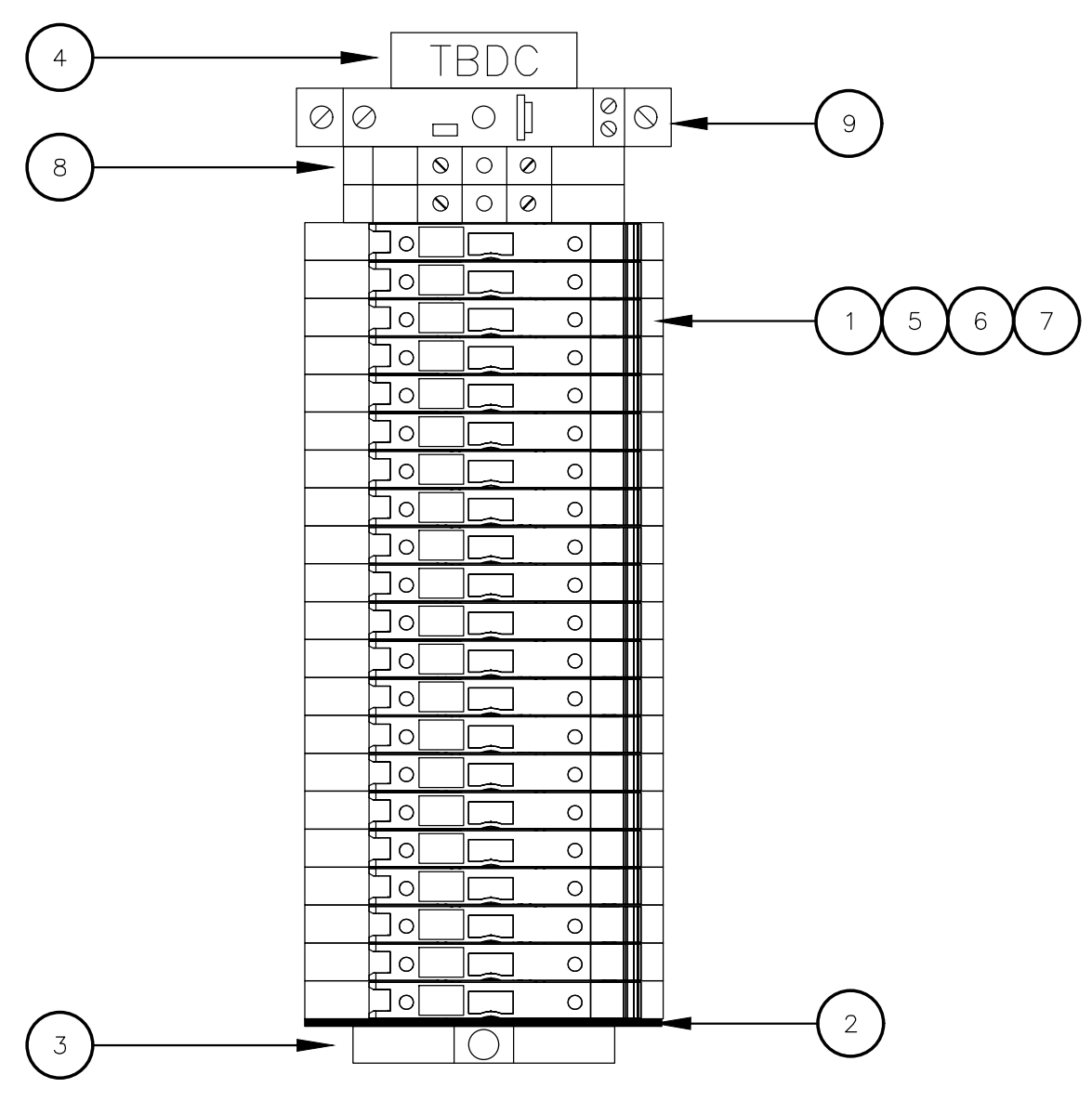
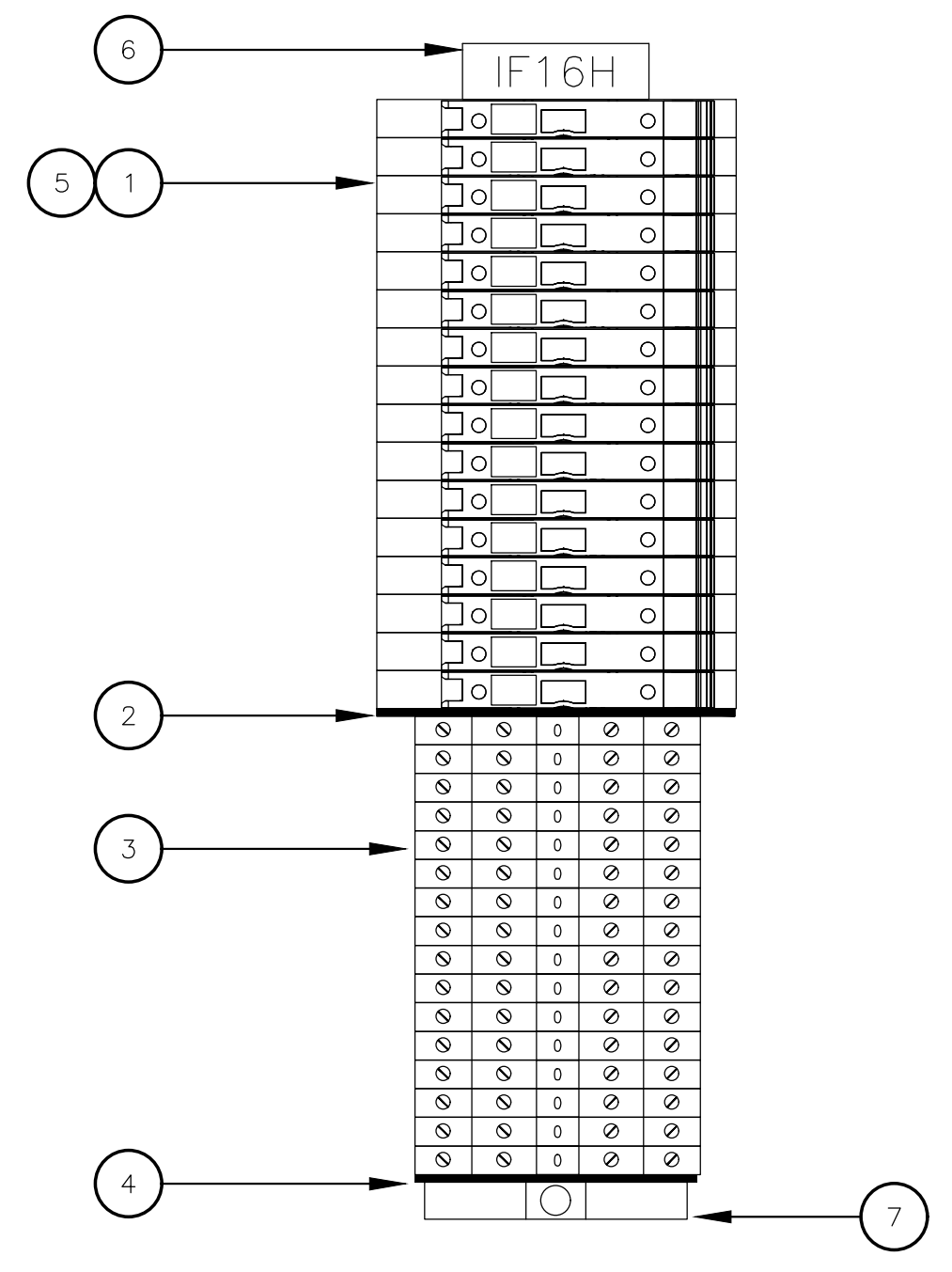


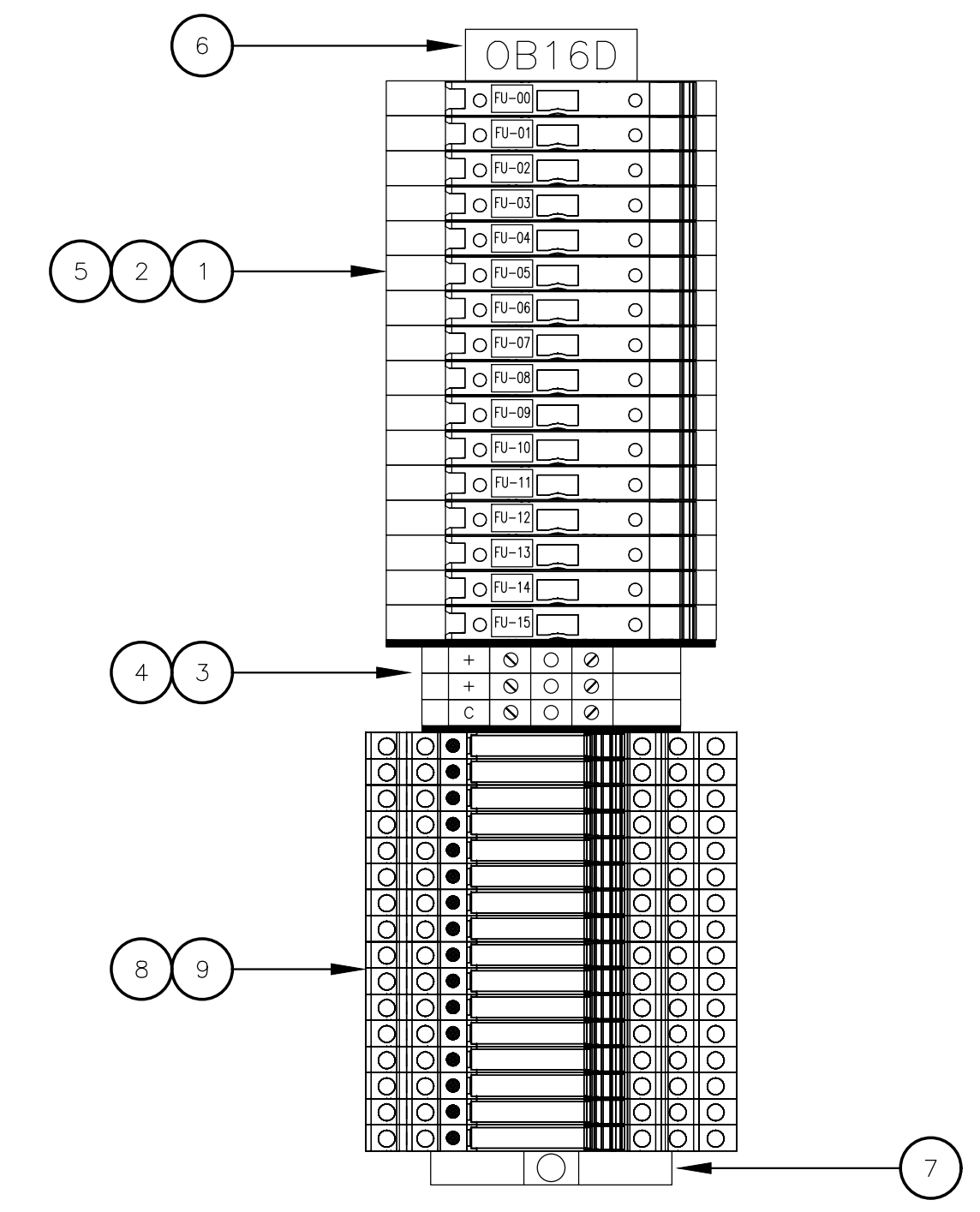
TBDC WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	21	2-LEVEL TERMINAL BLOCK W/FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
3	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP
4	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
5	15	FUSE, 5x20, 5A, CERAMIC	BUSSMAN	PANEL SHOP
6	3	FUSE, 5x20, 2A, CERAMIC	BUSSMAN	PANEL SHOP
7	3	FUSE, 5x20, 1A, CERAMIC	BUSSMAN	PANEL SHOP
8	2	TERMINAL BLOCK	ALLEN BRADLEY	PANEL SHOP
9	1	CIRCUIT BREAKER, CI, D2, 12A	PHOENIX CONTACT	PANEL SHOP



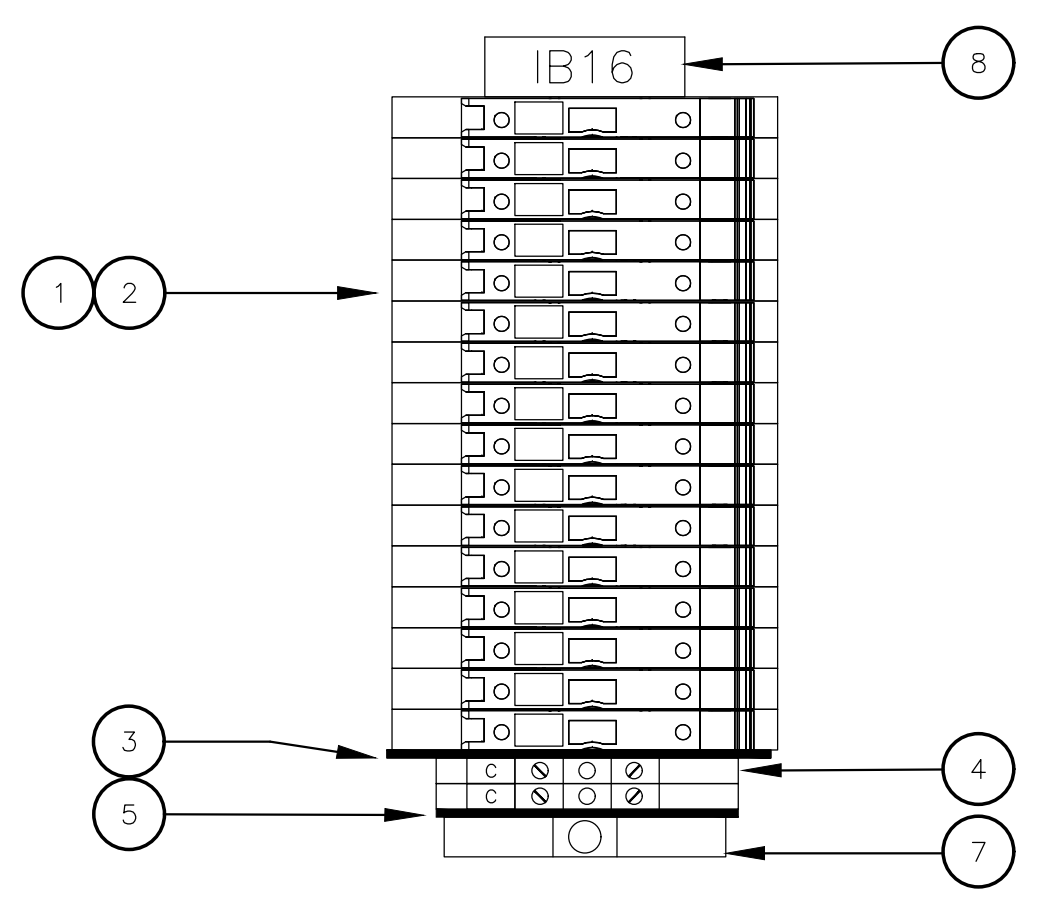
1756-IF16H WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	16	2-LEVEL TERMINAL BLOCK W/FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
3	16	2-LEVEL TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
4	1	END BARRIER FOR 2-LEVEL TERMINAL BLOCK	ALLEN BRADLEY	PANEL SHOP
5	16	FUSE, 5x20, 500mA, CERAMIC	BUSSMAN	PANEL SHOP
6	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
7	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP



