



Model: See Affected Rigs	Sep. 5, 2018
Serial #: All	
Product Bulletin # PDC-017	

## PWH PLC Cabinet Circuit Protection Modification

Some rigs with standalone server cabinets have been experiencing loss of communication as a result of circuit breaker 5 (CB5) tripping. This CB feeds power to the server cabinet in the Powerhouse PLC cabinet. The power distribution from CB5 leads to the PLC cabinet and field installed start/stop circuits.

Upon investigation, it has been discovered that the cause of CB5 tripping is likely the result of a short circuit. In the event of a short circuit, CB5 trips and shuts off network communication between all Ethernet IP devices connected to the Stratix switch in the Powerhouse server cabinet. Canrig recommends installing a Circuit Breaker modification kit (AY24262) to address this issue.

### Affected Rigs

This modification applies to all PACE 1, 2, and 3 series. Also, B-, S-, M- and F- rigs which have had server cabinet upgrades may present this issue.

### Recommendation

Order Canrig Kit AY24262 to replace add 2 More Circuit Breakers (CB9 & CB10) with a 2 and 5 Amp load protection. Only one order is needed per rig. If any rigs encounter the issues described above please order the kit below. Illustrations for changes are described below.

**Table 1: PLC Cabinet Circuit Protection Modification Kit**

Part No.	Qty	Description
AY24262	1	Kit, Upgrade, Server Cabinet Branch Breaker

### Procedure

- For all rigs.** Refer to Figure 4 on page 6 (for M59-M62, B7-B29, and S887 – S893 rigs), or Figure 8 on page 10 (for F34 – F37, and M36 – B06 rigs).
  - Locate the PLC Cabinet in the Powerhouse.
  - Install new circuit breakers in an open spot near the existing 24VDC installed circuit breakers:
    - Clip the 2 Amp breakers on DIN rail and label it **CB9**.
    - Clip the 5 Amp breakers on DIN Rail and label it **CB10**.

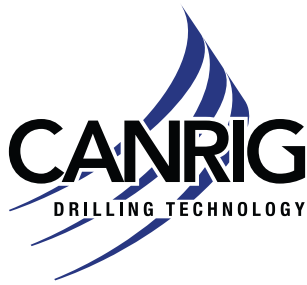


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2. **For all rigs.** Refer to Figure 4 on page 6 (for M59-M62, B7-B29, and S887 – S893 rigs), or Figure 8 on page 10 (for F34 – F37, and M36 – B06 rigs).
  - a. Cut a long enough 16 AWG wire to install in the top terminals of the newly-supplied circuit breakers.
  - b. Crimp non-insulated ferrules on both ends of the wires.
  - c. Install one end of the 16 AWG wire into the top side termination of **CB8.1**, and use it as a jumper.
  - d. Install the other end of the wire into the top screw termination of **CB9.1**.
  - e. Do the same install as previous described from CB9.1 to the top screw termination of **CB10.1**.
3. **For M59-M62, B7-B29, S887 – S893 rigs only.** Refer to Figure 4 on page 6.
  - a. Move Field Start stop motor wire labeled +24V.3S from TB5.3 to the bottom termination side of newly installed **CB9.2**.
  - b. Connect the other end of this wire to **TB230.1**.
4. **For M59-M62, B7-B29, S887 – S893 rigs only.** Refer to Figure 4 on page 6.
  - a. Move Server Cabinet 24VDC Power wire labeled +24V.6A from TB5.6 to the bottom termination side of newly installed **CB10.2**.



