH SWITCH (101Z) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.C7	1	AD16	APT	AD16-22W/G
126	-L14	SEMAPHORE INDICATOR FOR CIRCUIT BREAKER (105) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.C8	1	AD16	APT	AD16-22W/G
127	-L15	SEMAPHORE INDICATOR FOR LINE EARTHING SWITCH (101X) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.F3	1	AD16	APT	AD16-22W/G
128	-L16	SEMAPHORE INDICATOR FOR VT-T1(193) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.F4	1	AD16	APT	AD16-22W/G
129									
130	-S111~S181	PUSH BUTTON SWITCH FOR CB & DS & ES OPEN COMMAND WITH SELF-RETURN, 1NO+1NC			/18.19,20,21,25	8	KGF	KG AUTO	KGFH-QM1G
131	-S112~S182	PUSH BUTTON SWITCH FOR CB & DS & ES CLOSE COMMAND WITH SELF-RETURN, 1NO+1NC			/18.19,20,21,25	8	KGF	KG AUTO	KGFH-QM1R
132	-MM	MULTI-FUNCTION METER / ACCURACY CLASS 0.55 VOLTAGE AC 85~265V, DC 100~300V, 50/60Hz, INPUT 0~347V, 1~10A			/34.F3	1	ELITE	CEWE	ELITE 446
133	-BCU	BAY CONTROL UNIT,ABB REC670			/22.22A,23,23A	1	6MD664	SIEMENS	6MD664
134	-L1B	SEMAPHORE INDICATOR FOR VT-T1 (193) WITH LED TYPE, RED(WHEN CLOSE), GREEN(WHEN OPEN)			/14.F6	1	AD16	APT	AD16-22W/G
135	-K100	AUXILIARY RELAY FOR VT-T1 ISOLATOR INCOMPLETE. POWER CONSUMPTION 5W, DC125V, 4NO			/36.D9	1	MR	LS	MR-4D(40)

**Saudi Electricity Company**  
OTD Projects Department

MOHAMMED A. ALWADI  
DATE: 11-2-14  
14/347/20011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>الشركة الوطنية لنقل الكهرباء</b> <b>نقل الكهرباء</b> <b>National Grid sa</b>		SHEET NO.
		DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	LIST OF APPARATUS, LCC				04C of 38
01	01.JUL.13	FOR APPROVAL		DATE STARTED 25.SEP.12	DATE COMPLETED _____	CONTRACT NO. _____		REV. NO.
00	25.SEP.12	FOR APPROVAL				INDEX P		05
REV. NO.	DATE	DESCRIPTION		OPRC. DEPT. _____	ENG. DEPT. _____	PLANT NO. 10CN1017		01
				ALKHARJ SAUDI ARABIA		DRAWING NUMBER CD-367820		

NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

1	2	3	4	5	6	7	8	9	10
SER.NO.	DESIGNATION	DESCRIPTION			SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
< FOR GCB MOTOR SPRING OPERATING MECHANISM >									
1	-Y1	CLOSING COIL OF CIRCUIT BREAKER. 14A, DC 125V			/24.E3	1	-	YOUJIN ELECTRO	-
2	-Y2	TRIPPING COIL 1 OF CIRCUIT BREAKER. 12A, DC 125V			/24.E5	1	-	YOUJIN ELECTRO	-
3	-Y3	TRIPPING COIL 2 OF CIRCUIT BREAKER. 12A, DC 125V			/24.E8	1	-	YOUJIN ELECTRO	-
4	-M4	DC MOTOR FOR SPRING CHARGING, DC 125V, 10A, 8000rpm, I=7.9A			/16.E7	1	-	DONG JIN	-
5	-S1	AUXILIARY CONTACT FOR CIRCUIT BREAKER, 9NO+8NC			/27	1	-	YONG SUNG	-
6	-S2	AUXILIARY CONTACT FOR CIRCUIT BREAKER, 9NO+8NC			/27	1	-	YONG SUNG	-
7	-S34	GAS PRESSURE METER FOR CB, 500 kPa FOP TRIP2			/24.F8	1	233.52.100	WKA	233.52.100+820.1.1.2
8	-S35	GAS PRESSURE METER FOR CB, LOW PPESSURE 550 kPa, CLOSE BLOCK 500 kPa TRIP1			/24.25	1	233.52.100	WKA	233.52.100+820.1.1.2
9	HT	AL-MOLD HEATER, 50ohm, MAX 200W			/13	1	RSHT 200	HYUNDAI	-
< FOR MOTOR OPERATING MECHANISM OF 3POSITION SWITCH >									
1	-M2	DC MOTOR, DC125V, 100W, 2A, 3600±10% RPM			/16	1	DMK D8D180-125A	DMK	-
2	-LSA	LIMIT SWITCH(ON: WHEN DS/ES IS OPEN), DC125V, 1NO+1NC.			/18,19,20	1	SAS-00E	SCHALTBAU	-
3	-LSB	LIMIT SWITCH(ON: WHEN DS/ES IS CLOSED), DC125V, 1NO+1NC.			/18,19,20	1	SAS-00E	SCHALTBAU	-
4	-DS1	DOOR S/W(ON: WHEN OPENING OF BOX COVER), DC125V, 10A.			/18,19,20	1	SAS-00E	SCHALTBAU	-
5	-DS2	DOOR S/W(ON: WHEN OPENING OF BOX COVER), DC125V, 10A.			/18,19,20	1	SAS-00E	SCHALTBAU	-
6	-DS3	DOOR S/W(ON: WHEN OPENING OF BOX COVER), DC125V, 10A.			/18,19,20	1	SAS-00E	SCHALTBAU	-
7	-ILMD	INTERLOCK MAGNET, DC 125V, 7W 698ohm			/18,19,20	1	3CF5265-001	MOTION TECH.	-
8	-ILME	INTERLOCK MAGNET, DC 125V, 7W 698ohm			/18,19,20	1	3CF5265-001	MOTION TECH.	-
9	-PS1	PADLOCK KEY SWITCH, 125V, 10A			/18,19,20	1	KH-302K	KUN HEUNG	KH-302K-2105
10	HT	HEATER, 2kohm, MAX 50W			/13	1	RWH 60 HOS	SAM WHA	-
< FOR MOTOR SPRING MECHANISM OF 101X >									
1	-M1	DC MOTOR, DC 125V, 21GW, 12300rpm, WITH D-MPING RESISTOR-RM(RVH 60HOS, 100ohm), I <sub>n</sub> =3.2A			/16	1	DM-40011(SS)	DONG JIN	DM-40011
2	-DS1	DOOR SWITCH, 10A (ON : WHEN OPEN MECHANISM BOX COVER)			/21	-	SAS-00E	SCHALTBAU	-
3	-SS1	SHUTTER SWITCH, 10A (OFF : WHEN INSERT MANUAL HANDLE)			/21	1	SAS-00E	SCHALTBAU	-
4	-S1	AUXILIARY CONTACT, 8NC(LATE MAKE)+8NC(EARLY BREAK)			/27	1	-	DAE YOUNG	-
5	-S2	AUXILIARY CONTACT 8NO(1EARLY MAKE+4LATE MAKE)+8NC(1LATE BREAK+4EARLY BREAK)			/27	1	-	DAE YOUNG	-
6	-PS1	PADLOCK KEY SWITCH, 125V, 10A			/21	-	KH-302K	KUN HEUNG	KH-302K-2105
7	HT	HEATER, 2kohm, MAX 60W			/13	1	RWH 60 HOS	SAM WHA	-
< FOR GENERAL GAS COMPARTMENTS, EXCEPT CIRCUIT BREAKER >									
1	-S21	GAS PRESSURE METER FOR GAS COMP. G07-1, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.C6	1	233.52.100	WKA	233.52.100+820.2.2.1
2	-S22	GAS PRESSURE METER FOR GAS COMP. G07-2, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.C7	1	233.52.100	WKA	233.52.100+820.2.2.1
3	-S23	GAS PRESSURE METER FOR GAS COMP. G07-3, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.C8	1	233.52.100	WKA	233.52.100+820.2.2.1
4	-S24	GAS PRESSURE METER FOR GAS COMP. G07-4, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.C9	1	233.52.100	WKA	233.52.100+820.2.2.1
5	-S25	GAS PRESSURE METER FOR GAS COMP. G07-5, LOW PPESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.D6	1	233.52.100	WKA	233.52.100+820.2.2.1
6	-S26	GAS PRESSURE METER FOR GAS COMP. G07-6, LOW PPESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.D7	1	233.52.100	WKA	233.52.100+820.2.2.1
7	-S27	GAS PRESSURE METER FOR GAS COMP. G07-7, LOW PPESSURE 350&370 kPa HIGH DENSITY 500 kPa			/28.D8	1	233.52.100	WKA	233.52.100+820.2.2.1
< FOR CT SECONDARY TERMINAL BOX >									
1	-X50	EPOXY INSULATED GAS SEALING TERMINALS (16 POLES)			/34	1	-	HYUNDAI	-
2	-X51	EPOXY INSULATED GAS SEALING TERMINALS (16 POLES)			/34	1	-	HYUNDAI	-
3	-X52	EPOXY INSULATED GAS SEALING TERMINALS (16 POLES)			/34	1	-	HYUNDAI	-

Saudi Electricity Company  
Projects Department

MOHAMMAD M. AWAD

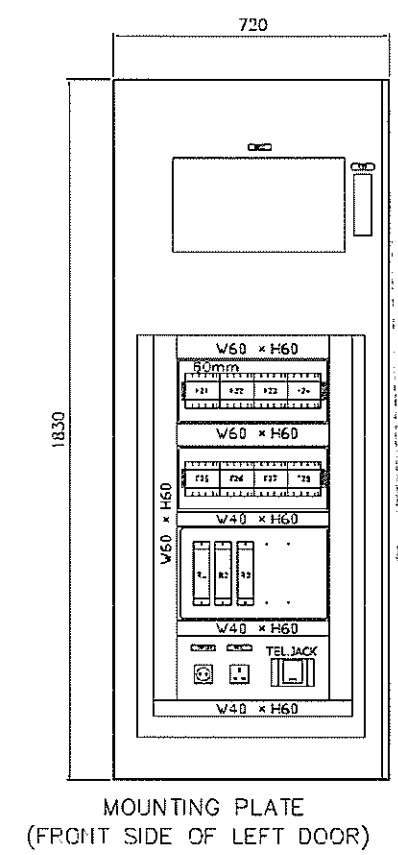
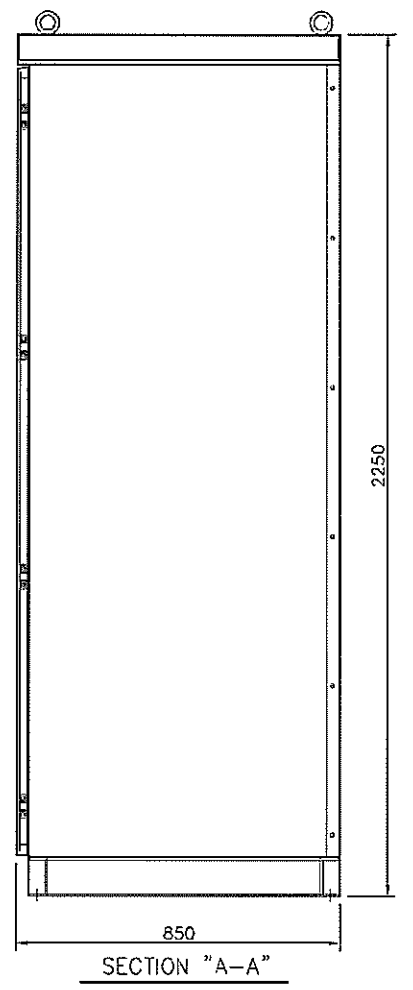
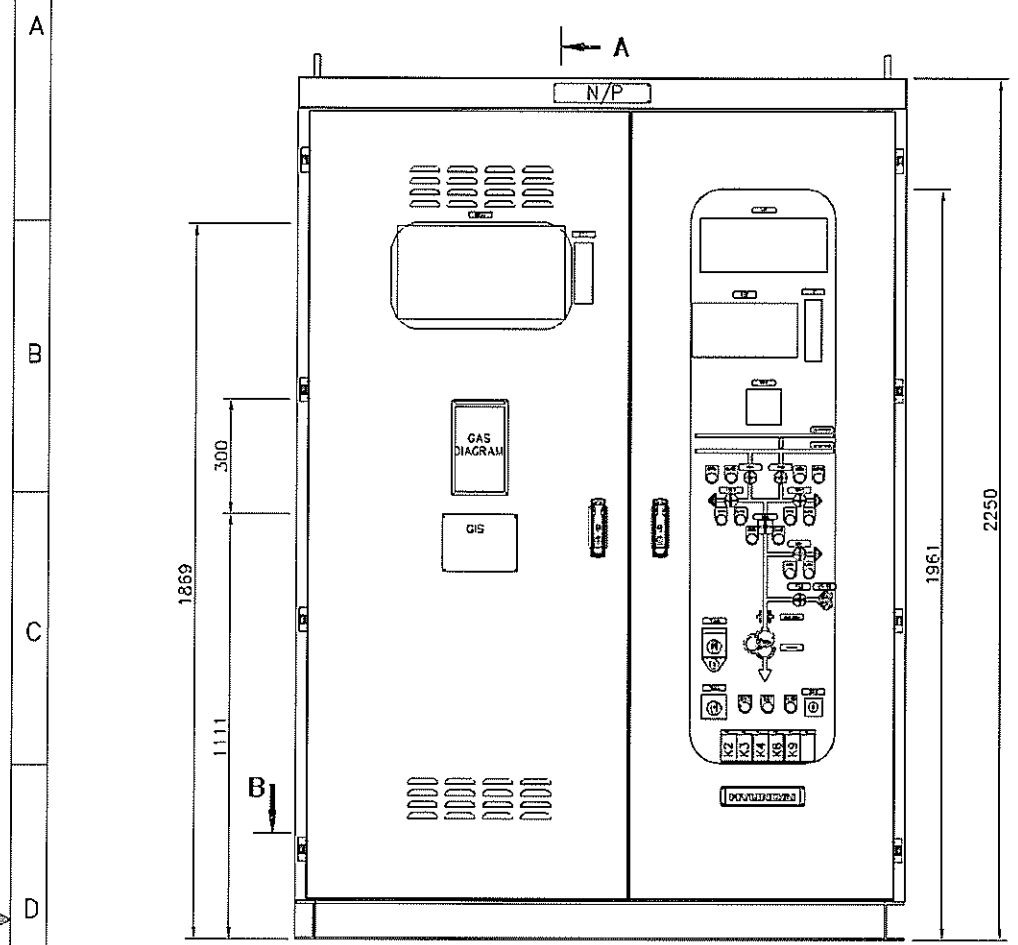
DATE 11-2-14  
14/347/303011



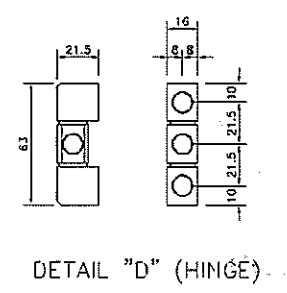
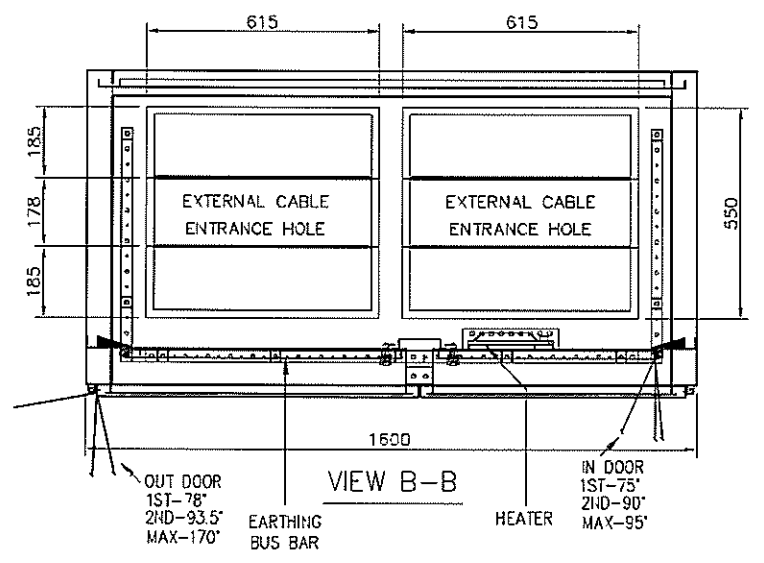
AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid SA		SHEET NO. 05 of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	LIST OF APPARATUS, MECHANISM				NEXT 06	
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO. _____	INDEX P	PLANT NO 10CN1017	DRAWING NUMBER CD-367820
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT. _____	ENG. DEPT. _____	ALKHARJ	SAUDI ARABIA	_____	_____	_____	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

1 2 3 4 5 6 7 8 9 10



Saudi Electricity Company  
 Projects Department  
 NAME **Mohamed Awad**  
 DATE **11-2-14**  
**14/347/303011**



- NOTE
- \* PROTECTION DEGREE : IP 41
  - \* PAINT COLOR - INTERIOR: RAL 9003, EXTERIOR: RAL 7038
  - \* MIMIC MATERIAL : SCP1
  - \* THICKNESS OF PANEL : 2.3mm
  - \* THICKNESS OF BOTTOM PLATE : 3.2mm
  - \* SIZE OF COPPER GROUND BUS : L1420xW30x6.0t (1EA), L580xW30x6.0t (2EA)
  - \* THE ARRANGEMENT OF EACH DEVICE CAN BE CHANGED DURING MANUFACTURING STAGE.



AS-BUILT			BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u>	CHECKED BY <u>C.Y.HONG</u>
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u>	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT. _____	ENG. DEPT. _____

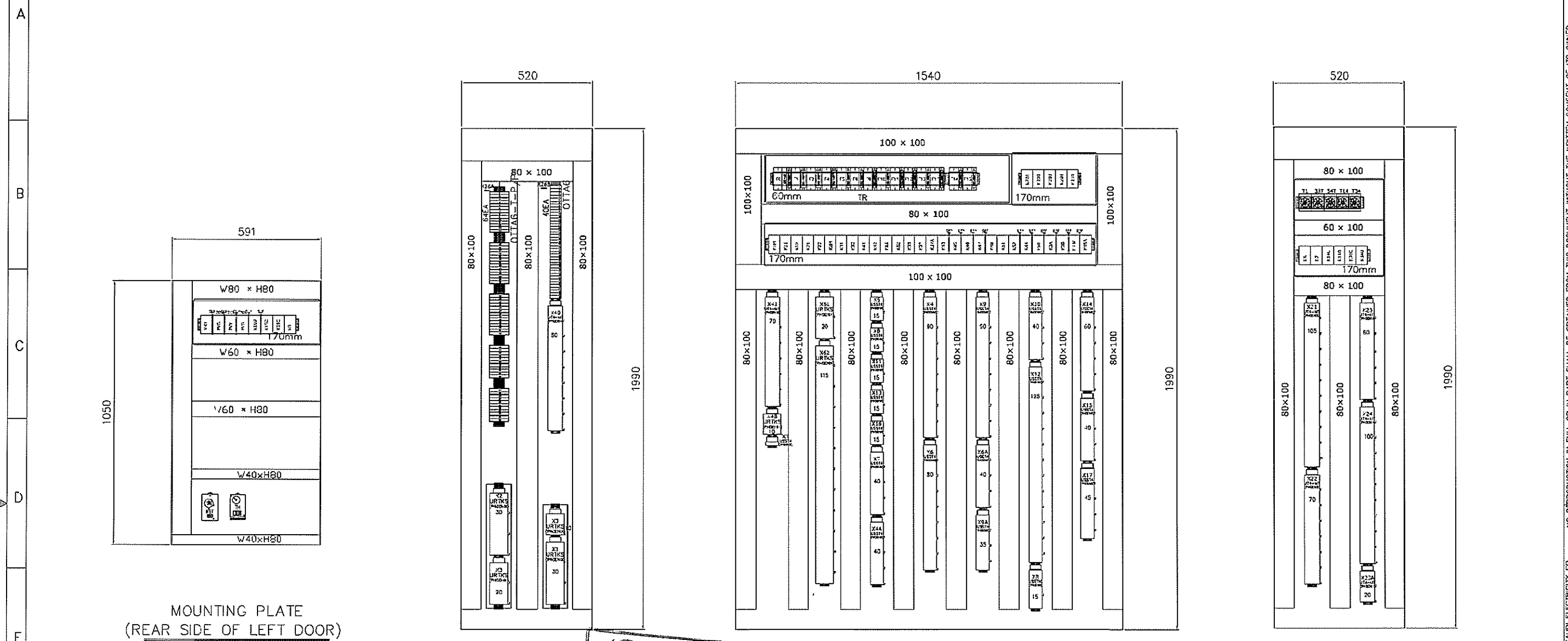
SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 OUTLINE OF LCC  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid SA	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
-----	P	10CN1017	CD -367820

SHEET NO.	06 of 38
NEXT	07
REV. NO.	01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE PERMITTED WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1 2 3 4 5 6 7 8 9 10



MOUNTING PLATE (REAR SIDE OF LEFT DOOR)

MOUNTING PLATE (LEFT)

MOUNTING PLATE (RIGHT)

**Saudi Electricity Company**  
**OTR Projects Department**

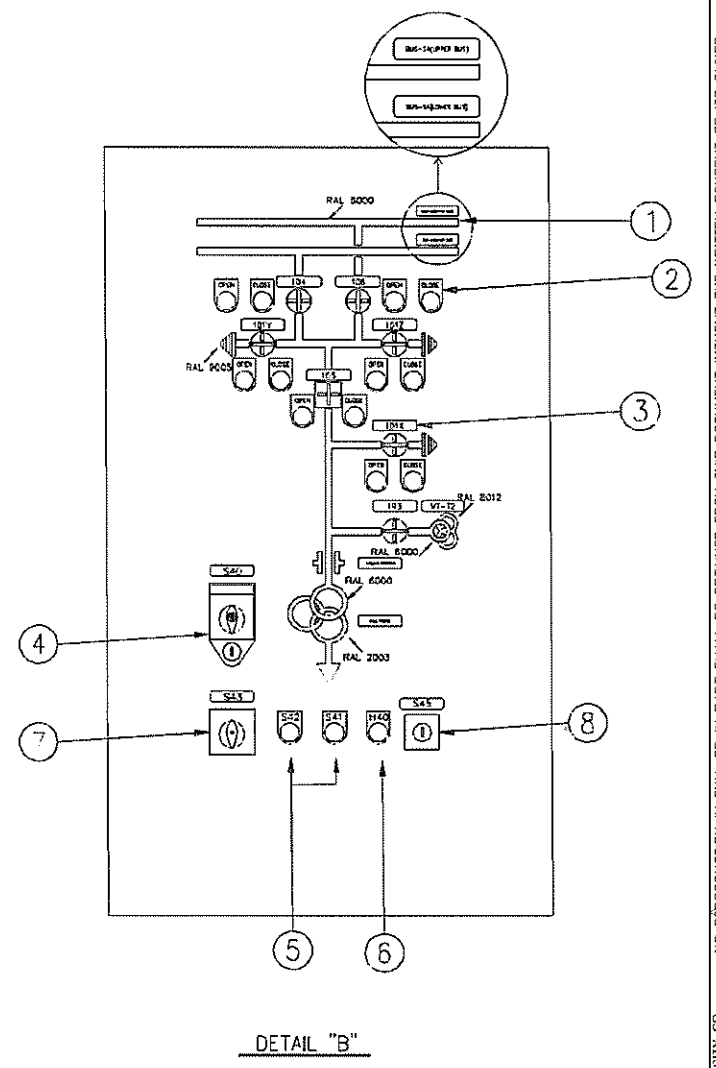
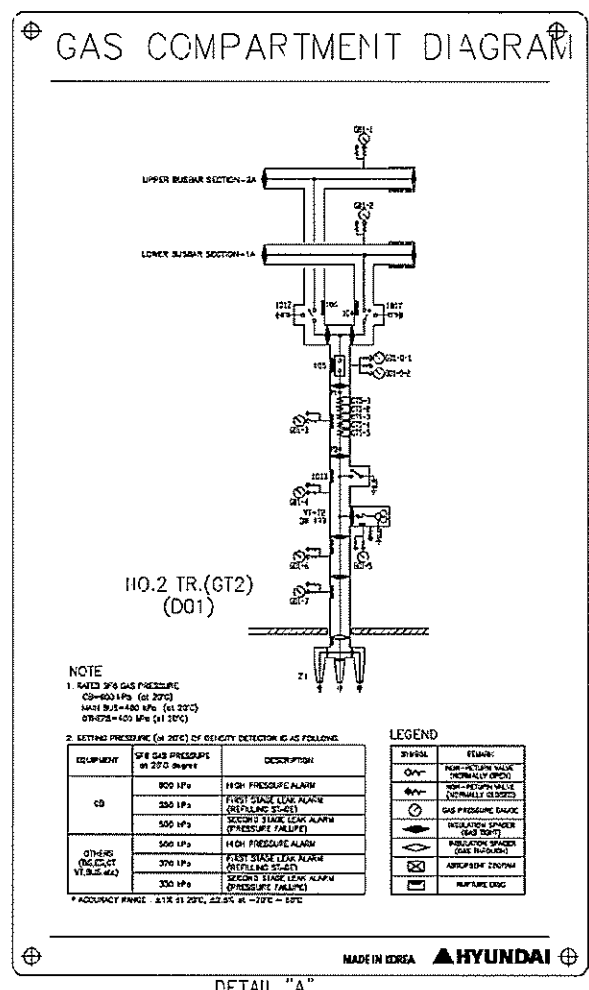
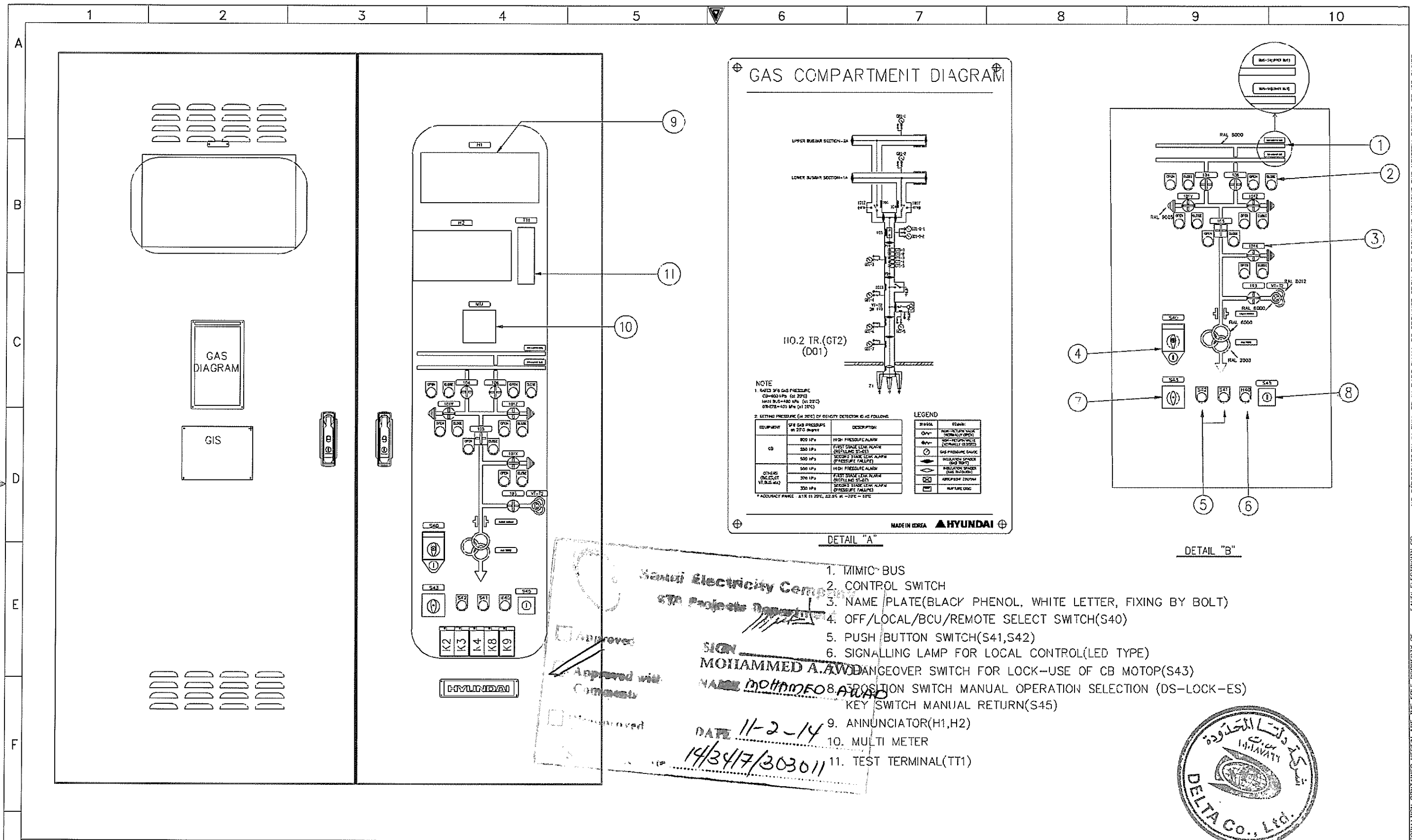
Approved  
 Approved with Comments  
 Disapproved

MOHAMMED A. AWD  
 MOHAMMED A. AWD  
 DATE 11-2-14  
 14/3417/203011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid SA		SHEET NO. 06A of 38	
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HANI	CHECKED BY C.Y.HONG	INTERNAL ARRANGEMENT OF LCC				NEXT 07	REV. NO.	
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENC. DEPT.	ALKHARJ	SAUDI ARABIA	-----	P	10CN1017	CD -367820	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.