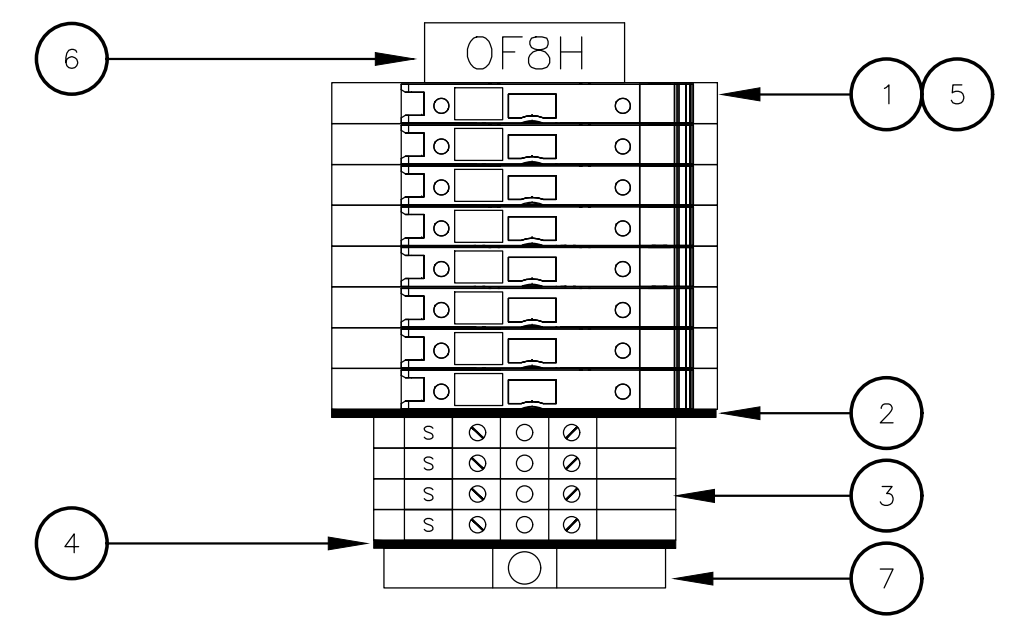
1756-OB16D WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	16	2-LEVEL TERMINAL BLOCK W/ FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
3	3	TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
4	1	END BARRIER FOR TERMINAL BLOCK	ALLEN BRADLEY	PANEL SHOP
5	16	FUSE, 5x20, 2A, CERAMIC	BUSSMAN	PANEL SHOP
6	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
7	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP
8	16	RELAY TERMINAL, SPDT, 24VDC	ALLEN BRADLEY	PANEL SHOP
9	1	JUMPER, 20 POS, GRAY, FOR RELAY COMMON	ALLEN BRADLEY	PANEL SHOP



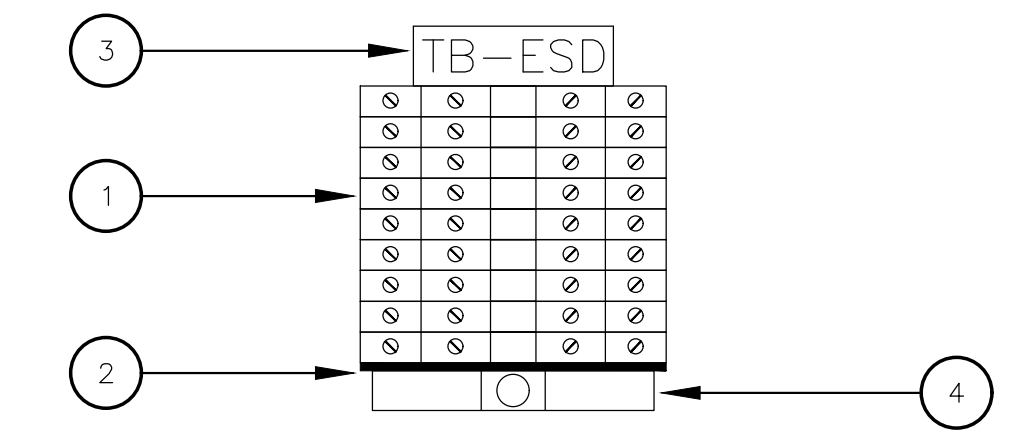
1756-IB16 WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	16	2-LEVEL TERMINAL BLOCK W/ FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	16	FUSE 5x20 mm MEDIUM TIME LAG, 1A, CERAMIC (OR EQUAL)	BUSSMAN	PANEL SHOP
3	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
4	2	TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
5	1	END BARRIER FOR TERMINAL BLOCK	ALLEN BRADLEY	PANEL SHOP
6	AR	JUMPER STOCK FOR 2-LEVEL TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
7	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP
8	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP



1756-OF8H WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	8	2-LEVEL TERMINAL BLOCK W/FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
3	4	TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
4	1	END BARRIER FOR TERMINAL BLOCK	ALLEN BRADLEY	PANEL SHOP
5	8	FUSE, 5x20, 500mA, CERAMIC	BUSSMAN	PANEL SHOP
6	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
7	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP



TB-ESD WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	9	TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD4	ALLEN BRADLEY	PANEL SHOP
3	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
4	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP



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REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
		A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE

TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

LONE TREE ENGINEERING SERVICES
7807 E PEAKVIEW AVE, STE 150
CENTENNIAL, CO 80111, USA

CLIENT

NIGERIAN PETROLEUM DEVELOPMENT COMPANY

LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
CONTROL PANEL
TERMINAL BLOCK ASSEMBLIES

DRAWN BY	DATE	LTES NO:	DWG. NO.	REV
A. HOGAN	05/21/20	19016-00	L1901-NPDC-INS-DWG-00110	B
SCALE: NONE				

Plotted by: JOSEPH BOND Date: 12/17/2020 9:29 AM Drawing: P:\High Country Sales\Utorogu Cryo Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00110.dwg

RIO-01 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	A604812LPG	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	A60P48	PANEL SHOP
3	1	ENHANCED LIQUID & GAS FLOW COMPUTER FOR CONTROLLIGIX	PROSOFT	MVI56E-AFC	PANEL SHOP
4	1	17-SLOT CONTROLLOGIX CHASSIS	ALLEN-BRADLEY	1756-A17	PANEL SHOP
5	1	CHASSIS POWER SUPPLY, 24VDC	ALLEN-BRADLEY	1756-PB75	PANEL SHOP
6	1	ETHERNET/IP COMMUNICATION MODULE, DUAL PORT, 10/100	ALLEN-BRADLEY	1756-EN2TR	PANEL SHOP
7	2	ANALOG INPUT, 16 POINT, CURRENT/VOLTAGE (36-PIN), HART	ALLEN-BRADLEY	1756-IF16H	PANEL SHOP
8	2	ANALOG OUTPUT, 8 POINT, CURRENT/VOLTAGE (20-PIN), HART	ALLEN-BRADLEY	1756-OF8H	PANEL SHOP
9	4	DISCRETE INPUT, 16 POINT, 10-31 (20-PIN)	ALLEN-BRADLEY	1756-IB16	PANEL SHOP
10	3	DISCRETE OUTPUT, 16 POINT, 19-30 VDC DIAGNOSTIC (36-PIN)	ALLEN-BRADLEY	1756-OB16D	PANEL SHOP
11	6	20-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBNH	PANEL SHOP
12	5	36-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBCH	PANEL SHOP
13	11	EXTENDED DEPTH TERMINAL HOUSING	ALLEN-BRADLEY	1756-TBE	PANEL SHOP
14	4	EMPTY SLOT FILLER CARD	ALLEN-BRADLEY	1756-N2	PANEL SHOP
15	A/R	DIN RAIL, 35 MM, PEROFRACTED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
16	0	END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
17	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP710Z24	PANEL SHOP
18	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
19	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
20	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
21	2	16-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
22	2	8-CHANNEL ANALOG OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
23	4	16-POINT 24VDC DISCRETE INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
24	3	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
25	1	TB-ESD ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
26	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
27	A/R	WIREWAY, 4"x4", GRAY W/COVER (DC)	PANDUIT	F4X4LG6	PANEL SHOP
28					

LAMICOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	BOP	RIO-01		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4				
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	R1S1			PANEL SHOP
3	R1S2			PANEL SHOP
4	R1S3			PANEL SHOP
5	R1S4			PANEL SHOP
6	R1S5			PANEL SHOP
7	R1S6			PANEL SHOP
8	R1S7			PANEL SHOP
9	R1S8			PANEL SHOP
10	R1S9			PANEL SHOP
11	R1S10			PANEL SHOP
12	R1S11			PANEL SHOP
13	TB-ESD			PANEL SHOP

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			B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

CLIENT



NIGERIAN PETROLEUM DEVELOPMENT COMPANY



LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
 UTOROGU, NIGERIA
 L1901-NPDC
 RIO-01
 BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
A. HOGAN	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00126	B

Plotted by: JOSEPH.BOND Date: 12/23/2020 10:29 AM Drawing: P:\High Country Sales\Drawings\Electrical\Instrumentation\L1901-NPDC-INS-DWG-00126.dwg

X

RIO-10 BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	PANEL SHOP
3		NOT USED		
4	1	17-SLOT CONTROLLOGIX CHASSIS	ALLEN-BRADLEY	PANEL SHOP
5	1	CHASSIS POWER SUPPLY, 24VDC	ALLEN-BRADLEY	PANEL SHOP
6	1	ETHERNET/IP COMMUNICATION MODULE, DUAL PORT, 10/100	ALLEN-BRADLEY	PANEL SHOP
7	2	ANALOG INPUT, 16 POINT, CURRENT/VOLTAGE (36-PIN), HART	ALLEN-BRADLEY	PANEL SHOP
8	2	ANALOG OUTPUT, 8 POINT, CURRENT/VOLTAGE (20-PIN), HART	ALLEN-BRADLEY	PANEL SHOP
9	4	DISCRETE INPUT, 16 POINT, 10-31 (20-PIN)	ALLEN-BRADLEY	PANEL SHOP
10	3	DISCRETE OUTPUT, 16 POINT, 19-30 VDC DIAGNOSTIC (36-PIN)	ALLEN-BRADLEY	PANEL SHOP
11	6	20-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	PANEL SHOP
12	5	36-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	PANEL SHOP
13	11	EXTENDED DEPTH TERMINAL HOUSING	ALLEN-BRADLEY	PANEL SHOP
14	5	EMPTY SLOT FILLER CARD	ALLEN-BRADLEY	PANEL SHOP
15	A/R	DIN RAIL, 35 MM, PEROFRATED, 7.5	ALLEN-BRADLEY	PANEL SHOP
16	3	TERMINAL BLOCK	ALLEN-BRADLEY	PANEL SHOP
17	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	PANEL SHOP
18	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	PANEL SHOP
19	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	PANEL SHOP
20	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	PANEL SHOP
21	2	16-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	PANEL SHOP
22	2	8-CHANNEL ANALOG OUTPUT ASSEMBLY	DWG#	PANEL SHOP
23	4	16-POINT 24VDC DISCRETE INPUT ASSEMBLY	DWG#	PANEL SHOP
24	3	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	PANEL SHOP
25	1	TB-ESD ASSEMBLY	DWG#	PANEL SHOP
26	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	PANEL SHOP
27	A/R	WIREWAY, 4"x4", GRAY W/COVER (DC)	PANDUIT	PANEL SHOP
28	1	HAZARDOUS-AREA RATED SILICONE HEATING BLANKET, 240VAC, 720 WATTS, 12"x24"	BRISK HEAT	PANEL SHOP
29	1	HEAVY DUTY BOLT-ON WASHER THERMOCOUPLE ASSEMBLY	OMEGA	PANEL SHOP
30	1	ISOLATED TEMPERATURE TRANSMITTER	MOORE INDUSTRIES	PANEL SHOP
31	2	END ANCHOR	ALLEN-BRADLEY	PANEL SHOP
32	1	GROUP MARKER	ALLEN-BRADLEY	PANEL SHOP

X

LAMICOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	BOP	RIO-10		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4				
5				
6				

X

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	R10S1			PANEL SHOP
3	R10S2			PANEL SHOP
4	R10S3			PANEL SHOP
5	R10S4			PANEL SHOP
6	R10S5			PANEL SHOP
7	R10S6			PANEL SHOP
8	R10S7			PANEL SHOP
9	R10S8			PANEL SHOP
10	R10S9			PANEL SHOP
11	R10S10			PANEL SHOP
12	R10S11			PANEL SHOP
13	TB-ESD			PANEL SHOP
14	TB-HTR			PANEL SHOP

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			B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		
		

CLIENT	 NIGERIAN PETROLEUM DEVELOPMENT COMPANY  LONEB RESOURCES NIG. LTD
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UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC RIO-10 BILL OF MATERIAL AND NAMEPLATE SCHEDULE			
DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO
A.HOGAN	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00127
REV	B		

Plotted by: JOSEPH.BOND Date: 12/17/2020 9:37 AM Drawing: P:\High Country Sales\Utorogu_Cryo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00127.dwg

