

ESD RIO-15 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	CSD483612SS	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	CP4836	PANEL SHOP
3	1	ENCLOSURE MOUNTING BRACKET	HOFFMAN	CMFKSS	PANEL SHOP
4	1	5094 ETHERNET ADAPTER 16 MODULES RJ45	ALLEN-BRADLEY	5094-AEN2TR	PANEL SHOP
5	3	FLEX 5000 ANALOG INPUT, 8 POINT, CURRENT/VOLTAGE MODULE, HART, (RTB3I)	ALLEN-BRADLEY	5094-IF8IH	PANEL SHOP
6	1	FLEX 5000 DISCRETE INPUT, 16 POINT, MODULE, (RTB3)	ALLEN-BRADLEY	5094-IB16	PANEL SHOP
7	2	FLEX 5000 DISCRETE INPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-IB16S	PANEL SHOP
8	1	FLEX 5000 DISCRETE OUTPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-OB16S	PANEL SHOP
9	7	MOUNTING BASE	ALLEN-BRADLEY	5094-MB	PANEL SHOP
10	1	REMOVABLE TERMINAL BLOCK	ALLEN-BRADLEY	5094-RTB3	PANEL SHOP
11	6	REMOVABLE TERMINAL BLOCK, ISOLATED (FOR SAFETY MODULES)	ALLEN-BRADLEY	5094-RTB3I	PANEL SHOP
12		EMPTY SLOT FILLER	ALLEN-BRADLEY	5094-N2	PANEL SHOP
13	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP1020Z24	PANEL SHOP
14	A/R	DIN RAIL, 35 MM, PERFORATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
15		END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
16	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
17	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
18	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
19	1	TB-ESD TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
20	3	8-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
21	3	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16S)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
22	1	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
23	1	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
24	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
25	1	2-POSITION RED PUSH-PULL TWIST E-STOP	ALLEN-BRADLEY	800T-FXLE6AP	PANEL SHOP
26	1	JUMBO PROTECTIVE GUARD	ALLEN-BRADLEY	800T-N310J	PANEL SHOP
27	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	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

LAMACOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	ESD	RIO-15		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4	ESD PB	HS-9101		PANEL SHOP
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	TB-ESD			PANEL SHOP
3	R15S1			PANEL SHOP
4	R15S2			PANEL SHOP
5	R15S3			PANEL SHOP
6	R15S4			PANEL SHOP
7	R15S5			PANEL SHOP
8	R15S6			PANEL SHOP
9	R15S7			PANEL SHOP
10	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	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		



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  
ESD RIO-15  
BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
A. HOGAN	06/08/20	SCALE: NONE	L1901-NPDC-INS-DWG-01001	B

Plotted by: JOSEPH BOND Date: 12/21/2020 10:47 AM Drawing: P:\High Country Sales\Utorogu Cyo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-01001.dwg

ESD RIO-25 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	CSD483612SS	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	CP4836	PANEL SHOP
3	1	ENCLOSURE MOUNTING BRACKET	HOFFMAN	CMFKSS	PANEL SHOP
4	1	5094 ETHERNET ADAPTER 16 MODULES RJ45	ALLEN-BRADLEY	5094-AEN2TR	PANEL SHOP
5	3	FLEX 5000 ANALOG INPUT, 8 POINT, CURRENT/VOLTAGE MODULE, HART, (RTB3I)	ALLEN-BRADLEY	5094-IF8IH	PANEL SHOP
6	1	FLEX 5000 DISCRETE INPUT, 16 POINT, MODULE, (RTB3)	ALLEN-BRADLEY	5094-IB16	PANEL SHOP
7	2	FLEX 5000 DISCRETE INPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-IB16S	PANEL SHOP
8	1	FLEX 5000 DISCRETE OUTPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-OB16S	PANEL SHOP
9	7	MOUNTING BASE	ALLEN-BRADLEY	5094-MB	PANEL SHOP
10	1	REMOVABLE TERMINAL BLOCK	ALLEN-BRADLEY	5094-RTB3	PANEL SHOP
11	6	REMOVABLE TERMINAL BLOCK, ISOLATED (FOR SAFETY MODULES)	ALLEN-BRADLEY	5094-RTB3I	PANEL SHOP
12		EMPTY SLOT FILLER	ALLEN-BRADLEY	5094-N2	PANEL SHOP
13	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP1020Z24	PANEL SHOP
14	A/R	DIN RAIL, 35 MM, PERFORATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
15		END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
16	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
17	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
18	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
19	1	TB-ESD TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
20	3	8-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
21	3	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16S)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
22	1	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
23	1	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
24	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
25	1	2-POSITION RED PUSH-PULL TWIST E-STOP	ALLEN-BRADLEY	800T-FXLE6AP	PANEL SHOP
26	1	JUMBO PROTECTIVE GUARD	ALLEN-BRADLEY	800T-N310J	PANEL SHOP
27	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	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

LAMACOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	ESD	RIO-25		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4	ESD PB	HS-9801		PANEL SHOP
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	TB-ESD			PANEL SHOP
3	R25S1			PANEL SHOP
4	R25S2			PANEL SHOP
5	R25S3			PANEL SHOP
6	R25S4			PANEL SHOP
7	R25S5			PANEL SHOP
8	R25S6			PANEL SHOP
9	R25S7			PANEL SHOP
10	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	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		



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  
ESD RIO-25  
BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
A. HOGAN	06/08/20	SCALE: NONE	L1901-NPDC-INS-DWG-01002	B

Plotted by: JOSEPH BOND Date: 12/21/2020 10:54 AM Drawing: P:\High Country Sales\Utorogu Cyo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-01002.dwg



ESD RIO-35 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	CSD483612SS	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	CP4836	PANEL SHOP
3	1	ENCLOSURE MOUNTING BRACKET	HOFFMAN	CMFKSS	PANEL SHOP
4	1	5094 ETHERNET ADAPTER 16 MODULES RJ45	ALLEN-BRADLEY	5094-AEN2TR	PANEL SHOP
5	3	FLEX 5000 ANALOG INPUT, 8 POINT, CURRENT/VOLTAGE MODULE, HART, (RTB3I)	ALLEN-BRADLEY	5094-IF8IH	PANEL SHOP
6	1	FLEX 5000 DISCRETE INPUT, 16 POINT, MODULE, (RTB3)	ALLEN-BRADLEY	5094-IB16	PANEL SHOP
7	2	FLEX 5000 DISCRETE INPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-IB16S	PANEL SHOP
8	1	FLEX 5000 DISCRETE OUTPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-OB16S	PANEL SHOP
9	7	MOUNTING BASE	ALLEN-BRADLEY	5094-MB	PANEL SHOP
10	1	REMOVABLE TERMINAL BLOCK	ALLEN-BRADLEY	5094-RTB3	PANEL SHOP
11	6	REMOVABLE TERMINAL BLOCK, ISOLATED (FOR SAFETY MODULES)	ALLEN-BRADLEY	5094-RTB3I	PANEL SHOP
12		EMPTY SLOT FILLER	ALLEN-BRADLEY	5094-N2	PANEL SHOP
13	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP1020Z24	PANEL SHOP
14	A/R	DIN RAIL, 35 MM, PERFORATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
15		END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
16	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
17	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
18	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
19	1	TB-ESD TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
20	3	8-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
21	3	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16S)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
22	1	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
23	1	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
24	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
25	1	2-POSITION RED PUSH-PULL TWIST E-STOP	ALLEN-BRADLEY	800T-FXLE6AP	PANEL SHOP
26	1	JUMBO PROTECTIVE GUARD	ALLEN-BRADLEY	800T-N310J	PANEL SHOP
27	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	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

LAMACOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	ESD	RIO-35		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4	ESD PB	HS-9501		PANEL SHOP
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	TB-ESD			PANEL SHOP
3	R35S1			PANEL SHOP
4	R35S2			PANEL SHOP
5	R35S3			PANEL SHOP
6	R35S4			PANEL SHOP
7	R35S5			PANEL SHOP
8	R35S6			PANEL SHOP
9	R35S7			PANEL SHOP
10	TB-HTR			PANEL SHOP

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REF DWG. NO.	DESCRIPTION	REV	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	12/23/20	JJB	SRB	SCP		
		A	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  
 ESD RIO-35  
 BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
A. HOGAN	06/08/20	SCALE: NONE	L1901-NPDC-INS-DWG-01003	B

Plotted by: JOSEPH BOND Date: 12/21/2020 10:57 AM Drawing: P:\High Country Sales\Utorogu Cyo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-01003.dwg