**Saudi Electricity Company**  
 STA Projects Department

Approved: \_\_\_\_\_  
 Approved with Comments: \_\_\_\_\_  
 Disapproved: \_\_\_\_\_

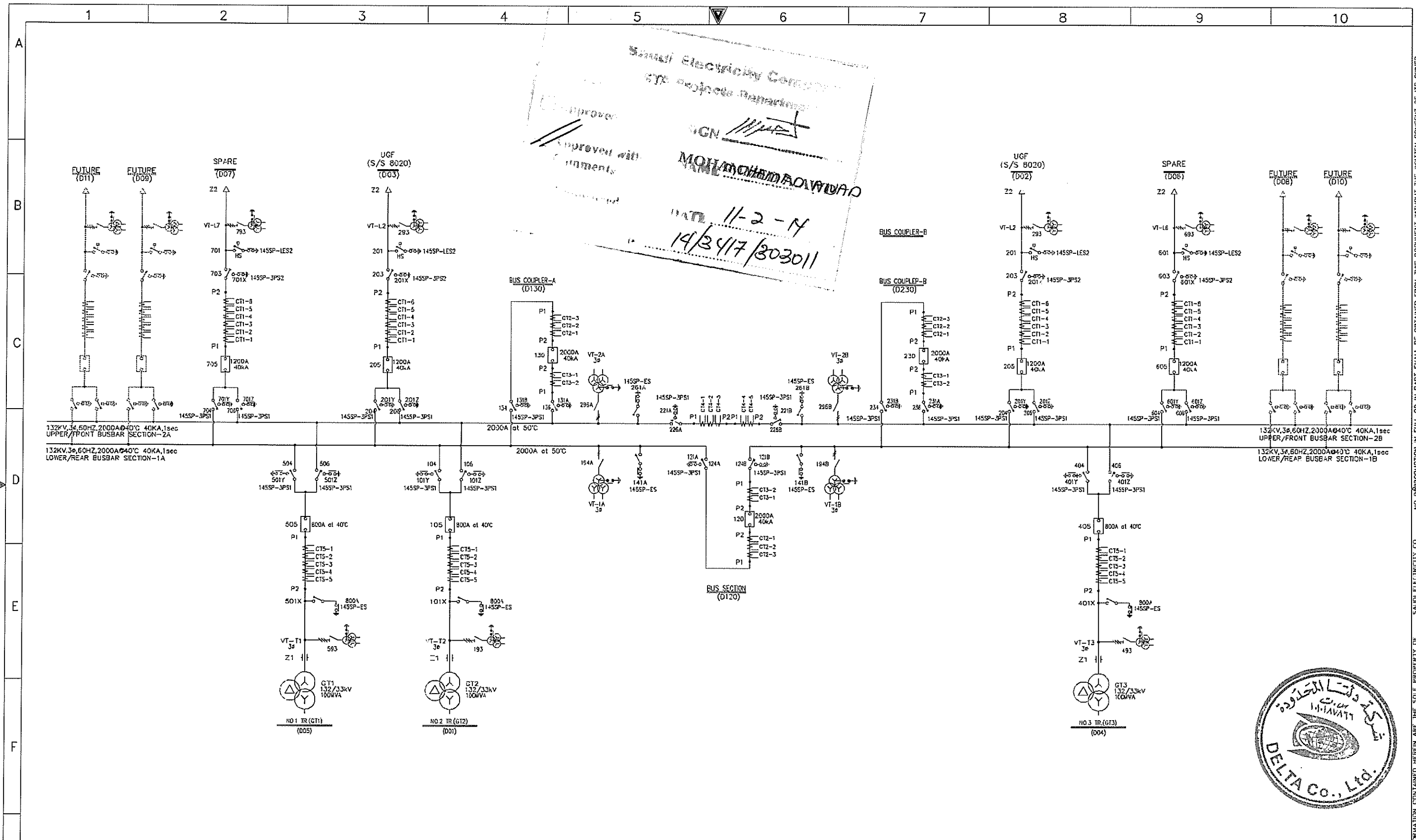
SIGN: **MOHAMMED A. AWAD**  
 NAME: **MOHAMMED A. AWAD**  
 DATE: **11-2-14**  
**14/347/303011**

1. MIMIC-BUS
2. CONTROL SWITCH
3. NAME PLATE (BLACK PHENOL, WHITE LETTER, FIXING BY BOLT)
4. OFF/LOCAL/BCU/REMOTE SELECT SWITCH (S40)
5. PUSH BUTTON SWITCH (S41, S42)
6. SIGNALLING LAMP FOR LOCAL CONTROL (LED TYPE)
7. POSITION SWITCH MANUAL OPERATION SELECTION (DS-LOCK-ES)
8. KEY SWITCH MANUAL RETURN (S45)
9. ANNUNCIATOR (H1, H2)
10. MULTI METER
11. TEST TERMINAL (TT1)



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>نقل الكهرباء</b> National Grid SA		SHEET NO. 07 of 38
		DRAWN BY <u>D.H.HAH</u>	CHECKED BY <u>C.Y.HONG</u>	FRONT ARRANGEMENT OF LCC		<b>الشركة الوطنية لنقل الكهرباء</b>		NEXT CB
		DATE STARTED <u>25.SEP.12</u>	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO. _____	INDEX <u>P</u>	REV. NO. 01
		OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		PLANT NO. <u>10CN1017</u>	DRAWING NUMBER <u>CD -367820</u>	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

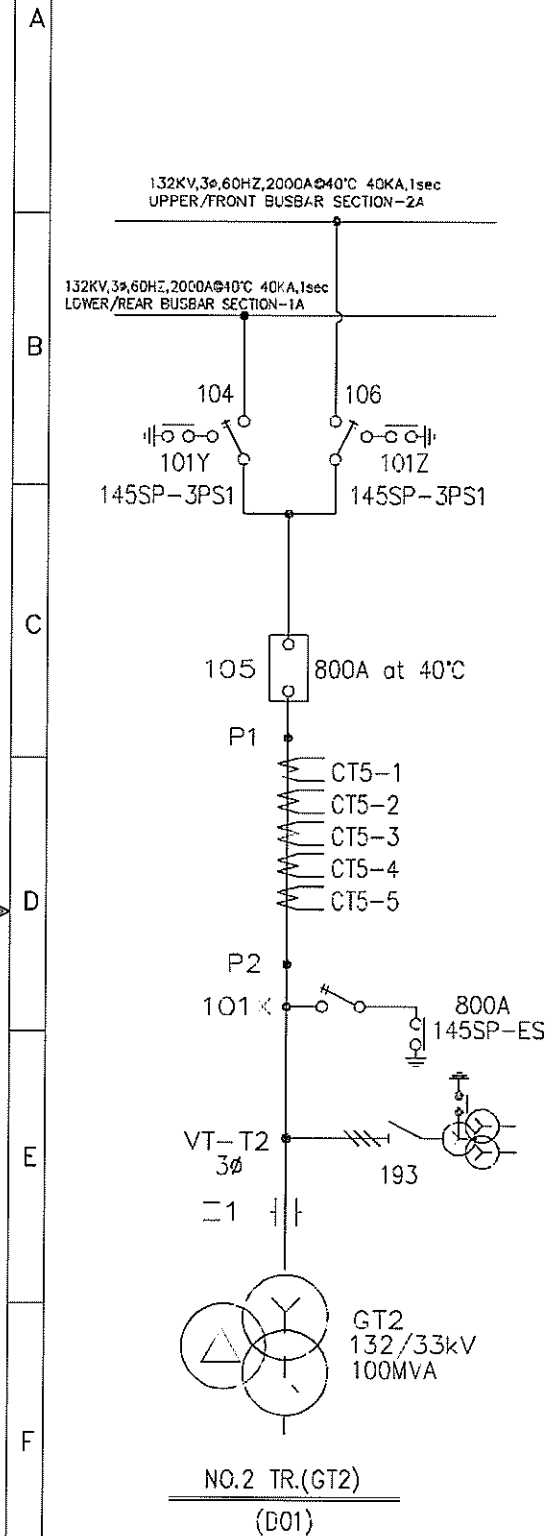


AS-BUILT			BY	DATE
01	01.JUL.13	FOR APPROVAL	D.H.HAN	C.Y.HONG
00	25.SEP.12	FOR APPROVAL		
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 OPERATION ONE LINE DIAGRAM  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

		<b>شركة الوطنية لنقل الكهرباء</b> <b>National Grid SA</b>		SHEET NO. 08 of 38 NEXT 09 REV. NO. 01
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	
-----	P	10CN1017	CD -367820	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

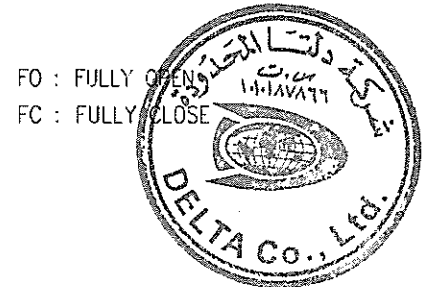


BAY REF.	EQUIPMENT REF.	CONTROL	STATUS OF THE RELATED EQUIPMENT																	CONTROL & SIGNALLING			REMARKS										
			D01					D130			D120									NOTE	BCU + LCC	SAS		CRCC									
			106	101Y	104	101Z	105	101X	136	130	134	226A	226B	124A	120	124B	261A	141A	261B						141B	230	234	13.8kV CB	13.8kV ES				
NO.2 TR GT2 BAY (D01)	106	CLOSE / OPEN	-	F0	F0	F0	0	F0	-	-	-	-	-	-	-	F0	-	-	-	-	-	-	0	-	-	-	-	C+S	C+S	C+S	SERVICE		
			-	F0	FC	F0	-	F0	FC	C	FC	-	-	-	-	-	F0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	SERVICE	
			-	F0	FC	F0	-	F0	-	-	-	FC	FC	FC	C	FC	F0	-	-	-	FC	C	FC	-	0	-	-	-	-	-	-	-	SERVICE
			-	FC	-	F0	-	-	-	-	-	-	-	-	-	-	-	FC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST
101Y	CLOSE / OPEN	F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-	C+S	S	S	-				
		FC	F0	-	F0	-	F0	FC	C	FC	-	-	-	-	-	F0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	SERVICE		
104	CLOSE / OPEN	FC	F0	-	F0	-	F0	FC	C	FC	-	-	-	-	-	F0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	SERVICE		
		FC	F0	-	F0	-	F0	-	-	-	FC	FC	FC	C	FC	-	F0	-	-	FC	C	FC	-	0	-	-	-	-	-	-	-	TEST	
101Z	CLOSE / OPEN	F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-	C+S	S	S	-				
		FC	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	1,3	-	S	C+S	C+S	SERVICE			
105	CLOSE	F0	-	FC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	1,3	-	-	-	-	-	TEST			
		F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-	C+S	C+S	S	TEST			
101X	CLOSE / OPEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

\* NOTE  
 1 : PROTECTION RELAY RESET  
 2 : 13.8kV MV CB IN DRAWOUT /TEST POSITION  
 3 : CB GAS PRESSURE > CB GAS PRESSURE LOW STAGE 1  
 4 : PROTECTION RELAYS OPEATED  
 5 : CB GAS PRESSURE > CB GAS PRESSURE LOW STAGE 2

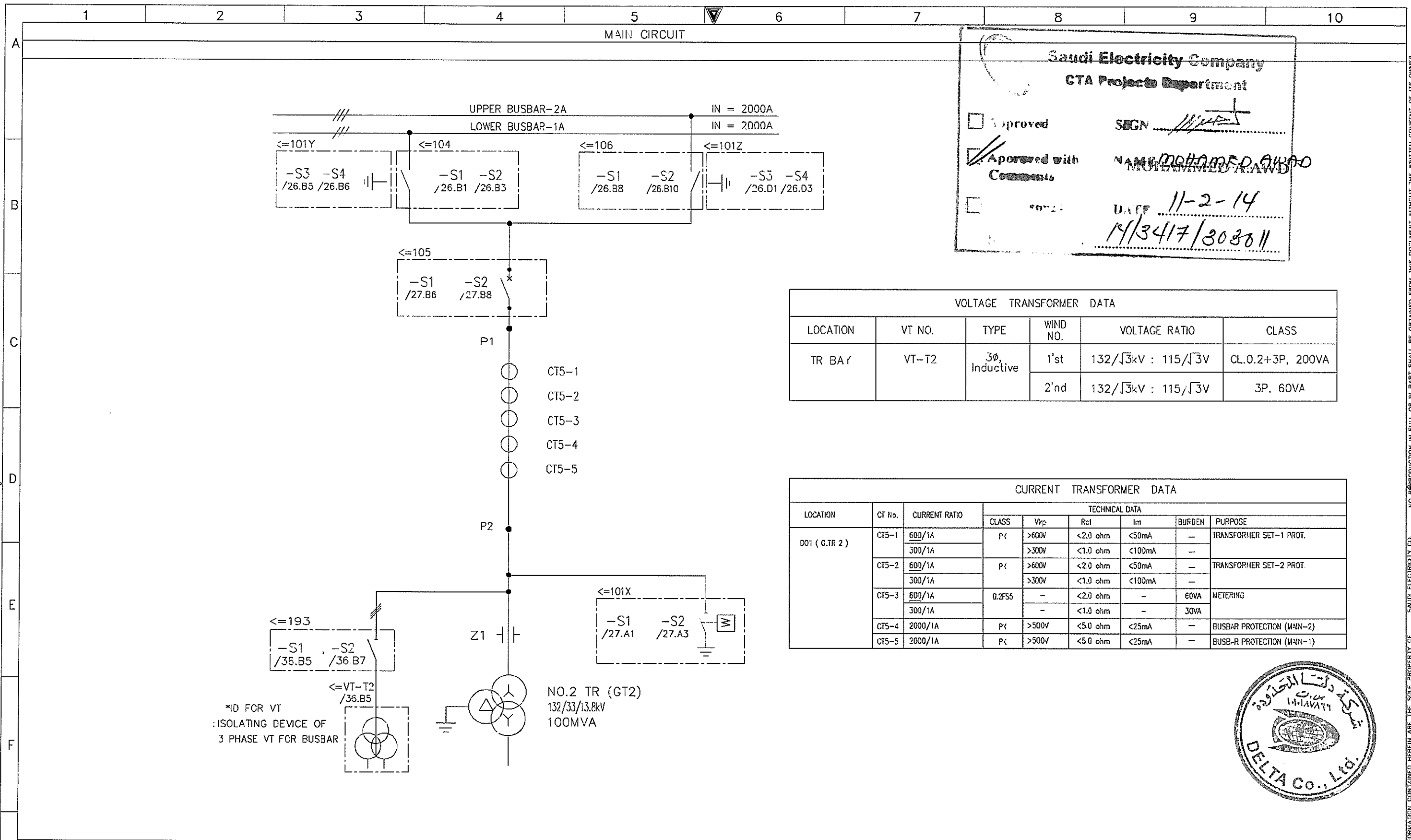
6 : 13.8kV BUS EARTH SWITCH OPEN & S701 OPEN

\* REMARK  
 O : OPEN STATE  
 C : CLOSED STATE  
 - : INDEPENDENT CONDITION  
 C+S : CONTROL AND SIGNALLING  
 S : SIGNALLING ONLY



AS-BUILT £61 BY _____ DATE _____			DRAWN BY D.H.HAHN CHECKED BY C.Y.HONG			SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		National Grid SA		SHEET NO. 09 of 38
01	01.JUL.13	FOR APPROVAL	DATE STARTED 25.SEP.12 DATE COMPLETED _____			INTERLOCK DIAGRAM		CONTRACT NO. _____		INDEX P	PLANT NO. 10CN1017	REV. NO. 01
00	25.SEP.12	FOR APPROVAL	OPRC. DEPT. _____ ENG. DEPT. _____			LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		DRAWING NUMBER CD -367820		SAUDI ARABIA		





**Saudi Electricity Company**  
**CTA Projects Department**

Approved  
 Approved with Comments

SIGN: *[Signature]*  
 NAME: MUHAMMAD ALWAD  
 DATE: 11-2-14  
14/3417/303011

VOLTAGE TRANSFORMER DATA					
LOCATION	VT NO.	TYPE	WIND NO.	VOLTAGE RATIO	CLASS
TR BAY	VT-T2	3 $\phi$ , Inductive	1 <sup>st</sup>	132/ $\sqrt{3}$ kV : 115/ $\sqrt{3}$ V	CL.0.2+3P, 200VA
			2 <sup>nd</sup>	132/ $\sqrt{3}$ kV : 115/ $\sqrt{3}$ V	3P, 60VA

CURRENT TRANSFORMER DATA								
LOCATION	CT No.	CURRENT RATIO	TECHNICAL DATA					
			CLASS	V <sub>pk</sub>	R <sub>cl</sub>	I <sub>m</sub>	BURDEN	PURPOSE
D01 (G.TR 2)	CT5-1	600/1A	P<	>600V	<2.0 ohm	<50mA	—	TRANSFORMER SET-1 PROT.
		300/1A		>300V	<1.0 ohm	<100mA	—	
	CT5-2	600/1A	P<	>600V	<2.0 ohm	<50mA	—	TRANSFORMER SET-2 PROT.
		300/1A		>300V	<1.0 ohm	<100mA	—	
	CT5-3	600/1A	0.2FS	—	<2.0 ohm	—	60VA	METERING
		300/1A		—	<1.0 ohm	—	30VA	
CT5-4	2000/1A	P<	>500V	<5.0 ohm	<25mA	—	BUSBAR PROTECTION (MAIN-2)	
CT5-5	2000/1A	P<	>500V	<5.0 ohm	<25mA	—	BUSBAR PROTECTION (MAIN-1)	



AS-BUILT			BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	<b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid sa			SHEET NO.	
			DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>		MAIN CIRCUIT				CONTRACT NO.	INDEX
01	01.JUL.13	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____		LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY	-----	P	10CN1017	CD -367820	NEXT 11
00	25.SEP.12	FOR APPROVAL	OPRG. DEPT. _____ ENG. DEPT. _____		ALKHARJ SAUDI ARABIA	-----	-----	-----	-----	REV. NO. 01
REV. NO.	DATE	DESCRIPTION								

NO PRODUCTION IN FULL OR IN PART WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

**Saudi Electricity Company**  
GTA Projects Department

Approved  
 Approved with Comments

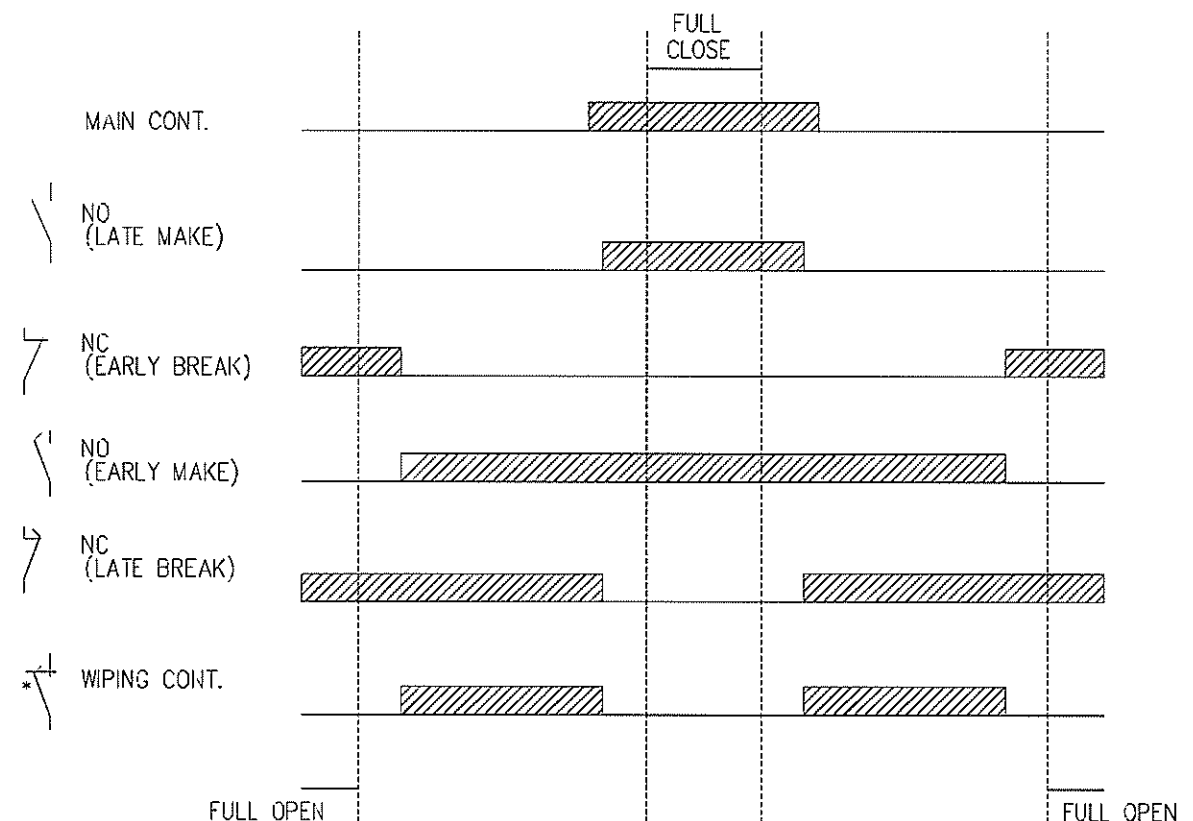
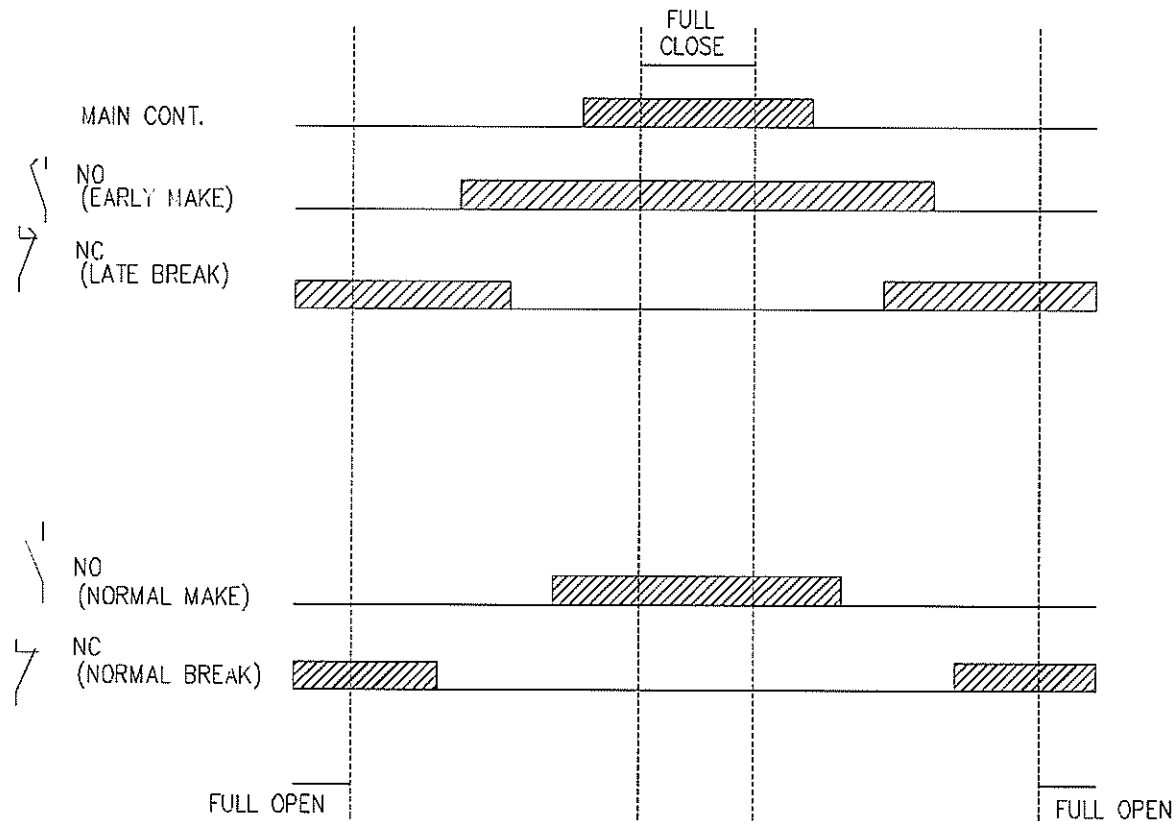
SIGN: \_\_\_\_\_  
 NAME: MOHAMED AWAD  
 DATE: 11-2-14  
14/3417/303011

1. SWITCHING DIAGRAM FOR CIRCUIT BREAKER

2. SWITCHING DIAGRAM FOR DS & ES

▨ : CONTACT CLOSED

▨ : CONTACT CLOSED

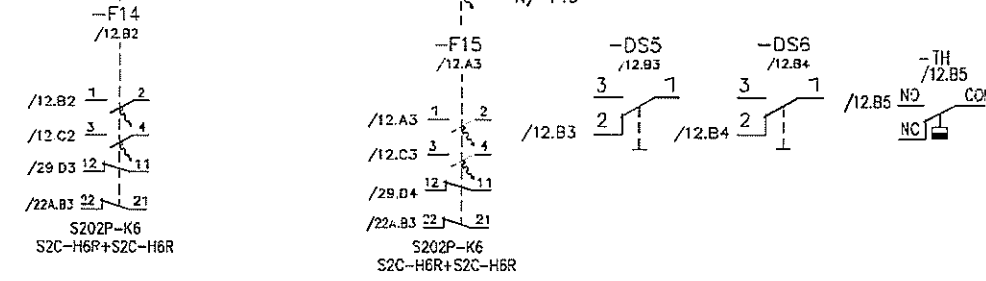
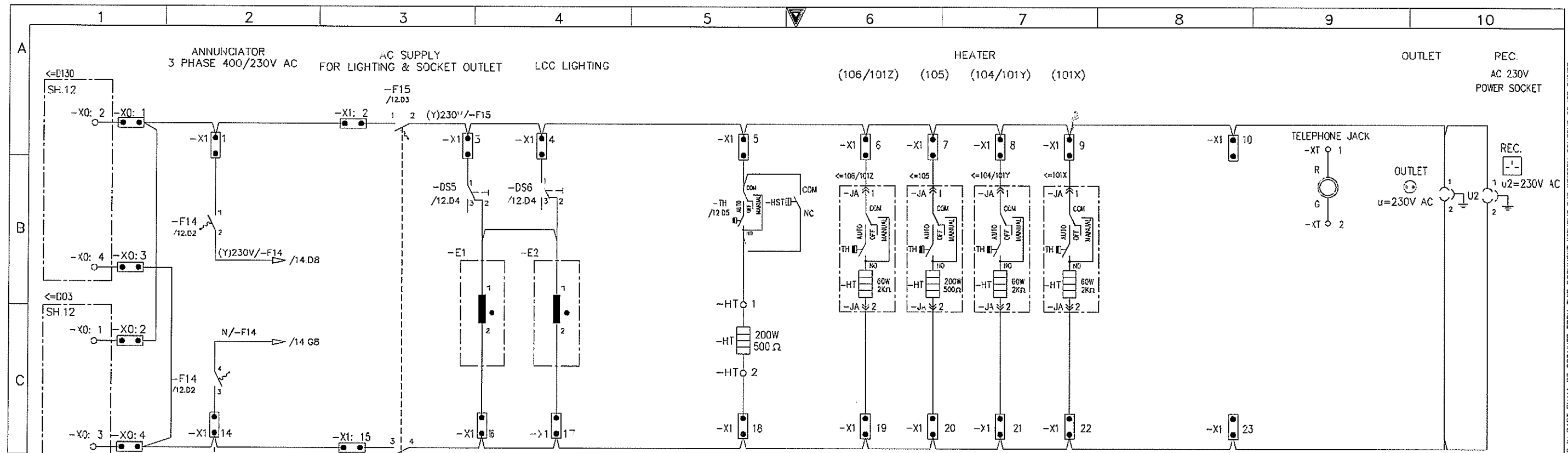


AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716				<b>الشركة الوطنية لنقل الكهرباء</b>		SHEET NO. 11 of 38		
			DRAWN BY <u>D.H.HAN</u> CHECKED BY <u>C.Y.HONG</u>		SWITCHING DIAGRAM				<b>نقل الكهرباء</b> National Grid sa		NEXT 12		
			DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____		LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY				CONTRACT NO. _____	INDEX P	PLANT NO. 10CN1017	DRAWING NUMBER CD -367820	REV. NO. 01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENC. DEPT. _____	ALKHARJ SAUDI ARABIA		-----		-----		-----		

SEC-D (2004/10)

EDMS VECTOR SECE00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
 CTA Project ~~XXXXXXXXXX~~