RIO-20 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY	
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	A62H4812SS6LP3PT	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	A60P48	PANEL SHOP
3		NOT USED			
4	1	17-SLOT CONTROLLOGIX CHASSIS	ALLEN-BRADLEY	1756-A17	PANEL SHOP
5	1	CHASSIS POWER SUPPLY, 24VDC	ALLEN-BRADLEY	1756-PB75	PANEL SHOP
6	1	ETHERNET/IP COMMUNICATION MODULE, DUAL PORT, 10/100	ALLEN-BRADLEY	1756-EN2TR	PANEL SHOP
7	2	ANALOG INPUT, 16 POINT, CURRENT/VOLTAGE (36-PIN), HART	ALLEN-BRADLEY	1756-IF16H	PANEL SHOP
8	2	ANALOG OUTPUT, 8 POINT, CURRENT/VOLTAGE (20-PIN), HART	ALLEN-BRADLEY	1756-OF8H	PANEL SHOP
9	4	DISCRETE INPUT, 16 POINT, 10-31 (20-PIN)	ALLEN-BRADLEY	1756-IB16	PANEL SHOP
10	3	DISCRETE OUTPUT, 16 POINT, 19-30 VDC DIAGNOSTIC (36-PIN)	ALLEN-BRADLEY	1756-OB16D	PANEL SHOP
11	6	20-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBNH	PANEL SHOP
12	5	36-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBCH	PANEL SHOP
13	11	EXTENDED DEPTH TERMINAL HOUSING	ALLEN-BRADLEY	1756-TBE	PANEL SHOP
14	5	EMPTY SLOT FILLER CARD	ALLEN-BRADLEY	1756-N2	PANEL SHOP
15	A/R	DIN RAIL, 35 MM, PEROFRATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
16	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	PANEL SHOP
17	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP710Z24	PANEL SHOP
18	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
19	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
20	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
21	2	16-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
22	2	8-CHANNEL ANALOG OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
23	4	16-POINT 24VDC DISCRETE INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
24	3	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
25	1	TB-ESD ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
26	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
27	A/R	WIREWAY, 4"x4", GRAY W/COVER (DC)	PANDUIT	F4X4LG6	PANEL SHOP
28	1	HAZARDOUS-AREA RATED SILICONE HEATING BLANKET, 240VAC, 720 WATTS, 12"x24"	BRISK HEAT	SRX12247202PT3	PANEL SHOP
29	1	HEAVY DUTY BOLT-ON WASHER THERMOCOUPLE ASSEMBLY	OMEGA	WTJ-HD-72-S	PANEL SHOP
30	1	ISOLATED TEMPERATURE TRANSMITTER	MOORE INDUSTRIES	SPT/TPRG/PRG/U/C (D IN)	PANEL SHOP
31	2	END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
32	1	GROUP MARKER	ALLEN-BRADLEY	1492-GM35	PANEL SHOP

LAMICOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	BOP	RIO-20		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4				
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	R20S1			PANEL SHOP
3	R20S2			PANEL SHOP
4	R20S3			PANEL SHOP
5	R20S4			PANEL SHOP
6	R20S5			PANEL SHOP
7	R20S6			PANEL SHOP
8	R20S7			PANEL SHOP
9	R20S8			PANEL SHOP
10	R20S9			PANEL SHOP
11	R20S10			PANEL SHOP
12	R20S11			PANEL SHOP
13	TB-ESD			PANEL SHOP
14	TB-HTR			PANEL SHOP

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			B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LONEB PROJECT MANAGER		
LONEB PROJECT MANAGER		

CLIENT



NIGERIAN PETROLEUM DEVELOPMENT COMPANY



LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
 UTOROGU, NIGERIA
 L1901-NPDC
 RIO-20
 BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00128	B

Plotted by: JOSEPH BOND Date: 12/17/2020 9:39 AM Drawing: P:\High Country Sales\Utorogu_Cryo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00128.dwg

X

RIO-30 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	A62H4812SS6LP3PT	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	A60P48	PANEL SHOP
3		NOT USED			
4	1	17-SLOT CONTROLLOGIX CHASSIS	ALLEN-BRADLEY	1756-A17	PANEL SHOP
5	1	CHASSIS POWER SUPPLY, 24VDC	ALLEN-BRADLEY	1756-PB75	PANEL SHOP
6	1	ETHERNET/IP COMMUNICATION MODULE, DUAL PORT, 10/100	ALLEN-BRADLEY	1756-EN2TR	PANEL SHOP
7	2	ANALOG INPUT, 16 POINT, CURRENT/VOLTAGE (36-PIN), HART	ALLEN-BRADLEY	1756-IF16H	PANEL SHOP
8	2	ANALOG OUTPUT, 8 POINT, CURRENT/VOLTAGE (20-PIN), HART	ALLEN-BRADLEY	1756-OF8H	PANEL SHOP
9	4	DISCRETE INPUT, 16 POINT, 10-31 (20-PIN)	ALLEN-BRADLEY	1756-IB16	PANEL SHOP
10	3	DISCRETE OUTPUT, 16 POINT, 19-30 VDC DIAGNOSTIC (36-PIN)	ALLEN-BRADLEY	1756-OB16D	PANEL SHOP
11	6	20-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBNH	PANEL SHOP
12	5	36-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBCH	PANEL SHOP
13	11	EXTENDED DEPTH TERMINAL HOUSING	ALLEN-BRADLEY	1756-TBE	PANEL SHOP
14	5	EMPTY SLOT FILLER CARD	ALLEN-BRADLEY	1756-N2	PANEL SHOP
15	A/R	DIN RAIL, 35 MM, PEROFRATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
16	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	PANEL SHOP
17	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP710Z24	PANEL SHOP
18	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
19	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
20	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
21	2	16-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
22	2	8-CHANNEL ANALOG OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
23	4	16-POINT 24VDC DISCRETE INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
24	3	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
25	1	TB-ESD ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
26	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
27	A/R	WIREWAY, 4"x4", GRAY W/COVER (DC)	PANDUIT	F4X4LG6	PANEL SHOP
28	1	HAZARDOUS-AREA RATED SILICONE HEATING BLANKET, 240VAC, 720 WATTS, 12"x24"	BRISK HEAT	SRX12247202PT3	PANEL SHOP
29	1	HEAVY DUTY BOLT-ON WASHER THERMOCOUPLE ASSEMBLY	OMEGA	WTJ-HD-72-S	PANEL SHOP
30	1	ISOLATED TEMPERATURE TRANSMITTER	MOORE INDUSTRIES	SPT/TPRG/PRG/U/C (D IN)	PANEL SHOP
31	1	END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
32	1	GROUP MARKER	ALLEN-BRADLEY	1492-GM35	PANEL SHOP

X

LAMICOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	BOP	RIO-30		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4				
5				
6				

X

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	R30S1			PANEL SHOP
3	R30S2			PANEL SHOP
4	R30S3			PANEL SHOP
5	R30S4			PANEL SHOP
6	R30S5			PANEL SHOP
7	R30S6			PANEL SHOP
8	R30S7			PANEL SHOP
9	R30S8			PANEL SHOP
10	R30S9			PANEL SHOP
11	R30S10			PANEL SHOP
12	R30S11			PANEL SHOP
13	TB-ESD			PANEL SHOP
14	TB-HTR			PANEL SHOP

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			B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

CLIENT



NIGERIAN PETROLEUM DEVELOPMENT COMPANY



LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
 UTOROGU, NIGERIA
 L1901-NPDC
 RIO-30
 BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00129	B

Plotted by: JOSEPH.BOND Date: 12/17/2020 9:44 AM Drawing: P:\High Country Sales\Utorogu_Cryo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00129.dwg

X

RIO-40 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	A62H4812SS6LP3PT	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	A60P48	PANEL SHOP
3		NOT USED			
4	1	17-SLOT CONTROLLOGIX CHASSIS	ALLEN-BRADLEY	1756-A17	PANEL SHOP
5	1	CHASSIS POWER SUPPLY, 24VDC	ALLEN-BRADLEY	1756-PB75	PANEL SHOP
6	1	ETHERNET/IP COMMUNICATION MODULE, DUAL PORT, 10/100	ALLEN-BRADLEY	1756-EN2TR	PANEL SHOP
7	2	ANALOG INPUT, 16 POINT, CURRENT/VOLTAGE (36-PIN), HART	ALLEN-BRADLEY	1756-IF16H	PANEL SHOP
8	2	ANALOG OUTPUT, 8 POINT, CURRENT/VOLTAGE (20-PIN), HART	ALLEN-BRADLEY	1756-OF8H	PANEL SHOP
9	4	DISCRETE INPUT, 16 POINT, 10-31 (20-PIN)	ALLEN-BRADLEY	1756-IB16	PANEL SHOP
10	3	DISCRETE OUTPUT, 16 POINT, 19-30 VDC DIAGNOSTIC (36-PIN)	ALLEN-BRADLEY	1756-OB16D	PANEL SHOP
11	6	20-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBNH	PANEL SHOP
12	5	36-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBCH	PANEL SHOP
13	11	EXTENDED DEPTH TERMINAL HOUSING	ALLEN-BRADLEY	1756-TBE	PANEL SHOP
14	5	EMPTY SLOT FILLER CARD	ALLEN-BRADLEY	1756-N2	PANEL SHOP
15	A/R	DIN RAIL, 35 MM, PEROFRATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
16	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	PANEL SHOP
17	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP710Z24	PANEL SHOP
18	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
19	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
20	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
21	2	16-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
22	2	8-CHANNEL ANALOG OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
23	4	16-POINT 24VDC DISCRETE INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
24	3	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
25	1	TB-ESD ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
26	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
27	A/R	WIREWAY, 4"x4", GRAY W/COVER (DC)	PANDUIT	F4X4LG6	PANEL SHOP
28	1	HAZARDOUS-AREA RATED SILICONE HEATING BLANKET, 240VAC, 720 WATTS, 12"x24"	BRISK HEAT	SRX12247202PT3	PANEL SHOP
29	1	HEAVY DUTY BOLT-ON WASHER THERMOCOUPLE ASSEMBLY	OMEGA	WTJ-HD-72-S	PANEL SHOP
30	1	ISOLATED TEMPERATURE TRANSMITTER	MOORE INDUSTRIES	SPT/TPRG/PRG/U/C (D IN)	PANEL SHOP
31	1	END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
32	1	GROUP MARKER	ALLEN-BRADLEY	1492-GM35	PANEL SHOP

X

LAMICOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	BOP	RIO-40		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4				
5				
6				

X

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	R40S1			PANEL SHOP
3	R40S2			PANEL SHOP
4	R40S3			PANEL SHOP
5	R40S4			PANEL SHOP
6	R40S5			PANEL SHOP
7	R40S6			PANEL SHOP
8	R40S7			PANEL SHOP
9	R40S8			PANEL SHOP
10	R40S9			PANEL SHOP
11	R40S10			PANEL SHOP
12	R40S11			PANEL SHOP
13	TB-ESD			PANEL SHOP
14	TB-HTR			PANEL SHOP

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REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
		A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		



LONE TREE
ENGINEERING SERVICES
7807 E PEAKVIEW AVE, STE 150
CENTENNIAL, CO 80111, USA

CLIENT



NIGERIAN PETROLEUM DEVELOPMENT COMPANY



LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
RIO-40
BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00130	B

Plotted by: JOSEPH BOND Date: 12/17/2020 9:45 AM Drawing: P:\High Country Sales\Utorogu_Cryo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00130.dwg

X

RIO-50 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY	
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	A62H4812SS6LP3PT	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	A60P48	PANEL SHOP
3		NOT USED			
4	1	17-SLOT CONTROLLOGIX CHASSIS	ALLEN-BRADLEY	1756-A17	PANEL SHOP
5	1	CHASSIS POWER SUPPLY, 24VDC	ALLEN-BRADLEY	1756-PB75	PANEL SHOP
6	1	ETHERNET/IP COMMUNICATION MODULE, DUAL PORT, 10/100	ALLEN-BRADLEY	1756-EN2TR	PANEL SHOP
7	2	ANALOG INPUT, 16 POINT, CURRENT/VOLTAGE (36-PIN), HART	ALLEN-BRADLEY	1756-IF16H	PANEL SHOP
8	2	ANALOG OUTPUT, 8 POINT, CURRENT/VOLTAGE (20-PIN), HART	ALLEN-BRADLEY	1756-OF8H	PANEL SHOP
9	4	DISCRETE INPUT, 16 POINT, 10-31 (20-PIN)	ALLEN-BRADLEY	1756-IB16	PANEL SHOP
10	3	DISCRETE OUTPUT, 16 POINT, 19-30 VDC DIAGNOSTIC (36-PIN)	ALLEN-BRADLEY	1756-OB16D	PANEL SHOP
11	6	20-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBNH	PANEL SHOP
12	5	36-POSITION NEMA SCREW CLAMP BLOCK	ALLEN-BRADLEY	1756-TBCH	PANEL SHOP
13	11	EXTENDED DEPTH TERMINAL HOUSING	ALLEN-BRADLEY	1756-TBE	PANEL SHOP
14	5	EMPTY SLOT FILLER CARD	ALLEN-BRADLEY	1756-N2	PANEL SHOP
15	A/R	DIN RAIL, 35 MM, PEROFRATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
16	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	PANEL SHOP
17	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP710Z24	PANEL SHOP
18	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
19	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L 1901-NPDC-ELE-DWG-00002	PANEL SHOP
20	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
21	2	16-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
22	2	8-CHANNEL ANALOG OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
23	4	16-POINT 24VDC DISCRETE INPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
24	3	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
25	1	TB-ESD ASSEMBLY	DWG#	L 1901-NPDC-INS-DWG-00110	PANEL SHOP
26	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
27	A/R	WIREWAY, 4"x4", GRAY W/COVER (DC)	PANDUIT	F4X4LG6	PANEL SHOP
28	1	HAZARDOUS-AREA RATED SILICONE HEATING BLANKET, 240VAC, 720 WATTS, 12"x24"	BRISK HEAT	SRX12247202PT3	PANEL SHOP
29	1	HEAVY DUTY BOLT-ON WASHER THERMOCOUPLE ASSEMBLY	OMEGA	WTJ-HD-72-S	PANEL SHOP
30	1	ISOLATED TEMPERATURE TRANSMITTER	MOORE INDUSTRIES	SPT/TPRG/PRG/U/C (D IN)	PANEL SHOP
31	1	END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
32	1	GROUP MARKER	ALLEN-BRADLEY	1492-GM35	PANEL SHOP

X

LAMICOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	BOP	RIO-50		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4				
5				
6				