ESD RIO-45 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	CSD483612SS	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	CP4836	PANEL SHOP
3	1	ENCLOSURE MOUNTING BRACKET	HOFFMAN	CMFKSS	PANEL SHOP
4	1	5094 ETHERNET ADAPTER 16 MODULES RJ45	ALLEN-BRADLEY	5094-AEN2TR	PANEL SHOP
5	3	FLEX 5000 ANALOG INPUT, 8 POINT, CURRENT/VOLTAGE MODULE, HART, (RTB3I)	ALLEN-BRADLEY	5094-IF8IH	PANEL SHOP
6	1	FLEX 5000 DISCRETE INPUT, 16 POINT, MODULE, (RTB3)	ALLEN-BRADLEY	5094-IB16	PANEL SHOP
7	2	FLEX 5000 DISCRETE INPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-IB16S	PANEL SHOP
8	1	FLEX 5000 DISCRETE OUTPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-OB16S	PANEL SHOP
9	7	MOUNTING BASE	ALLEN-BRADLEY	5094-MB	PANEL SHOP
10	1	REMOVABLE TERMINAL BLOCK	ALLEN-BRADLEY	5094-RTB3	PANEL SHOP
11	6	REMOVABLE TERMINAL BLOCK, ISOLATED (FOR SAFETY MODULES)	ALLEN-BRADLEY	5094-RTB3I	PANEL SHOP
12		EMPTY SLOT FILLER	ALLEN-BRADLEY	5094-N2	PANEL SHOP
13	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP1020Z24	PANEL SHOP
14	A/R	DIN RAIL, 35 MM, PERFORATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
15		END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
16	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
17	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
18	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
19	1	TB-ESD TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
20	3	8-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
21	3	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16S)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
22	1	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
23	1	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
24	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
25	1	2-POSITION RED PUSH-PULL TWIST E-STOP	ALLEN-BRADLEY	800T-FXLE6AP	PANEL SHOP
26	1	JUMBO PROTECTIVE GUARD	ALLEN-BRADLEY	800T-N310J	PANEL SHOP
27	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	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

LAMACOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	ESD	RIO-45		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4	ESD PB	HS-9302		PANEL SHOP
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	TB-ESD			PANEL SHOP
3	R45S1			PANEL SHOP
4	R45S2			PANEL SHOP
5	R45S3			PANEL SHOP
6	R45S4			PANEL SHOP
7	R45S5			PANEL SHOP
8	R45S6			PANEL SHOP
9	R45S7			PANEL SHOP
10	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	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		



**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  
ESD RIO-45  
BILL OF MATERIAL AND NAMEPLATE SCHEDULE

DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
A. HOGAN	06/08/20	SCALE: NONE	L1901-NPDC-INS-DWG-01004	B

Plotted by: JOSEPH BOND Date: 12/21/2020 11:02 AM Drawing: P:\High Country Sales\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-01004.dwg



ESD RIO-55 BILL OF MATERIAL					
ITEM NO.	QTY	DESCRIPTION	VENDOR	PART NUMBER	SUPPLIED BY
1	1	CONCEPT WALL MOUNTED ENCLOSURE	HOFFMAN	CSD483612SS	PANEL SHOP
2	1	BACK PANEL	HOFFMAN	CP4836	PANEL SHOP
3	1	ENCLOSURE MOUNTING BRACKET	HOFFMAN	CMFKSS	PANEL SHOP
4	1	5094 ETHERNET ADAPTER 16 MODULES RJ45	ALLEN-BRADLEY	5094-AEN2TR	PANEL SHOP
5	3	FLEX 5000 ANALOG INPUT, 8 POINT, CURRENT/VOLTAGE MODULE, HART, (RTB3I)	ALLEN-BRADLEY	5094-IF8IH	PANEL SHOP
6	1	FLEX 5000 DISCRETE INPUT, 16 POINT, MODULE, (RTB3)	ALLEN-BRADLEY	5094-IB16	PANEL SHOP
7	2	FLEX 5000 DISCRETE INPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-IB16S	PANEL SHOP
8	1	FLEX 5000 DISCRETE OUTPUT, 16 POINT, SAFETY MODULE, (RTB3I)	ALLEN-BRADLEY	5094-OB16S	PANEL SHOP
9	7	MOUNTING BASE	ALLEN-BRADLEY	5094-MB	PANEL SHOP
10	1	REMOVABLE TERMINAL BLOCK	ALLEN-BRADLEY	5094-RTB3	PANEL SHOP
11	6	REMOVABLE TERMINAL BLOCK, ISOLATED (FOR SAFETY MODULES)	ALLEN-BRADLEY	5094-RTB3I	PANEL SHOP
12		EMPTY SLOT FILLER	ALLEN-BRADLEY	5094-N2	PANEL SHOP
13	1	SAFETY CONTROL RELAY	ALLEN-BRADLEY	700S-DCP1020Z24	PANEL SHOP
14	A/R	DIN RAIL, 35 MM, PERFORATED, 7.5	ALLEN-BRADLEY	199-DR1	PANEL SHOP
15		END ANCHOR	ALLEN-BRADLEY	1492-EAJ35	PANEL SHOP
16	1	ISOLATED GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
17	1	EQUIPMENT GROUND BAR ASSEMBLY	DWG#	L1901-NPDC-ELE-DWG-00002	PANEL SHOP
18	1	DC POWER DISTRIBUTION TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
19	1	TB-ESD TERMINAL ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
20	3	8-CHANNEL ANALOG INPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
21	3	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16S)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
22	1	16-POINT 24VDC DISCRETE INPUT ASSEMBLY (5094-IB16)	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
23	1	16-POINT 24VDC DISCRETE OUTPUT ASSEMBLY	DWG#	L1901-NPDC-INS-DWG-01009	PANEL SHOP
24	A/R	WIREWAY, 3"x4", GRAY W/COVER (DC)	PANDUIT	F3X4LG6	PANEL SHOP
25	1	2-POSITION RED PUSH-PULL TWIST E-STOP	ALLEN-BRADLEY	800T-FXLE6AP	PANEL SHOP
26	1	JUMBO PROTECTIVE GUARD	ALLEN-BRADLEY	800T-N310J	PANEL SHOP
27	3	TERMINAL BLOCK	ALLEN-BRADLEY	1492-J10	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

LAMACOID NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	ESD	RIO-55		PANEL SHOP
2	ISOLATED	GROUND		PANEL SHOP
3	EQUIPMENT	GROUND		PANEL SHOP
4	ESD PB	HS-9303		PANEL SHOP
5				
6				

TB NAMEPLATE SCHEDULE				
ITEM NO.	FIRST LINE	SECOND LINE	THIRD LINE	SUPPLIED BY
1	TBDC			PANEL SHOP
2	TB-ESD			PANEL SHOP
3	R55S1			PANEL SHOP
4	R55S2			PANEL SHOP
5	R55S3			PANEL SHOP
6	R55S4			PANEL SHOP
7	R55S5			PANEL SHOP
8	R55S6			PANEL SHOP
9	R55S7			PANEL SHOP
10	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



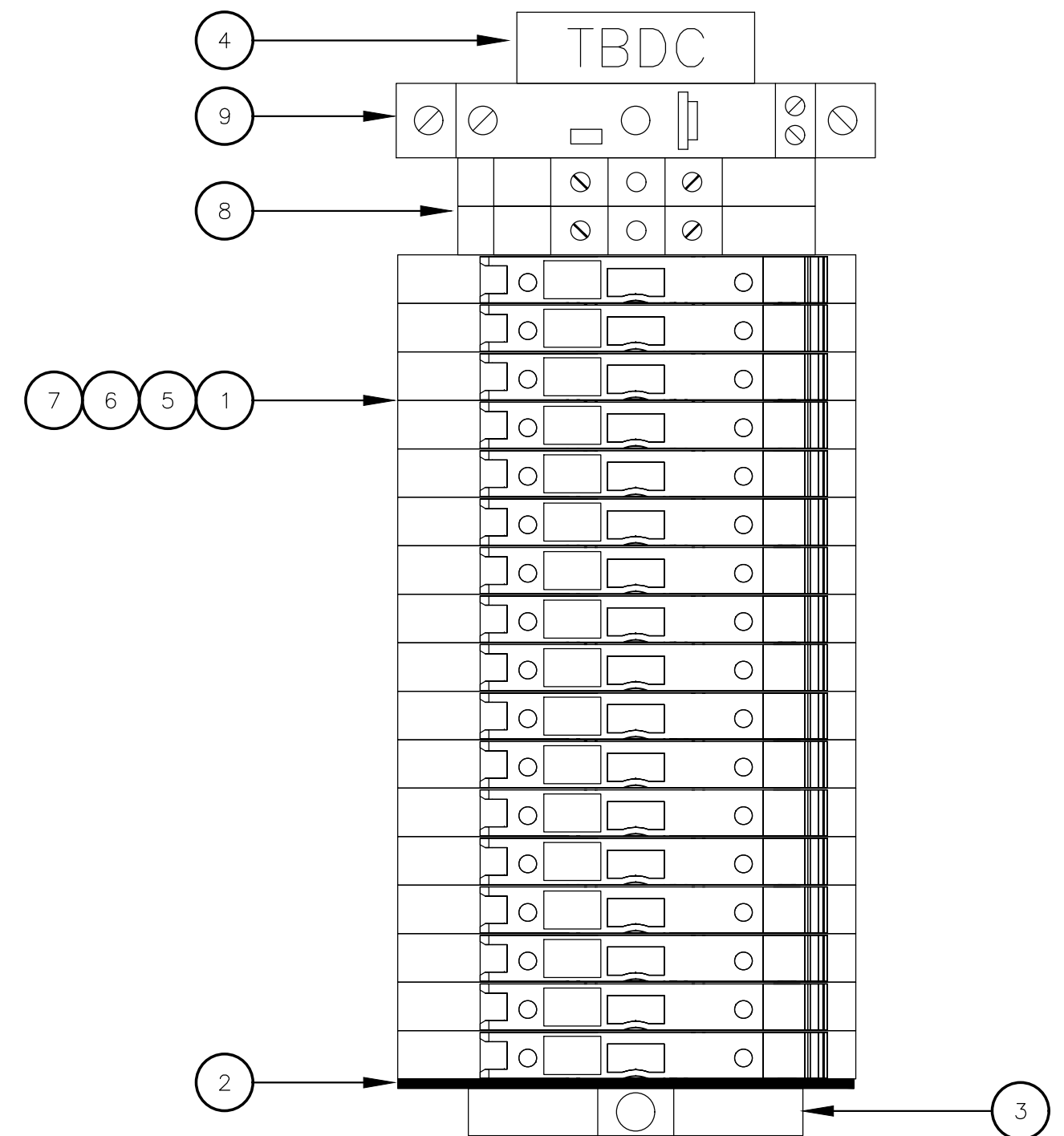
LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT  
 UTOROGU, NIGERIA  
 L1901-NPDC  
 ESD RIO-55  
 BILL OF MATERIAL AND NAMEPLATE SCHEDULE