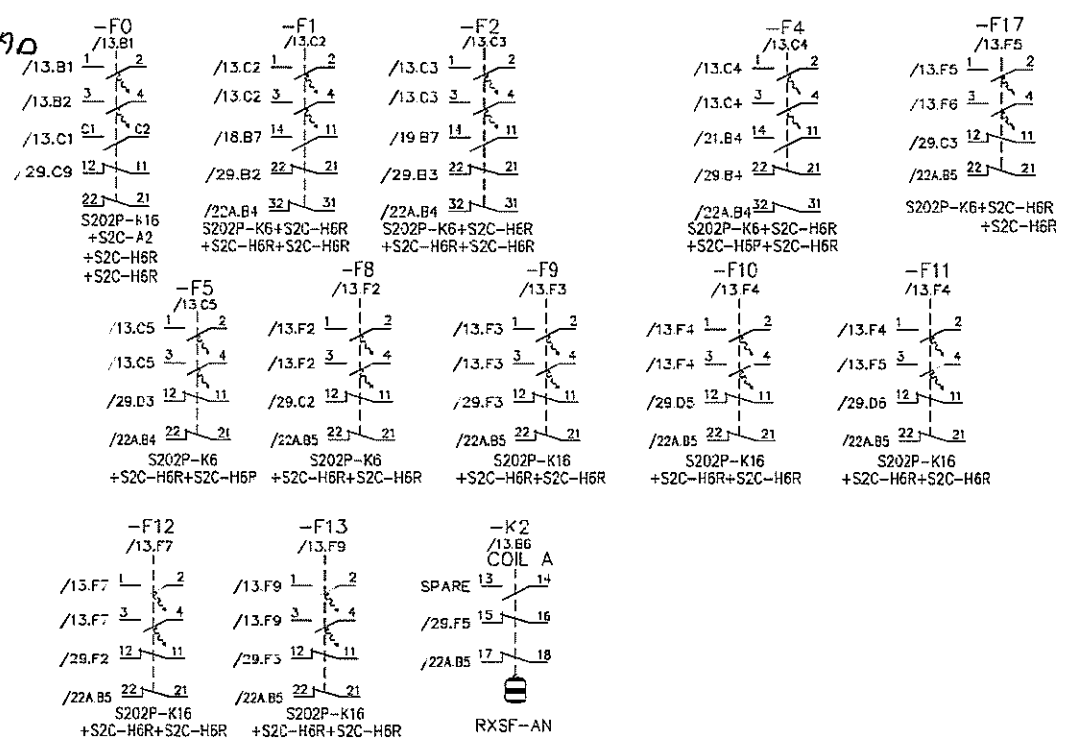
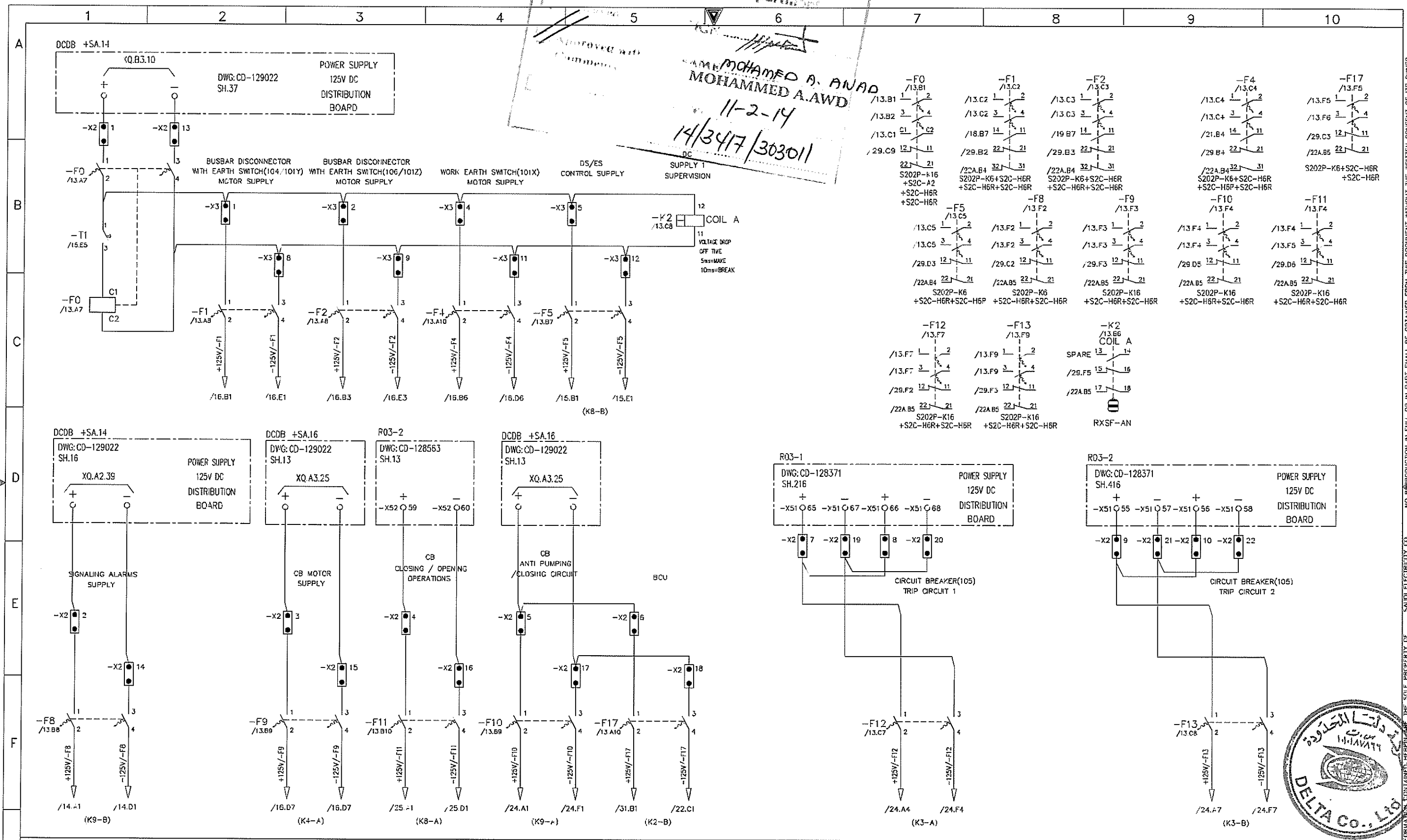
Approved with  
 Signature: MOHAMMED A. AWD  
 Name: MOHAMMED A. AWARD  
 Date: 11-2-14  
 ID: 14/347/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid sa		SHEET NO.
				DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>				12 of 38
				DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____				NEXT
				OPRG. DEPT. _____ ENG. DEPT. _____				13
				ALKHARJ SAUDI ARABIA				REV. NO.
								01
								REV. NO.
								01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

Approved with  
 Comments  
**MUHAMMAD A. AWAD**  
**MOHAMMED A. AWD**  
 11-2-14  
 14/347/303011



AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH
00	25.SEP.12	FOR APPROVAL	CHECKED BY C.Y.HONG
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT. _____ ENG. DEPT. _____

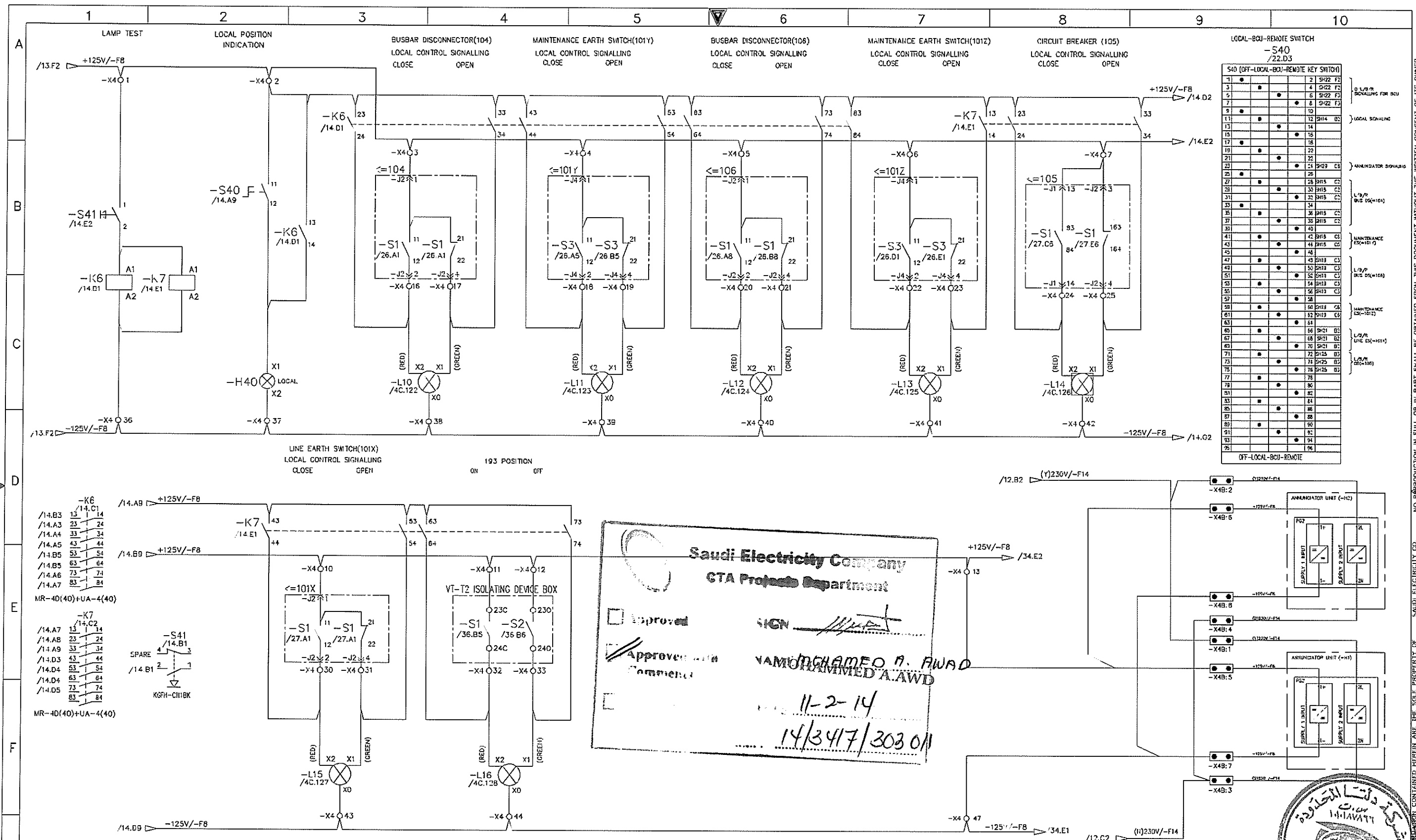
SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 DC POWER SUPPLY  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
-----	P	10CN1017	CD -367820

SHEET NO.	13 of 38
NEXT	14
REV. NO.	01



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
**CTA Projects Department**

Approved \_\_\_\_\_  
 Approved with Comment \_\_\_\_\_  
**YAMOUNGHAMEO A. AWAD**  
 11-2-14  
 14/347/303 OM

1	2	SH22 F2
3	4	SH22 F2
5	6	SH22 F2
7	8	SH22 F2
9	10	SH22 F2
11	12	SH14 B3
13	14	SH14 B3
15	16	SH14 B3
17	18	SH14 B3
19	20	SH14 B3
21	22	SH23 C3
23	24	SH23 C3
25	26	SH15 C2
27	28	SH15 C2
29	30	SH15 C2
31	32	SH15 C2
33	34	SH15 C2
35	36	SH15 C2
37	38	SH15 C2
39	40	SH15 C2
41	42	SH15 C2
43	44	SH15 C2
45	46	SH15 C2
47	48	SH15 C2
49	50	SH15 C2
51	52	SH15 C2
53	54	SH15 C2
55	56	SH15 C2
57	58	SH15 C2
59	60	SH15 C2
61	62	SH15 C2
63	64	SH15 C2
65	66	SH21 B2
67	68	SH21 B2
69	70	SH21 B2
71	72	SH25 B3
73	74	SH25 B3
75	76	SH25 B3
77	78	SH25 B3
79	80	SH25 B3
81	82	SH25 B3
83	84	SH25 B3
85	86	SH25 B3
87	88	SH25 B3
89	90	SH25 B3
91	92	SH25 B3
93	94	SH25 B3
95	96	SH25 B3

AS-BUILT		BY	DATE
01	01.JUL.13	FOR APPROVAL	
00	25.SEP.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY	D.H.HAH	CHECKED BY	C.Y.HONG
DATE STARTED	25.SEP.12	DATE COMPLETED	-----
OPRC. DEPT.	-----	ENC. DEPT.	-----

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716

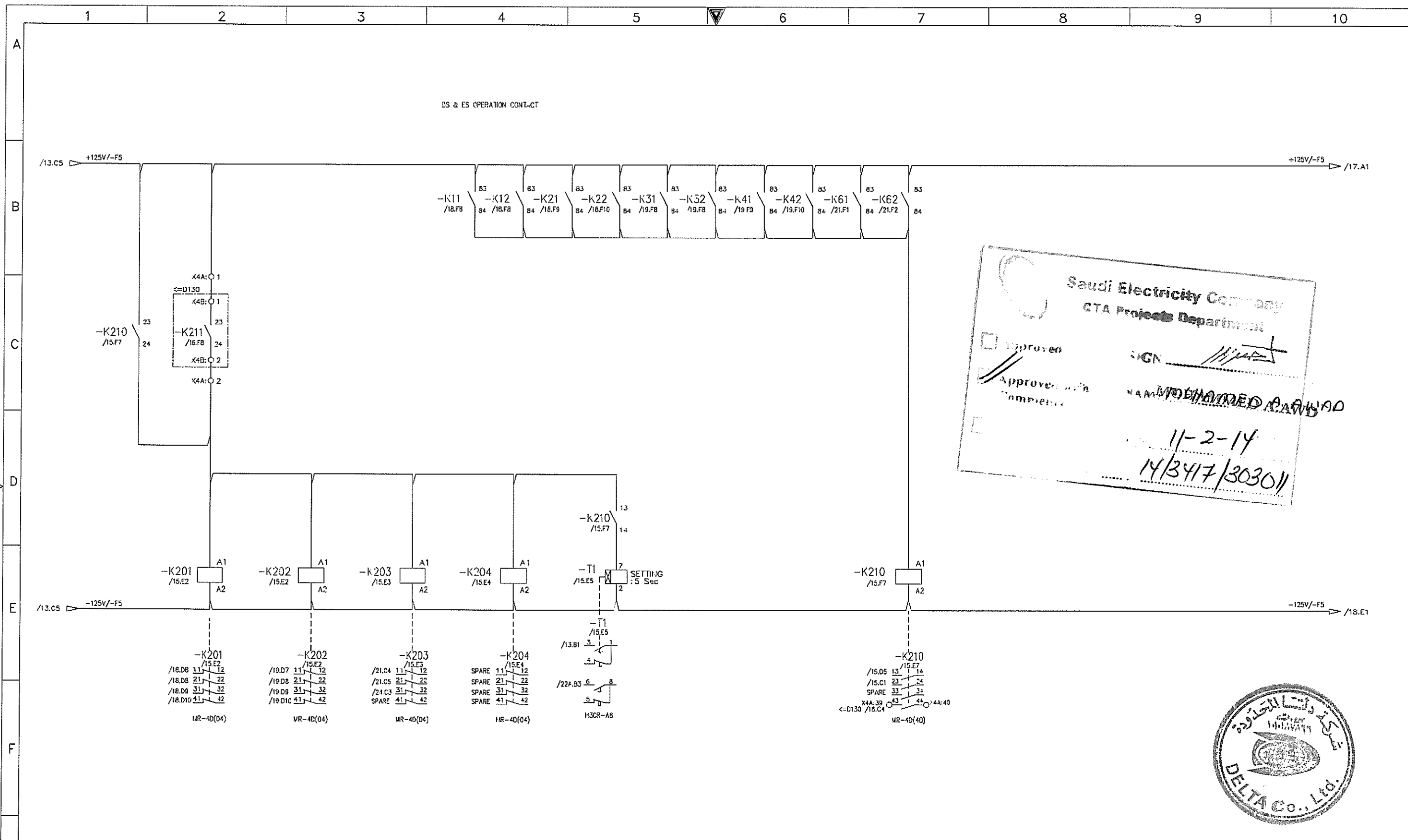
LOCAL POSITION INDICATOR

LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY

ALKHARJ SAUDI ARABIA

<b>الشركة الوطنية لنقل الكهرباء</b> National Grid SA			
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
-----	P	10CN1017	CD -367820
SHEET NO.	4	REV. NO.	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.



Saudi Electricity Company  
 GTA Projects Department

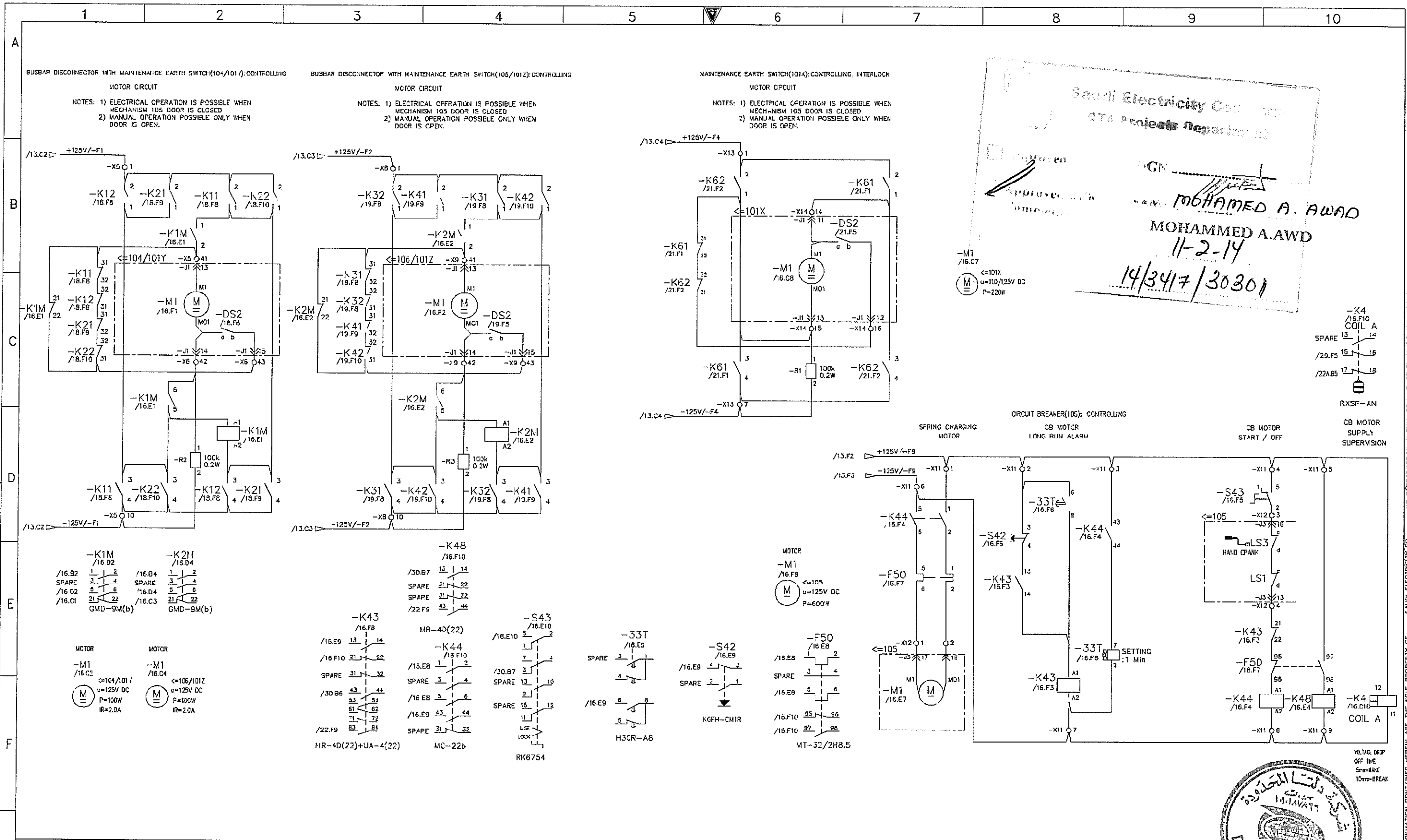
Approved \_\_\_\_\_  
 Approved with \_\_\_\_\_  
 Completed \_\_\_\_\_

SIGN: \_\_\_\_\_  
 NAME: MOHAMMED ABUAD  
 11-2-14  
 14/347/303011

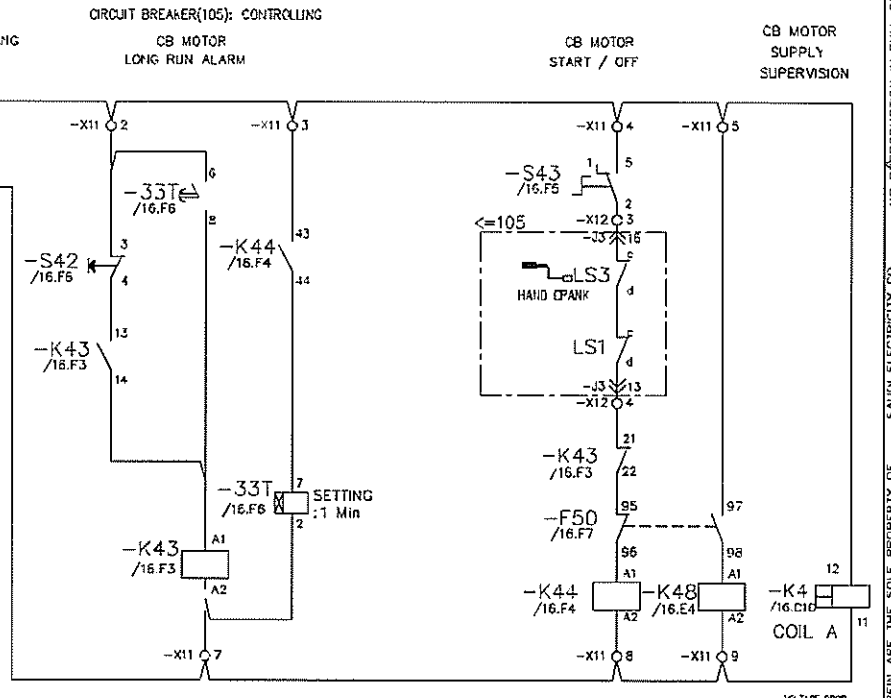
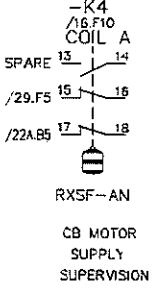
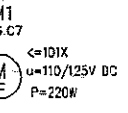


AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO.	
		DRAWN BY D.H.HALI CHECKED BY C.Y.HONG		OPERATION INTERLOCK		National Grid sa				15 of 38	
01 01.JUL.13 FOR APPROVAL		DATE STARTED 25.SEP.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO. _____		INDEX P		NEXT 16	
00 25.SEP.12 FOR APPROVAL		OPRC. DEPT. _____ ENG. DEPT. _____		ALKHARJ SAUDI ARABIA		PLANT NO. 10CN1017		DRAWING NUMBER CD -367820		REV. NO. 01	
REV. NO.	DATE	DESCRIPTION									

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



Saudi Electricity Company  
 GTA Projects Department  
 Approved by  
 MOHAMMED A. AWAD  
 11-2-14  
 14/3417/30301

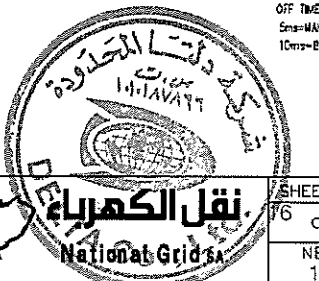


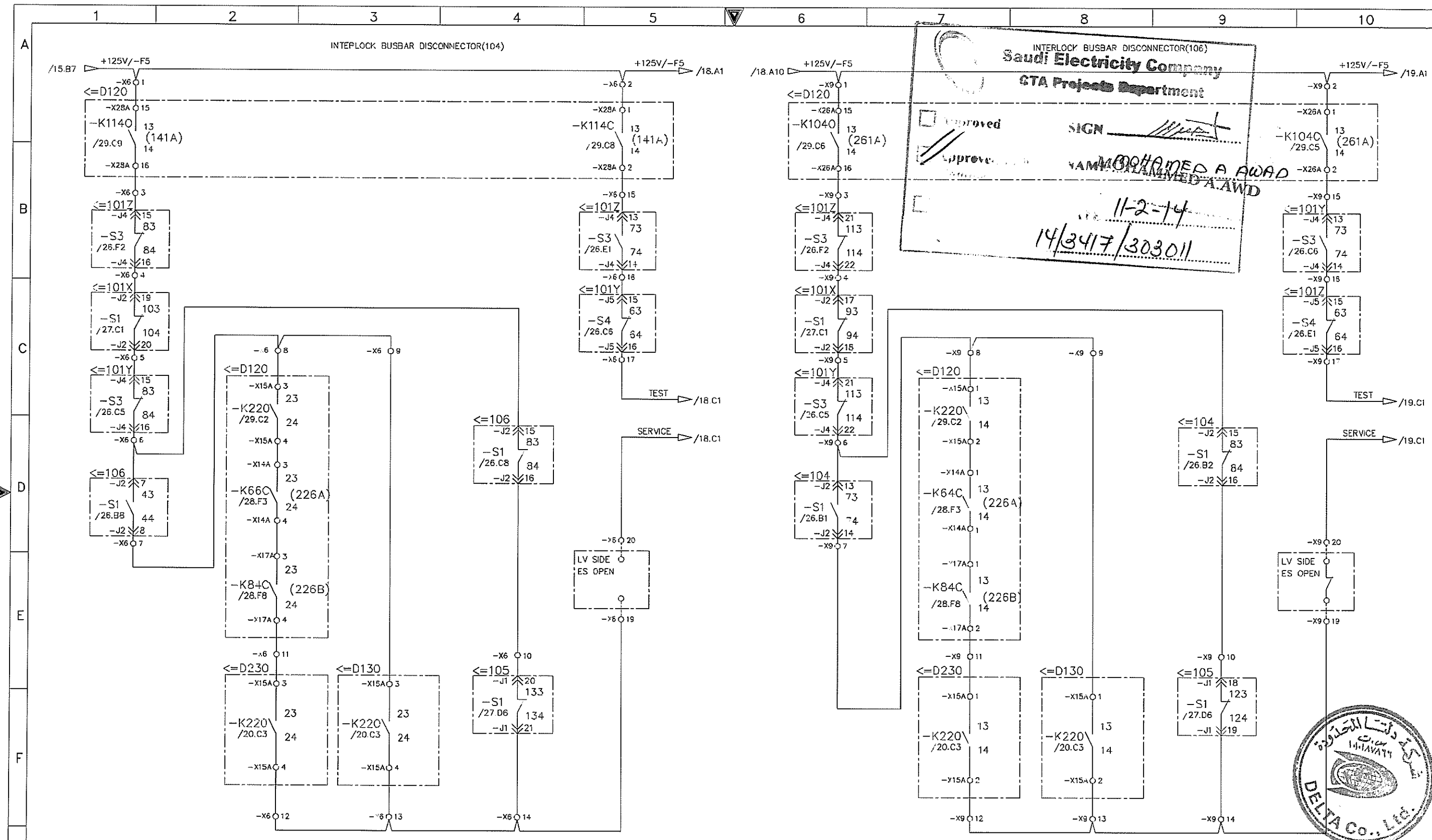
VOLTAGE DROP OFF TIME  
 5ms=MAKE  
 10ms=BREAK

AS-BUILT			BY	DATE
01	01.JUL.13	FOR APPROVAL	D.H.HAH	C.Y.HONG
00	25.SEP.12	FOR APPROVAL	DATE STARTED	25.SEP.12
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 MOTOR DRIVE CIRCUIT  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grids		SHEET NO.	16 of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
	P	10CN1017	CD-367820
			REV. NO. 01





AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH CHECKED BY C.Y.HONG
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 INTERLOCK OF BUSBAR DISCONNECTOR(104/106)  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid SA		SHEET NO. 17 of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
-----	P	10CN1017	CD -367820	01

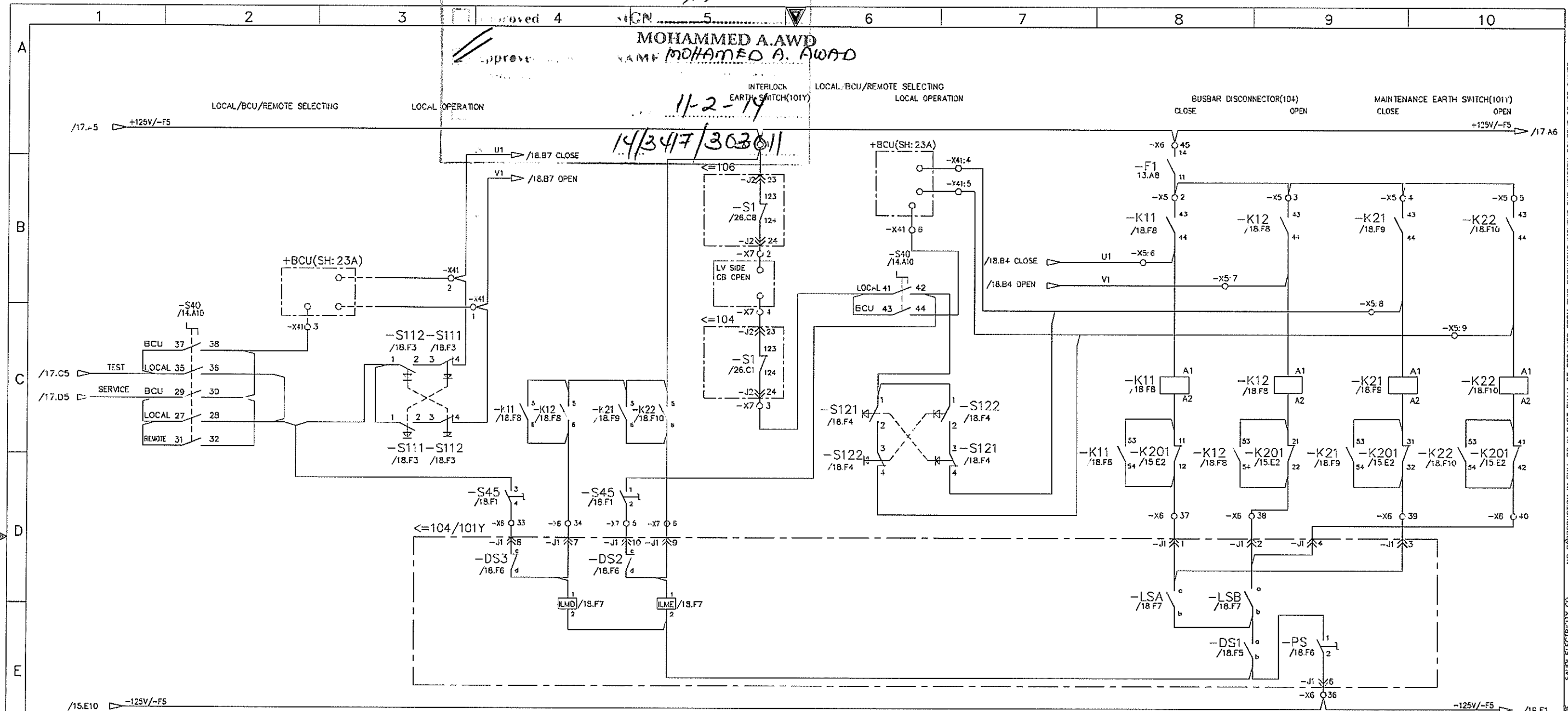


THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



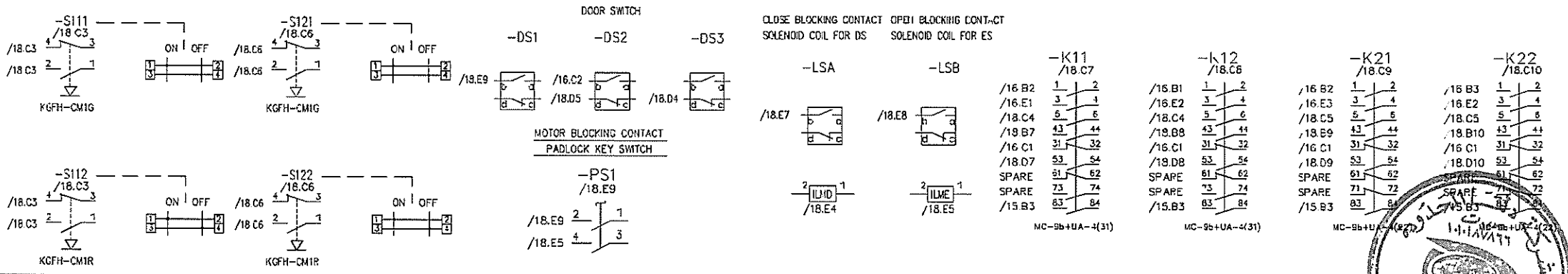
MOHAMMED A.AWD  
NAME MOHAMMED A. AWARD

11-2-19  
14/347/3030/1



-S45 /18.D5

S45 (SP MANUAL SELECTION)			
1	2	3	4
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16



AS-BUILT		BY	DATE
01	01.JUL.13	FOR APPROVAL	
00	25.SEP.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY	D.H.HAH	CHECKED BY	C.Y.HONG
DATE STARTED	25.SEP.12	DATE COMPLETED	
OPRC. DEPT.		ENG DEPT.	