X

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	R50S1			PANEL SHOP
3	R50S2			PANEL SHOP
4	R50S3			PANEL SHOP
5	R50S4			PANEL SHOP
6	R50S5			PANEL SHOP
7	R50S6			PANEL SHOP
8	R50S7			PANEL SHOP
9	R50S8			PANEL SHOP
10	R50S9			PANEL SHOP
11	R50S10			PANEL SHOP
12	R50S11			PANEL SHOP
13	TB-ESD			PANEL SHOP
14	TB-HTR			PANEL SHOP

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REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		



LONE TREE
ENGINEERING SERVICES
7807 E PEAKVIEW AVE, STE 150
CENTENNIAL, CO 80111, USA

CLIENT



NIGERIAN PETROLEUM DEVELOPMENT COMPANY

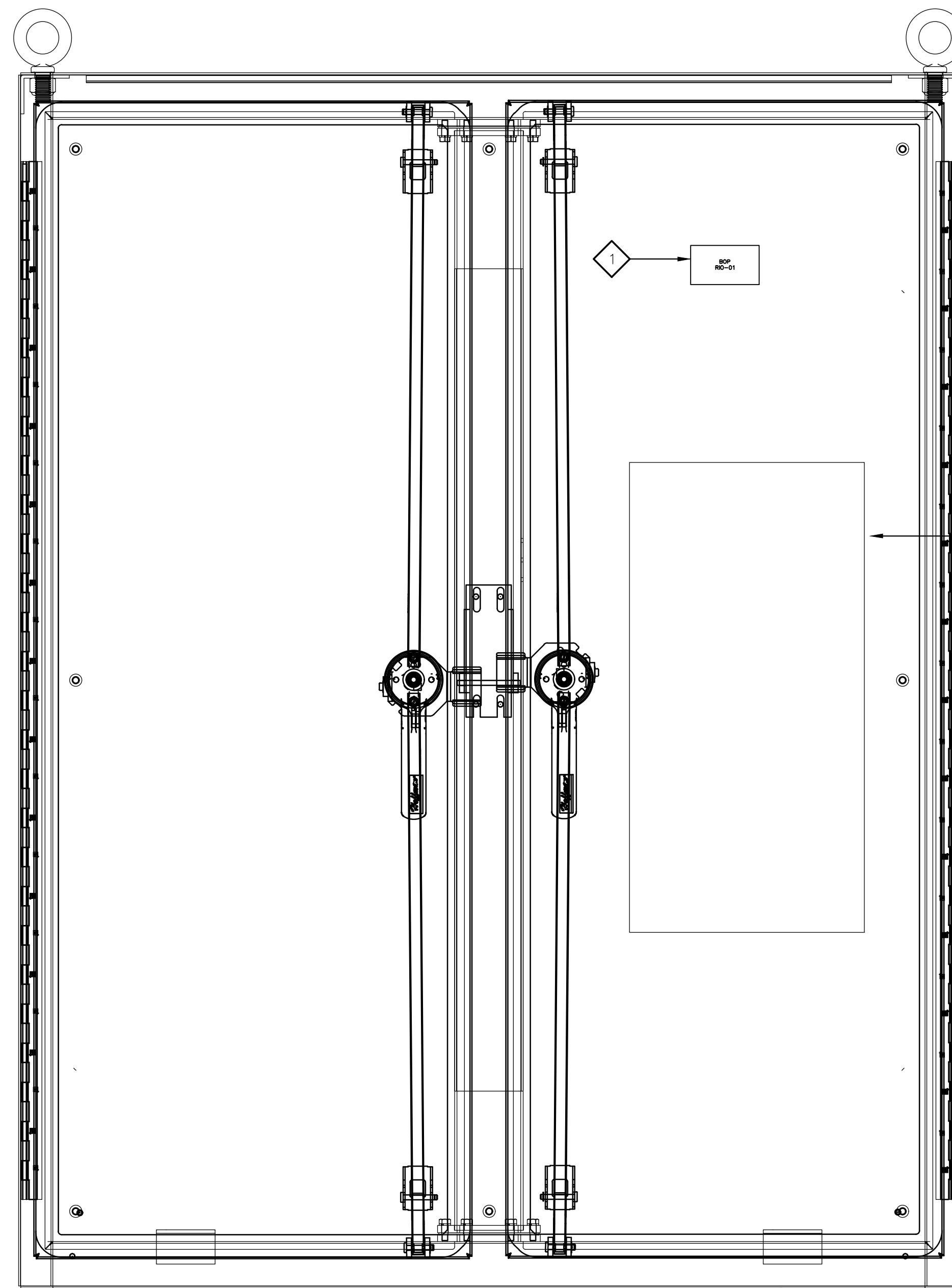


LONEB RESOURCES NIG. LTD

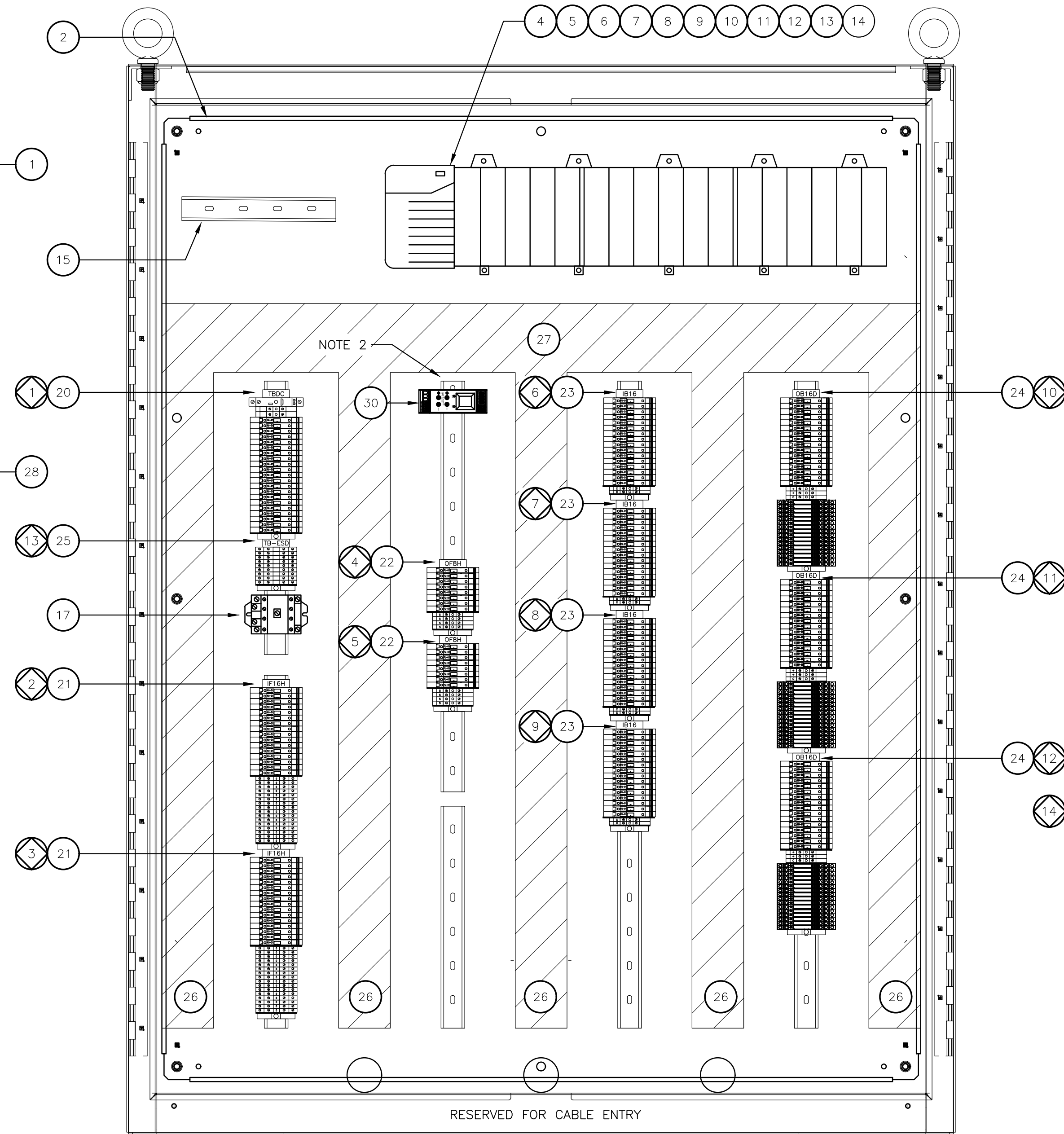
UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC

BILL OF MATERIAL AND NAMEPLATE SCHEDULE

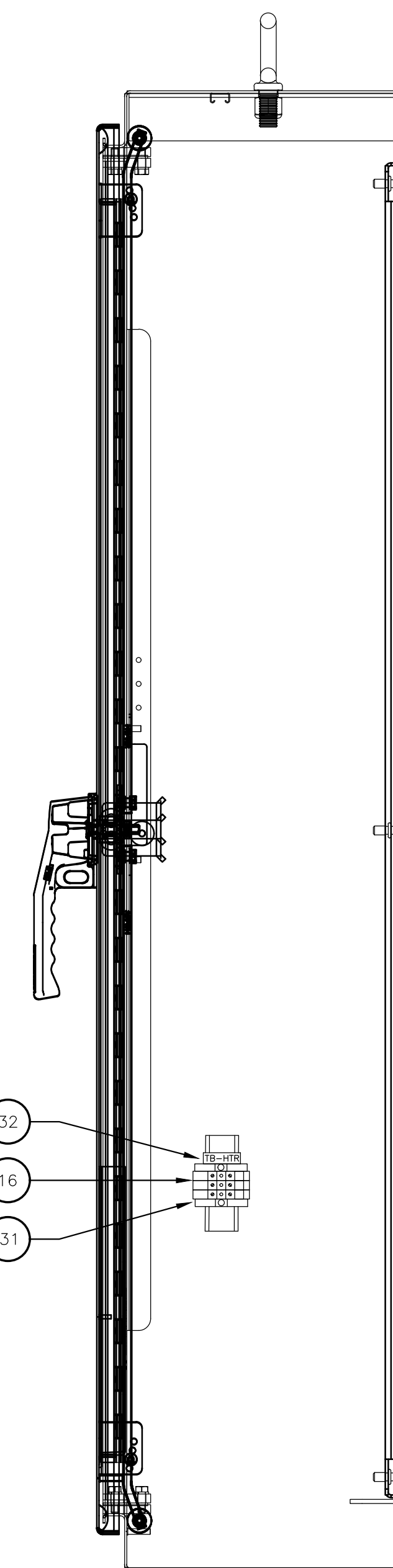
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	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00131	B



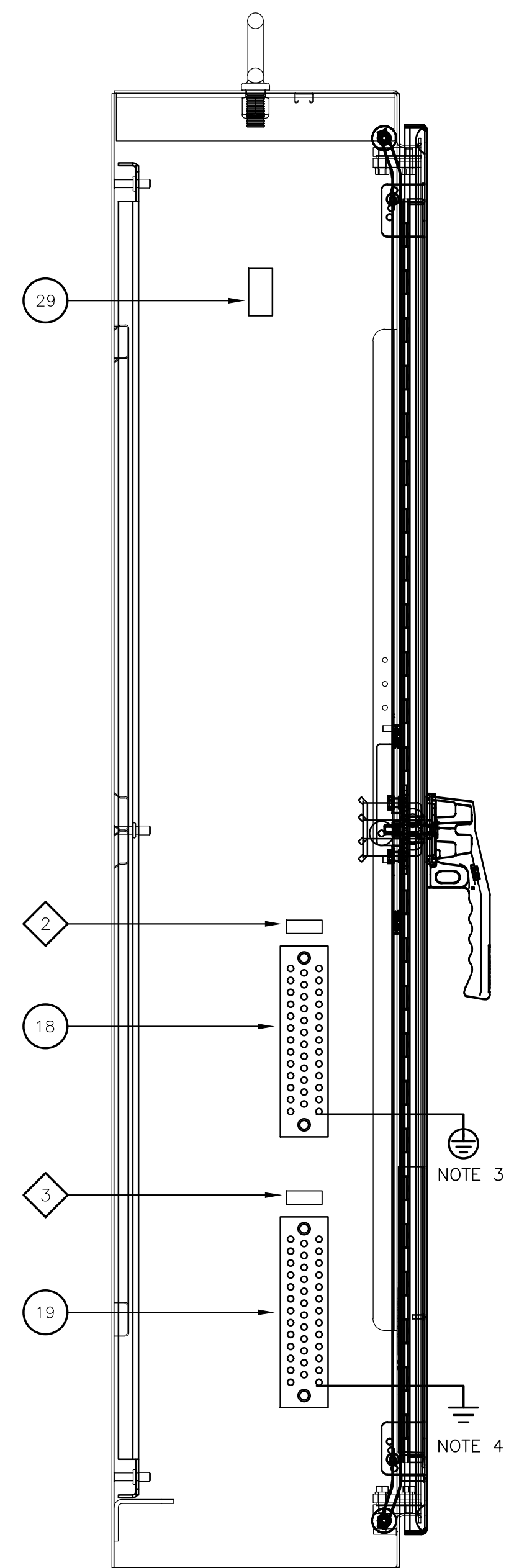
FRONT VIEW



FRONT INSIDE VIEW



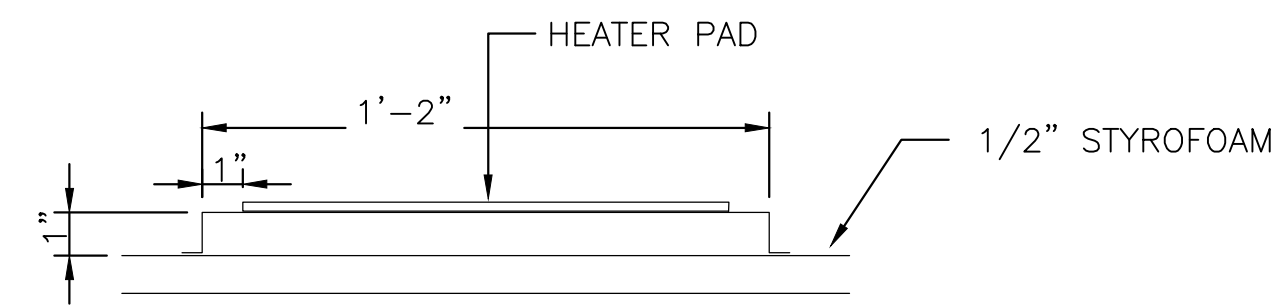
LEFT INSIDE VIEW



RIGHT INSIDE VIEW

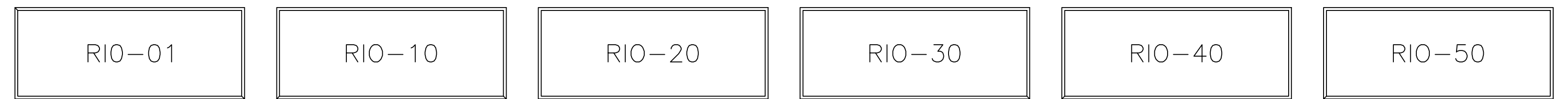
NOTES:

1. INSULATE PANEL ON ALL SIDES WITH 1/2" STYROFOAM INSULATION.
2. THE DINRAIL WITH THE ANALOG TERMINAL BLOCKS WILL BE ISOLATED WITH NYLON STAND-OFFS. TIE GROUND WIRE FROM DINRAIL DIRECTLY TO IGB.
3. ELECTRICAL CONTRACTOR TO RUN A #2 GND FROM THE ISOLATED GROUND BAR DIRECTLY TO THE GROUND GRID.
4. ELECTRICAL CONTRACTOR TO RUN A #4 GND FROM THE EQUIPMENT GROUND BAR TO THE GROUND GRID OR NEAREST STEEL.
5. ITEMS 16, 28, 29, 30, 31 AND 32 ARE FOR RIO-10, 20, 30, 40 AND 50.