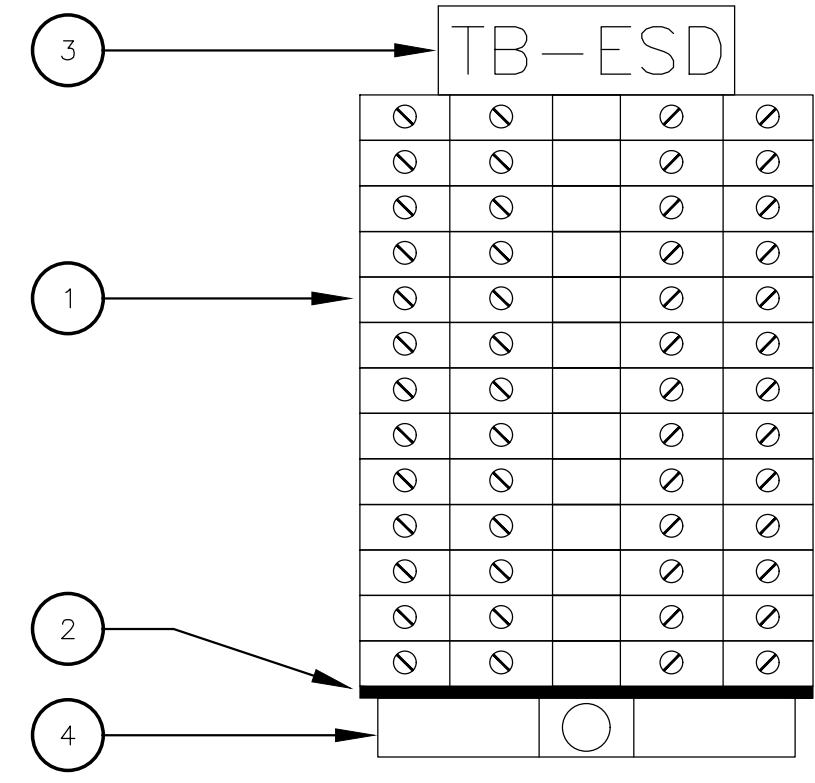
DRAWN BY	DATE	LTES NO: 19016-00	DWG. NO	REV
A. HOGAN	06/08/20	SCALE: NONE	L1901-NPDC-INS-DWG-01005	B

Plotted by: JOSEPH.BOND Date: 12/21/2020 11:05 AM Drawing: P:\High Country Sales\Utorogu Cyo\Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-01005.dwg

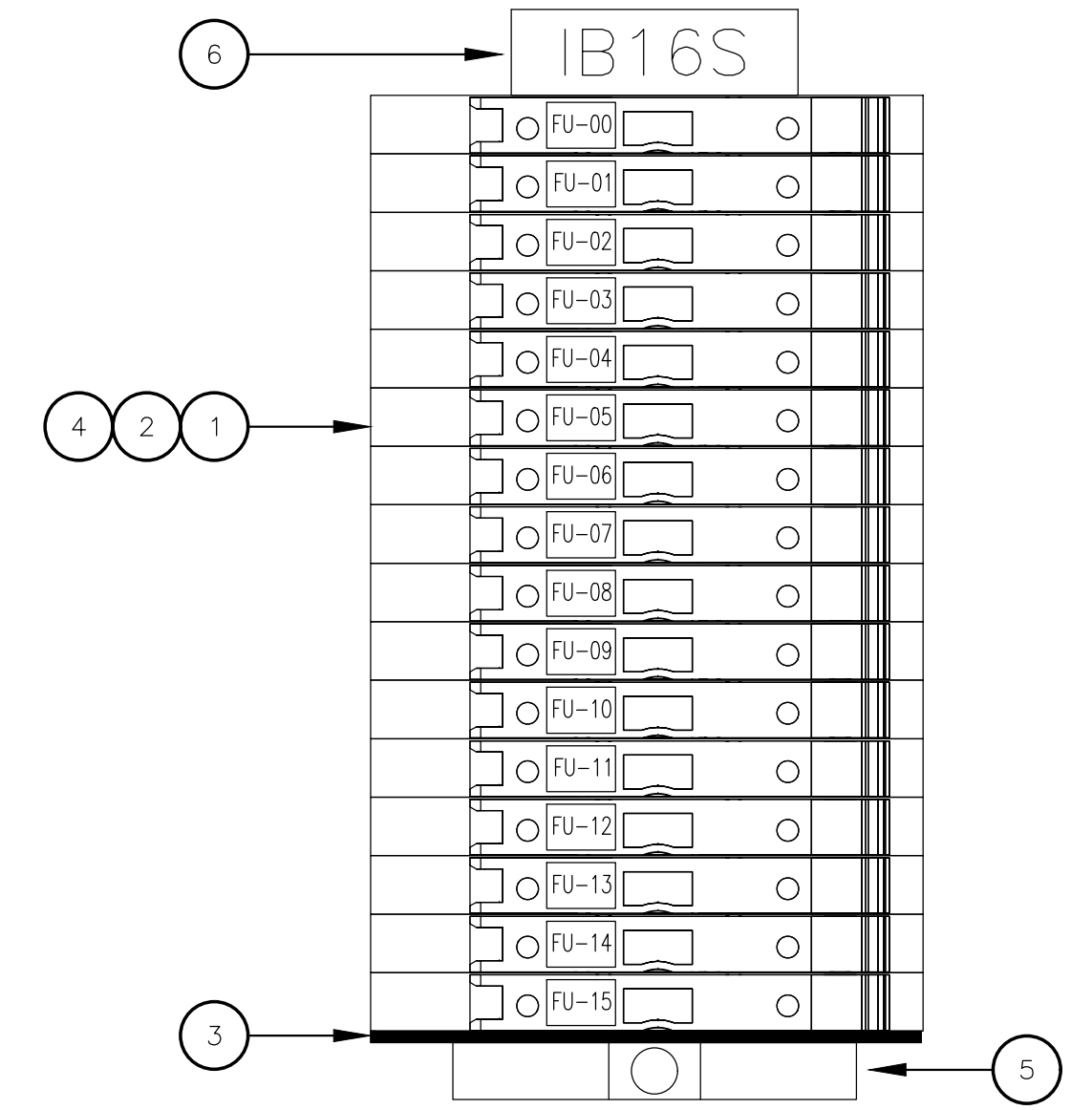
TBDC WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	17	2-LEVEL TERMINAL BLOCK W/FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
3	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP
4	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
5	13	FUSE, 5x20, 5A, CERAMIC	BUSSMAN	PANEL SHOP
6	2	FUSE, 5x20, 2A, CERAMIC	BUSSMAN	PANEL SHOP
7	2	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