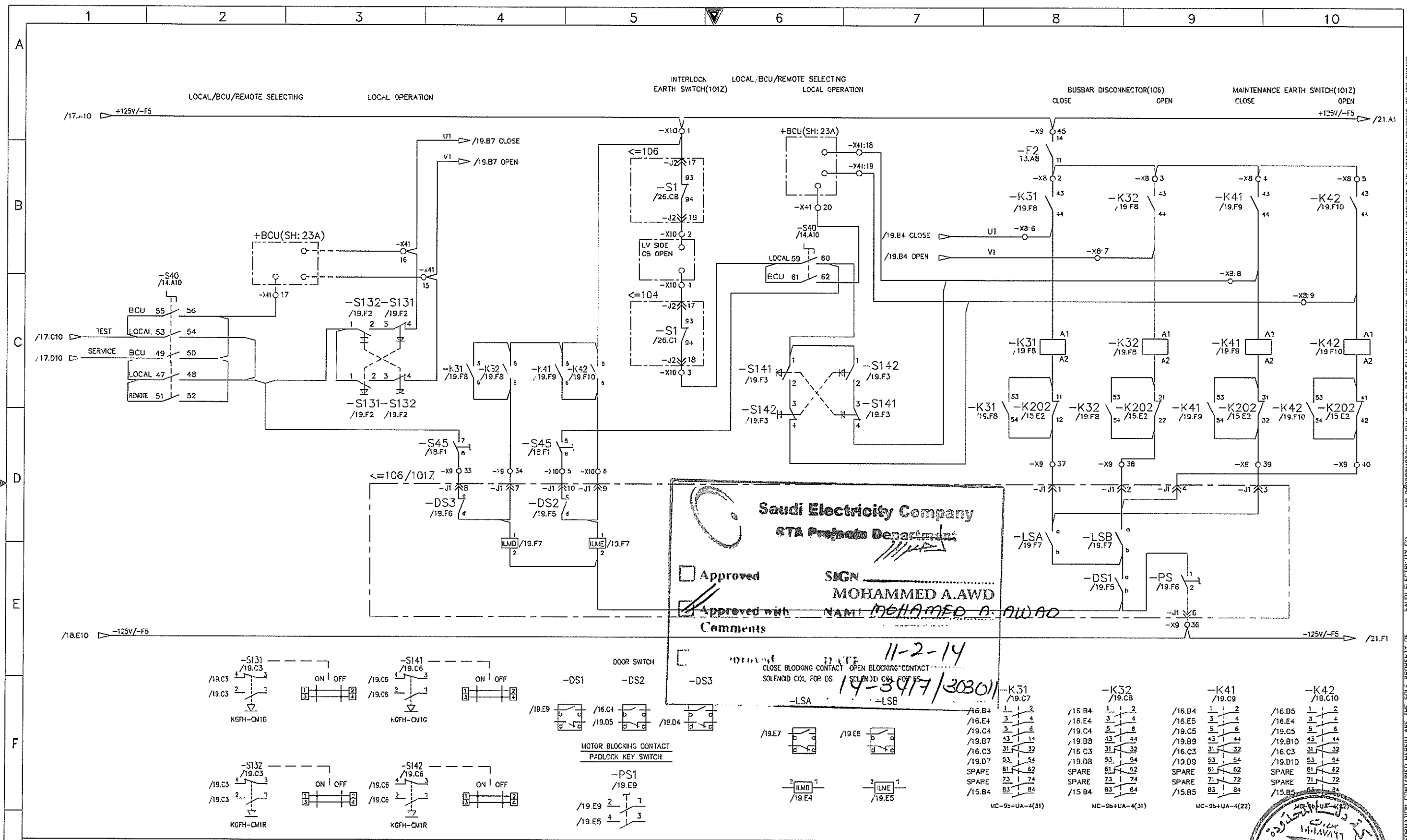
SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(104/101Y): CONTROLLING  
LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء  
National Grids

CONTRACT NO.	INDEX	PLANT NO	DRAWING NUMBER	REV. NO.
	P	10CN1017	CD -367820	01

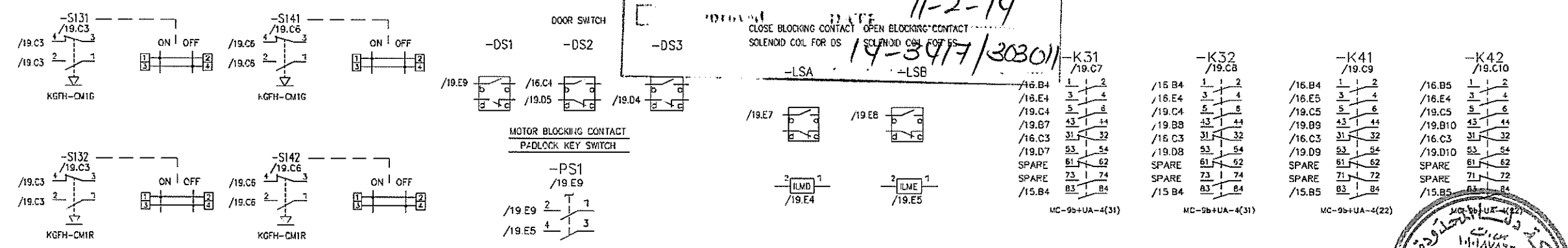
SHEET NO. 18 OF 38  
NEXT 19

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
**ETA Projects Department**

Approved  
 Approved with Comments  
 SIGN: MOHAMMED A. AWD  
 NAME: MOHAMMED A. AWD  
 DATE: 11-2-14  
19-3477/303011



AS-BUILT		BY	DATE
01	01.JUL.13	FOR APPROVAL	
00	25.SEP.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY	D.H.HAH	CHECKED BY	C.Y.HONG
DATE STARTED	25.SEP.12	DATE COMPLETED	
OPRG. DEPT.		ENG. DEPT.	

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716

BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH(106/1012): CONTROLLING

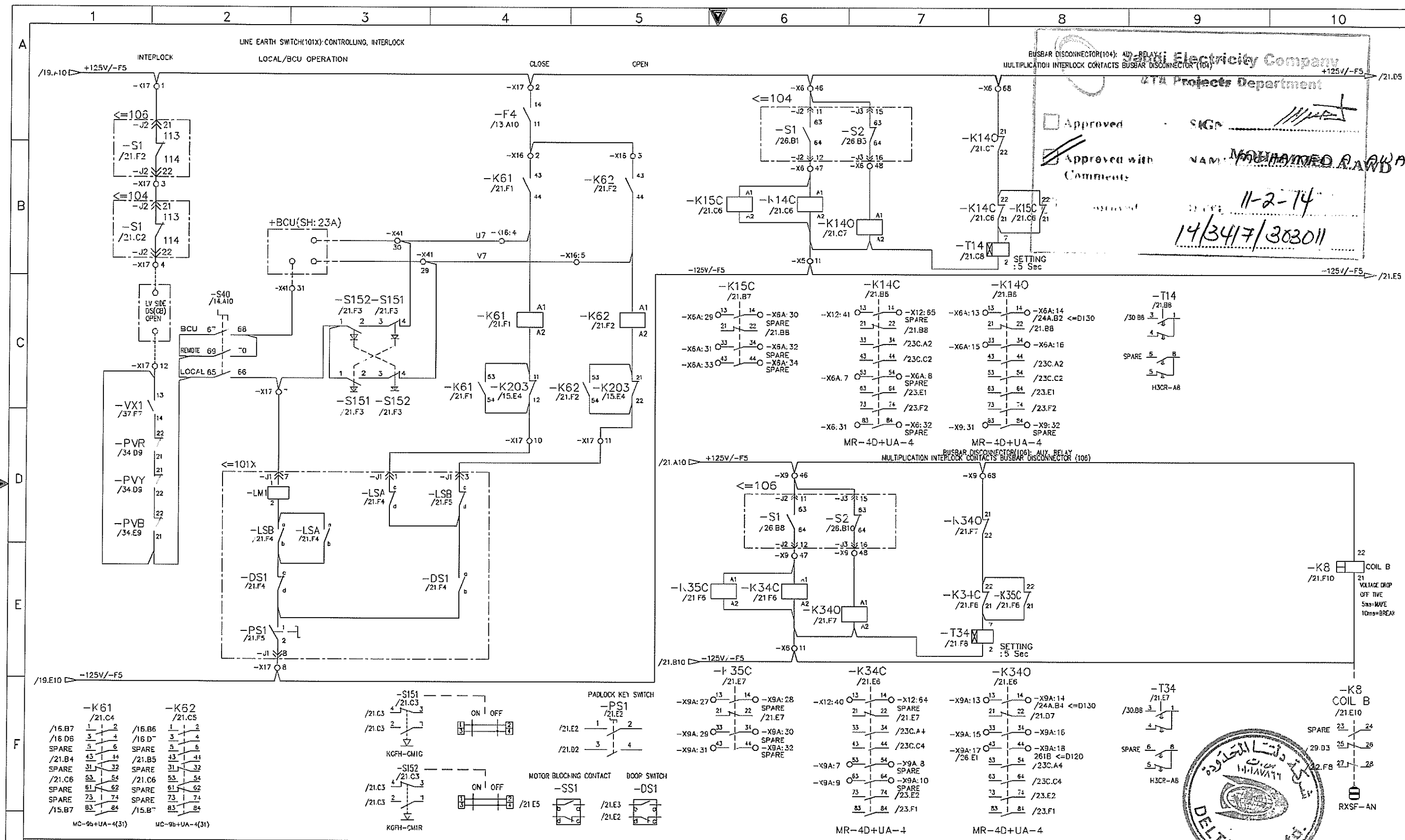
LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY

ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء نقل الكهرباء National Grid		SHEET NO.	19
		REV. NO.	01
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
	P	10CN1017	CD -36/820



THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



SAUDI Electricity Company  
 Projects Department

Approved with Comments

NAME: MUHAMMAD ALAWADH

DATE: 11-2-14

14/34/7/303011

REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.
01	01.JUL.13	FOR APPROVAL		
00	25.SEP.12	FOR APPROVAL		

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716

LINE ES(101X):CONTROLLING/BUSBAR DS(104/106): AUX. RELAY

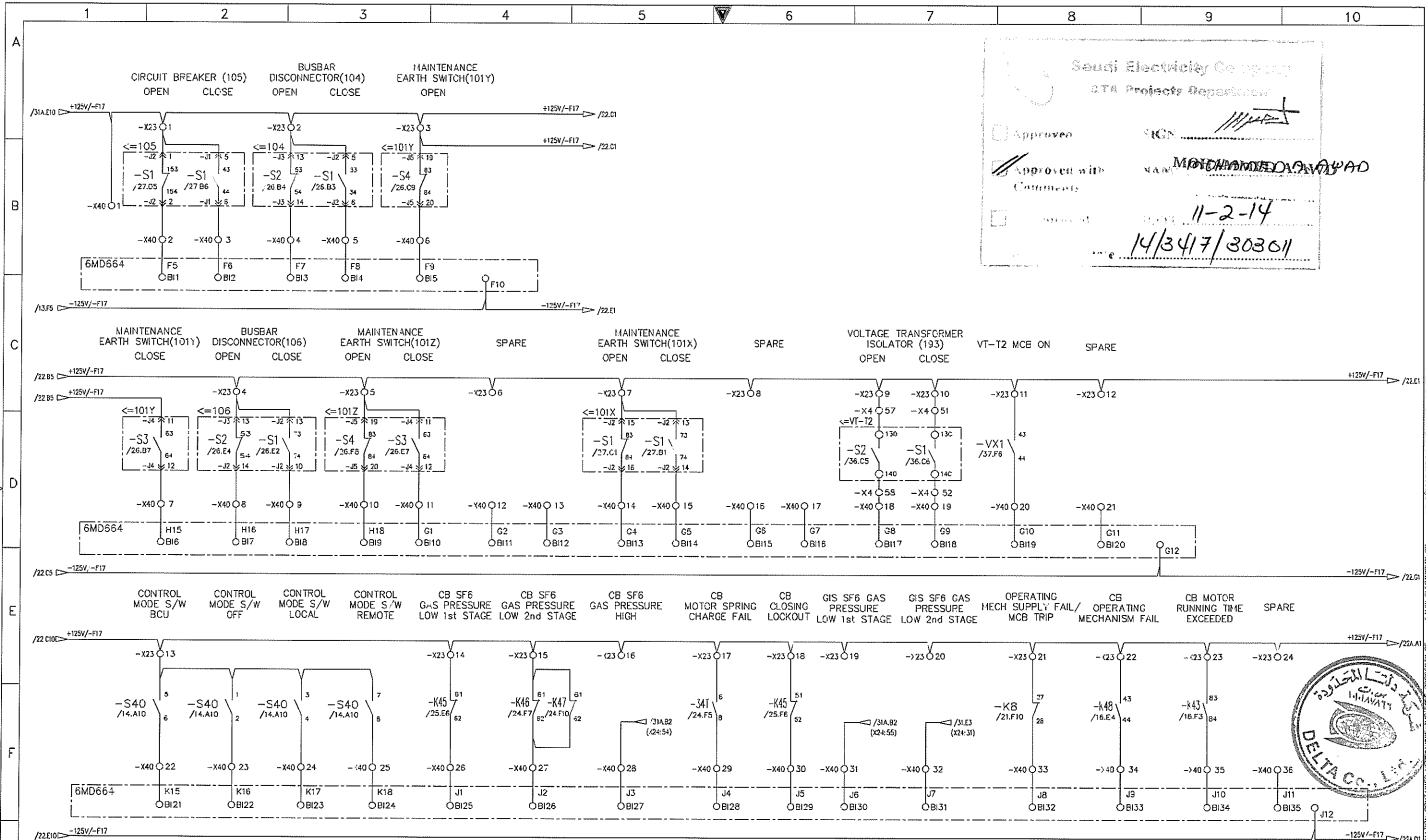
LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY

ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
	X	10CN1017	CD -367820

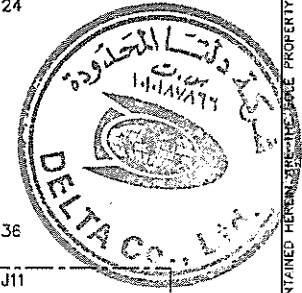


THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



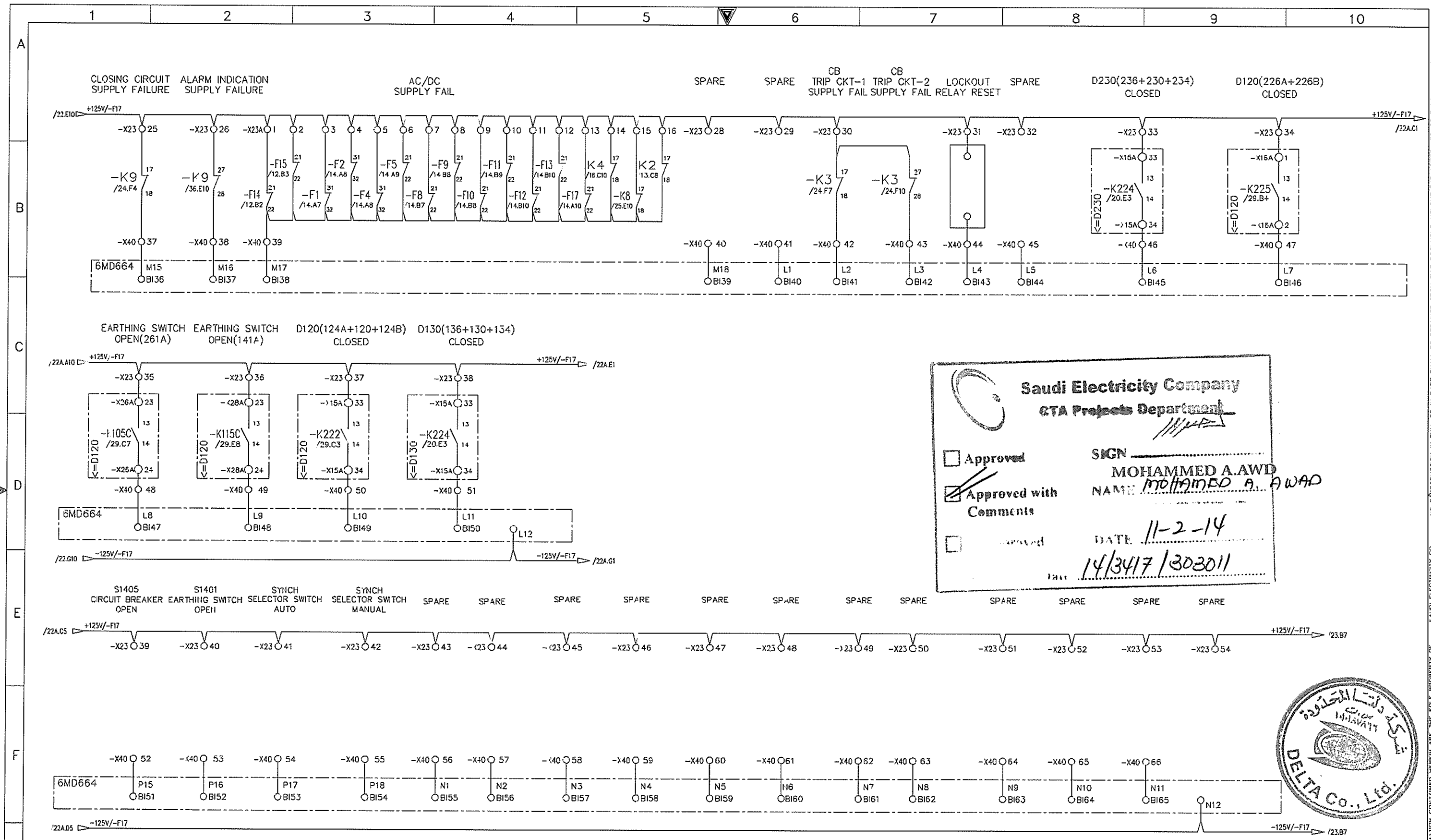
Saudi Electricity Co. Ltd.  
ATA Projects Department

Approved \_\_\_\_\_  
Approved with Comments \_\_\_\_\_  
Date: 11-2-14  
14/3417/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid SA		SHEET NO. 22 of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	SIGNALLING FOR BCU 1				NEXT 22A	REV. NO.
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO. _____	INDEX P	PLANT NO. 10CN1017	DRAWING NUMBER CD -367820
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ	SAUDI ARABIA	_____	_____	_____	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.



**Saudi Electricity Company**  
ETA Projects Department

Approved  
 Approved with Comments  
 Approved

SIGN \_\_\_\_\_  
 NAME MOHAMMED A. AWAD  
 DATE 11-2-14  
 14/3417/303011

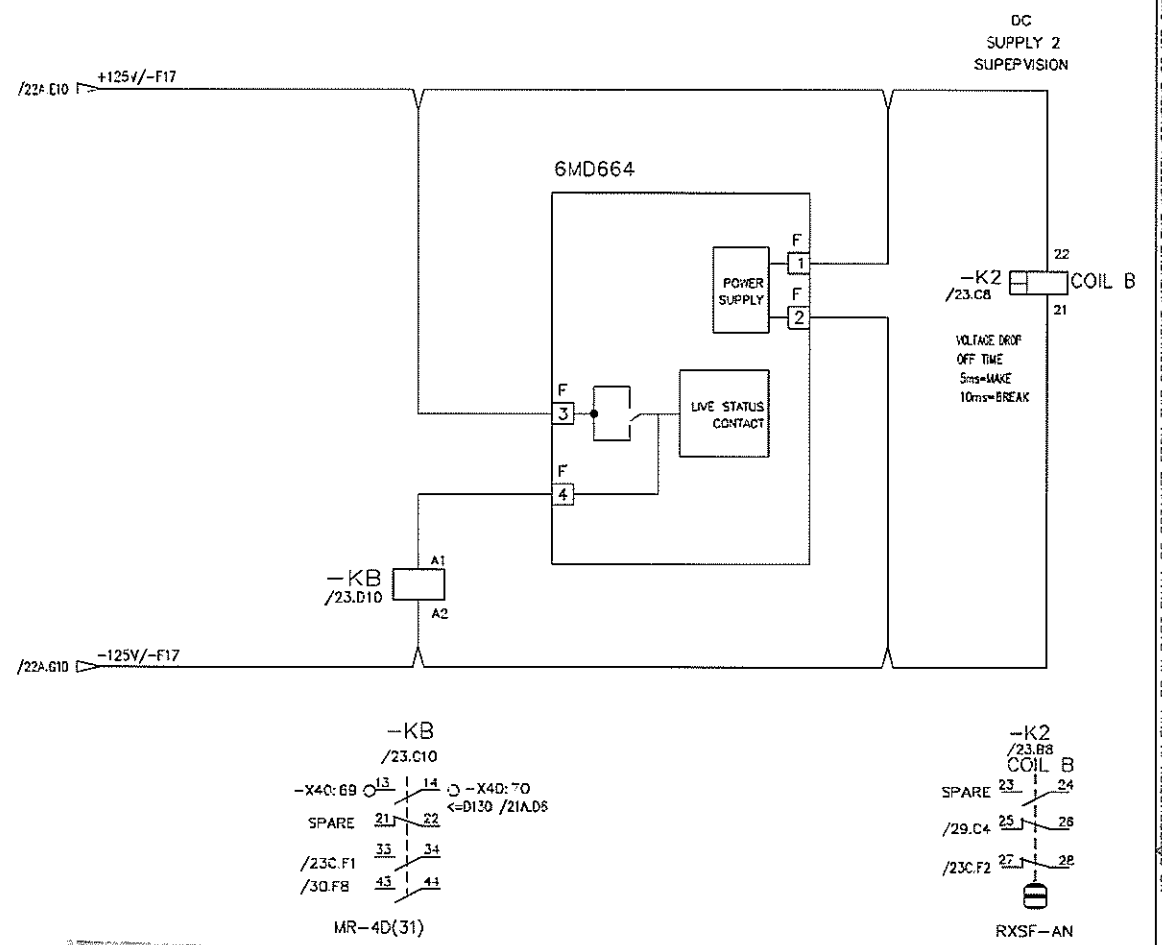
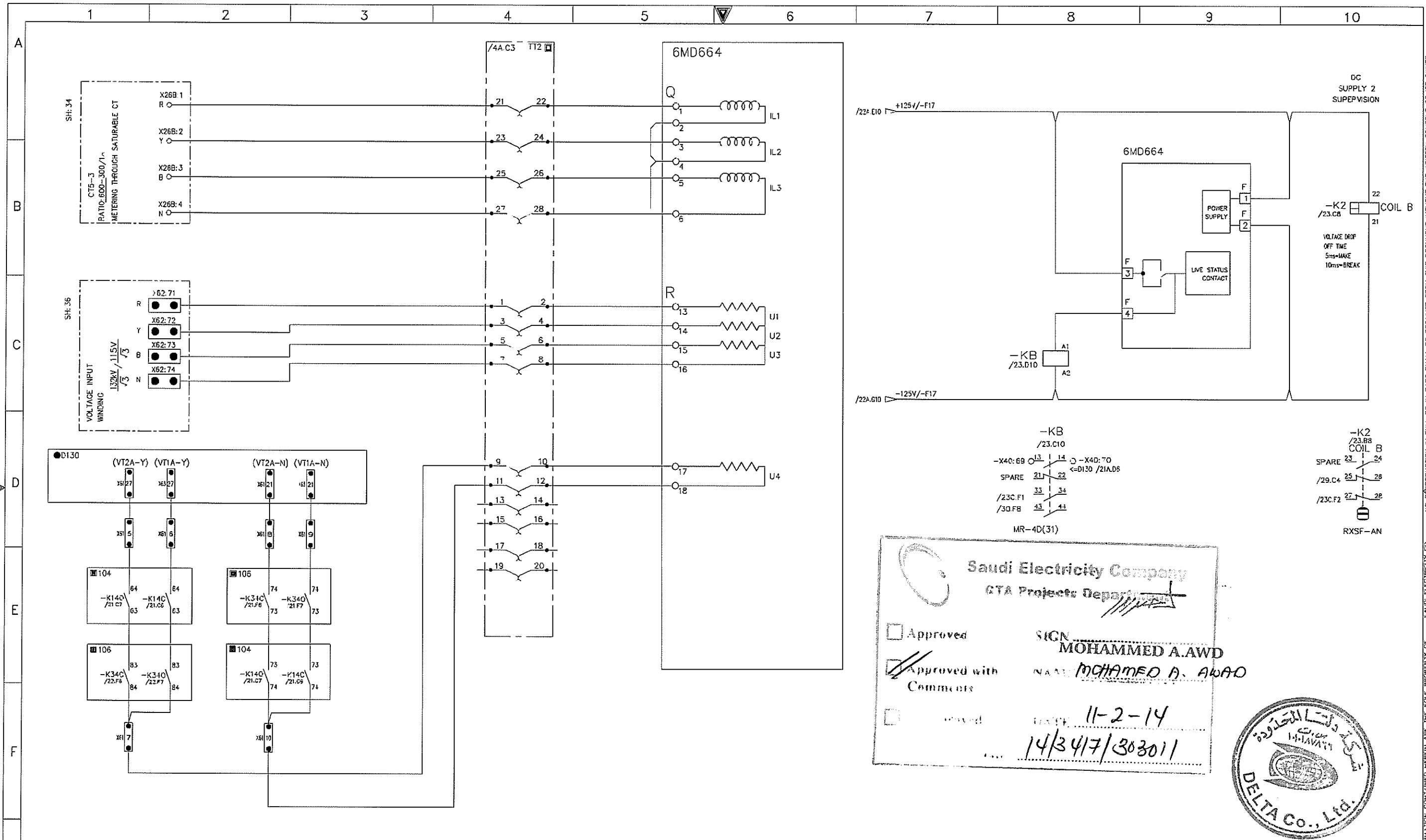


AS-BUILT BY _____ DATE _____			SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>الشركة الوطنية لنقل الكهرباء</b>		<b>نقل الكهرباء</b> National Grid SA		SHEET NO. 22 of 38		
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	SIGNALLING FOR BCU 2		National Grid SA		NEXT 23		
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.	ALKHARJ	SAUDI ARABIA	-----	P	10CN1017	CD -367820	01

SEC-D (2004/10)

EDMS VECTOR SECE00

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.