DETAIL OF STAND-OFF
(MOUNTED ON INSIDE OF DOOR)

PANEL DESIGN IS TYPICAL FOR THESE BOP RIO PANELS



DOOR NAMEPLATES

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REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
		A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

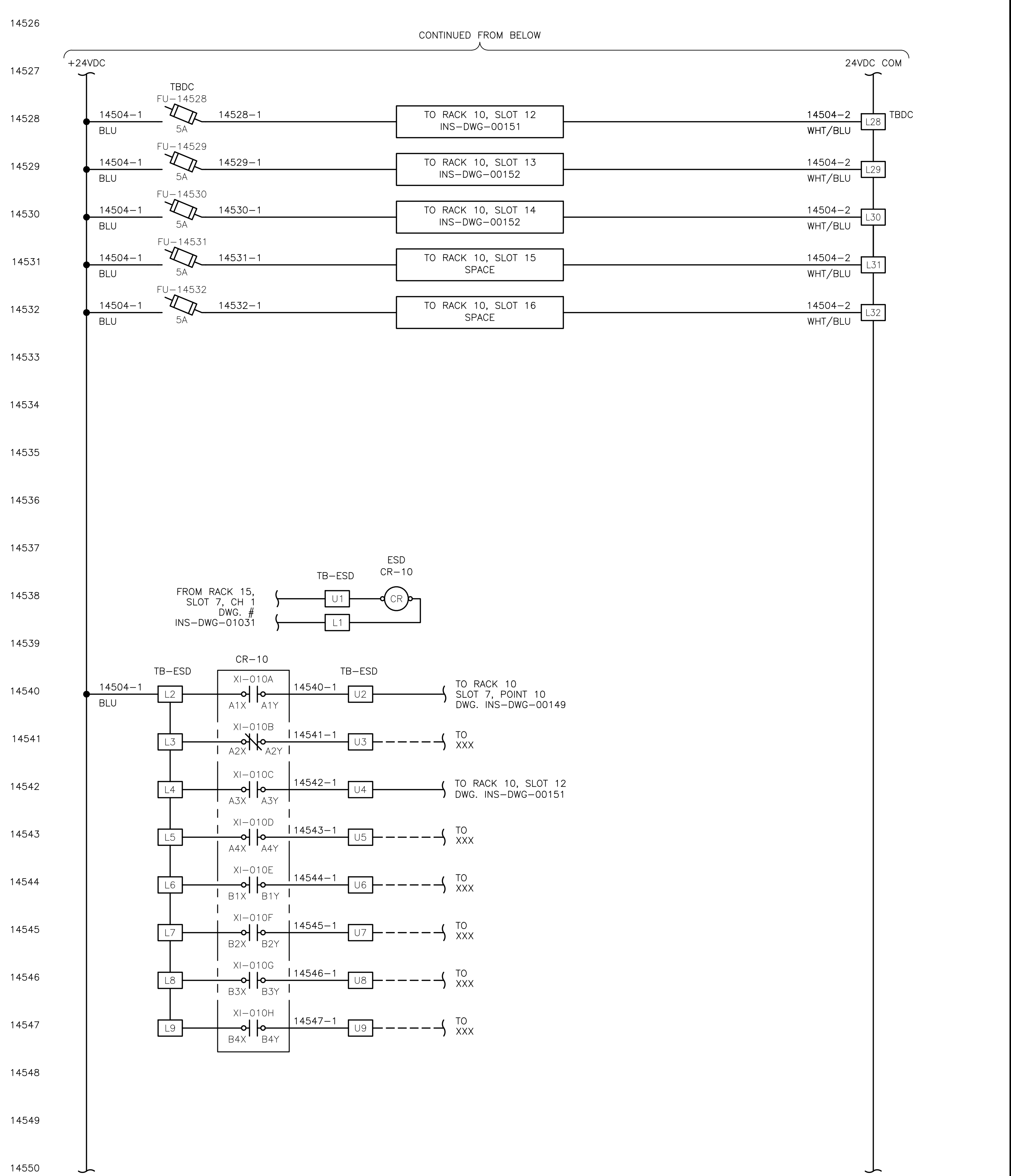
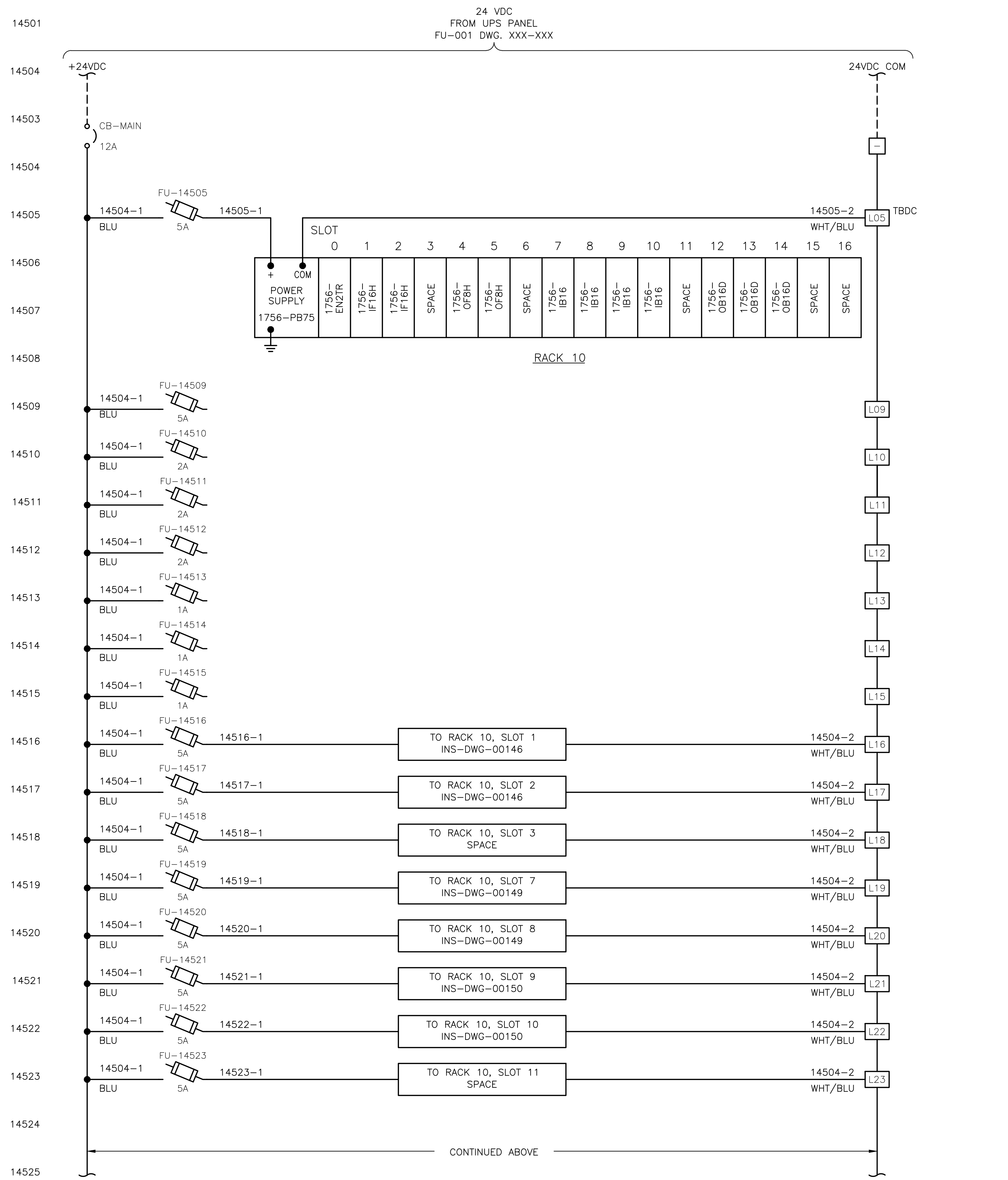
CLIENT

NIGERIAN PETROLEUM DEVELOPMENT COMPANY
LONEB RESOURCES NIG. LTD.

UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
TYPICAL RIO
PANEL LAYOUT

DRAWN BY	DATE	LTES NO:	DWG. NO.	REV
A. HOGAN	05/21/20	19016-00	L1901-NPDC-INS-DWG-00132	B
SCALE: NONE				

Path: C:\Users\jrb\Documents\Projects\1901-NPDC-INS-DWG-00132.dwg
 Date: 17/07/2020 10:24 AM
 User: jrb



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	B		ISSUED FOR APPROVAL			12/23/20	JJB	SRB	SCP		
	A		ISSUED FOR REVIEW			07/16/20	AMH	SRB	SCP		

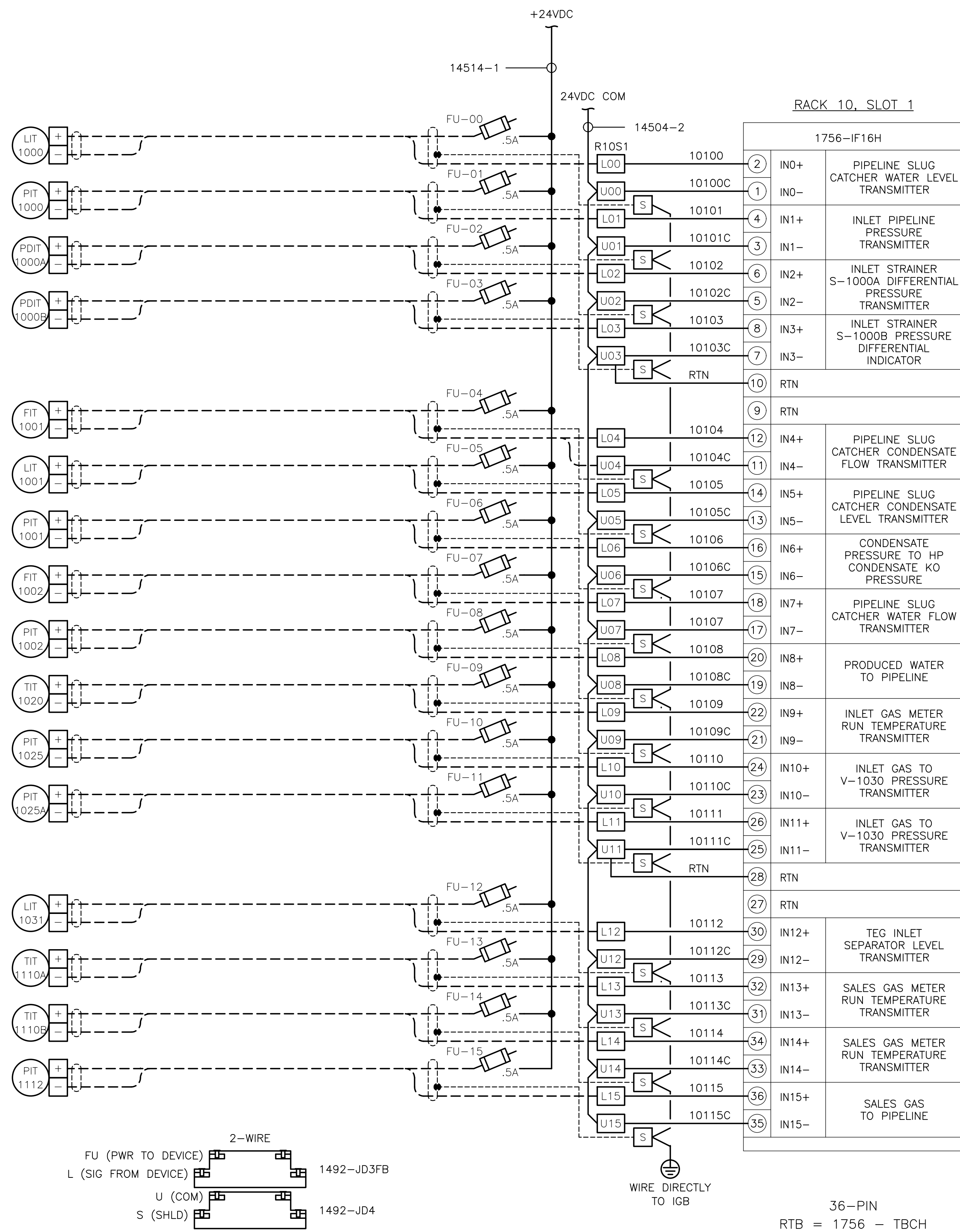
AUTHORIZED FOR RELEASE			CLIENT
TITLE	DATE	BY	 NIGERIAN PETROLEUM DEVELOPMENT COMPANY
LTES PROJECT MANAGER			
LONEB PROJECT MANAGER			

 LONEB RESOURCES NIG. LTD		UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC RIO-10 POWER DISTRIBUTION	
DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO.
A. HOGAN	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00145