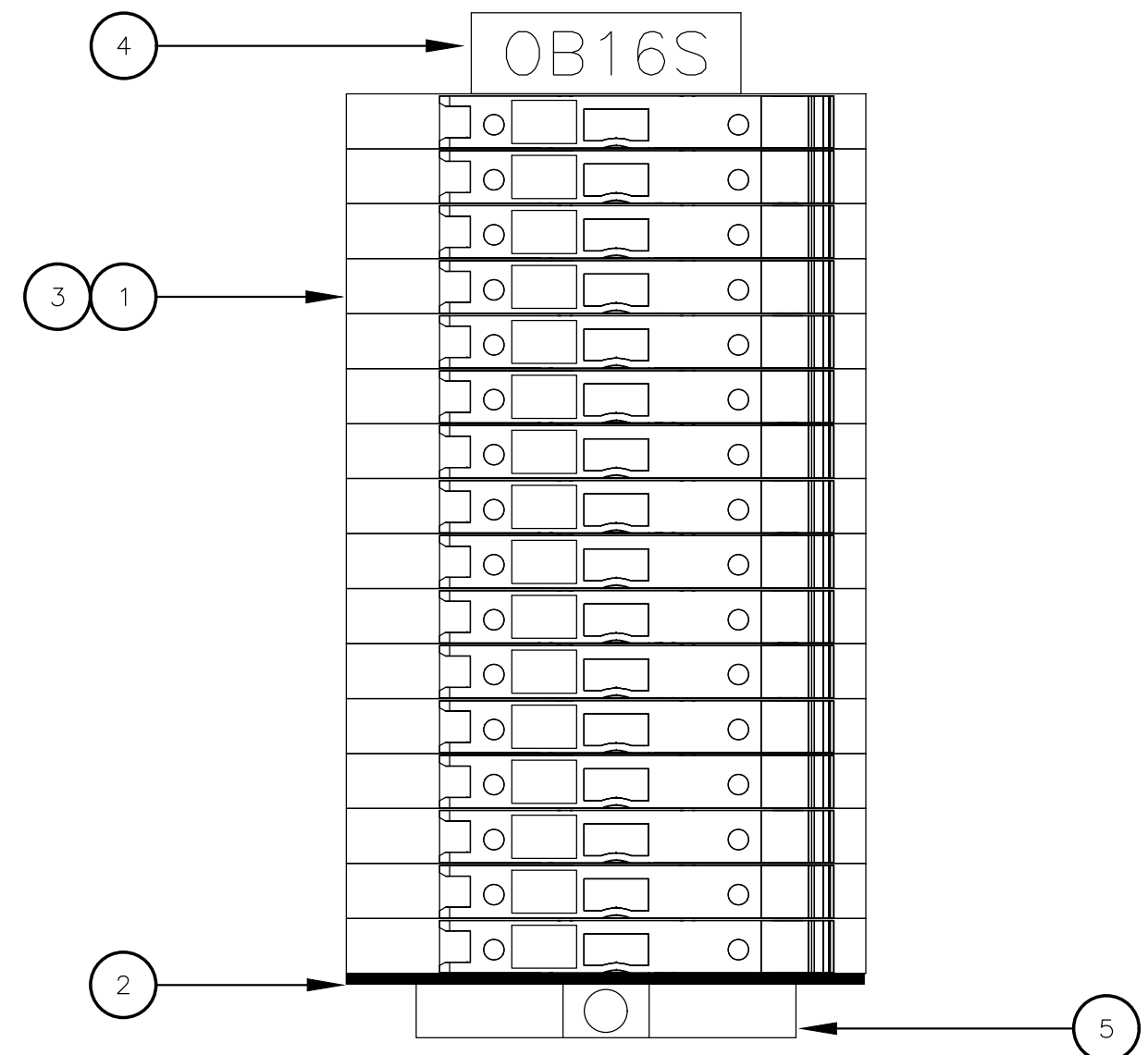
TB-ESD WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	13	TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD4	ALLEN BRADLEY	PANEL SHOP
3	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
4	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP



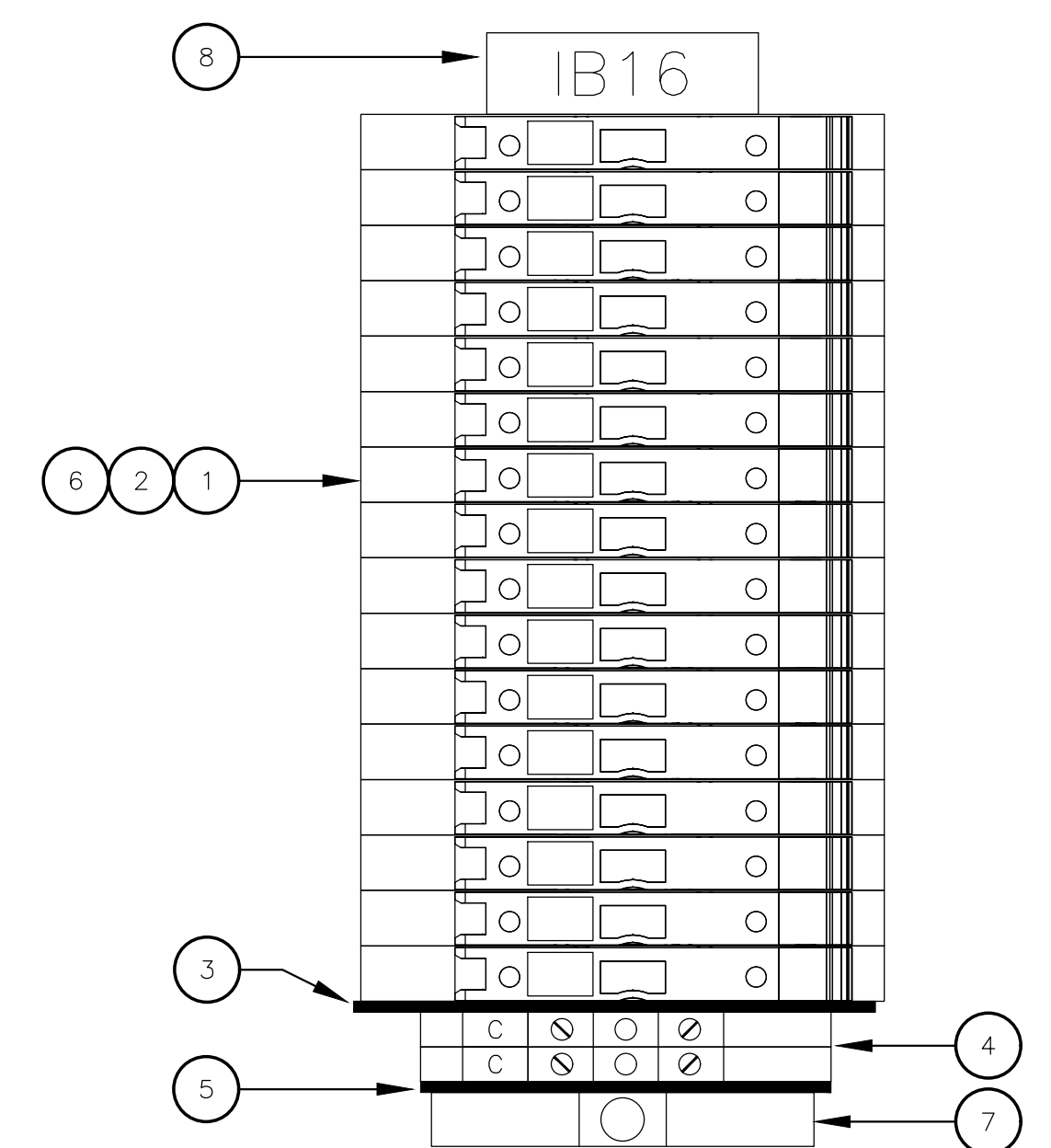
5094-IB16S WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	16	2-LEVEL TERMINAL BLOCK W/ FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	16	FUSE 5x20 mm MEDIUM TIME LAG, 1A, CERAMIC (OR EQUAL)	BUSSMAN	PANEL SHOP
3	1	END BARRIER FOR 2-LEVEL TERMINAL BLOCK	ALLEN BRADLEY	PANEL SHOP
4	AR	JUMPER STOCK FOR 2-LEVEL TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
5	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP
6	1	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP



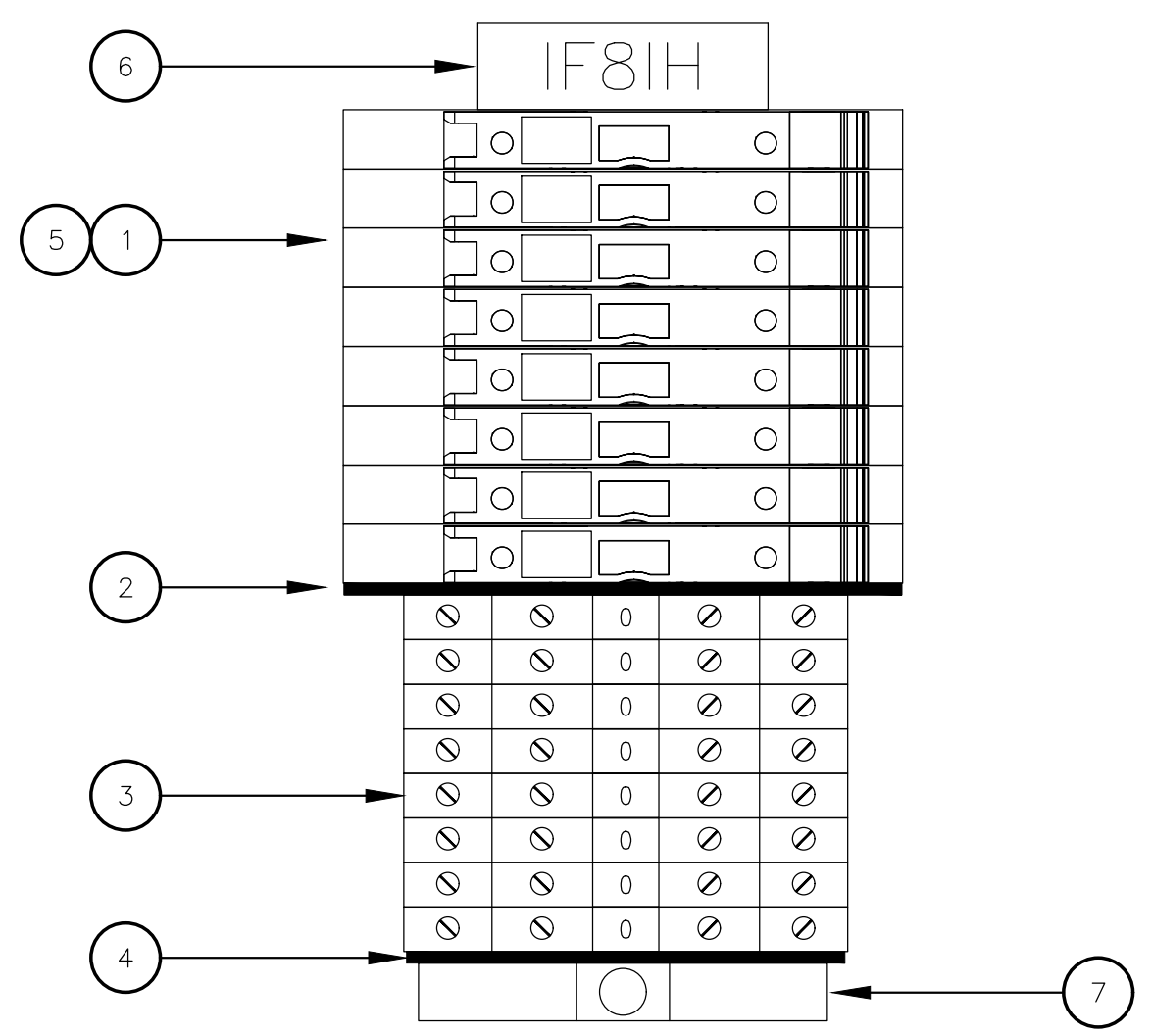
5094-OB16S WIRING ASSEMBLY BILL OF MATERIAL				
ITEM NO.	QTY	DESCRIPTION	VENDOR	SUPPLIED BY
1	16	2-LEVEL TERMINAL BLOCK W/ FUSED CIRCUIT	ALLEN BRADLEY	PANEL SHOP
2	1	END BARRIER FOR JD3FB	ALLEN BRADLEY	PANEL SHOP
3	16	FUSE, 5x20, 2A, CERAMIC	BUSSMAN	PANEL SHOP
4	AR	GROUP MARKER	ALLEN BRADLEY	PANEL SHOP
5	1	END ANCHOR	ALLEN BRADLEY	PANEL SHOP