Saudi Electricity Company  
GTA Projects Department

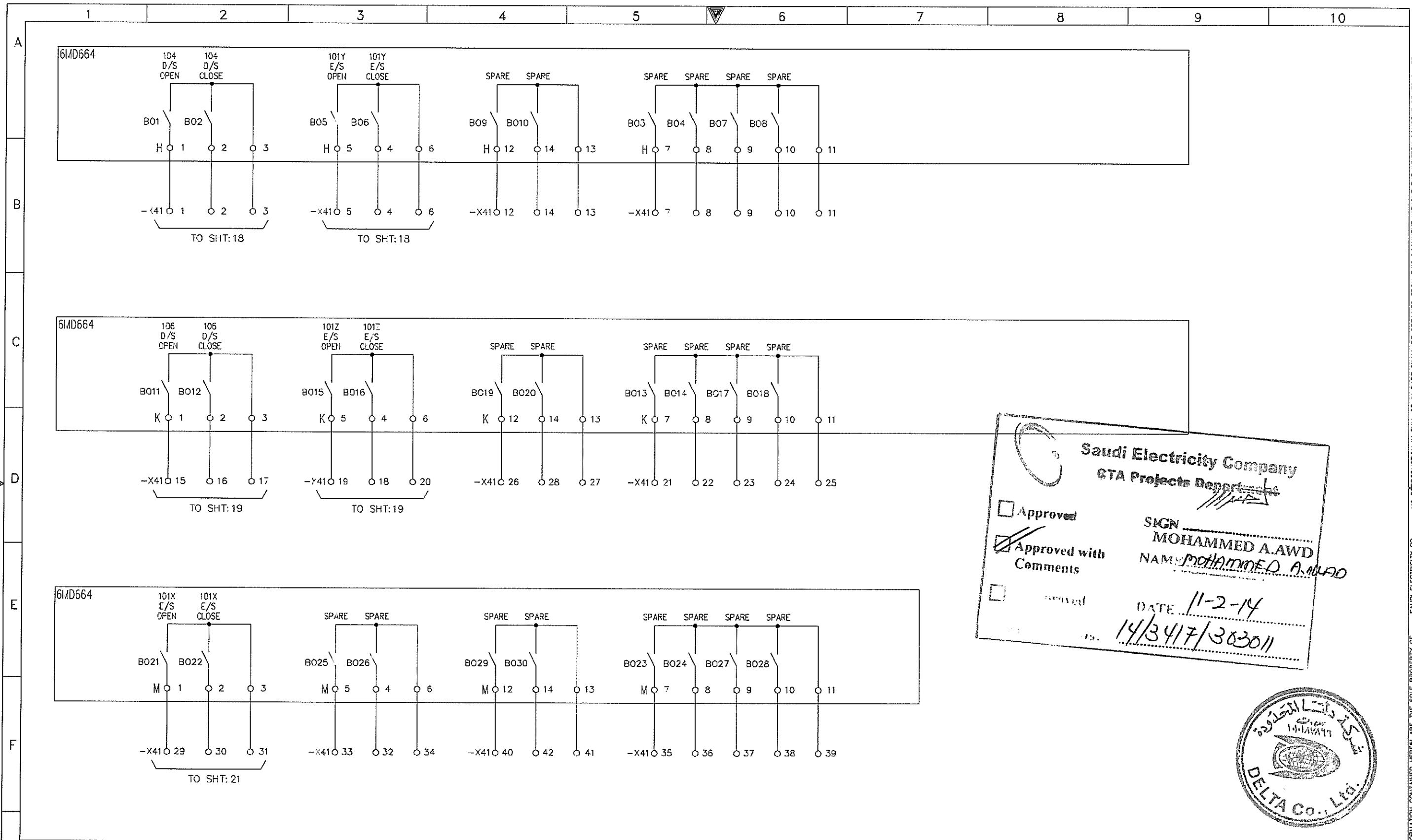
Approved  
 Approved with Comments  
 Not Approved

SIGN: MOHAMMED A.AWD  
 NAME: MOHAMMED A. AWARD  
 DATE: 11-2-14  
 14/347/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	شركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		SHEET NO. 23 of 38		
DRAWN BY D.H.HAH CHECKED BY C.Y.HONG				SIGNALLING FOR BCU 3		CONTRACT NO.		INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
DATE STARTED 25.SEP.12 DATE COMPLETED _____				LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		---		P	10CN1017	CD -367820	01
OPRG. DEPT. _____ ENG. DEPT. _____				ALKHARJ SAUDI ARABIA		---		P	10CN1017	CD -367820	01
REV. NO.	DATE	DESCRIPTION									
01	01.JUL.13	FOR APPROVAL									
00	25.SEP.12	FOR APPROVAL									

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



Saudi Electricity Company  
GTA Projects Department

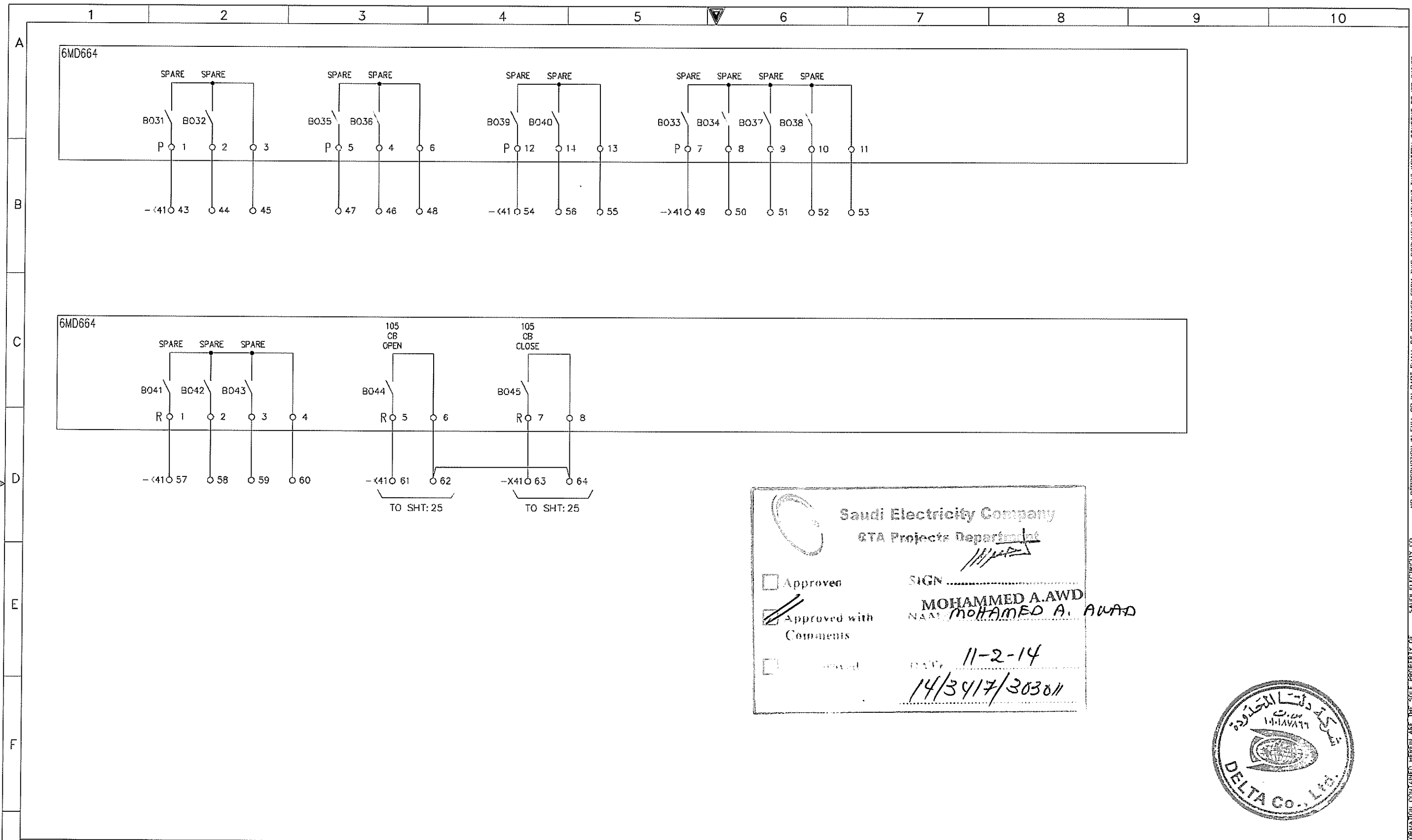
Approved  
 Approved with Comments  
 Not Approved

SIGN: MOHAMMED A.AWD  
 NAME: MOHAMMED A.AWD  
 DATE: 11-2-14  
 NO: 14/3417/303011



AS-BUILT			BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid SA		SHEET NO. 23A of 38	
01	01.JUL.13	FOR APPROVAL	DRAWN BY: D.H.HAN	CHECKED BY: C.Y.HONG	SIGNALLING FOR BCU 4	CONTRACT NO.		INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
00	25.SEP.12	FOR APPROVAL	DATE STARTED: 25.SEP.12	DATE COMPLETED: _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY	-----	P	10CN1017	CD -367820	01	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA						

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.



Saudi Electricity Company  
GTA Projects Department

Approved  
 Approved with Comments  
 [ ]

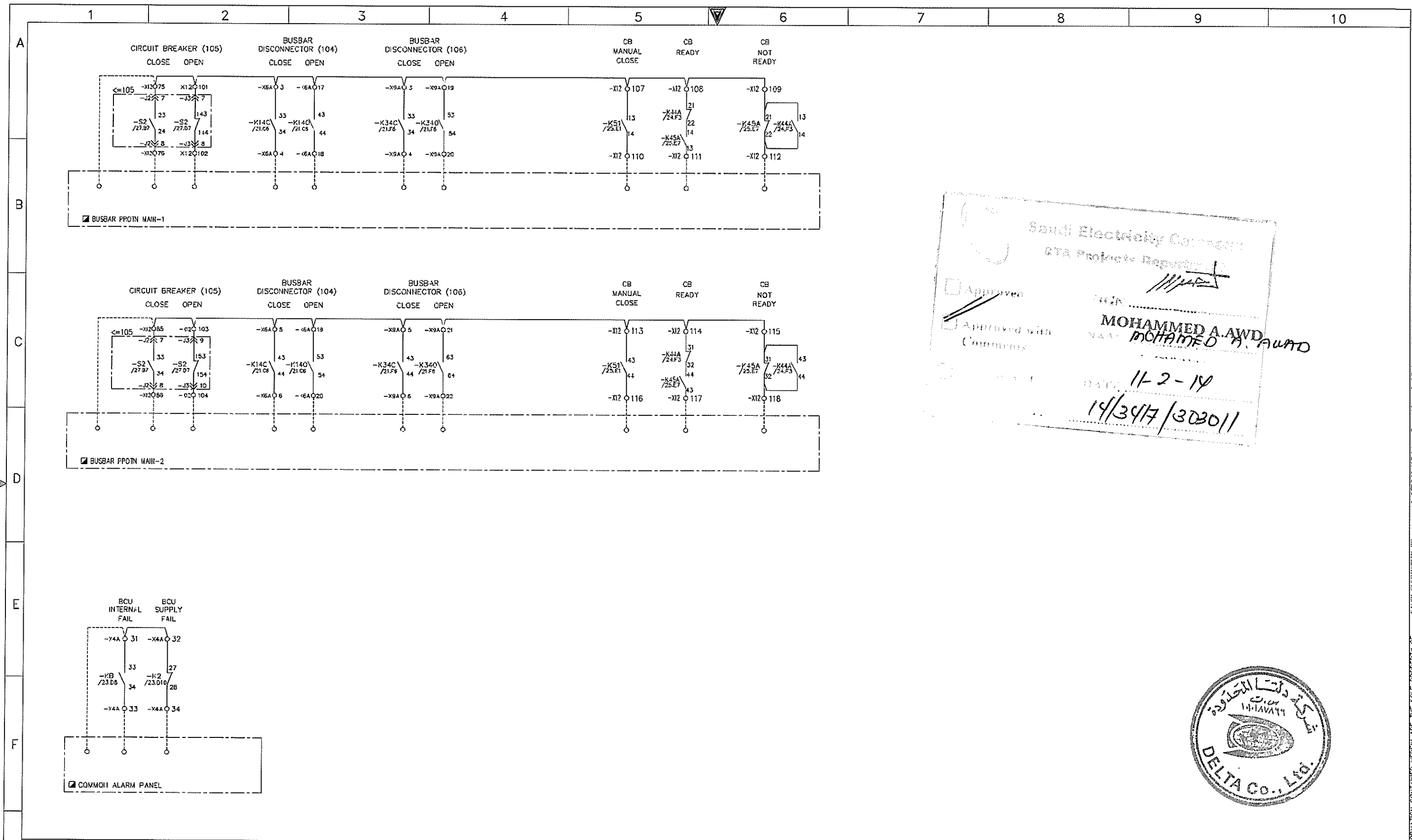
SIGN: *[Signature]*  
 MOHAMMED A. AWD  
 NAME: MOHAMMED A. AWARD  
 DATE: 11-2-14  
 14/3417/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		SHEET NO. 23B of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	SIGNALLING FOR BCU 5				NEXT 23C
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ	SAUDI ARABIA	-----	P	10CN1017
							CD -367820	01	REV. NO.

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO.





Saudi Electricity Company  
 GTA Projects Department

Approved with Comments

**MOHAMMED A. AWD**  
 MOHAMMED A. AWD

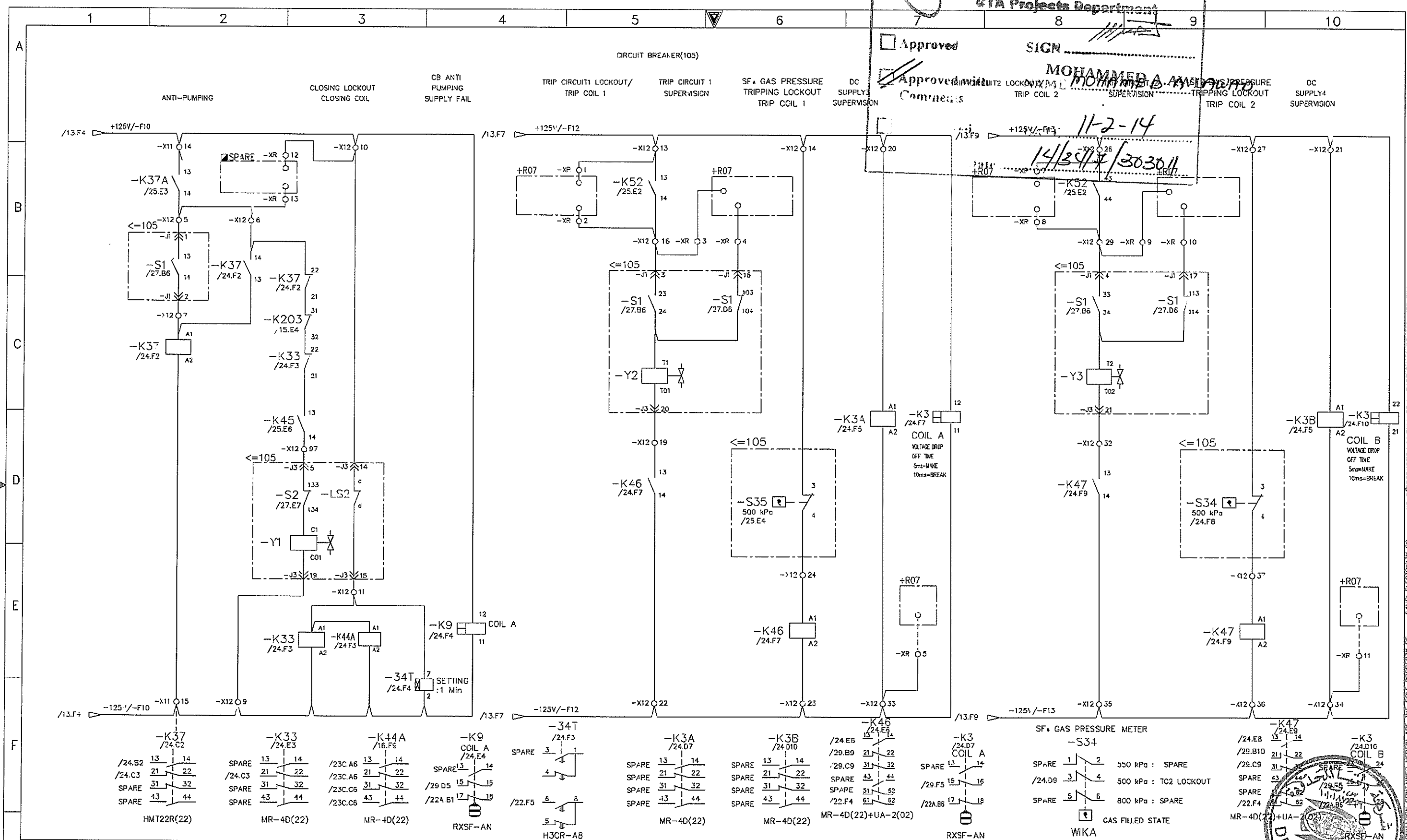
DATE: 11-2-14  
 14/347/302011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	<b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء			SHEET NO. 23 of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH CHECKED BY C.Y.HONG	SIGNALLING FOR INTERFACING SIGNAL LIST	CONTRACT NO. _____ INDEX P PLANT NO. 10CN1017 DRAWING NUMBER CD-367820			NEXT 24
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12 DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY	REV. NO. _____			REV. NO. 01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____	ALKHARJ SAUDI ARABIA				

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

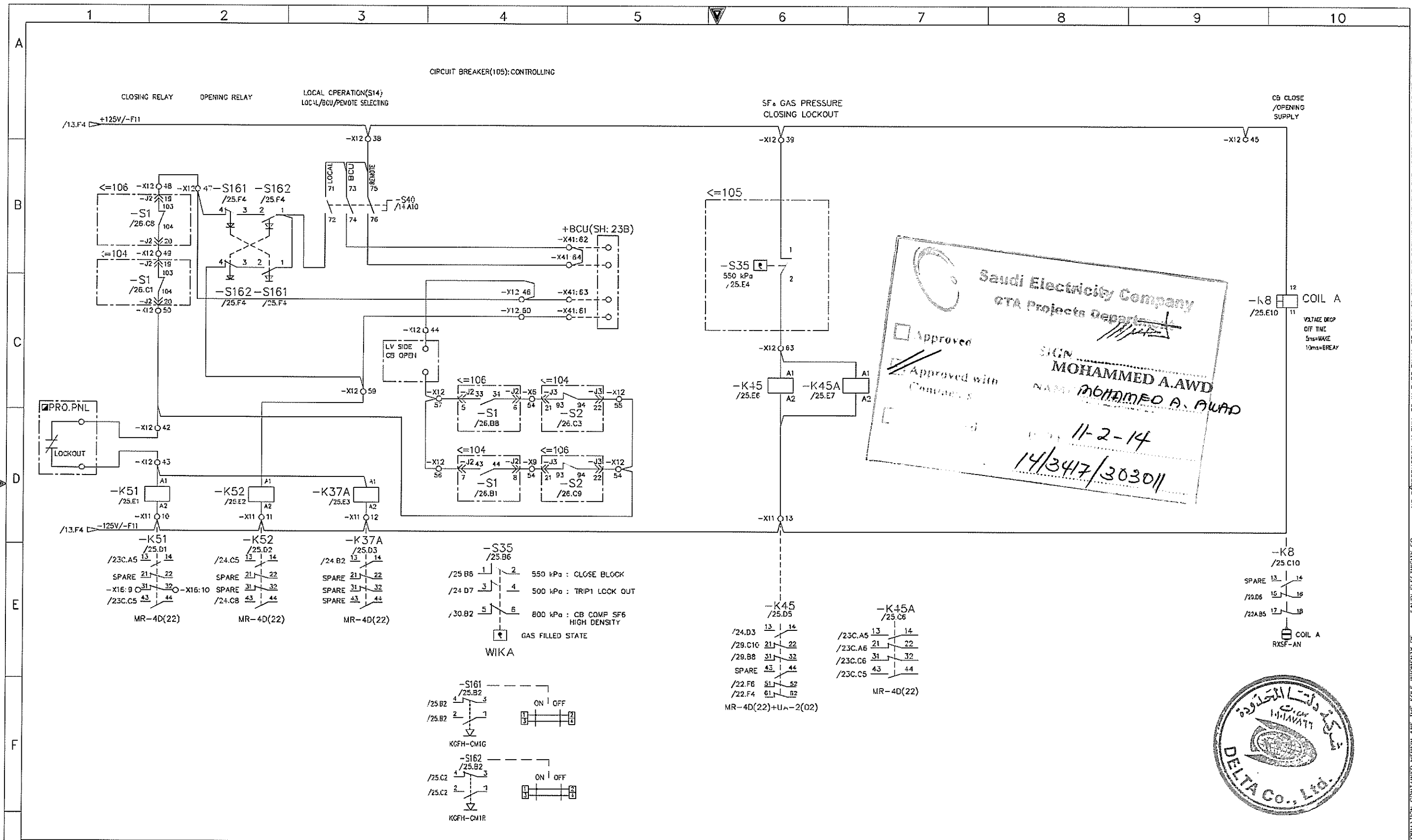
Approved SIGN \_\_\_\_\_  
 Approved with Comments MOHAMMED A. ALMURAYRI  
 11-2-14  
 14/24/17/3030/11



SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 CB ANTI-PUMPING/CLOSE/TRIP CIRCUIT  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid		SHEET NO. 24	OF 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.	
-----	P	10CN1017	CD-367820	01	

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
 GTA Projects Department

Approved  
 Approved with Comments

SIGN: **MOHAMMED A.AWD**  
 NAME: **MOHAMMED A. AWAD**

11-2-14  
 14/347/303011

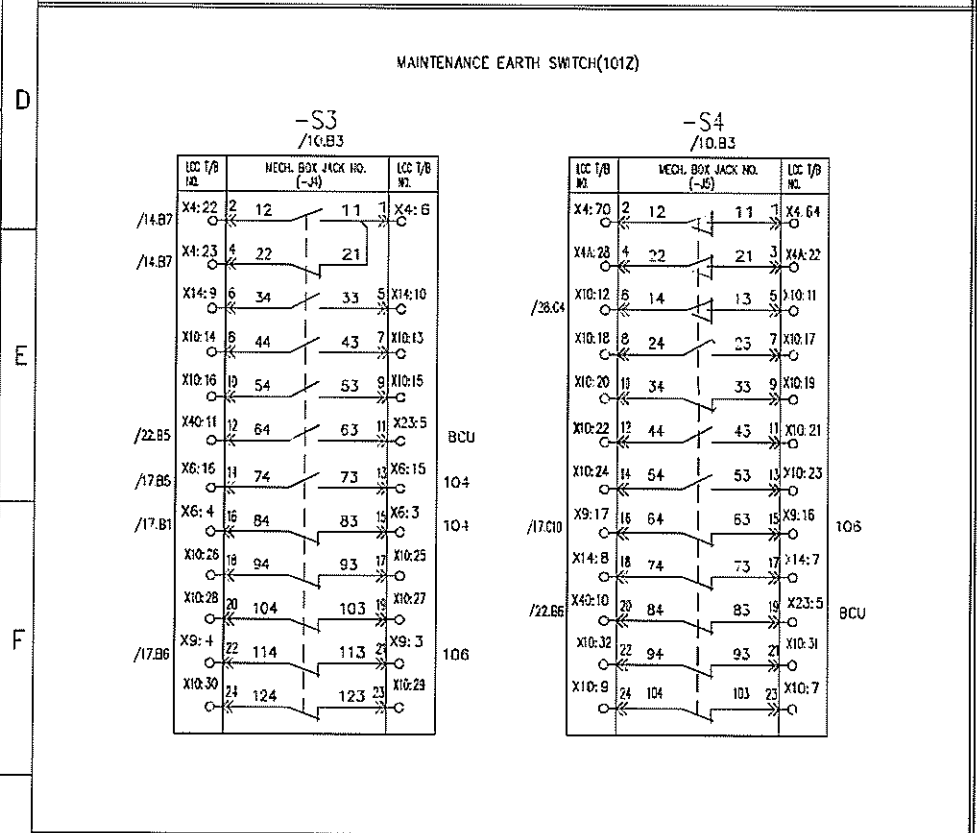
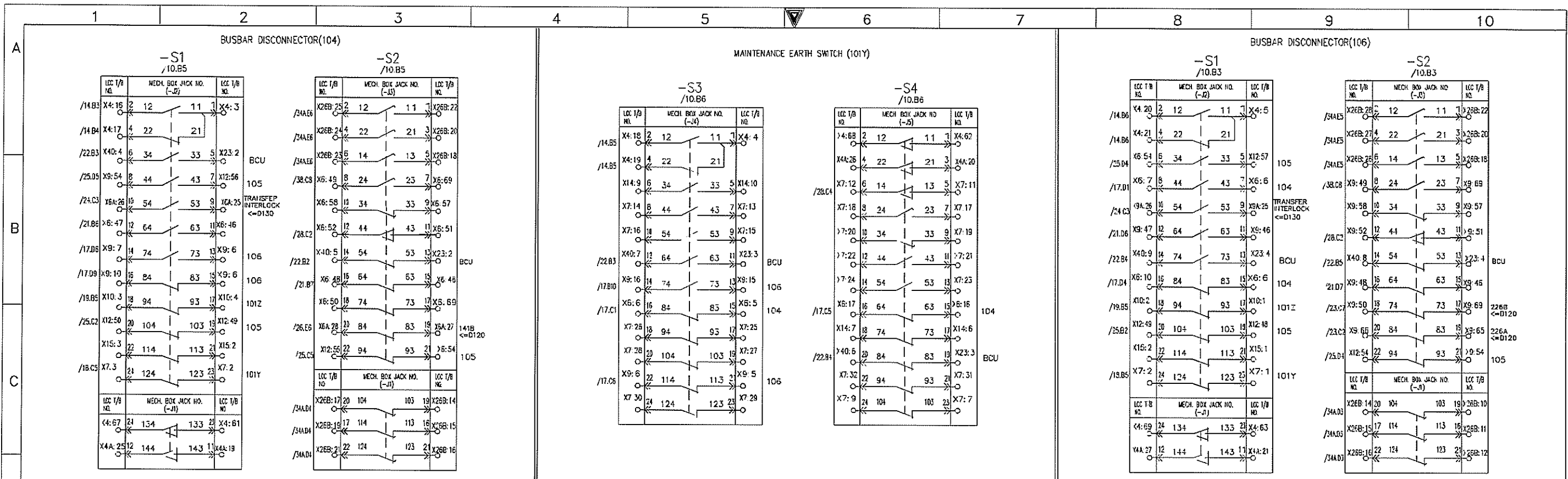


AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 CB CONTROLLING & PT SELECTION  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

<b>الشركة الوطنية لنقل الكهرباء</b> <b>نقل الكهرباء</b> <b>National Grid sa</b>				SHEET NO. 25 of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
-----	P	10CN1017	CD -367820	01

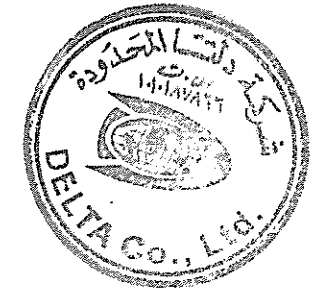
THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
ETA Projects Department

Approved  
 Approved with Comments  
 Disapproved

SIGNATURE: MOHAMMED A. AWD  
 NAME: MOHAMMED A. AWAO  
 DATE: 11-2-14  
14/34/7/303011

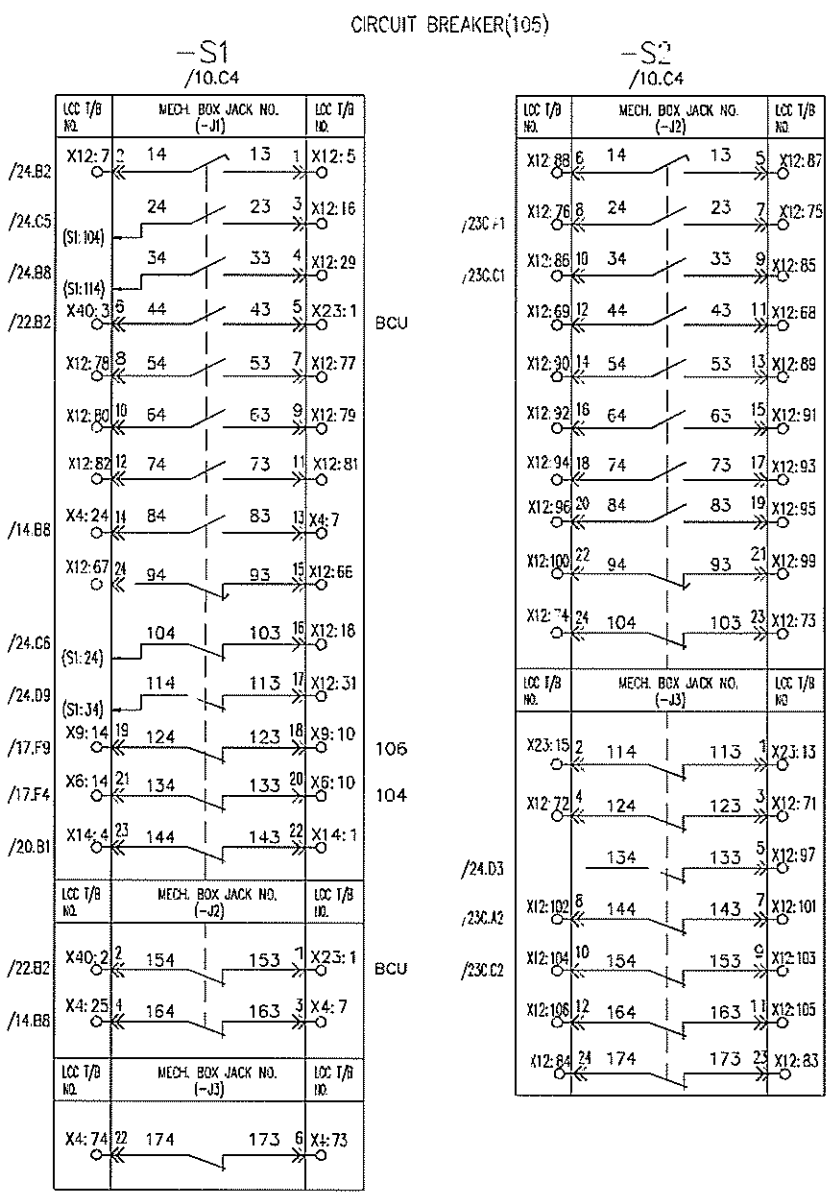
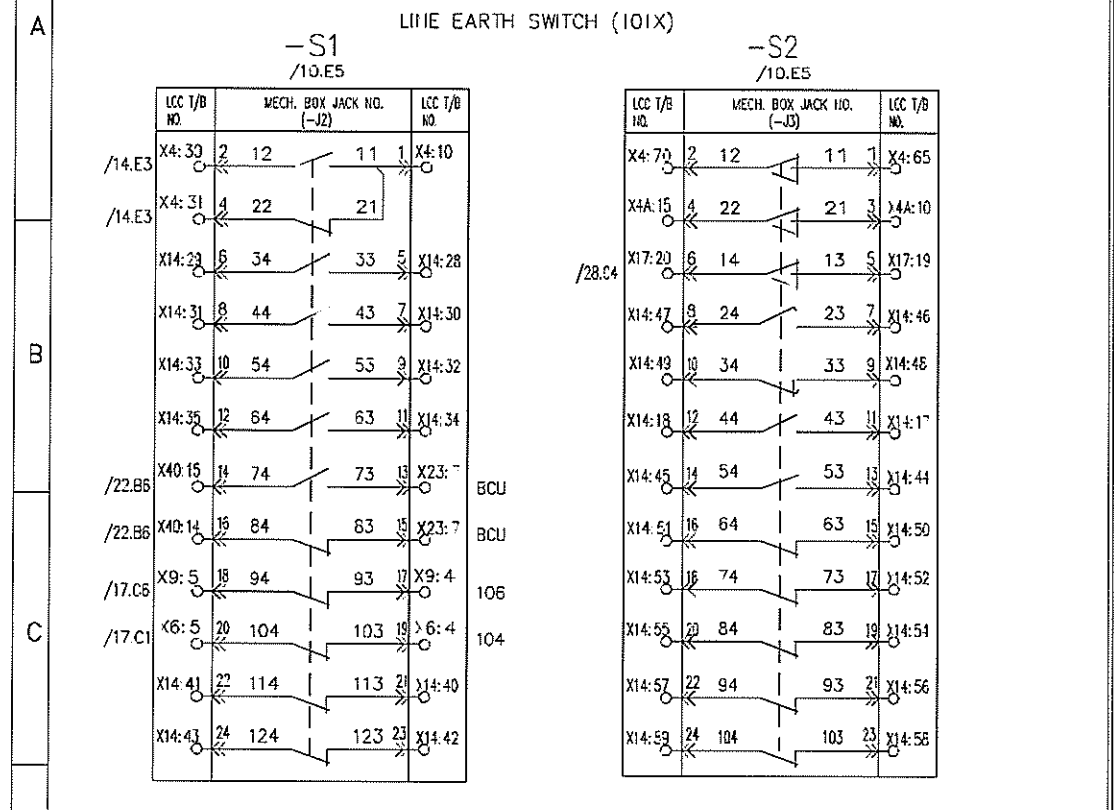


AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 AUXILIARY CONTACTS 1  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

نقل الكهرباء National Grid SA		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO. 26 of 38
		-----	P	10CN1017	CD -367820	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.	DATE	DESCRIPTION

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
**ETA Projects Department**

Approved  
 Approved with Comments  
 Disapproved

SIGN: **MOHAMMED A.AWD**  
 NAME: **MOHAMED A. AWAD**  
 DATE: **11-2-14**  
**14/3417/303011**

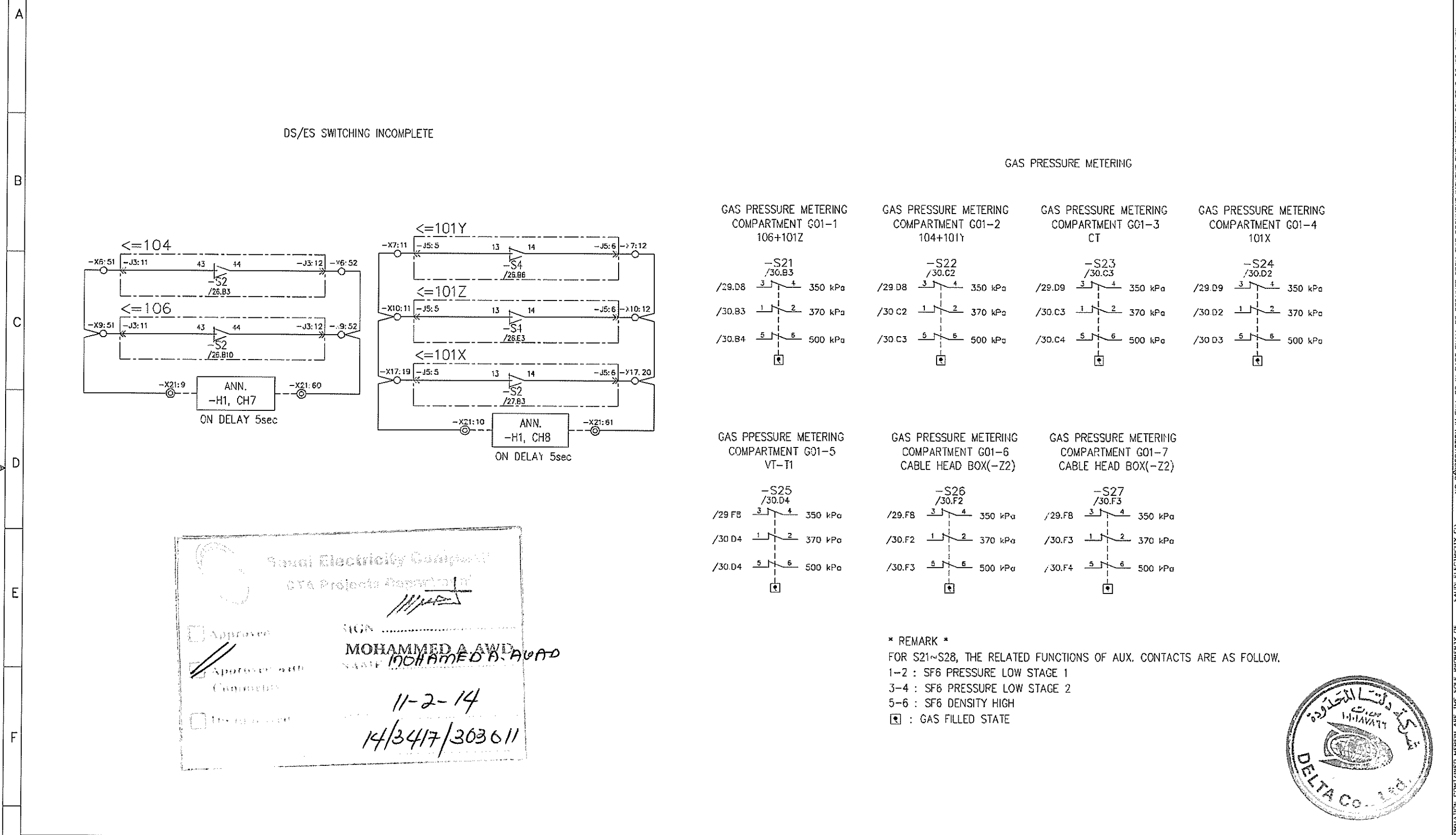


AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
**AUXILIARY CONTACTS 2**  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid SA		SHEET NO. 27 of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.		NEXT 28
-----	P	10CN1017	CD -367820	01		REV. NO.