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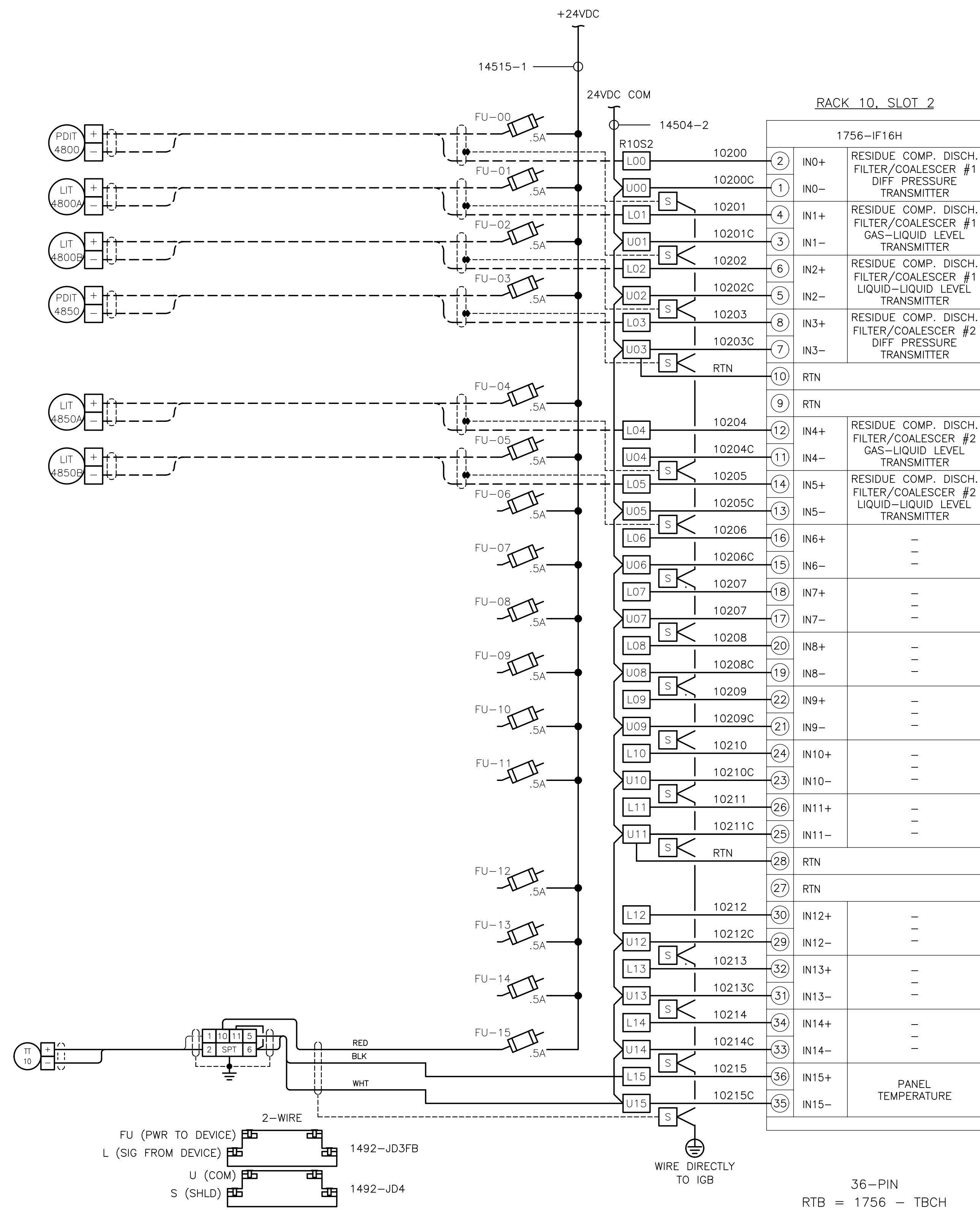
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B	ISSUED FOR APPROVAL	12/23/20	JPB	SRB	SCP						
A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP						
REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV		

AUTHORIZED FOR RELEASE			CLIENT	
TITLE	DATE	BY	NIGERIAN PETROLEUM DEVELOPMENT COMPANY	
LTES PROJECT MANAGER				
LONEB PROJECT MANAGER				
 LONE TREE ENGINEERING SERVICES 7807 E PEAKVIEW AVE, STE 150 CENTENNIAL, CO 80111, USA			 LONEB RESOURCES NIG. LTD	

DRAWN BY		DATE	LTES NO:	DWG. NO.	REV
A. HOGAN		05/21/20	19016-00	L1901-NPDC-INS-DWG-00146	B
SCALE:		NONE			

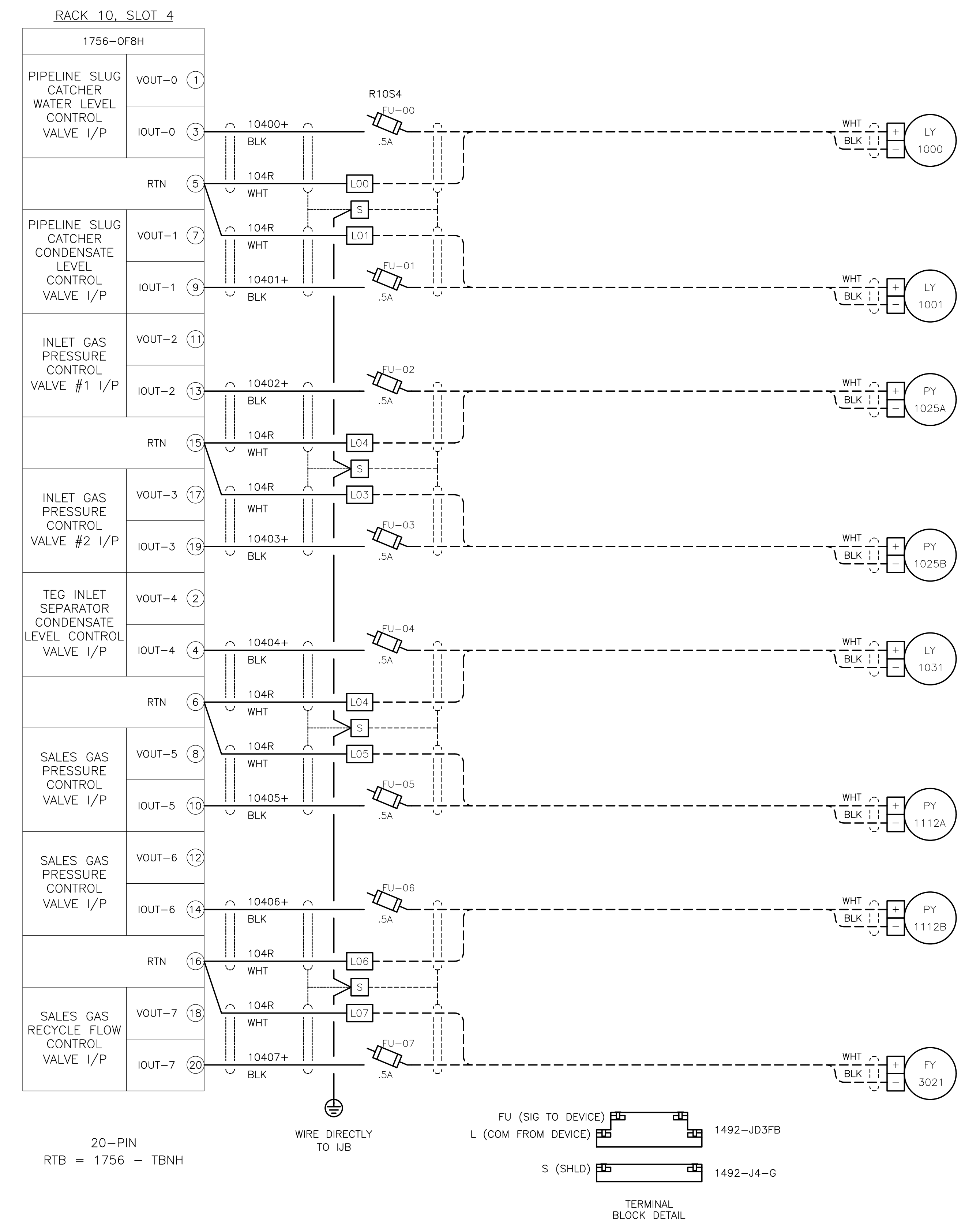
UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC RIO-10 LOOP DRAWING, RACK 10, SLOT 1 AND 2					
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A. HOGAN		05/21/20	19016-00	L1901-NPDC-INS-DWG-00146	B
SCALE:		NONE			

Plotted by: JOSEPH BOND Date: 12/17/2020 10:28 AM Drawing: P:\High Country Sales\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00146.dwg

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RACK 10, SLOT 3
SPACE

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REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
		A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

CLIENT

NIGERIAN PETROLEUM DEVELOPMENT COMPANY

LONEB RESOURCES NIG. LTD

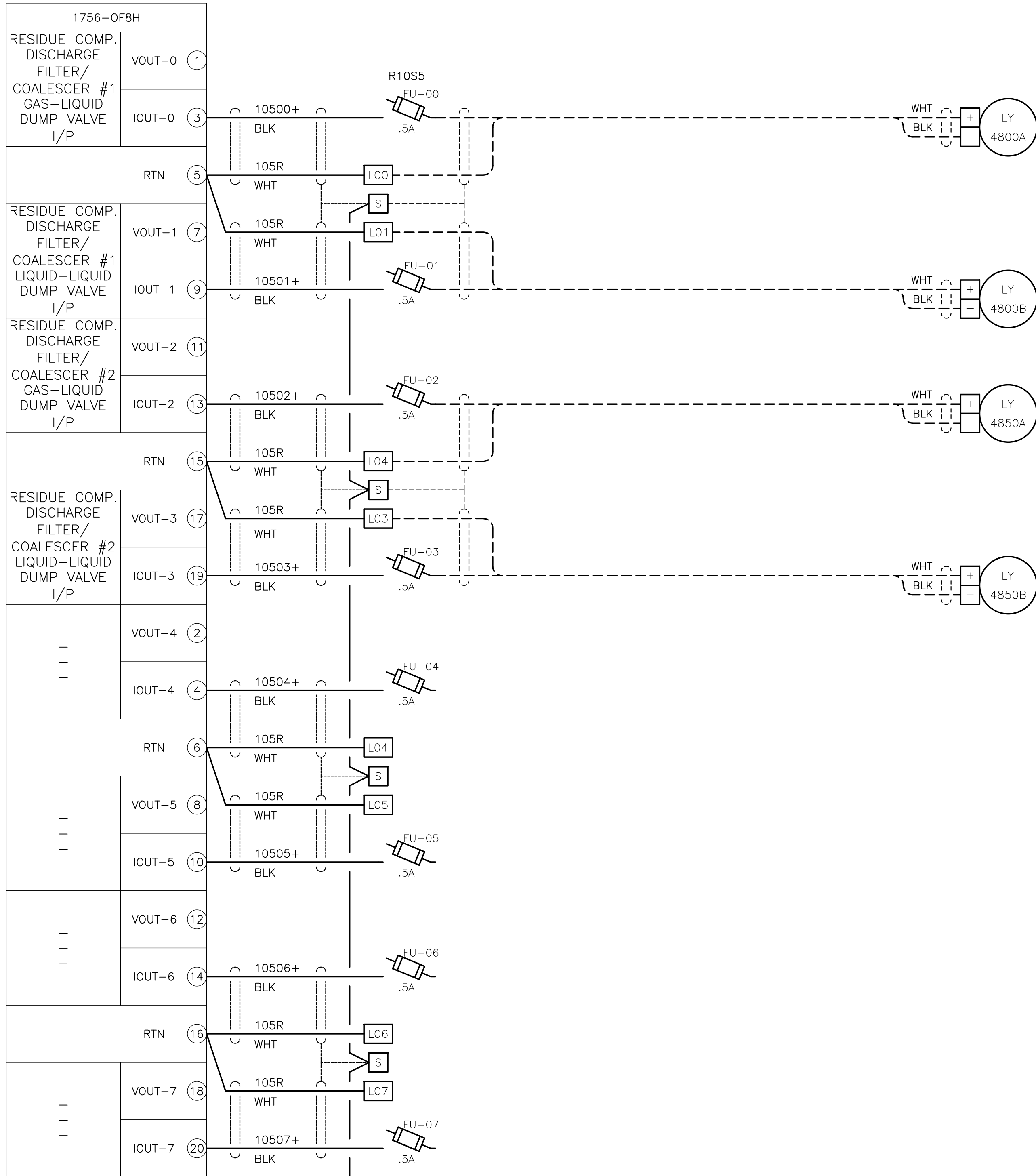
UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
RIO-10
LOOP DRAWING, RACK 10, SLOT 3 AND 4

DRAWN BY	DATE	LTES NO:	DWG. NO.	REV
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SCALE: NONE				

Plotted by: JOSEPH.BOND Date: 12/17/2020 10:30 AM Drawing: P:\High Country_Sales\Utorogu_Cryo Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-00147.dwg

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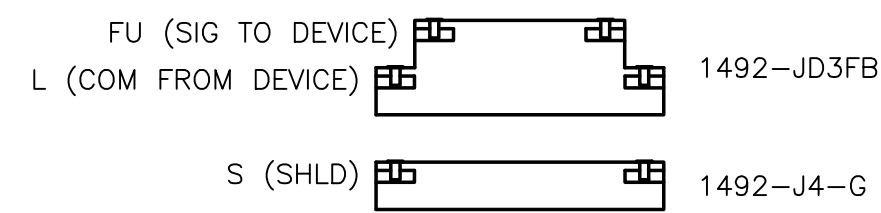
RACK 10, SLOT 5



RACK 10, SLOT 6
SPACE

20-PIN
RTB = 1756 - TBNH

WIRE DIRECTLY
TO IJB



TERMINAL
BLOCK DETAIL

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REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	ISSUED FOR APPROVAL	12/23/20	JOB	SRB	SCP		
		A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