5094-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 2-LEVEL TERMINAL BLOCK	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



5094-IF8 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	8	2-LEVEL TERMINAL BLOCKS	ALLEN BRADLEY	PANEL SHOP
4	1	END BARRIER FOR 2-LEVEL 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



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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  
 ESD PANEL  
 TERMINAL BLOCK ASSEMBLIES

DRAWN BY	DATE	LTES NO:	DWG. NO.
A. HOGAN	06/08/20	19016-00	L1901-NPDC-INS-DWG-01009
SCALE:	NONE		REV
			B

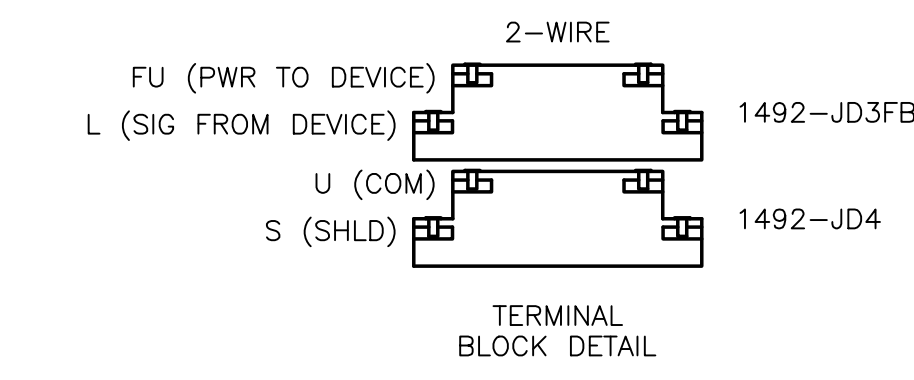
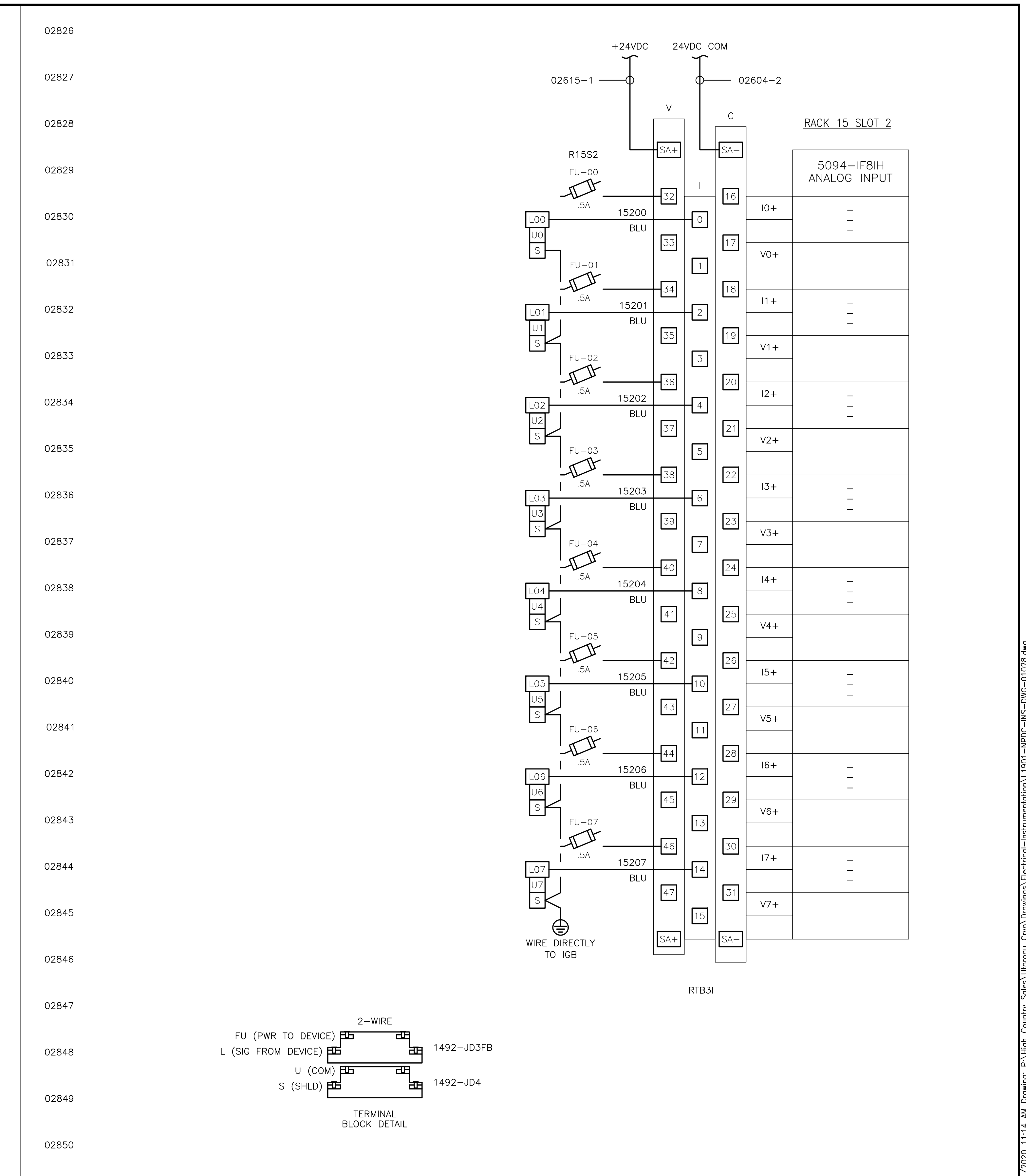
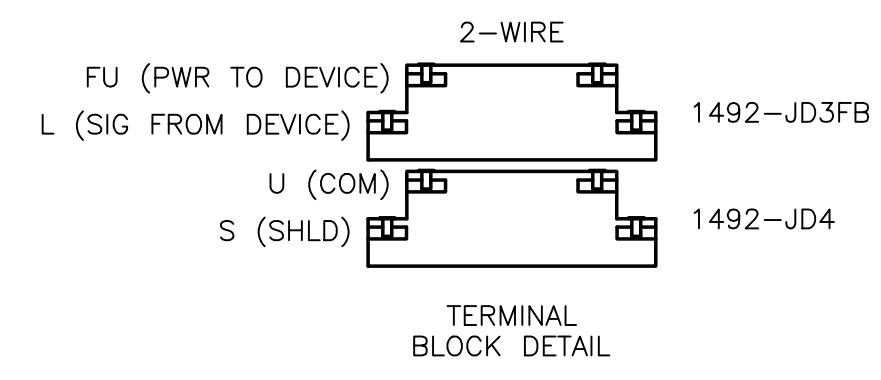
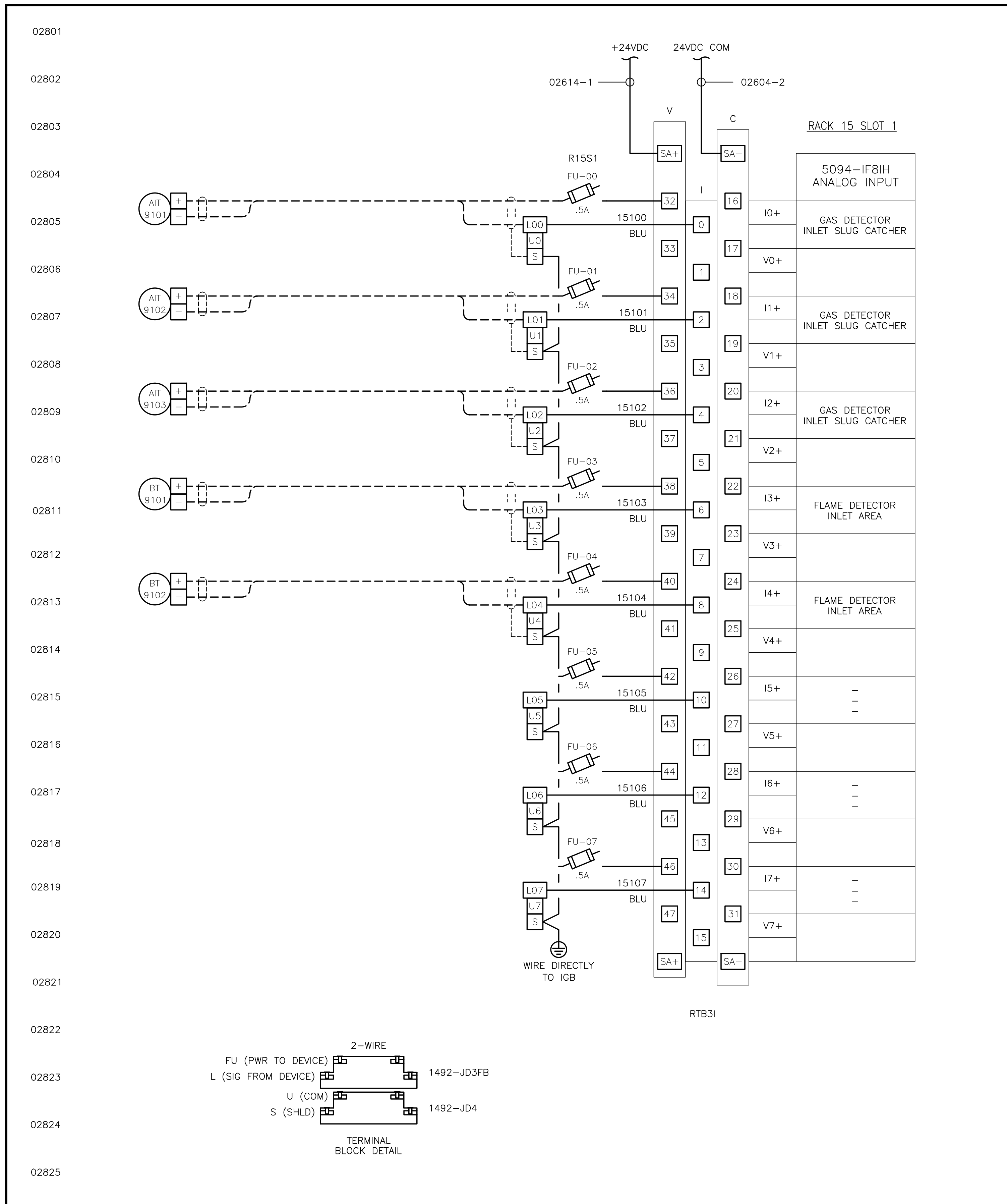
Plotted by: JOSEPH BOND Date: 12/21/2020 10:02 AM Drawing: P:\High Country Sales\Utorogu Cryo Drawings\Electrical-Instrumentation\L1901-NPDC-INS-DWG-01009.dwg