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.



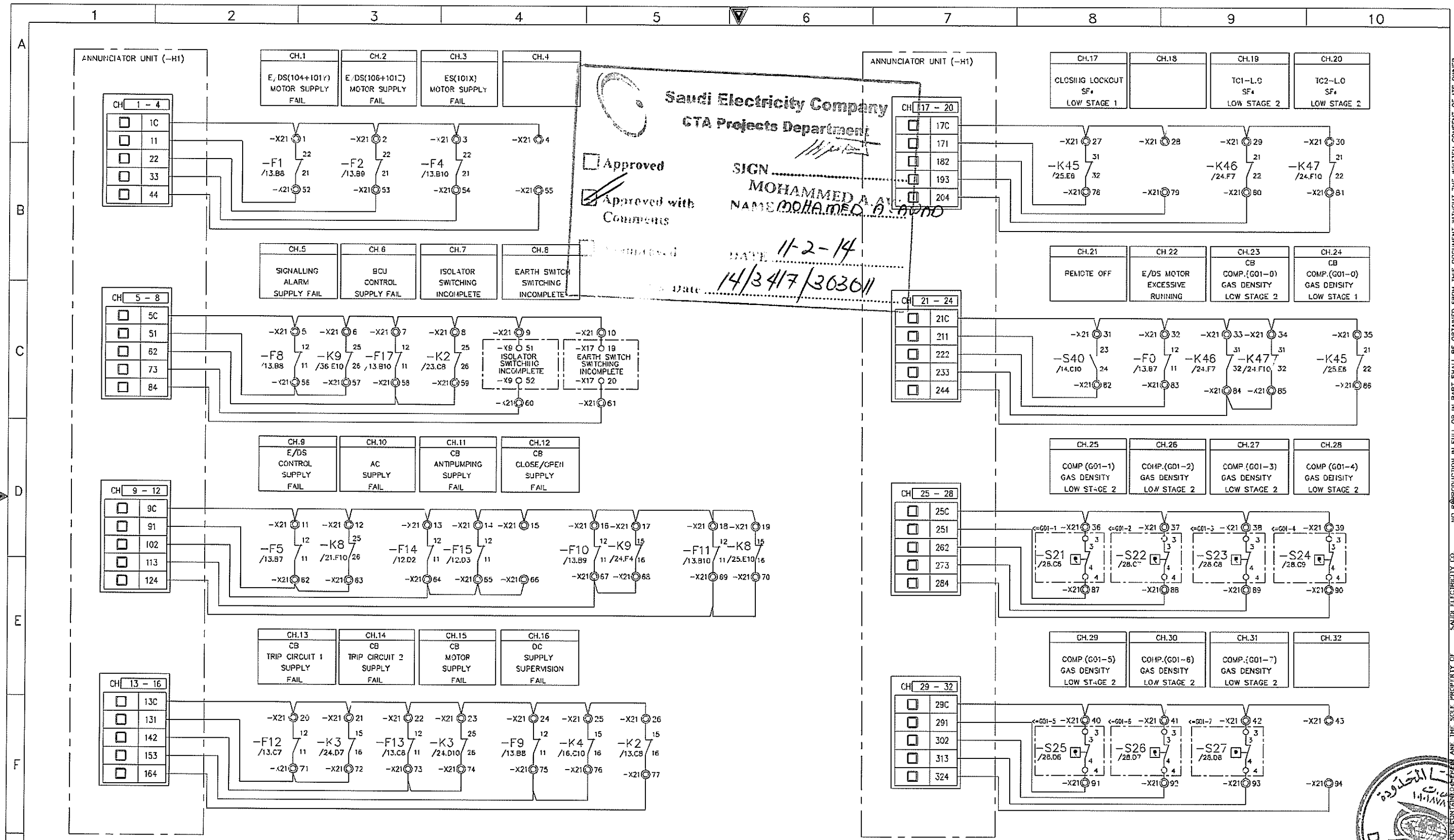
Saudi Electricity Company  
 CTA Projects Department  
 Approved: *[Signature]*  
 MOHAMMED A. AWAD  
 11-2-14  
 14/3417/303611

\* REMARK \*  
 FOR S21~S28, THE RELATED FUNCTIONS OF AUX. CONTACTS ARE AS FOLLOW.  
 1-2 : SF6 PRESSURE LOW STAGE 1  
 3-4 : SF6 PRESSURE LOW STAGE 2  
 5-6 : SF6 DENSITY HIGH  
 □ : GAS FILLED STATE



AS-BUILT			BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	الشركة الوطنية لنقل الكهرباء				SHEET NO. 28 of 38
DRAWN BY D.H.HAH CHECKED BY C.Y.HONG					DS/ES SWITCHING INCOMPLETE & GAS PRESSURE METERING	National Grid				NEXT 29
DATE STARTED 25.SEP.12 DATE COMPLETED _____					LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY	CONTRACT NO. _____	INDEX P	PLANT NO. 10CN1017	DRAWING NUMBER CD-367820	REV. NO. 01
OPRG. DEPT. _____ ENG. DEPT. _____					ALKHARJ SAUDI ARABIA					

NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO.



AS-BUILT		BY	DATE
01	01.JUL.13	FOR APPROVAL	
00	25.SEP.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

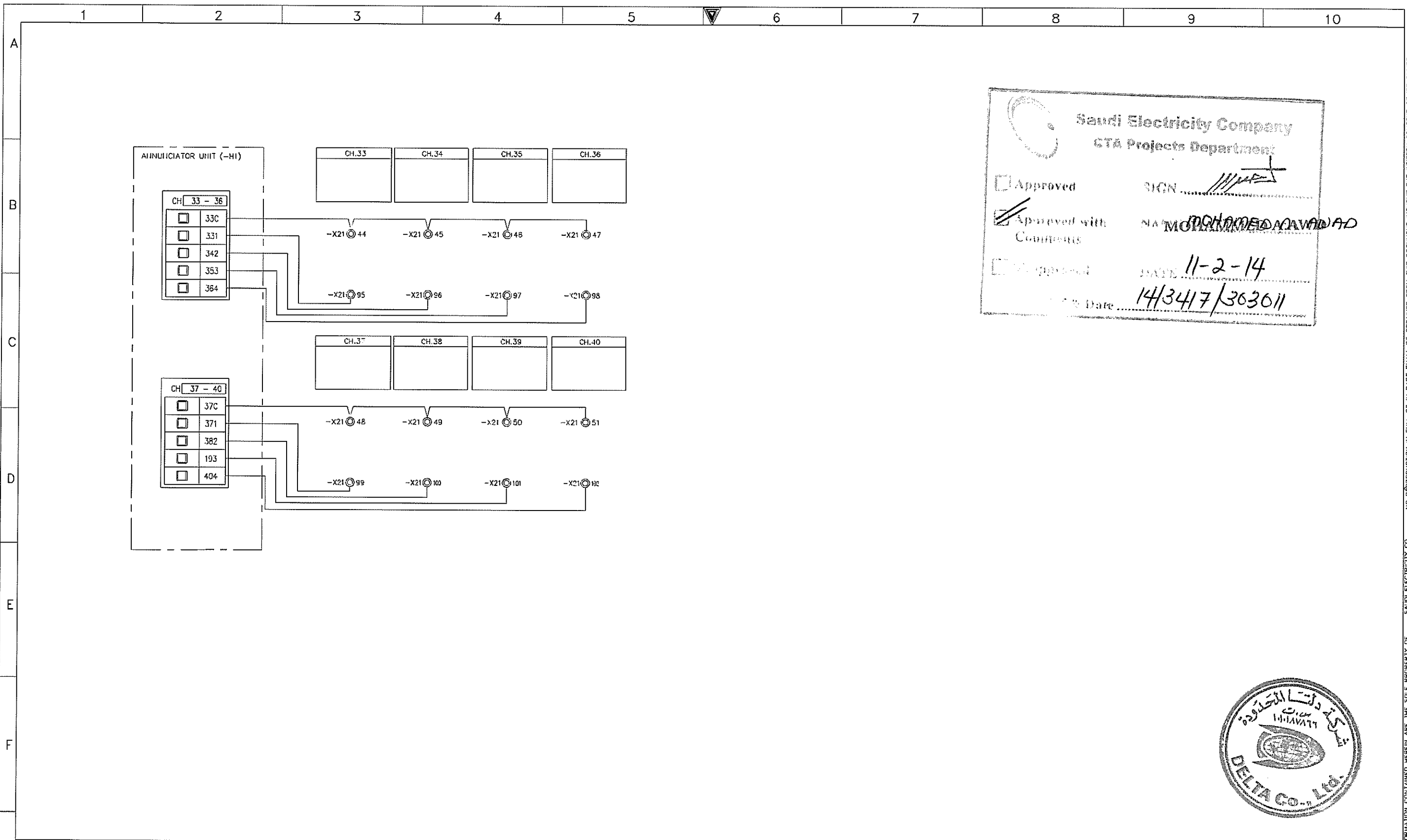
DRAWN BY	D.H.HAH	CHECKED BY	C.Y.HONG
DATE STARTED	25.SEP.12	DATE COMPLETED	----
OPRG. DEPT.	----	ENG. DEPT.	----

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 SIGNALLING : INPUT ANNUNCIATOR 1  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
-----	P	10CN1017	CD -367820
SHEET NO.	29A	REV. NO.	01



THIS DRAWING AND THE DATA CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



**Saudi Electricity Company**  
GTA Projects Department

Approved SIGN \_\_\_\_\_

Approved with Comments NAME MUHAMMAD AWAD AD

Disapproved DATE 11-2-14

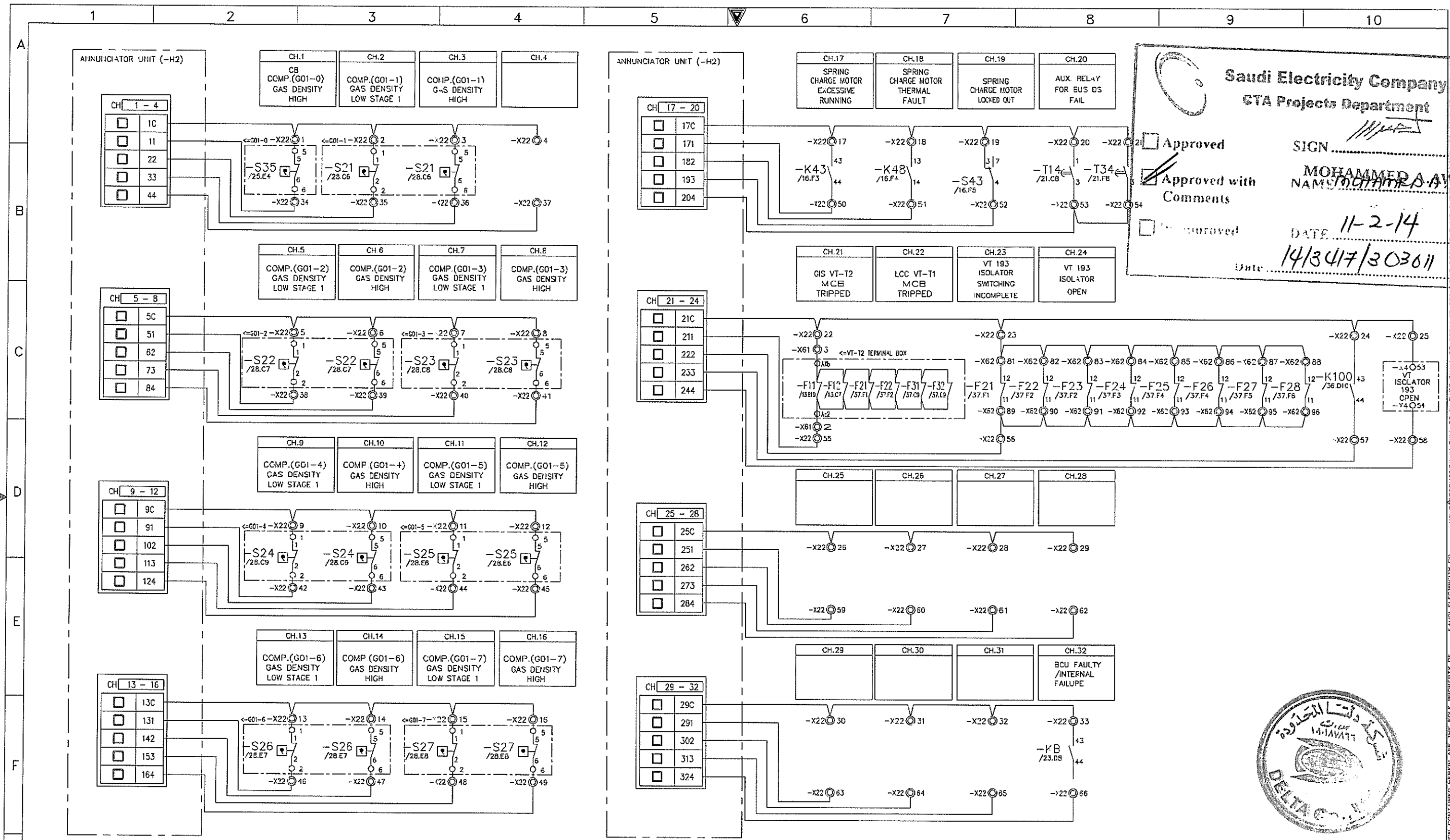
Project No. 14/3417/363011



AS-BUILT			BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>الشركة الوطنية لنقل الكهرباء</b>		<b>نقل الكهرباء</b> National Grid SA		SHEET NO. 29A of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u>	CHECKED BY <u>C.Y.HONG</u>	SIGNALLING : INPUT ANNUNCIATOR 1		<b>الشركة الوطنية لنقل الكهرباء</b>		<b>نقل الكهرباء</b> National Grid SA		NEXT 30
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u>	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO	DRAWING NUMBER	REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		-----	P	10CN1017	CD -367820	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.





**Saudi Electricity Company**  
**CTA Projects Department**

Approved SIGN: \_\_\_\_\_  
 Approved with Comments: **MOHAMMED A. ALKHARJ**  
 Approved: \_\_\_\_\_  
 DATE: **11-2-14**  
 Date: **14/3417/303611**



AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	
00	25.SEP.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY	D.H.HAH	CHECKED BY	C.Y.HONG
DATE STARTED	25.SEP.12	DATE COMPLETED	_____
OPRG. DEPT.	_____	ENG. DEPT.	_____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 SIGNALLING : INPUT ANNUNCIATOR 2  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO.	
		National Grid SA		50 of 38	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.	
_____	P.	10CN1017	CD -367820	01	

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF

1 2 3 4 5 6 7 8 9 10

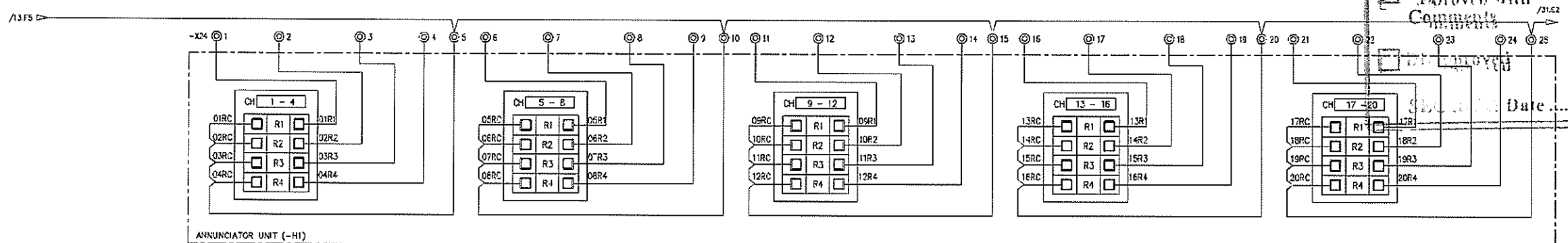
CH.1 E/S(10+10V) MOTOR SUPPLY FAL	CH.2 E/S(10+10V) MOTOR SUPPLY FAL	CH.3 E/S(10V) MOTOR SUPPLY FAL	CH.4	CH.5 DOVALLING ALARM SUPPLY FAL	CH.6 SCU CONTROL SUPPLY FAL	CH.7 ISOLATOR SWITCHING INCOMPLETE	CH.8 EARTH SWITCH SWITCHING INCOMPLETE	CH.9 E/S CONTROL SUPPLY FAL	CH.10 AC SUPPLY FAL	CH.11 CB AUTO/PHOTO SUPPLY FAL	CH.12 CB CLOSE/OPEN SUPPLY FAL	CH.13 CB TRIP CIRCUIT 1 SUPPLY FAL	CH.14 CB TRIP CIRCUIT 2 SUPPLY FAL	CH.15 CB MOTOR SUPPLY FAL	CH.16 DC SUPPLY SUPERVISION FAL	CH.17 CLOSING LOCKOUT SW. LOW STAGE 1	CH.18	CH.19 TC1-LO LOW STAGE 2	CH.20 TC2-LO LOW STAGE 2
--	--	---	------	--	--------------------------------------	---	---	-----------------------------------	------------------------------	--------------------------------------	--------------------------------------	--	--	---------------------------------	--	--	-------	--------------------------------	--------------------------------

**Saudi Electricity Company**  
**ETA Projects Department**

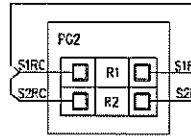
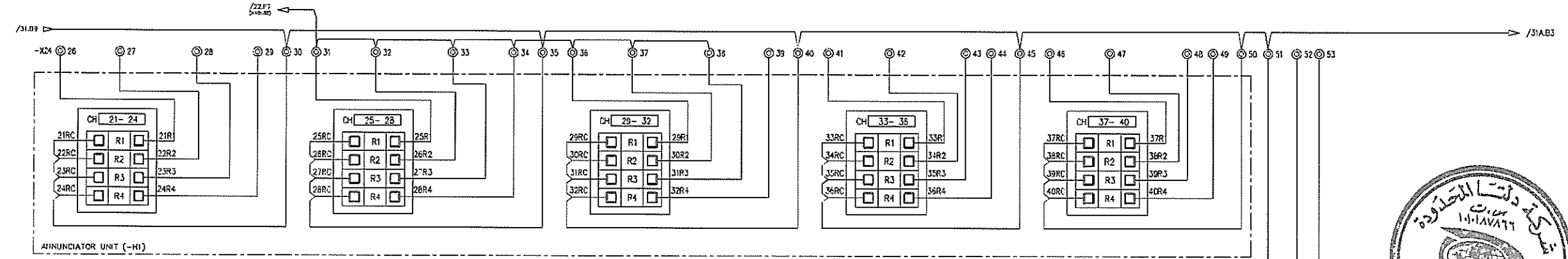
Approved  Approved with Comments

SIGN: MOHAMMED A. AWD  
NAME: MOHAMMED A. AWD  
DATE: 11-2-14  
14/3417/303011

Date: \_\_\_\_\_



CH.21 REMOTE OFF	CH.22 E/S MOTOR EXCESSIVE RUNNING	CH.23 CB COMP (001-0) GAS DENSITY LOW STAGE 2	CH.24 CB COMP (001-0) GAS DENSITY LOW STAGE 1	CH.25 COMP (001-1) GAS DENSITY LOW STAGE 2	CH.26 COMP (001-2) GAS DENSITY LOW STAGE 2	CH.27 COMP (001-3) GAS DENSITY LOW STAGE 2	CH.28 COMP (001-4) GAS DENSITY LOW STAGE 2	CH.29 COMP (001-5) GAS DENSITY LOW STAGE 2	CH.30 COMP (001-6) GAS DENSITY LOW STAGE 2	CH.31 COMP (001-7) GAS DENSITY LOW STAGE 2	CH.32	CH.33	CH.34	CH.35	CH.36	CH.37	CH.38	CH.39	CH.40 MOTOR SUPPLY 1 FAILURE ALARM	CH.41 MOTOR SUPPLY 2 FAILURE ALARM
---------------------	--	--	--	---	---	---	---	---	---	---	-------	-------	-------	-------	-------	-------	-------	-------	--	--



AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH CHECKED BY C.Y.HONG
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
SIGNALLING : OUTPUT ANNUNCIATOR 1  
LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid SA		SHEET NO. 31 of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	NEXT 31A
-----	P	10CN1017	CD -367820	REV. NO. 01

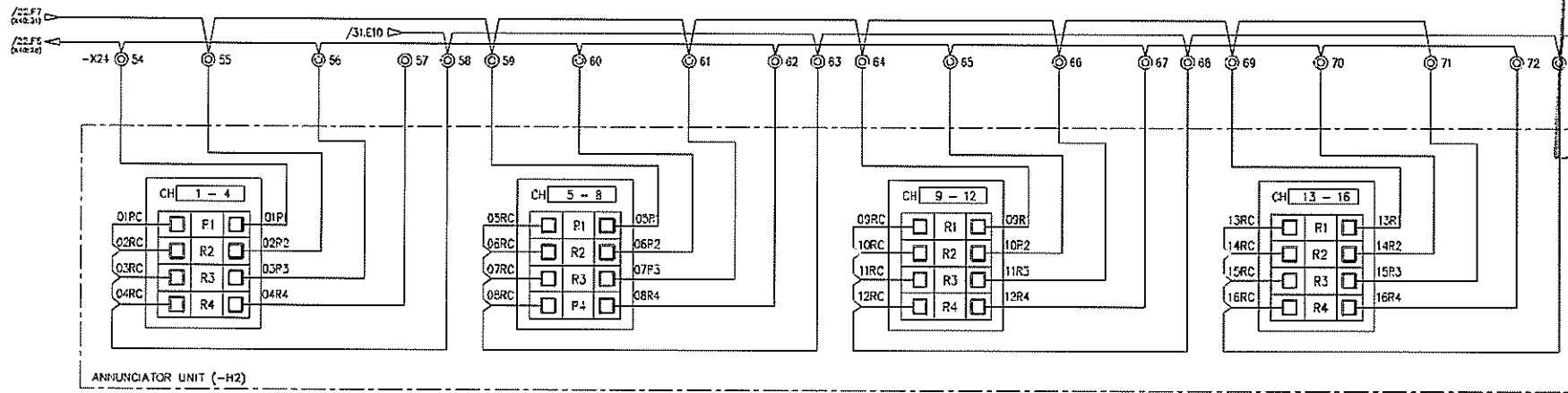
NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF

CH.1 COMP.(007-0) GAS DENSITY HIGH	CH.2 COMP.(007-1) GAS DENSITY LOW STAGE 1	CH.3 COMP.(007-1) GAS DENSITY HIGH	CH.4	CH.5 COMP.(007-2) GAS DENSITY LOW STAGE 1	CH.6 COMP.(007-2) GAS DENSITY HIGH	CH.7 COMP.(007-3) GAS DENSITY LOW STAGE 1	CH.8 COMP.(007-3) GAS DENSITY HIGH	CH.9 COMP.(007-4) GAS DENSITY LOW STAGE 1	CH.10 COMP.(007-4) GAS DENSITY HIGH	CH.11 COMP.(007-5) GAS DENSITY LOW STAGE 1	CH.12 COMP.(007-5) GAS DENSITY HIGH	CH.13 COMP.(007-6) GAS DENSITY LOW STAGE 1	CH.14 COMP.(007-6) GAS DENSITY HIGH	CH.15 COMP.(007-7) GAS DENSITY LOW STAGE 1	CH.16 COMP.(007-7) GAS DENSITY HIGH
---	--	---	------	--	---	--	---	--	--	---	--	---	--	---	--

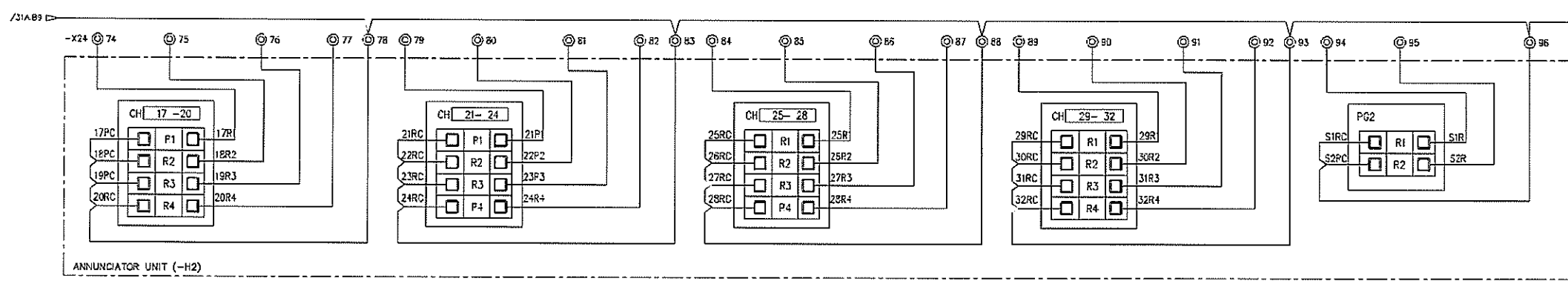
**Saudi Electricity Company**  
GTA Projects Department

Approved  
 Approved with Comments  
 Not Approved

SIGN: *[Signature]*  
NAME: MOHAMMED A. AWAD  
DATE: 11-2-14  
14/3417/303011



CH.17 SPRING CHARGE MOTOR EXCESSIVE RUNNING	CH.18 SPRING CHARGE MOTOR THERMAL FAULT	CH.19 SPRING CHARGE MOTOR LOADED OUT	CH.20 AUX. RELAY FOR BUS DS FAL.	CH.21 GS T-T2 AND TRIPED	CH.22 LCC VT-T2 MID TRIPED	CH.23 VT 103 ISOLATOR SWITCHING INCOMPLETE	CH.24 VT 103 ISOLATOR OPEN	CH.25	CH.26	CH.27	CH.28	CH.29	CH.30	CH.31	CH.32 BOJ FAILURE ANOMAL FAILURE	ANOMAL SUPPLY 1 FAILURE ALARM	ANOMAL SUPPLY 2 FAILURE ALARM
---	---	---	---	-----------------------------------	-------------------------------------	--	-------------------------------------	-------	-------	-------	-------	-------	-------	-------	---	----------------------------------	----------------------------------



AS-BUILT	BY	DATE	DRAWN BY	CHECKED BY
01	01.JUL.13	FOR APPROVAL	D.H.HAH	C.Y.HONG
00	25.SEP.12	FOR APPROVAL	DATE STARTED	25.SEP.12
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
SIGNALLING : OUTPUT ANNUNCIATOR 2  
LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
ALKHARJ SAUDI ARABIA