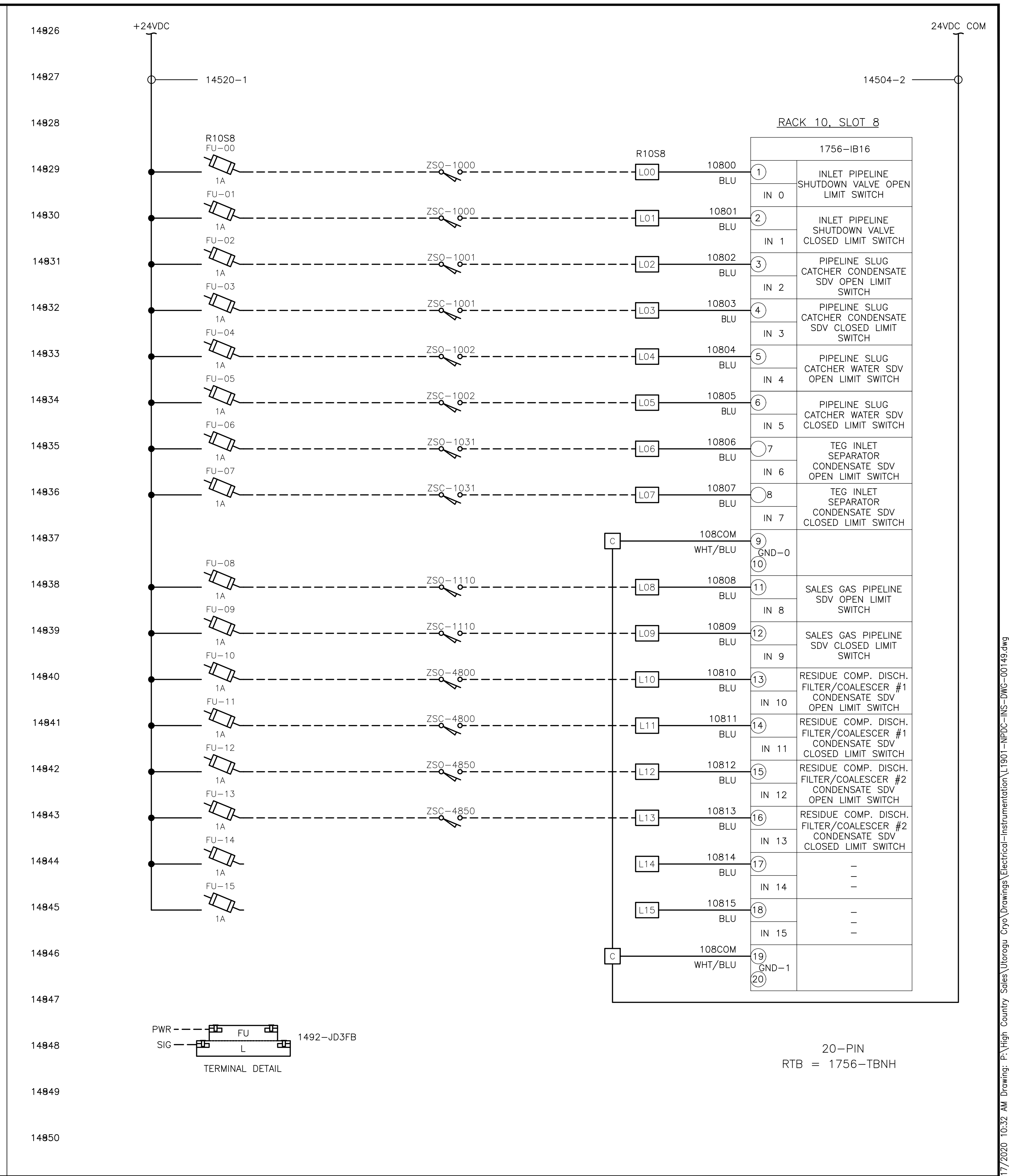
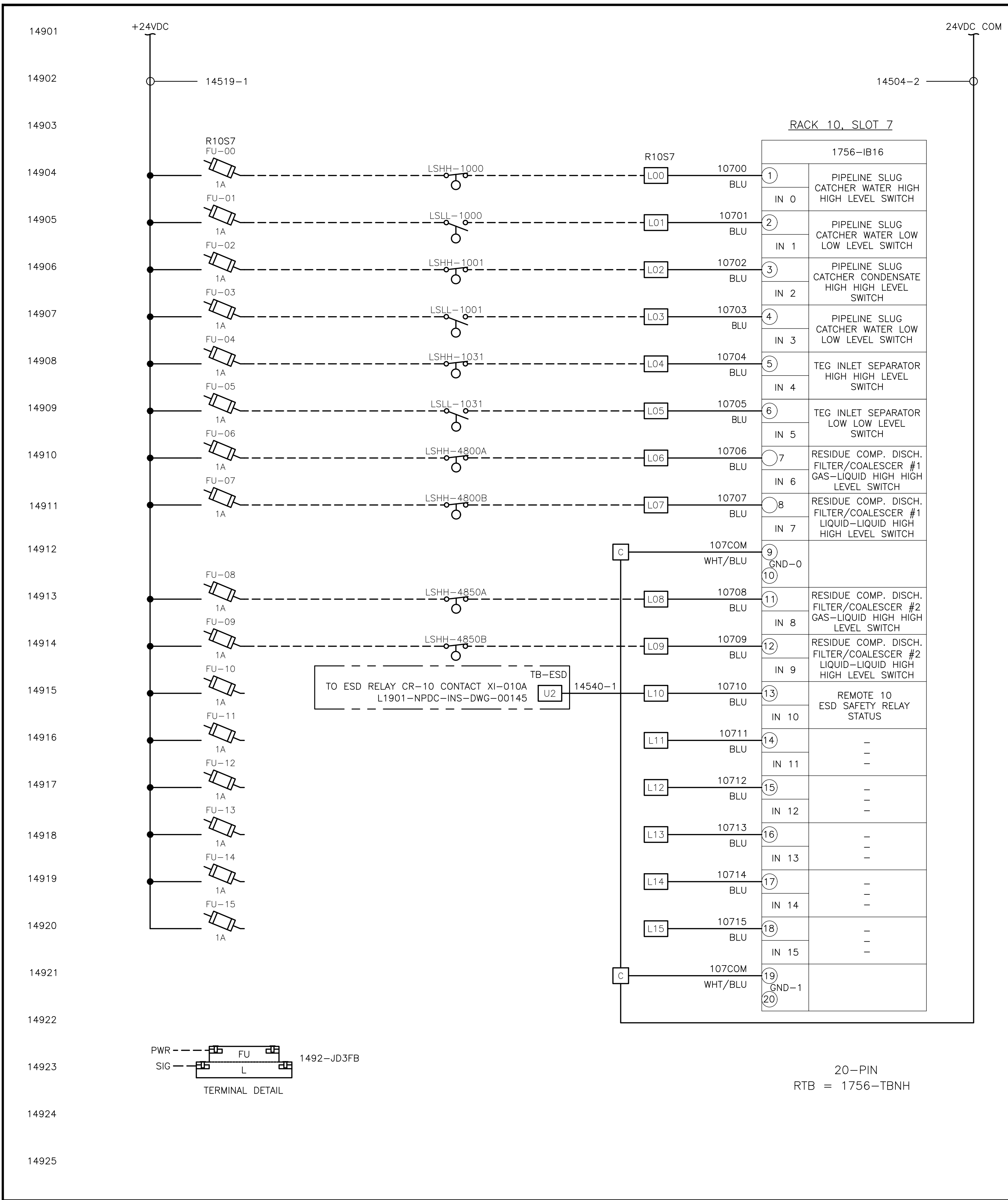
CLIENT

NIGERIAN PETROLEUM DEVELOPMENT COMPANY
LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC RIO-10 LOOP DRAWING, RACK 10, SLOT 5 AND 6			
DRAWN BY	DATE	LTES NO:	DWG. NO.
A. HOGAN	05/21/20	19016-00	L1901-NPDC-INS-DWG-00148
SCALE:	NONE		

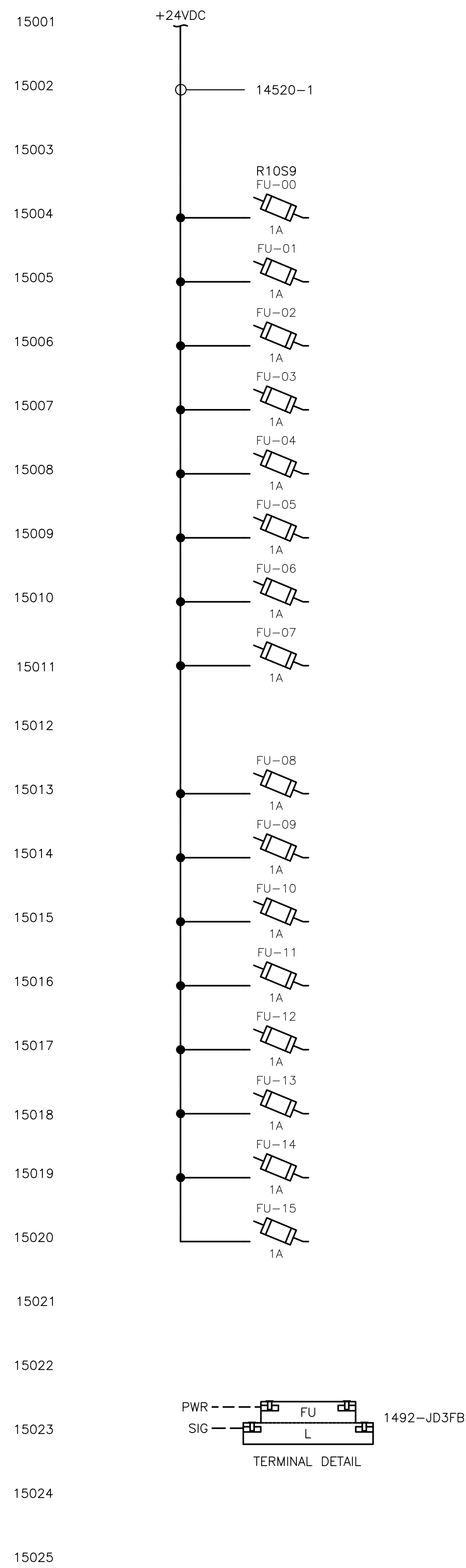
REV	B

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			B	ISSUED FOR APPROVAL	12/23/20	JOB	SRB	SCP																																										
			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP																																										
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AUTHORIZED FOR RELEASE			CLIENT																																															
TITLE	DATE	BY	 NIGERIAN PETROLEUM DEVELOPMENT COMPANY LONEB RESOURCES NIG. LTD																																															
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 LONE TREE ENGINEERING SERVICES <small>7807 E PEAKVIEW AVE, STE 150 CENTENNIAL, CO 80011, USA</small>			UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC RIO-10 LOOP DRAWING, RACK 10, SLOT 7 AND 8																																															
DRAWN BY	DATE	LTES NO:	DWG. NO.	REV																																														
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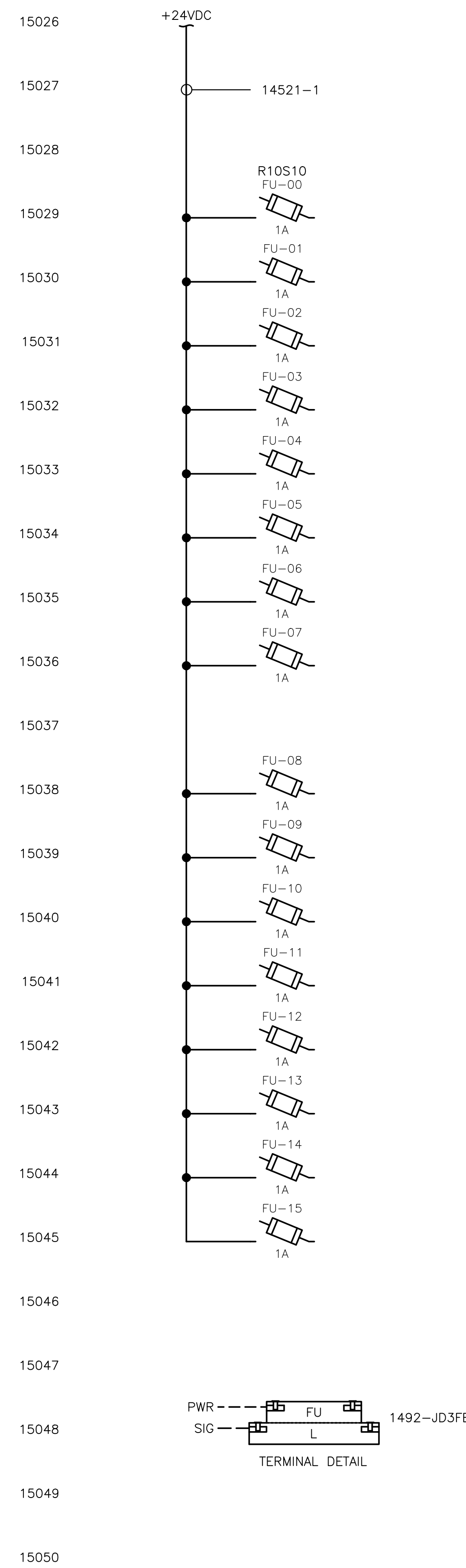
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RACK 10, SLOT 9

R10S9		1756-IB16	
L00	10900 BLU	①	IN 0
L01	10901 BLU	②	IN 1
L02	10902 BLU	③	IN 2
L03	10903 BLU	④	IN 3
L04	10904 BLU	⑤	IN 4
L05	10905 BLU	⑥	IN 5
L06	10906 BLU	⑦	IN 6
L07	10907 BLU	⑧	IN 7
C	109COM WHT/BLU	⑨	IN 8
L08	10908 BLU	⑩	IN 9
L09	10909 BLU	⑪	IN 10
L10	10910 BLU	⑫	IN 11
L11	10911 BLU	⑬	IN 12
L12	10912 BLU	⑭	IN 13
L13	10913 BLU	⑮	IN 14
L14	10914 BLU	⑯	IN 15
L15	10915 BLU	⑰	IN 15
C	109COM WHT/BLU	⑱	GND-1
		⑳	GND-0

20-PIN
RTB = 1756-TBNH



RACK 10, SLOT 10

R10S10		1756-IB16	
L00	101000 BLU	①	IN 0
L01	101001 BLU	②	IN 1
L02	101002 BLU	③	IN 2
L03	101003 BLU	④	IN 3
L04	101004 BLU	⑤	IN 4
L05	101005 BLU	⑥	IN 5
L06	101006 BLU	⑦	IN 6
L07	101007 BLU	⑧	IN 7
C	1010COM WHT/BLU	⑨	IN 8
L08	101008 BLU	⑩	IN 9
L09	101009 BLU	⑪	IN 10
L10	101010 BLU	⑫	IN 11
L11	101011 BLU	⑬	IN 12
L12	101012 BLU	⑭	IN 13
L13	101013 BLU	⑮	IN 14
L14	101014 BLU	⑯	IN 15
L15	101015 BLU	⑰	IN 15
C	1010COM WHT/BLU	⑱	GND-1
		⑳	GND-0