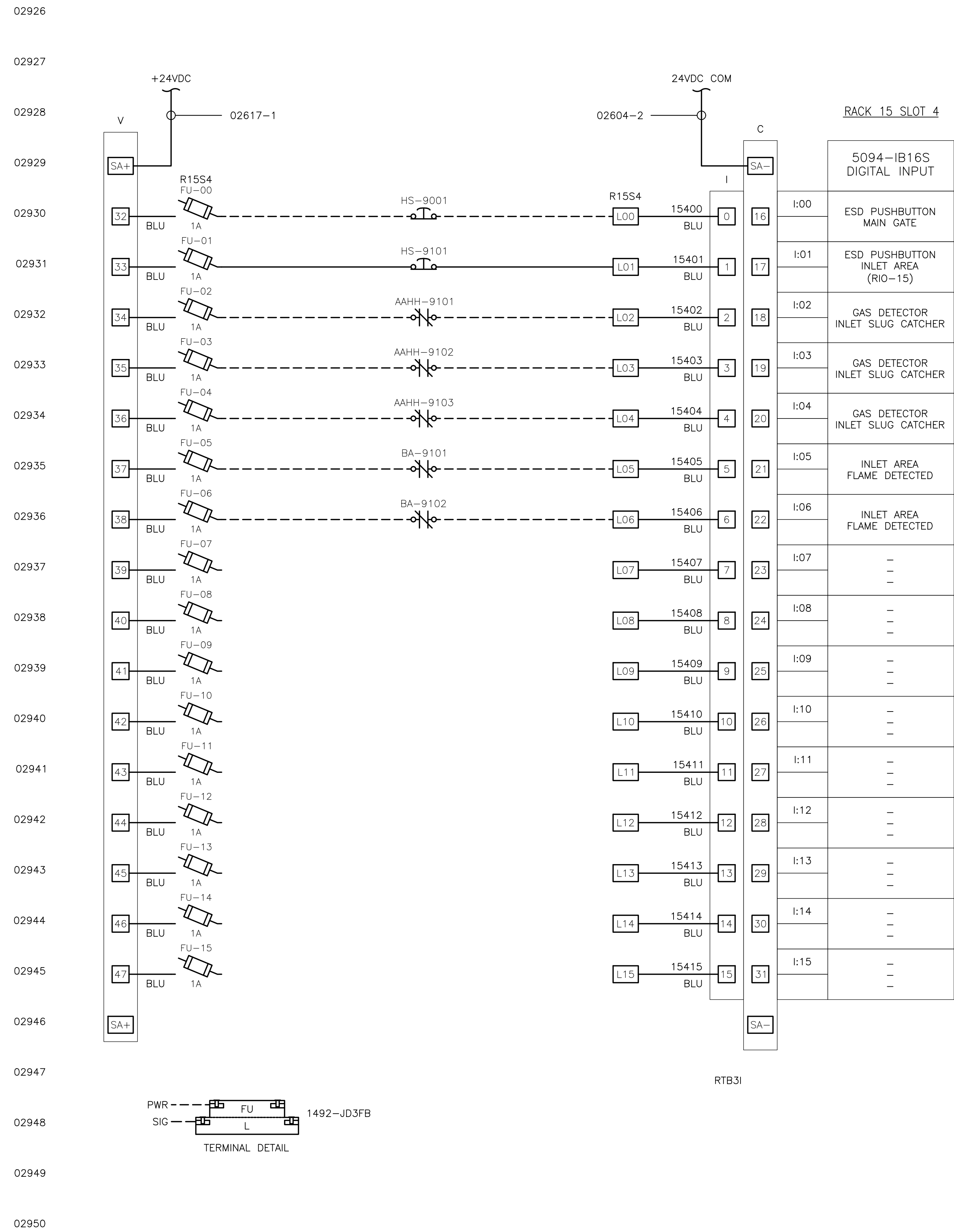
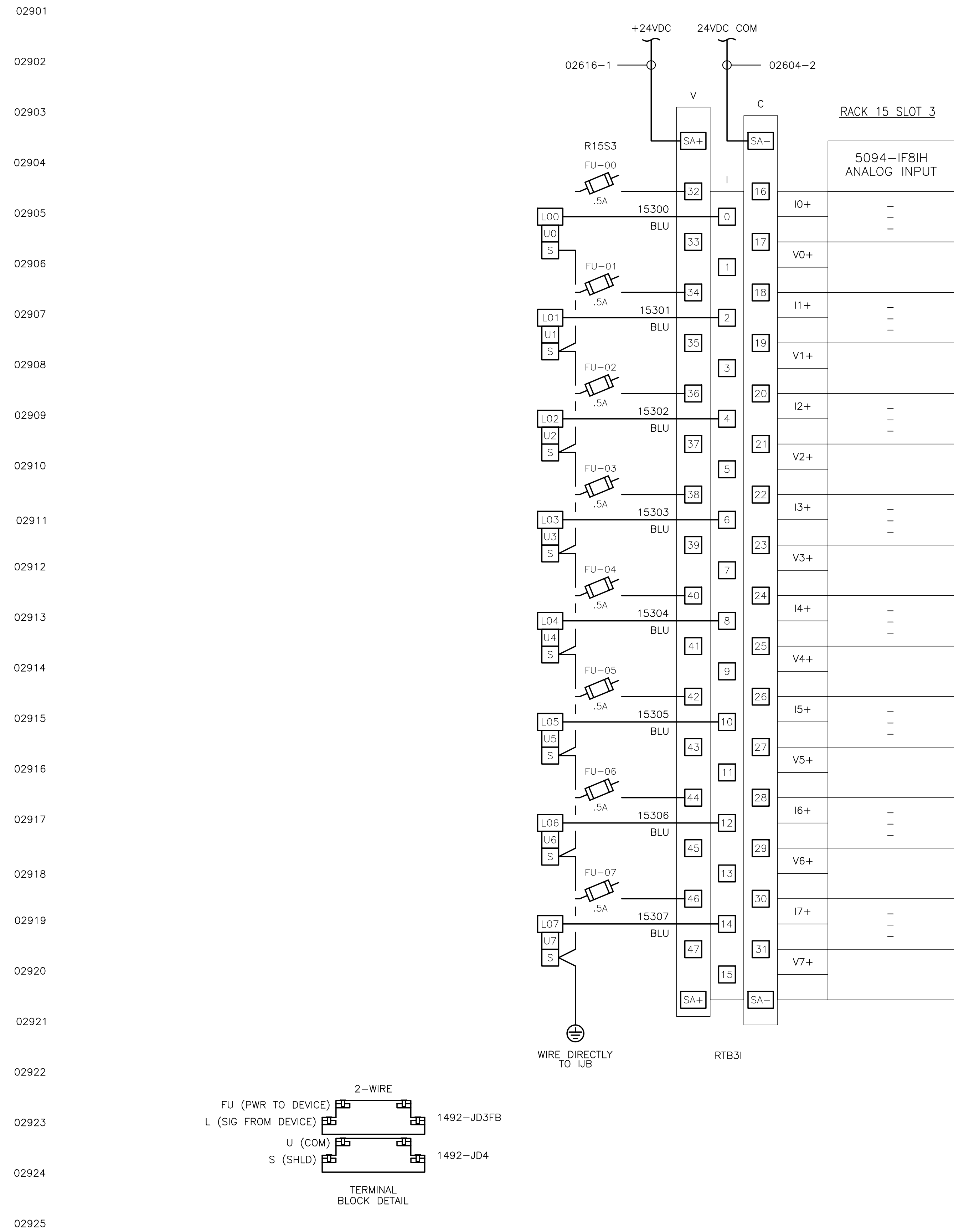