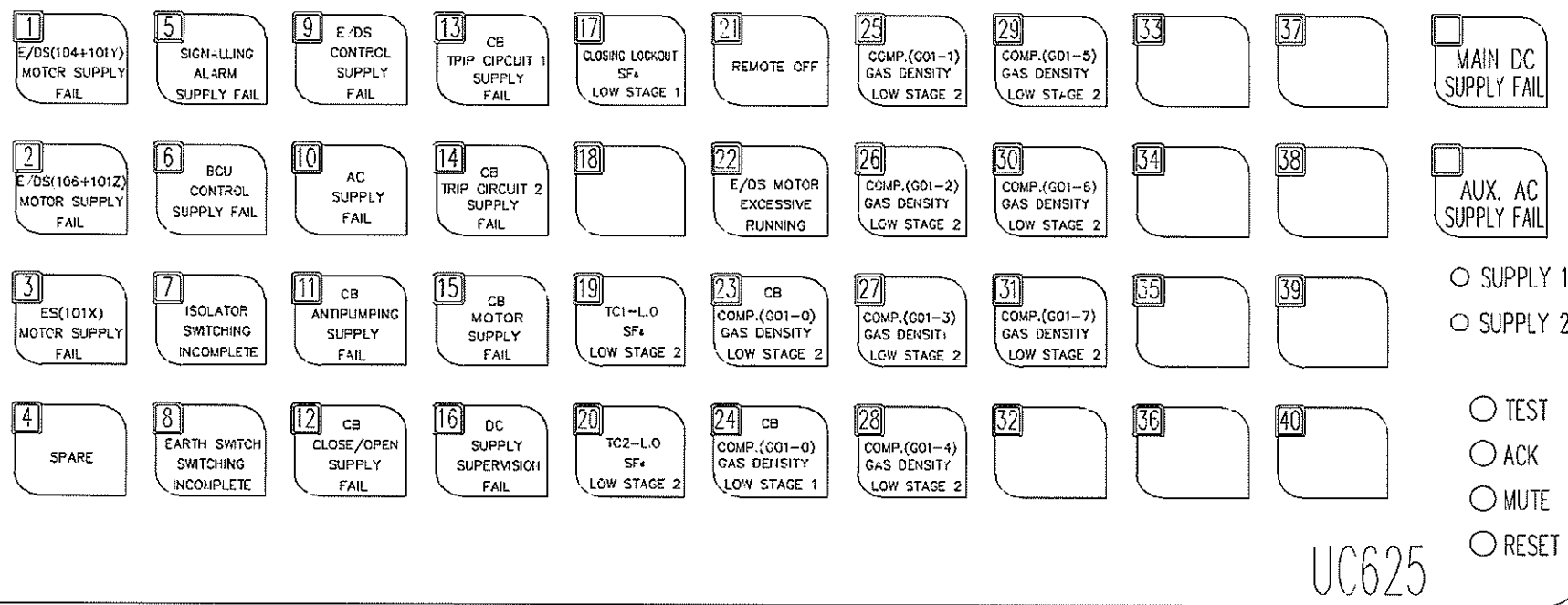
National Grid		SHEET NO.	31A of 38
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
---	P	10CN1017	CD -367820
REV. NO.	01	NEXT	32

NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF

1 2 3 4 5 6 7 8 9 10

-H1

**RTK**



CHANNEL	TIME DELAY	INPUT CONTACT TYPE
1	5mS	NORMAL OPEN
2	5mS	NORMAL OPEN
3	5mS	NORMAL OPEN
4	5mS	NORMAL OPEN
5	5mS	NORMAL OPEN
6	5mS	NORMAL OPEN
7	5S	NORMAL OPEN
8	5S	NORMAL OPEN
9	5mS	NORMAL OPEN
10	5mS	NORMAL OPEN
11	5mS	NORMAL OPEN
12	5mS	NORMAL OPEN
13	5mS	NORMAL OPEN
14	5mS	NORMAL OPEN
15	5mS	NORMAL OPEN
16	5mS	NORMAL OPEN
17	5S	NORMAL OPEN
18	5mS	NORMAL OPEN
19	5S	NORMAL OPEN
20	5S	NORMAL OPEN

CHANNEL	TIME DELAY	INPUT CONTACT TYPE
21	5mS	NORMAL CLOSE
22	5mS	NORMAL OPEN
23	5S	NORMAL OPEN
24	5S	NORMAL OPEN
25	5S	NORMAL CLOSE
26	5S	NORMAL CLOSE
27	5S	NORMAL CLOSE
28	5S	NORMAL CLOSE
29	5S	NORMAL CLOSE
30	5S	NORMAL CLOSE
31	5S	NORMAL CLOSE
32	5mS	NORMAL OPEN
33	5mS	NORMAL OPEN
34	5mS	NORMAL OPEN
35	5mS	NORMAL OPEN
36	5mS	NORMAL OPEN
37	5mS	NORMAL OPEN
38	5mS	NORMAL OPEN
39	5mS	NORMAL OPEN
40	5mS	NORMAL OPEN

- 1) MAKER : RTK INSTRUMENTS
- 2) MODEL : UC625-40YW-HH-024-R-M3
- 3) SUPPLY VOLTAGE
  - MAIN SUPPLY : DC 125V
  - AUX. SUPPLY : AC 230V
- 4) LED COLOR : YELLOW
- 5) OUTPUT CONTACT TYPE : NOMAL OPEN

**Saudi Electricity Company**  
GTA Projects Department

Approved  
 Approved with Comments  
 Not Approved

SIGN: MOHAMMED A.AWD  
 NAME: MOHAMMED A. AAWD  
 DATE: 11-2-14  
14/3417/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>الشركة الوطنية لنقل الكهرباء</b> <b>National Grid SA</b>		SHEET NO.
---	---	---	---	DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>		SIGNALLING : VIEW/FRONT ANNUNCIATOR 1		32 of 38
01	01.JUL.13	FOR APPROVAL	---	DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____		LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		NEXT 33
00	25.SEP.12	FOR APPROVAL	---	OPRG. DEPT. _____ ENG. DEPT. _____		ALKHARJ SAUDI ARABIA		REV. NO.
REV. NO.	DATE	DESCRIPTION	---	---		CONTRACT NO.	INDEX	PLANT NO.
---	---	---	---	---		---	P	10CN1017
---	---	---	---	---		---	---	CD -367820
---	---	---	---	---		---	---	01

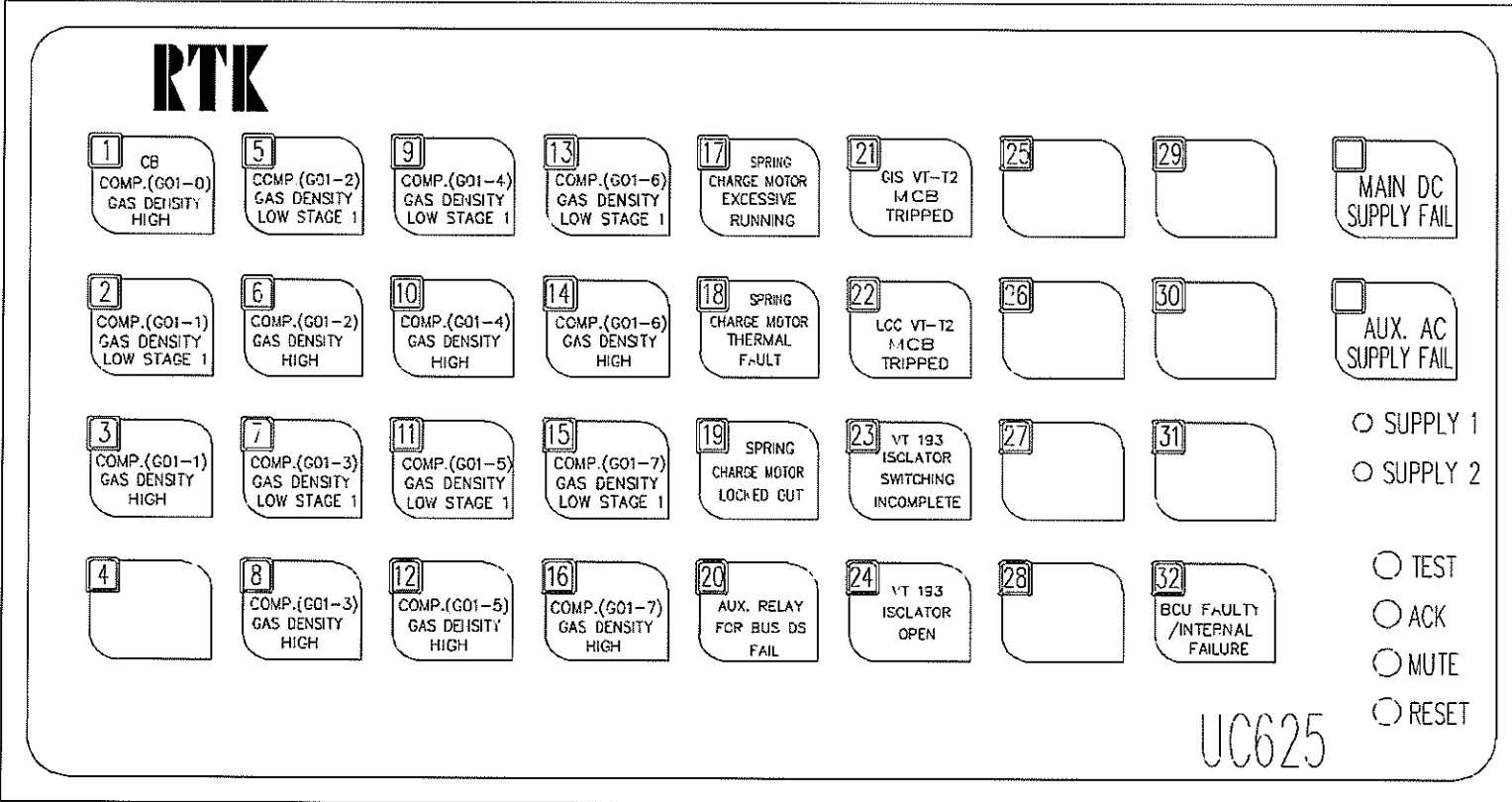
SEC-D (2004/10)

EDMS VECTOR SECE00

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1 2 3 4 5 6 7 8 9 10

-H2



CHANNEL	TIME DELAY	INPUT CONTACT TYPE
1	5S	NORMAL CLOSE
2	5S	NORMAL CLOSE
3	5S	NORMAL CLOSE
4	5mS	NORMAL OPEN
5	5S	NORMAL CLOSE
6	5S	NORMAL CLOSE
7	5S	NORMAL CLOSE
8	5S	NORMAL CLOSE
9	5S	NORMAL CLOSE
10	5S	NORMAL CLOSE
11	5S	NORMAL CLOSE
12	5S	NORMAL CLOSE
13	5S	NORMAL CLOSE
14	5S	NORMAL CLOSE
15	5S	NORMAL CLOSE
16	5S	NORMAL CLOSE

CHANNEL	TIME DELAY	INPUT CONTACT TYPE
17	5mS	NORMAL OPEN
18	5mS	NORMAL OPEN
19	5mS	NORMAL OPEN
20	5mS	NORMAL OPEN
21	5mS	NORMAL OPEN
22	5mS	NORMAL OPEN
23	5S	NORMAL OPEN
24	5mS	NORMAL OPEN
25	5mS	NORMAL OPEN
26	5mS	NORMAL OPEN
27	5mS	NORMAL OPEN
28	5mS	NORMAL OPEN
29	5mS	NORMAL OPEN
30	5mS	NORMAL OPEN
31	5mS	NORMAL OPEN
32	5mS	NORMAL OPEN

- 1) MAKER : RTK INSTRUMENTS
- 2) MODEL : UC625-32YW-HH-024-R-M3
- 3) SUPPLY VOLTAGE
  - MAIN SUPPLY : DC 125V
  - AUX. SUPPLY : AC 230V
- 4) LED COLOR : YELLOW
- 5) OUTPUT CONTACT TYPE : NOMAL OPEN

Saudi Electricity Company  
GTA Projects Department

Approved

Captured with [unclear]

DATE 11-2-14

14/3417/383011



REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.
01	01.JUL.13	FOR APPROVAL		
00	25.SEP.12	FOR APPROVAL		

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716

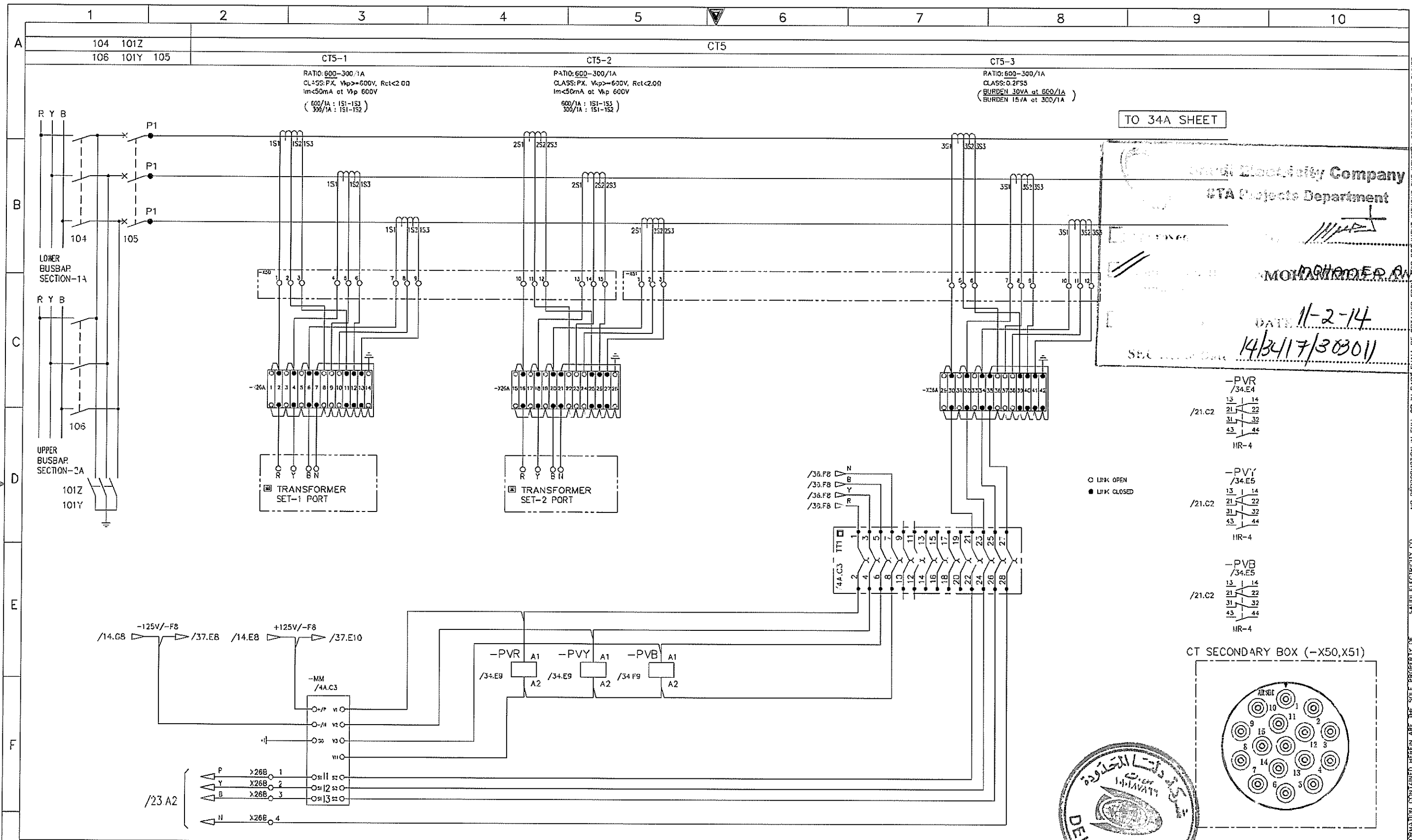
SIGNALLING : VIEW/FRONT ANNUNCIATOR 2

LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY

ALKHARJ SAUDI ARABIA

National Grid sa		SHEET NO. 33 of 38	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
-----	P	10CN1017	CD -367820
			REV. NO. 01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

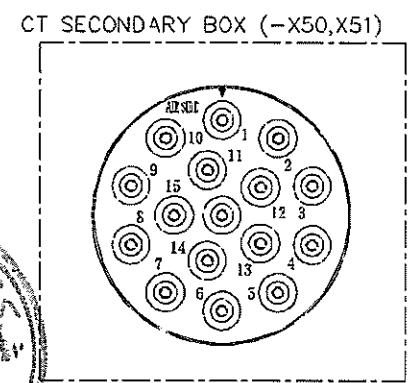
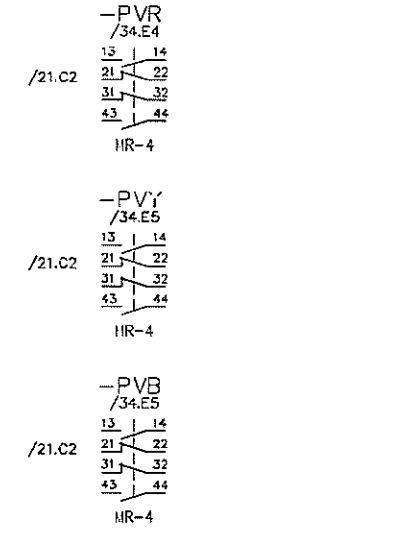


TO 34A SHEET

**Saudi Electricity Company**  
**ETA Projects Department**

MOHAMMED A. ALBOUF

DATE 11-2-14  
 14/3417/303011

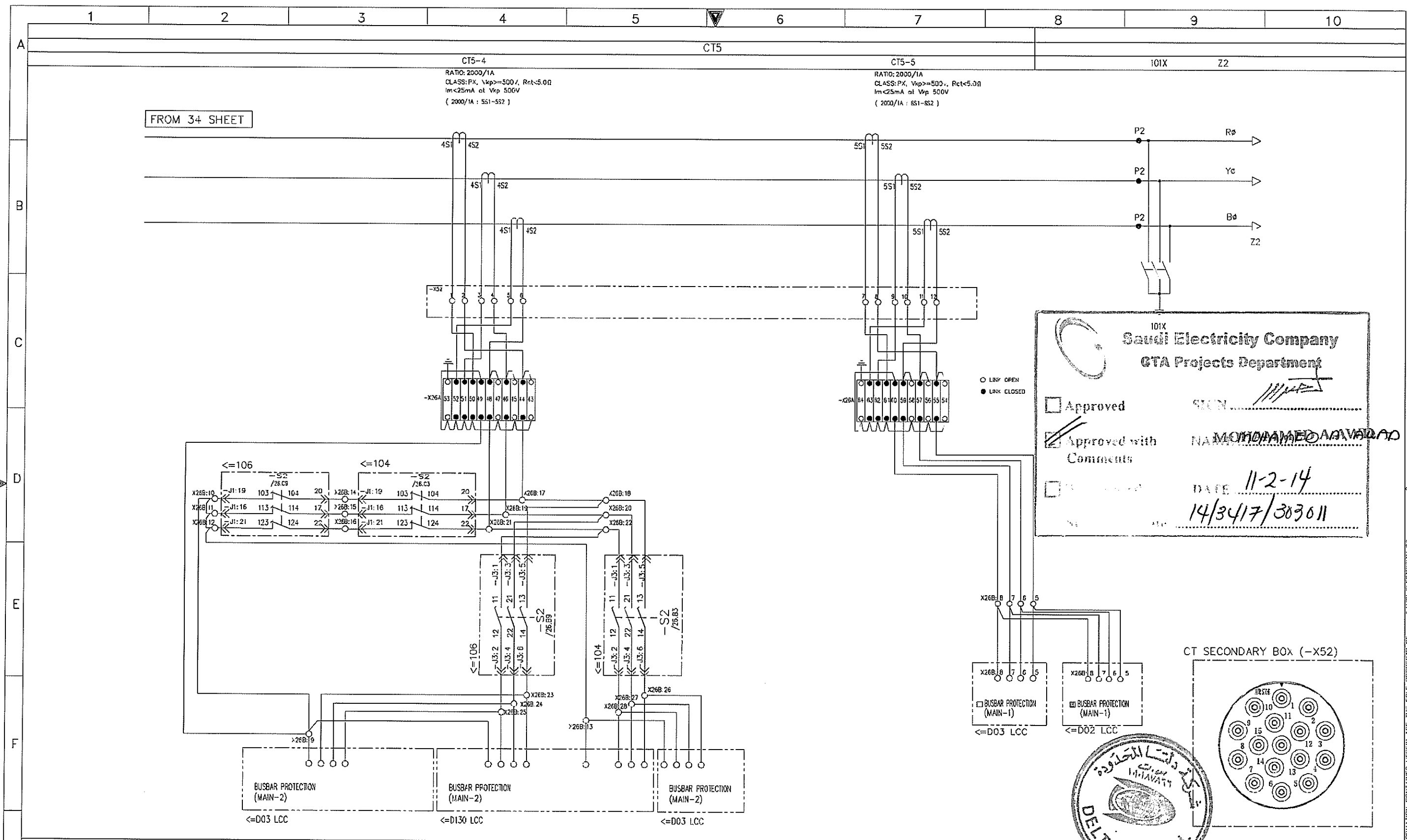


AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH
00	25.SEP.12	FOR APPROVAL	CHECKED BY C.Y.HONG
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 SHORT CIRCUIT AND DISCONNECTING CT'S (CT5) & CT SECONDARY BOX TERMINAL/LABELLING  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

<b>الشركة الوطنية لنقل الكهرباء</b> <b>نقل الكهرباء</b> <b>National Grid SA</b>		SHEET NO. 34 of 38
CONTRACT NO. _____	INDEX P	PLANT NO. 10CN1017
DRAWING NUMBER CD-367820	REV. NO. 01	

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF

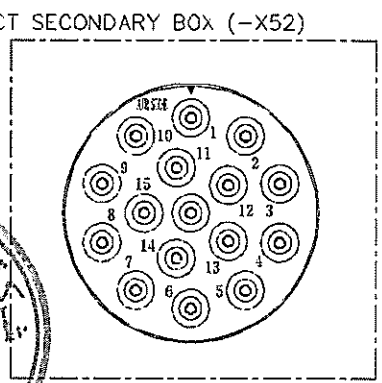


FROM 34 SHEET

101X  
**Saudi Electricity Company**  
 GTA Projects Department

Approved  
 Approved with Comments  
 Not Approved

SIGN: *[Signature]*  
 NAME: MOHAMMED ALWAZAN  
 DATE: 11-2-14  
14/3417/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>نقل الكهرباء</b> <b>National Grid SA</b>		SHEET NO. 34 of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u>	CHECKED BY <u>C.Y.HONG</u>	SHORT CIRCUIT AND DISCONNECTING CT'S(CT5) & CT SECONDARY BOX TERMINAL/LABELLING		CONTRACT NO.	NEXT 35
00	25.SEP.12	FOR APPROVAL	GATE STARTED <u>25.SEP.12</u>	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		INDEX	REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRC. DEPT. _____	ENG. DEPT. _____	ALKHARJ	SAUDI ARABIA	P	10CN1017
						CD -367820	01	01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO PRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

1 2 3 4 5 6 7 8 9 10

A

C

D

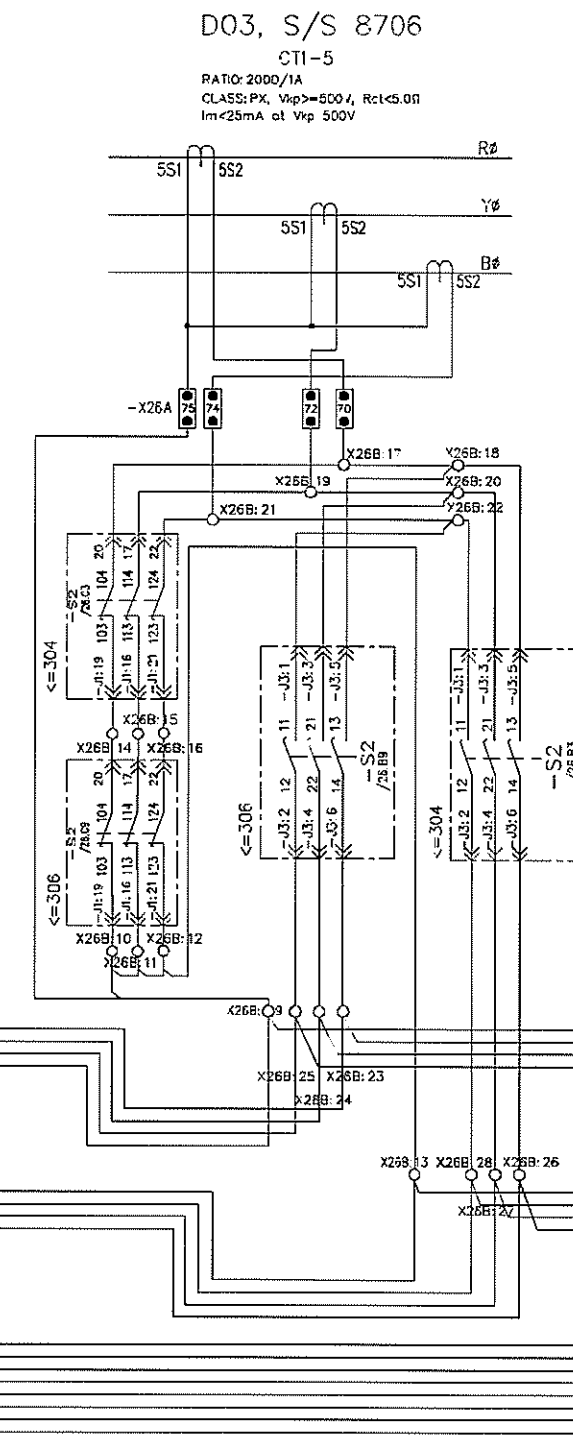
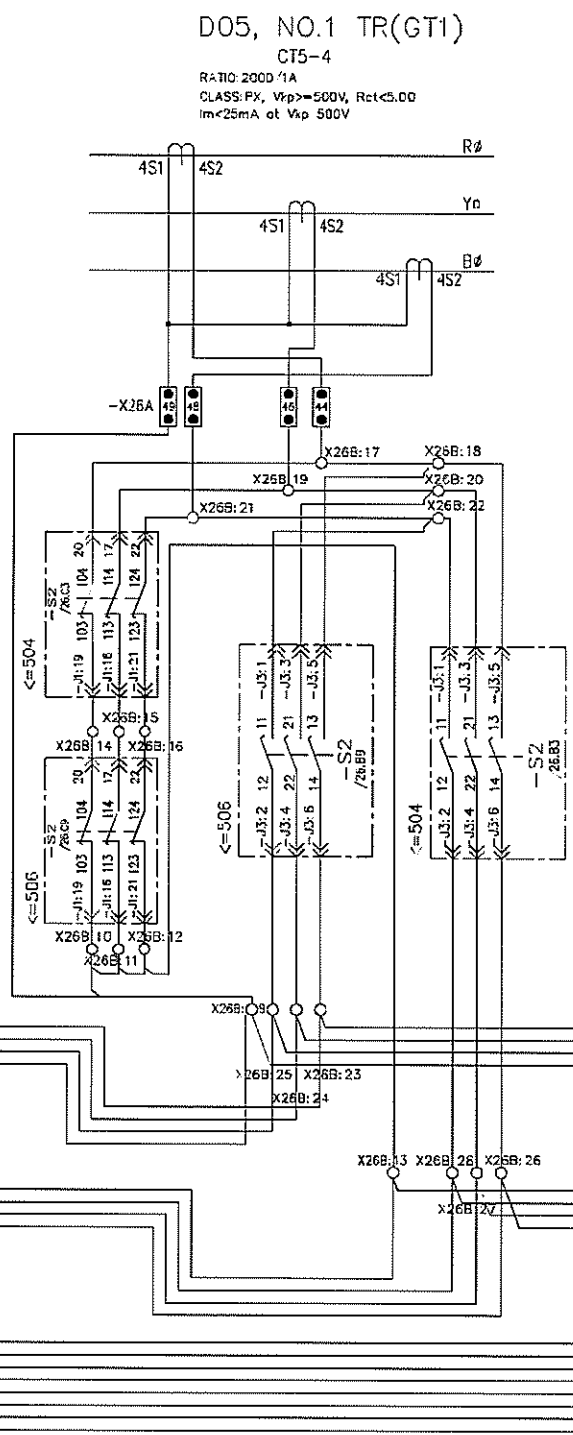
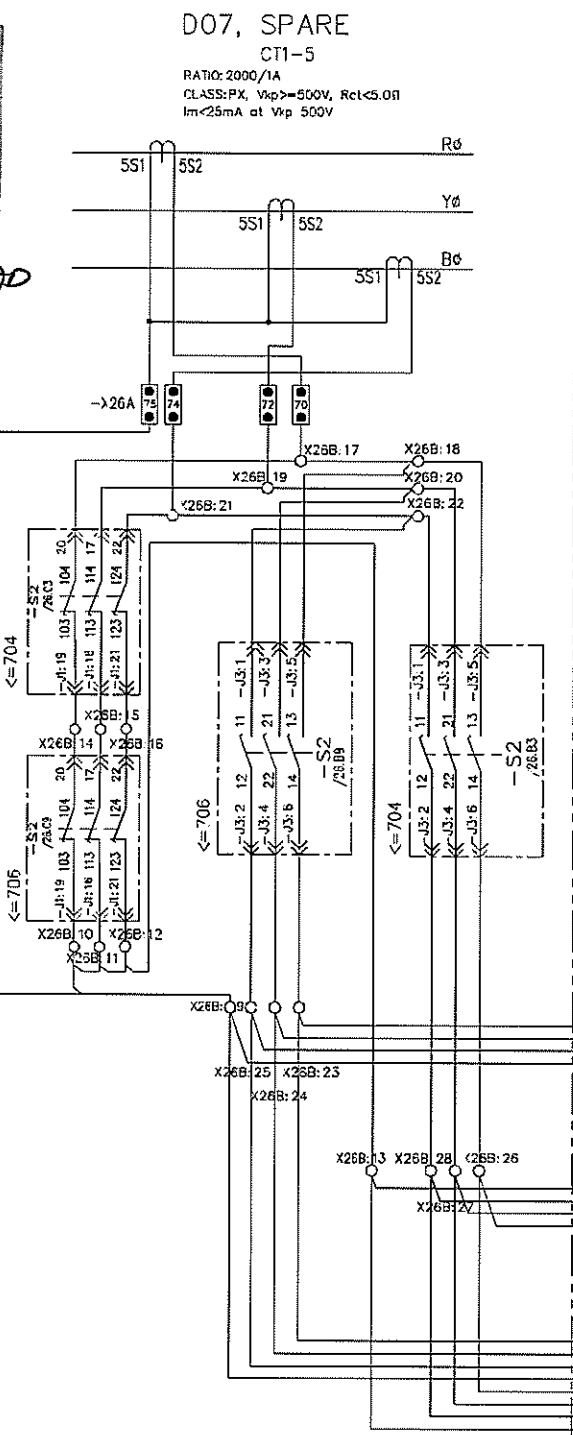
E