20-PIN
RTB = 1756-TBNH

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REF DWG. NO.	DESCRIPTION

REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE

TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

LONE TREE
ENGINEERING SERVICES
7807 E PEAKVIEW AVE, STE 150
CENTENNIAL, CO 80111, USA

CLIENT

NIGERIAN PETROLEUM DEVELOPMENT COMPANY

LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
RIO-10
LOOP DRAWING, RACK 10, SLOT 9 AND 10

DRAWN BY	DATE	LTES NO:	DWG. NO.	REV
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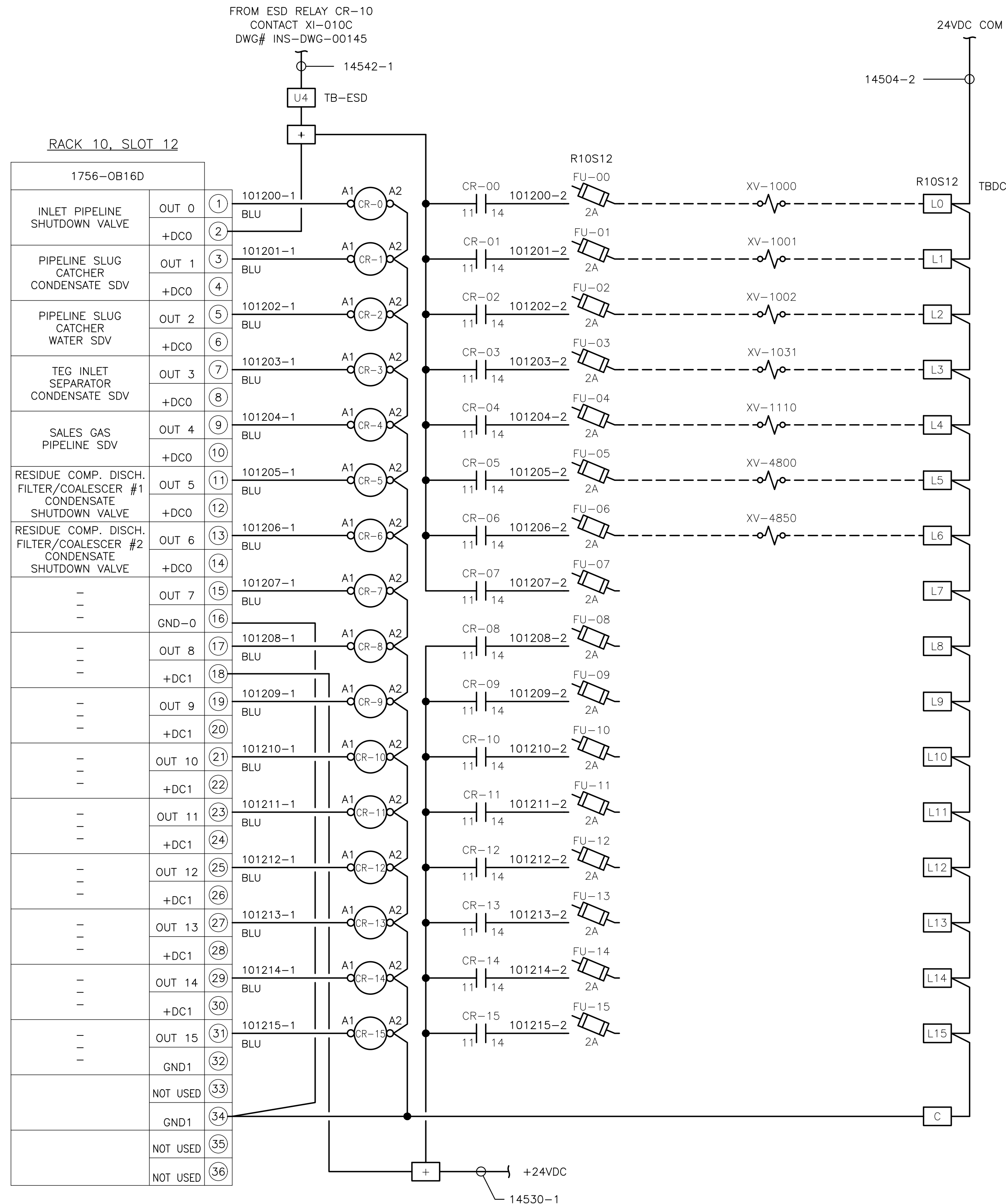
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RACK 10, SLOT 11
SPACE

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REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

CLIENT

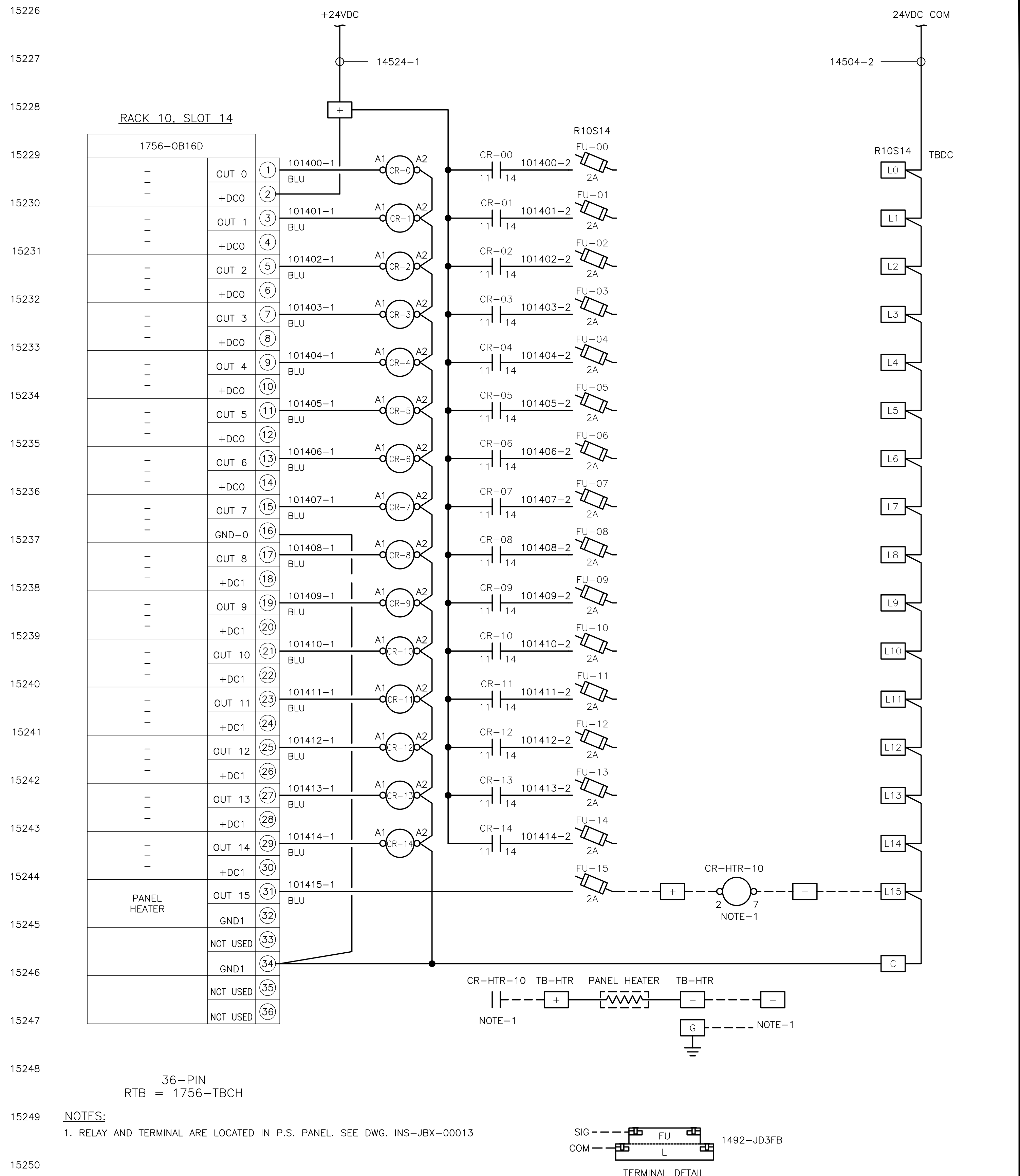
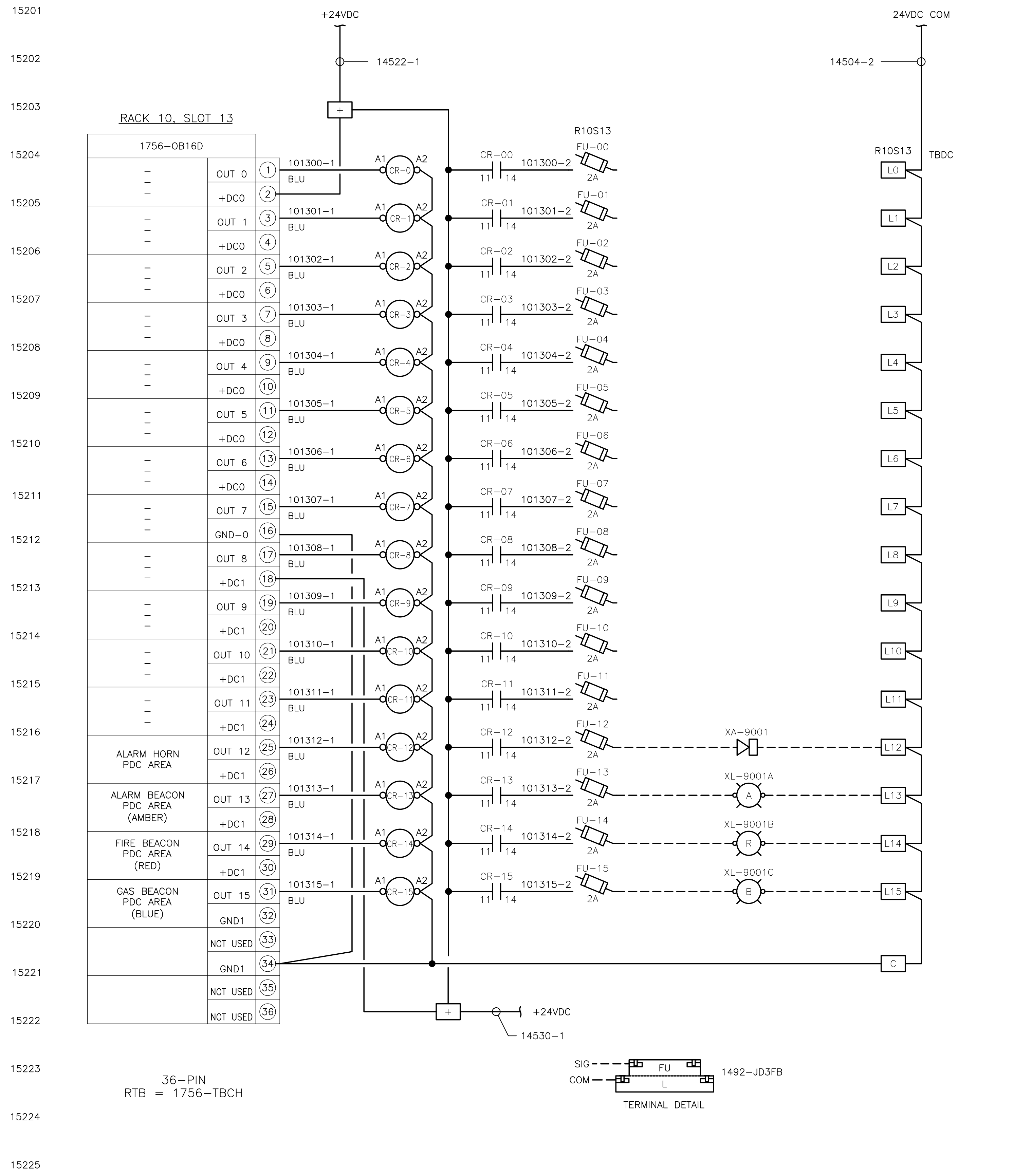
NIGERIAN PETROLEUM DEVELOPMENT COMPANY

LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
RIO-10
LOOP DRAWING, RACK 10, SLOT 11 AND 12

DRAWN BY	DATE	LTES NO:	DWG. NO.	REV
A. HOGAN	05/21/20	19016-00	L1901-NPDC-INS-DWG-00151	B
SCALE: NONE				

Plotted by: JOSEPH.BOND Date: 12/23/2020 10:34 AM Drawing: P:\High Country Sales\Drawings\Electrical\Instrumentation\L1901-NPDC-INS-DWG-00151.dwg



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			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE			CLIENT	
TITLE	DATE	BY	NIGERIAN PETROLEUM DEVELOPMENT COMPANY	
LTES PROJECT MANAGER			LONEB RESOURCES NIG. LTD	
LONEB PROJECT MANAGER				

UTORUGU GAS EXPANSION PROJECT			
UTORUGU, NIGERIA			
L1901-NPDC			
RIO-10			
LOOP DRAWING, RACK 10, SLOT 13 AND 14			
DRAWN BY	DATE	LTES NO:	DWG. NO.
A. HOGAN	05/21/20	19016-00	L1901-NPDC-INS-DWG-00152
SCALE:	NONE		REV
			B

Plotted by: JOSEPH BOND Date: 12/17/2020 10:35 AM Drawing: P:\High Country Sales\Utorogu Cryo Drawings\Electrical\Instrumentation\L1901-NPDC-INS-DWG-00152.dwg

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RACK 10, SLOT 15
SPACE

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RACK 10, SLOT 16
SPACE

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REF DWG. NO.	DESCRIPTION
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REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
B	ISSUED FOR APPROVAL	12/23/20	JJB	SRB	SCP		
A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE		
TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

CLIENT



NIGERIAN PETROLEUM DEVELOPMENT COMPANY



LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT
UTOROGU, NIGERIA
L1901-NPDC
RIO-10
LOOP DRAWING, RACK 10, SLOT 15 AND 16

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO.
A. HOGAN	05/21/20	SCALE: NONE	L1901-NPDC-INS-DWG-00153

REV	B
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