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			B	ISSUED FOR APPROVAL	12/23/20	JB	SRB	SCP			
			A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP			
			AUTHORIZED FOR RELEASE TITLE DATE BY LTES PROJECT MANAGER LONEB PROJECT MANAGER			CLIENT  NIGERIAN PETROLEUM DEVELOPMENT COMPANY  LONEB RESOURCES NIG. LTD			UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC ESD RIO-15 RACK 15, SLOT 1 AND 2		
DRAWN BY		DATE	LTES NO: 19016-00		DWG. NO:		REV				
A. HOGAN		06/08/20	SCALE: NONE		L1901-NPDC-INS-DWG-01028		B				

Path: C:\Users\jrbond\Documents\Projects\UTOROGU\1901-NPDC-INS-DWG-01028.dwg



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

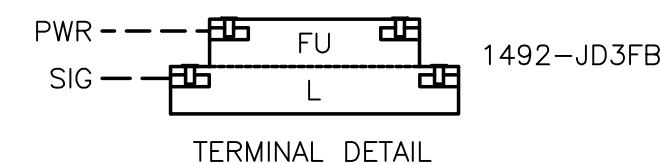
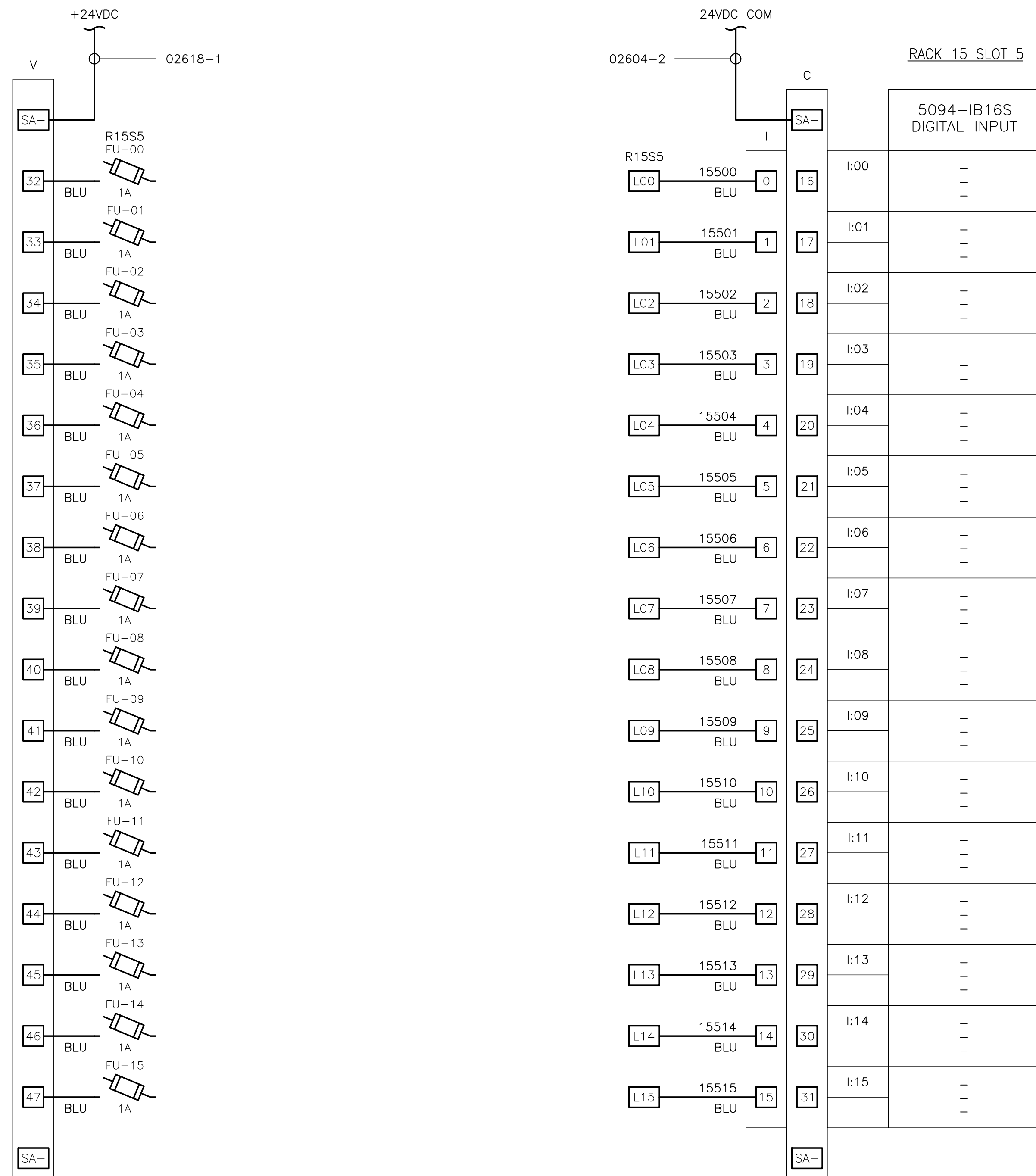
AUTHORIZED FOR RELEASE			CLIENT
TITLE	DATE	BY	 NIGERIAN PETROLEUM DEVELOPMENT COMPANY
LTES PROJECT MANAGER			
LONEB PROJECT MANAGER			

 LONEB RESOURCES NIG. LTD		UTOROGU GAS EXPANSION PROJECT UTOROGU, NIGERIA L1901-NPDC ESD RIO-15 RACK 15, SLOT 3 AND 4	
DRAWN BY	DATE	LTES NO:	DWG. NO.
A. HOGAN	06/08/20	19016-00	L1901-NPDC-INS-DWG-01029
SCALE: NONE		REV	B

Plotter: hp-j105681-0000 Date: 17/01/2020 11:18 AM Drawn: P:\A\Hogan\Projects\ESD\1901-NPDC-INS-DWG-01029.dwg