F

**Saudi Electricity Company**  
**CTA Projects Department**

Approved \_\_\_\_\_  
 Approved with \_\_\_\_\_  
 Approved \_\_\_\_\_

SIGN: \_\_\_\_\_  
 NAME: **MOHAMED A. AWAD**  
**MOHAMMED A.AWD**  
 DATE: **11-2-14**  
**14/3417/303011**



TO 35A SHEET



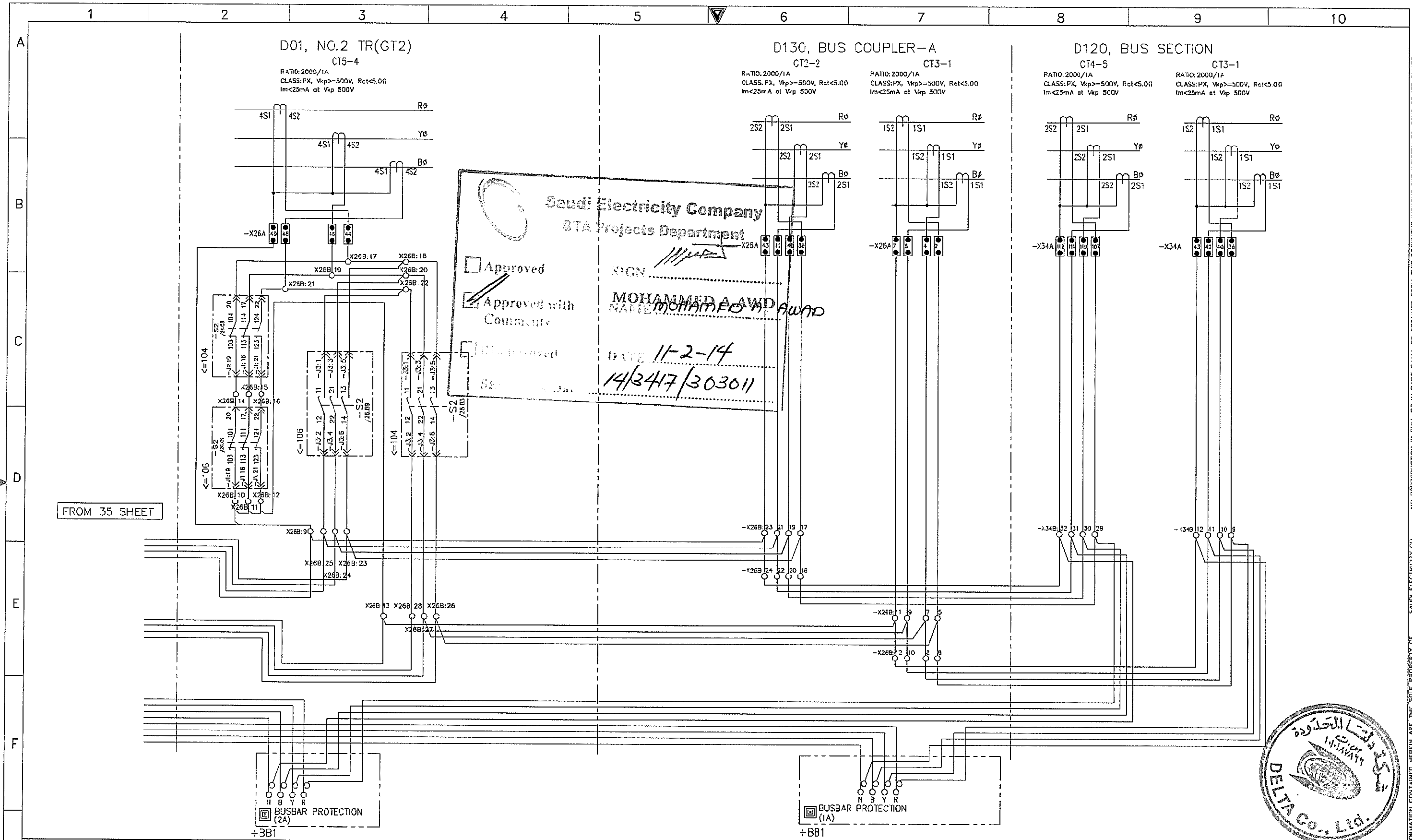
AS-BUILT		BY _____	DATE _____
01	01.JUL.13	FOR APPROVAL	DRAWN BY <u>D.H.HAH</u> CHECKED BY <u>C.Y.HONG</u>
00	25.SEP.12	FOR APPROVAL	DATE STARTED <u>25.SEP.12</u> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716  
 CT SWITCHING & CT BUS WIRE ARRANGEMENT  
 LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY  
 ALKHARJ SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 35A
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
-----	P	10CN1017	CD -367820	01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.





**Saudi Electricity Company**  
STA Projects Department

Approved  
 Approved with Comments  
 Disapproved

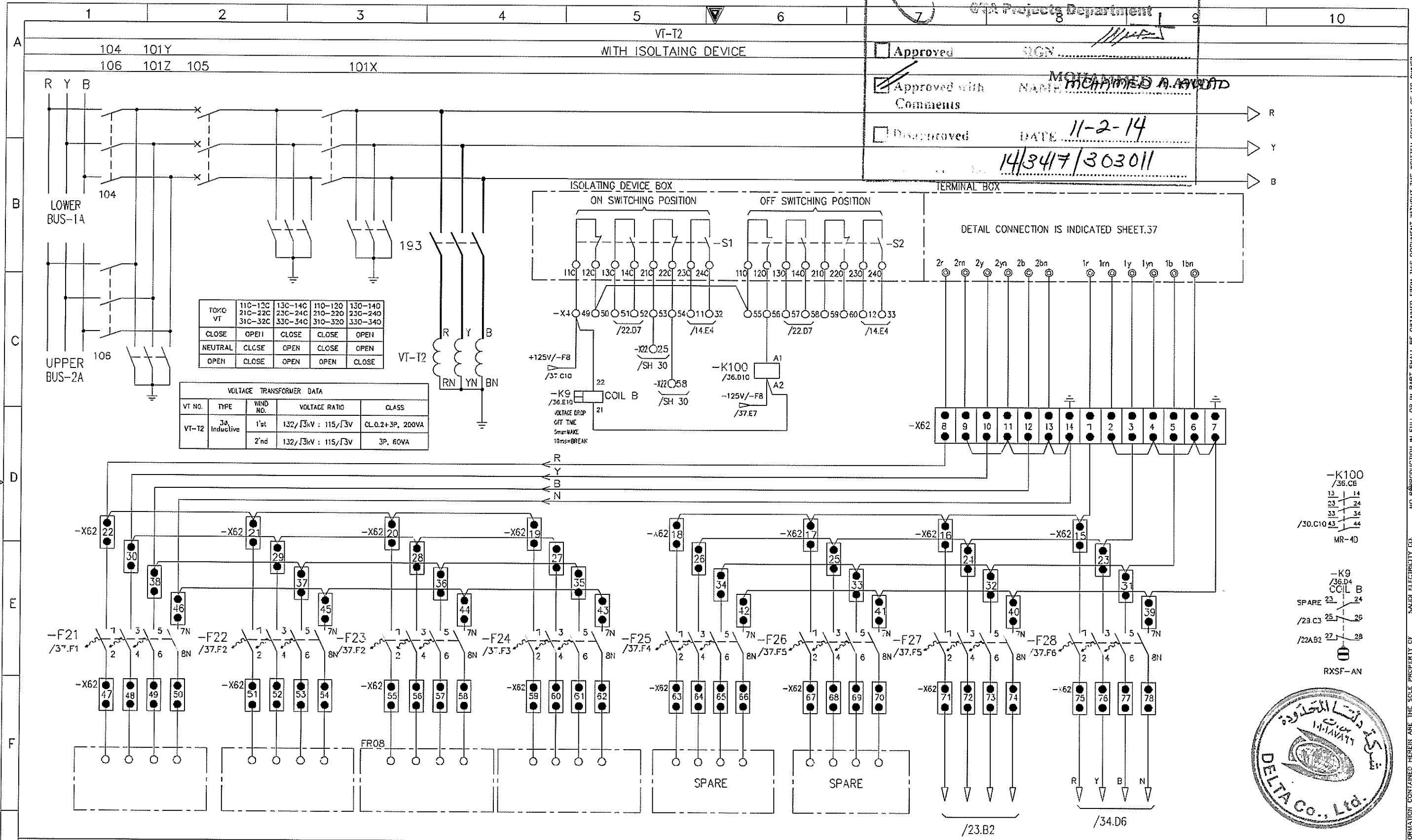
SIGN: *[Signature]*  
**MOHAMMED AWD AWAD**  
 DATE: 11-2-14  
 14/3417/303011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA		SHEET NO. 35A of 38
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	CT SWITCHING & CT BUS WIRE ARRANGEMENT		NEXT 36	
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12      DATE COMPLETED _____		LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		REV. NO. 01	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____      ENG. DEPT. _____		ALKHARJ      SAUDI ARABIA		CONTRACT NO. _____      INDEX P      PLANT NO. 10CN1017      DRAWING NUMBER CD -367820	

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

Approved \_\_\_\_\_  
 Approved with Comments NAME: MUHAMMAD A. ALWADI  
 Disapproved \_\_\_\_\_  
 DATE: 11-2-14  
14/3417/303011



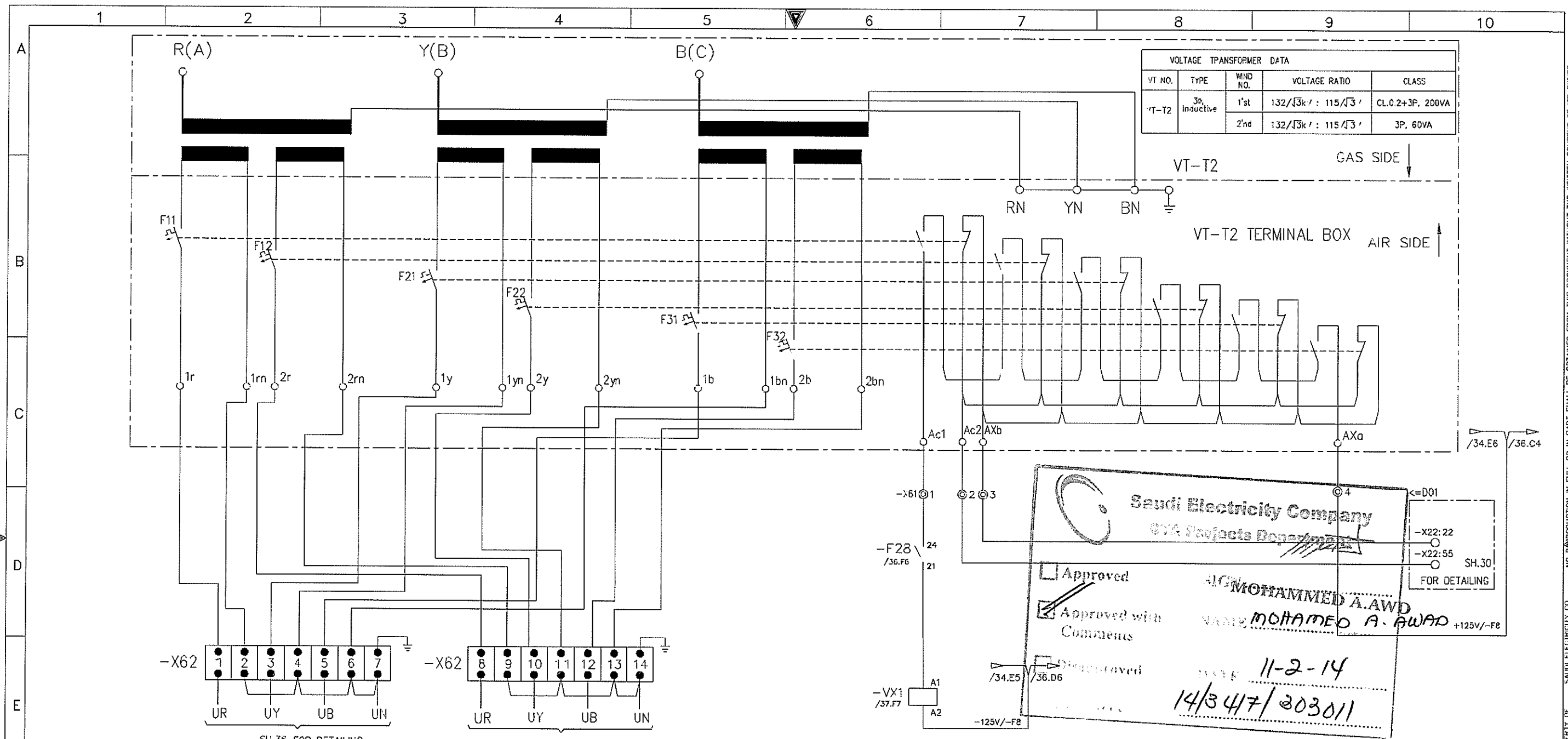
TO/KG	110-120	130-140	110-120	130-140
VT	21C-22C	23C-24C	210-220	230-240
	31C-32C	33C-34C	310-320	330-340
CLOSE	OPEH	CLOSE	CLOSE	OPEH
NEUTRAL	CLCSE	OPEN	CLOSE	OPEN
OPEN	CLOSE	OPEN	OPEN	CLOSE

VOLTAGE TRANSFORMER DATA				
VT NO.	TYPE	WIND NO.	VOLTAGE RATIO	CLASS
VT-T2	3 <sup>rd</sup> Inductive	1 <sup>st</sup>	132/√3kV : 115/√3V	CL.0.2+3P, 200VA
		2 <sup>nd</sup>	132/√3kV : 115/√3V	3P, 60VA



AS-BUILT BY _____ DATE _____			SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 36 of 38	
DRAWN BY: D.H.HAH CHECKED BY: C.Y.HONG			VOLTAGE TRANSFORMER(VT-T2)		National Grid SA		National Grid SA		NEXT 37	
DATE STARTED: 25.SEP.12 DATE COMPLETED: _____			LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO. _____		INDEX P		REV. NO. 01	
OPRC. DEPT. _____ ENG. DEPT. _____			ALKHARJ SAUDI ARABIA		PLANT NO. 10CN1017		DRAWING NUMBER CD-367820			

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.



VOLTAGE TRANSFORMER DATA				
VT NO.	TYPE	WIND NO.	VOLTAGE RATIO	CLASS
VT-T2	3% Inductive	1 <sup>st</sup>	132/√3k / : 115/√3 /	CL.0.2+3P, 200VA
		2 <sup>nd</sup>	132/√3k / : 115/√3 /	3P, 60VA

**Saudi Electricity Company**  
GVA Projects Department

Approved

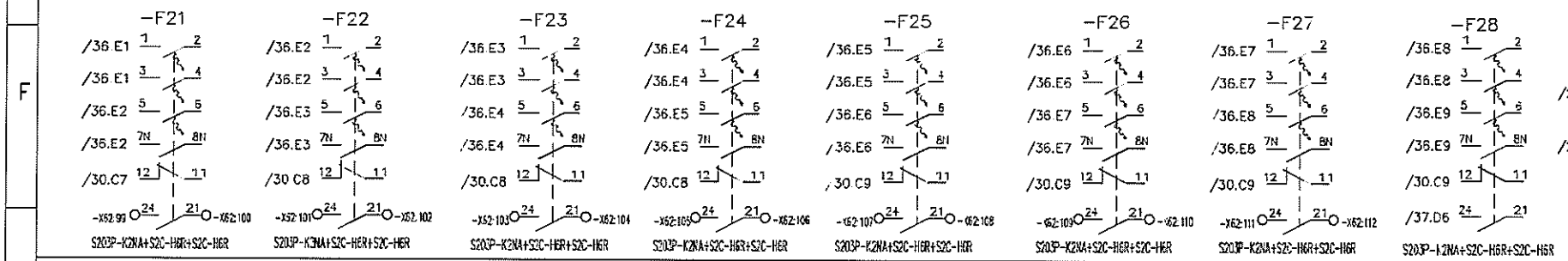
Approved with Comments

Not Approved

MOHAMMED A. AWD  
NAME MOHAMMED A. AWARD +125V/-F8

11-2-14  
14/347/203011

-X22:22  
-X22:55  
SH.30  
FOR DETAILING



AS-BUILT			BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716	نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA			SHEET NO. 37 of 38	
TERMINAL BOX OF VT-T2			DRAWN BY D.H.HAH	CHECKED BY C.Y.HONG	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY				CONTRACT NO.	INDEX
ALKHARJ SAUDI ARABIA			DATE STARTED 25.SEP.12	DATE COMPLETED _____	OPRG. DEPT. _____	ENG. DEPT. _____	P	10CN1017	CD -367820	01

THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF SAUDI ELECTRICITY CO. NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

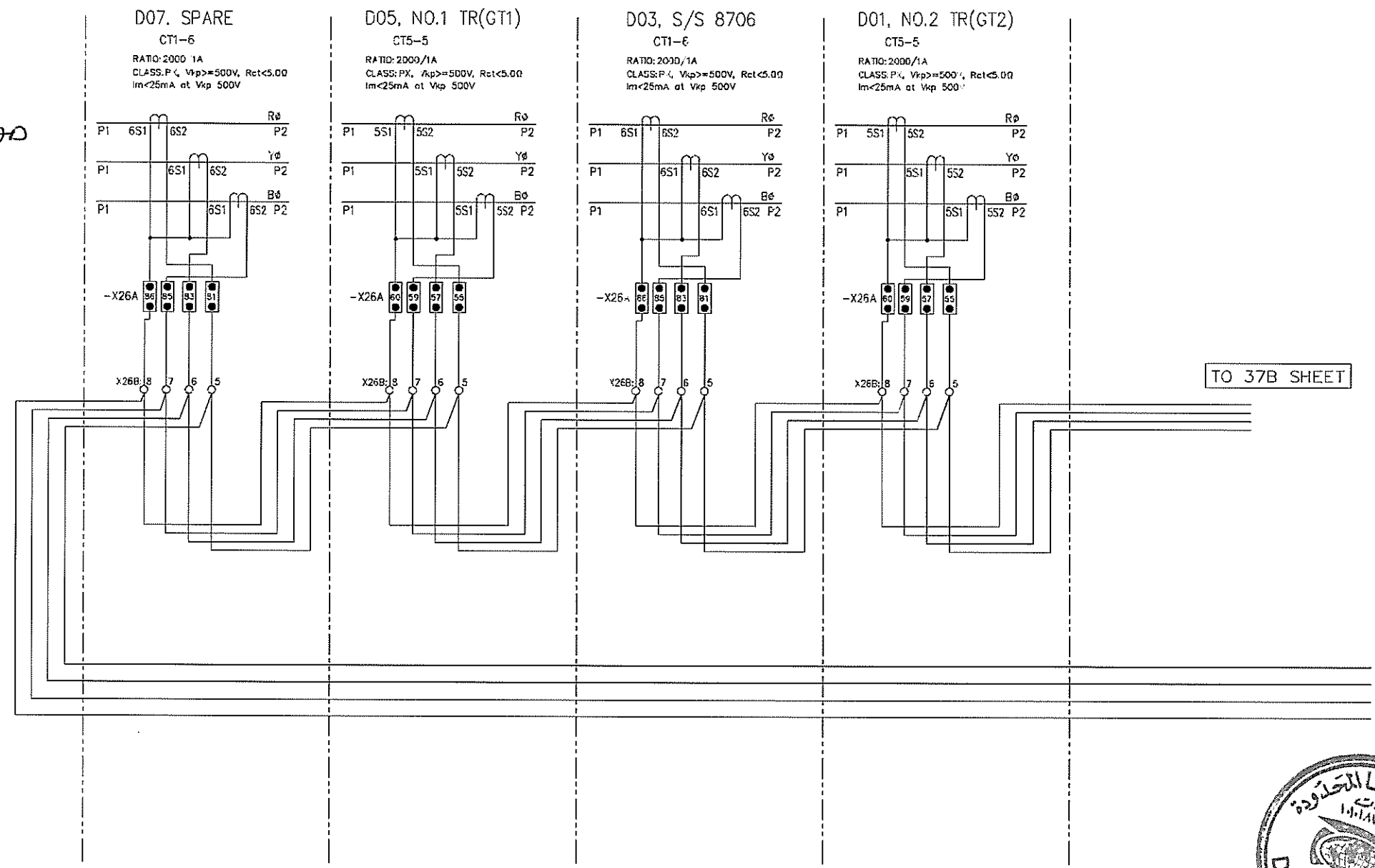
1 2 3 4 5 6 7 8 9 10

A  
B  
C  
D  
E  
F  
G

**Saudi Electricity Company**  
Projects Department

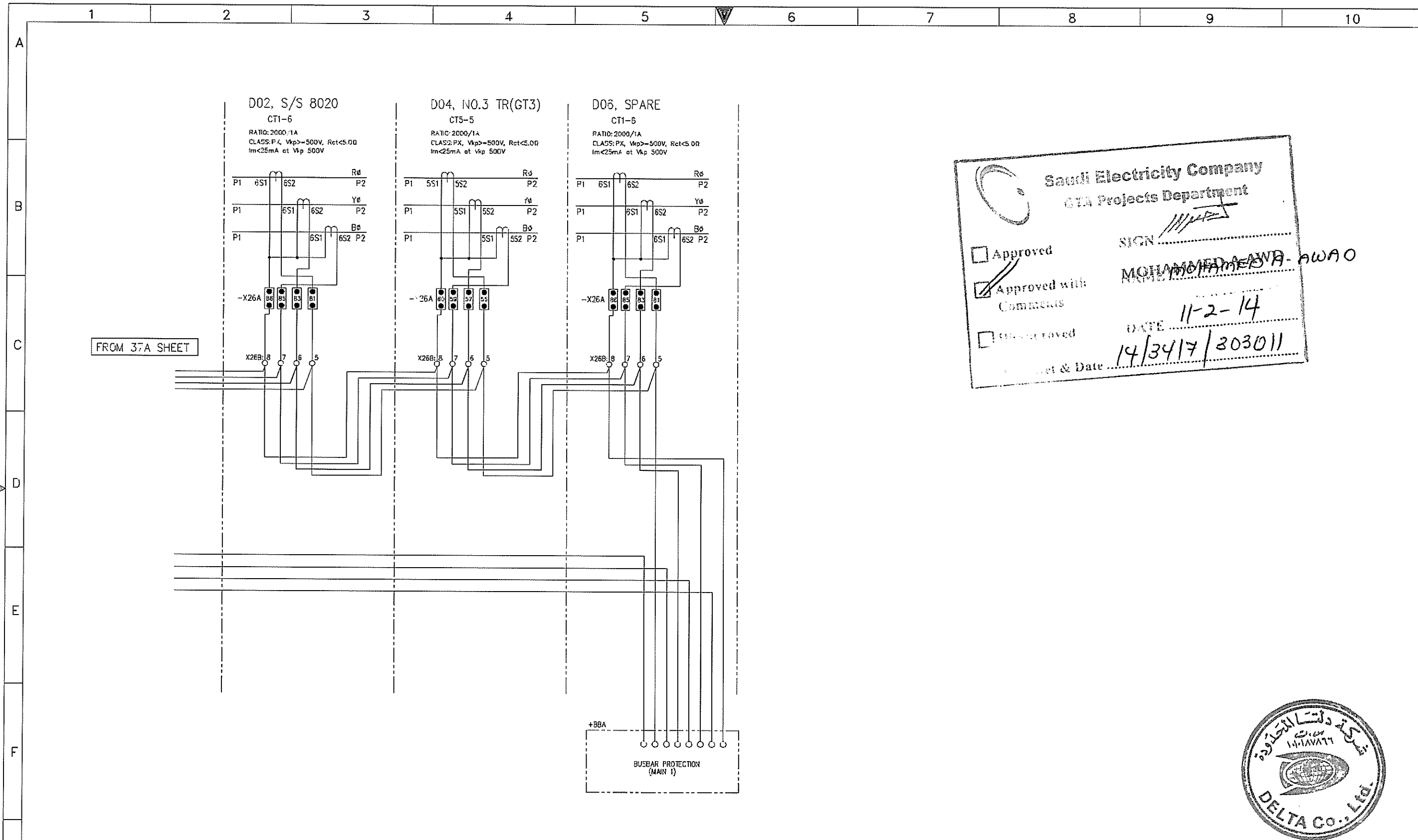
Approved  
 Approved  
 Prepared

SIGN: *[Signature]*  
**MOHAMMED A. AWAD**  
11-2-14  
14/3417/302011



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa		SHEET NO. 37A of 38
		DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	BUSBAR PROTECTION CT LOOPING						NEXT 37B
		DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
		OPRC. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		-----	P	10CN1017	CD -367820	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF



**Saudi Electricity Company**  
GTA Projects Department

Approved  
 Approved with Comments  
 Not Approved

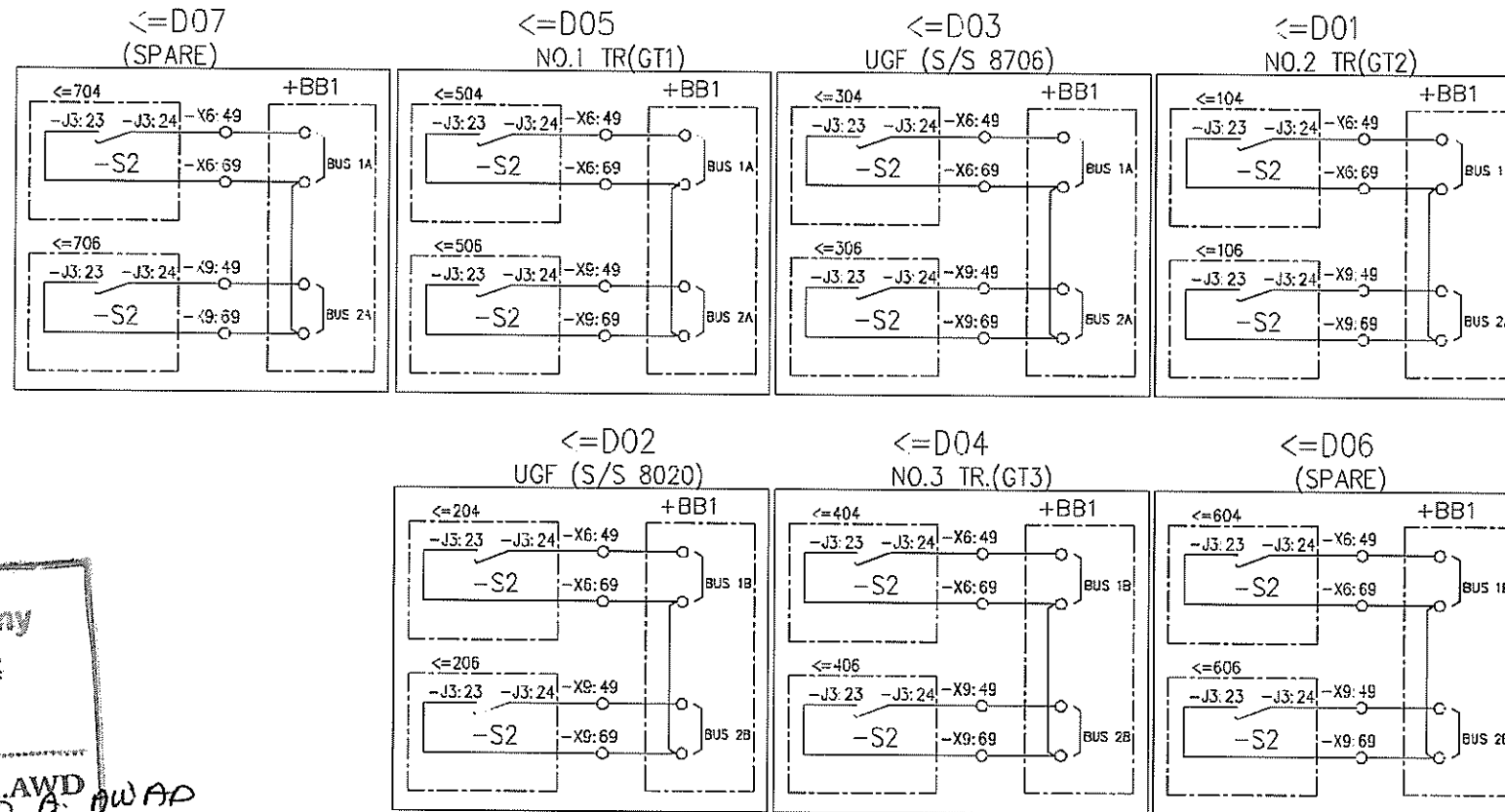
SIGN: *[Signature]*  
 NAME: **MOHAMMED AWA-AWA O**  
 DATE: **11-2-14**  
 Sheet & Date: **14/3417/203011**



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		<b>الشركة الوطنية لنقل الكهرباء</b>		<b>نقل الكهرباء</b> National Grid sa		SHEET NO. 37B of 38
		DRAWN BY <u>D.H.HAI</u>	CHECKED BY <u>C.Y.HONG</u>	BUSBAR PROTECTION CT LOOPING		<b>National Grid sa</b>				NEXT 38
		DATE STARTED <u>25.SEP.12</u>	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
		OPRC. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		-----	P	10CN1017	CD -367820	01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.

CT SWITCHING




**Saudi Electricity Company**  
**CTA Projects Department**

Approved  
 Approved with Comments  
 Disapproved

SIGN: *[Signature]*  
 NAME: **MOHAMMED A. AWD**  
 DATE: **11-2-14**  
 SEC Ref & Date: **14/3417 / 303011**



AS-BUILT		BY _____	DATE _____	SEC-COA 132kV/33kV/13.8kV SUBSTATION #8716		 <b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء		SHEET NO. 38 of 38	
01	01.JUL.13	FOR APPROVAL	DRAWN BY D.H.HANI	CHECKED BY C.Y.HONG	CT SWITCHING & DS/ES SWITCHING INCOMPLETE		CONTRACT NO. _____ INDEX P		REV. NO. 01
00	25.SEP.12	FOR APPROVAL	DATE STARTED 25.SEP.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D01 NO.2 TR.(GT2) BAY		PLANT NO. 10CN1017 DRAWING NUMBER CD -367820		REV. NO. 01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____	ENG. DEPT. _____	ALKHARJ SAUDI ARABIA		DRAWING NUMBER CD -367820		REV. NO. 01

NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER. SAUDI ELECTRICITY CO.