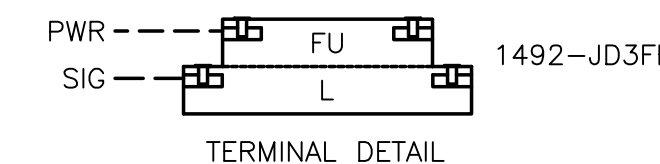
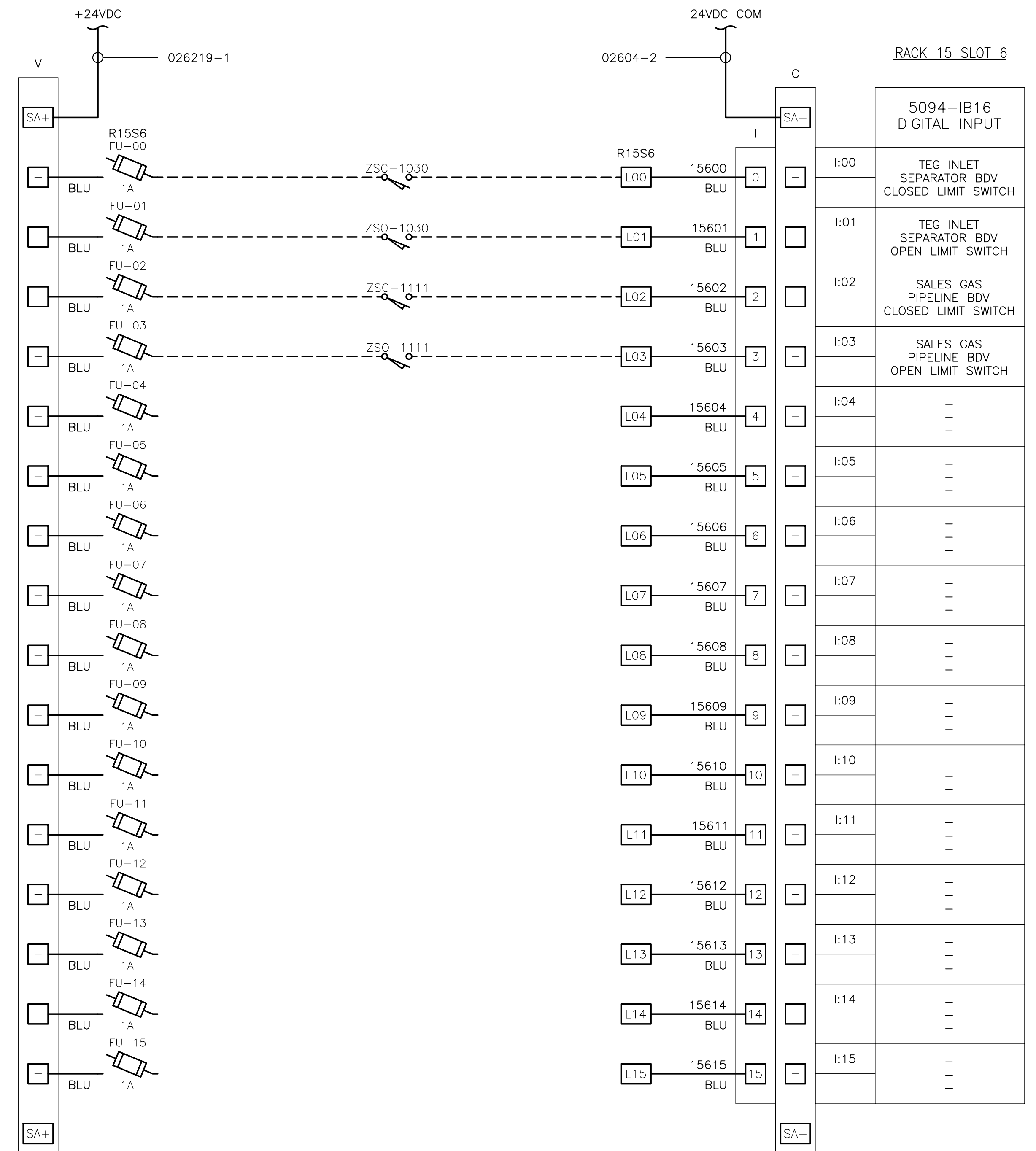


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REF DWG. NO.	DESCRIPTION	REV	DESCRIPTION	DATE	BY	CHKD	LTES APV	LONEB APV	NPDC NWD APV
		B	ISSUED FOR APPROVAL	12/23/20	JOB	SRB	SCP		
		A	ISSUED FOR REVIEW	07/16/20	AMH	SRB	SCP		

AUTHORIZED FOR RELEASE

TITLE	DATE	BY
LTES PROJECT MANAGER		
LONEB PROJECT MANAGER		

LONE TREE ENGINEERING SERVICES  
7007 E PEAKVIEW AVE, STE 150  
CENTENNIAL, CO 80111, USA

CLIENT

NIGERIAN PETROLEUM DEVELOPMENT COMPANY

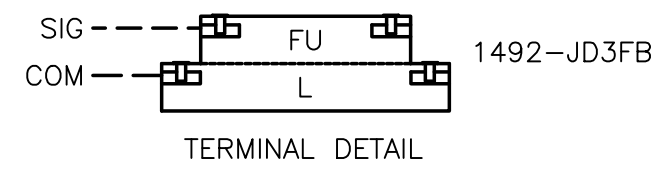
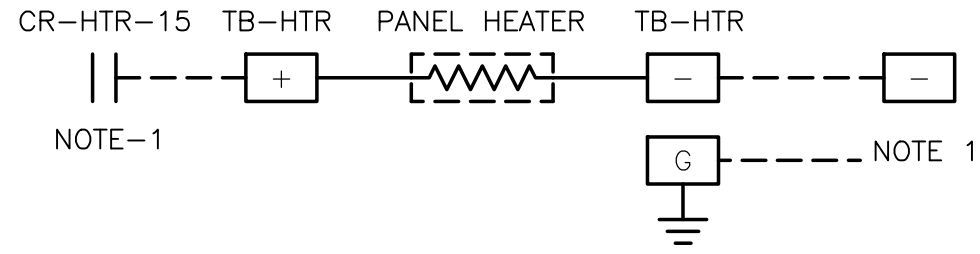
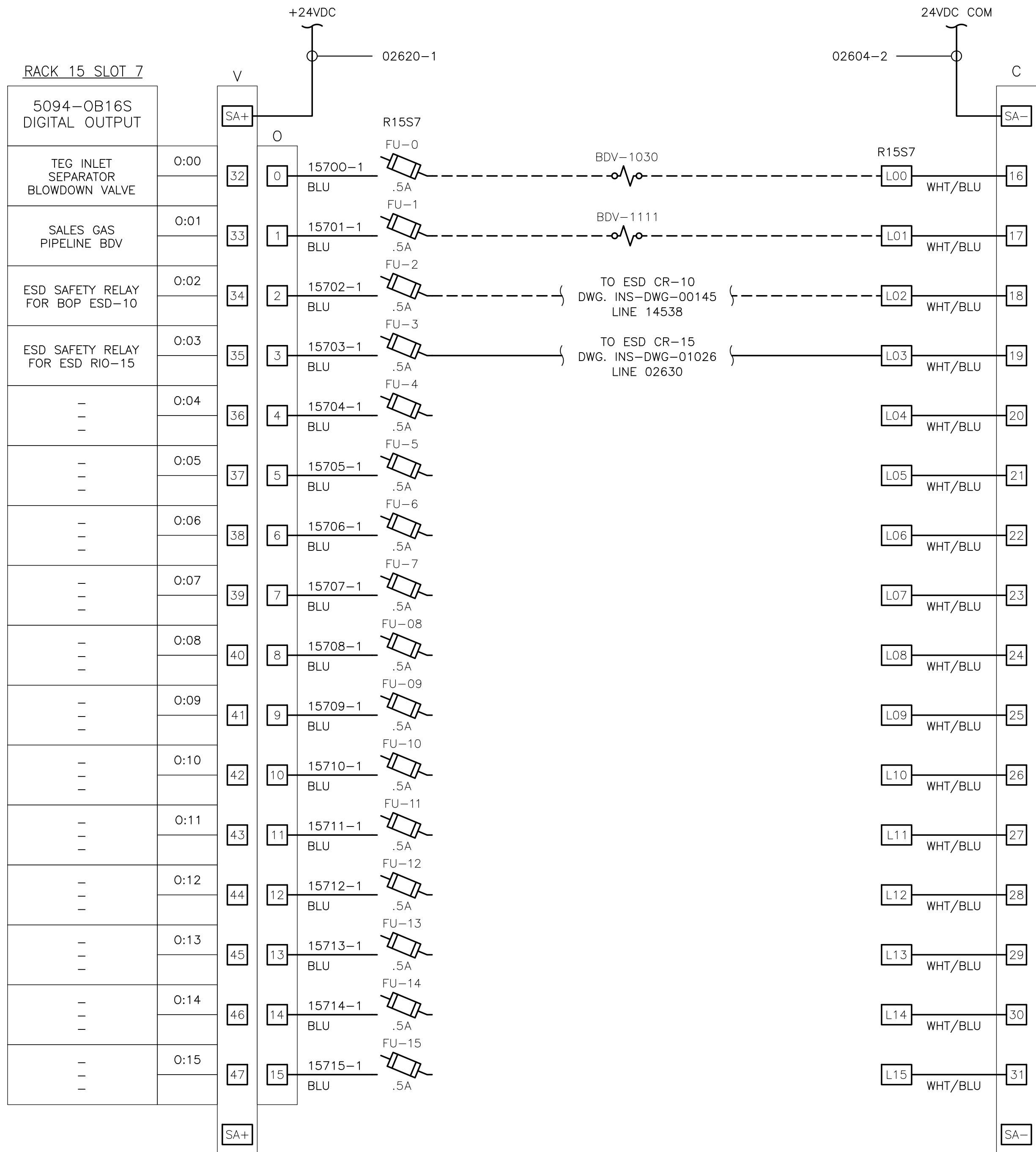
LONEB RESOURCES NIG. LTD

UTOROGU GAS EXPANSION PROJECT  
UTOROGU, NIGERIA  
L1901-NPDC  
ESD RIO-15  
RACK 15, SLOT 5 AND 6

DRAWN BY	DATE	LTES NO:	DWG. NO.	REV
A. HOGAN	06/08/20	19016-00	L1901-NPDC-INS-DWG-01030	B
SCALE: NONE				

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NOTES:  
1. RELAY AND TERMINAL ARE LOCATED IN P.S. PANEL. SEE DWG. INS-JBX-00013

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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		

LONE TREE ENGINEERING SERVICES  
7007 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  
ESD RIO-15  
RACK 15, SLOT 7

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A. HOGAN	06/08/20	19016-00	L1901-NPDC-INS-DWG-01031	B

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