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Termination	Wire Number	Termination	Circuit/Signal	Note	
TBS-1	0.5.5 +24V.1N	RACK 0, SLOT 5, Terminal 5	CIRCUIT BREAKER 5 DIGITAL INPUT POWER SUPPLY OK	RACK 0, SLOT 5, Terminal 5	
		TB200-13/14	MUD PUMP 1 (MP1) LOCKOUT SWITCH	RACK 0, SLOT 1, Terminal 0	
		TB200-15/16	MUD PUMP 1 (MP1) BLOWER PRESS. SW 1=OK 0=FAULT	RACK 0, SLOT 1, Terminal 3	
		TB200-17/18	MUD PUMP 1 (MP1) OILER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 1, Terminal 6	
		TB200-19/20	MUD PUMP 1 (MP1) WATER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 2, Terminal 1	
		TB200-23/24	MUD PUMP 1 (MP1) VIBRATION SWITCH	RACK 0, SLOT 7, Terminal 0	
		TB200-25/26	MUD PUMP 1 STROKE SWITCH (counter)	RACK 0, SLOT 8, Terminal 2	
		TB202-13/14	MUD PUMP 2 (MP2) LOCKOUT SWITCH	RACK 0, SLOT 1, Terminal 1	
		TB202-15/16	MUD PUMP 2 (MP2) BLOWER PRESS. SW 1=OK 0=FAULT	RACK 0, SLOT 1, Terminal 4	
		TB202-17/18	MUD PUMP 2 (MP2) OILER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 2, Terminal 2	
TBS-2	+24V.2R	TB202-19/20	MUD PUMP 2 (MP2) WATER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 1, Terminal 7	
		TB202-23/24	MUD PUMP 2 (MP2) VIBRATION SWITCH	RACK 0, SLOT 7, Terminal 1	
		TB202-25/26	MUD PUMP 2 STROKE SWITCH (counter)	RACK 0, SLOT 8, Terminal 3	
		TB204-13/14	MUD PUMP 3 (MP3) LOCKOUT SWITCH	RACK 0, SLOT 1, Terminal 2	
		TB204-15/16	MUD PUMP 3 (MP3) BLOWER PRESSURE SW 1=OK 0=FAULT	RACK 0, SLOT 1, Terminal 5	
		TB204-17/18	MUD PUMP 3 (MP3) OILER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 2, Terminal 0	
		TB204-19/20	MUD PUMP 3 (MP3) WATER PRESSURE SW 1=OK 0=FAULT	RACK 0, SLOT 2, Terminal 3	
		TB204-23/24	MUD PUMP 3 (MP3) VIBRATION SWITCH	RACK 0, SLOT 7, Terminal 2	
		TB204-25/26	MUD PUMP 3 STROKE SWITCH (counter)	RACK 0, SLOT 8, Terminal 4	
		TB207-7	RACK 0, SLOT 2, Terminal 7	MUD PUMP 1 (MP1) IM RIG PLUG JUMPER 1=M RIG CONNECTION (24VDC JUMPER) (NOT ON B RIG)	RACK 0, SLOT 2, Terminal 7
TBS-3	+24V.3S	Jumped in Field	MAIN HPU OIL LEVEL LOW LEVEL SWITCH	RACK 0, SLOT 3, Terminal 0	
		Jumped in Field	MAIN HPU OIL TEMPERATURE HIGH SWITCH	RACK 0, SLOT 3, Terminal 3	
		Jumped in Field	MAIN HPU OIL PRESSURE HIGH SWITCH	RACK 0, SLOT 3, Terminal 5	
		Jumped in Field	MAIN HPU MOTOR OIL TRIPPED/ABERDEER MOTOR. 1 OVERLOAD STATUS (NOT ON B RIG)	RACK 0, SLOT 8, Terminal 5	
		TB230-1	MAIN HPU DIESEL ENGINE RUNNING (NOT ON B RIG)	RACK 0, SLOT 8, Terminal 6	
		TB231-1	MUD MIX 1 START/STOP CONTROLS	RACK 0, SLOT 3, Terminal 6	
		TB232-1	MUD MIX 2 START/STOP CONTROLS	RACK 0, SLOT 3, Terminal 9	
		TB233-1	DESANDER MOTOR START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 4	
		TB234-1	DESILTER MOTOR START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 5	
		TB235-1	DEGASSER MOTOR START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 6	
TBS-4	0.5.1	TB236-1	WATER PUMP 1 START/STOP CONTROLS	RACK 0, SLOT 6, Terminal 2	
		TB237-1	WATER PUMP 2 START/STOP CONTROLS	RACK 0, SLOT 6, Terminal 3	
		TB238-1	TRIP TANK 1 START/STOP CONTROLS	RACK 0, SLOT 2, Terminal 4	
		TB243-1	TRIP TANK 2 START/STOP CONTROLS	RACK 0, SLOT 2, Terminal 5	
		TB244-1	SPARE MCC S61 START/STOP	RACK 0, SLOT 6, Terminal 6	
		TB244-1	SPARE MCC S61 START/STOP	RACK 0, SLOT 6, Terminal 7	
		TB251-1	GENERATOR 1 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 0	
		TB253-1	GENERATOR 2 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 1	
		TB255-1	GENERATOR 3 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 2	
		TB255-7	GENERATOR 4 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 3	
TBS-5	+24V.4D	RACK 0, SLOT 5, Terminal 1	MUD PUMP 2 (MP2) IM RIG PLUG JUMPER IM RIG CONNECTED (NOT ON B RIG)	RACK 0, SLOT 5, Terminal 1	
		TB259-5	BRAKE RESISTOR 1 (blower) PRESSURE SWITCH	RACK 0, SLOT 7, Terminal 3	
		TB260-5	BRAKE RESISTOR 2 (blower) PRESSURE SWITCH	RACK 0, SLOT 7, Terminal 4	
		TB269-7	BRAKE RESISTOR 1 TEMP SWITCH	RACK 0, SLOT 7, Terminal 5	
		TB260-7	BRAKE RESISTOR 2 TEMP SWITCH	RACK 0, SLOT 7, Terminal 6	
		CR0.13.0.11	MAIN HPU STOP CONTACT	RACK 0, SLOT 13, Terminal 0	
		CR0.13.1.111	MAIN HPU START CONTACT/ABERDEER MTR1 START (NOT ON B RIG)	RACK 0, SLOT 13, Terminal 1	
		CR0.13.2.111	DIESEL E-STOP/ABERDEER MTR2 START (NOT ON B RIG)	RACK 0, SLOT 13, Terminal 2	
		TBS-6	+24V.6A	SERVER CABINET	Server Cabinet Power
		TBS-7			
TBS-8					

Figure 1: Before Wiring Changes (M59-M62, B7-B29 Rigs)





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CB5 After Changes			
Termination	Wire Number	Termination	Circuit/Signal
TB5:1	+24V.1P	RACK 0, SLOT 5, Terminal 5	CIRCUIT BREAKER 5 DIGITAL INPUT POWER SUPPLY OK
		TB200:19/14	MUD PUMP 1 (MP1) LOCKOUT SWITCH
		TB200:15/16	MUD PUMP 1 (MP1) BLOWER PRESS. SW 1=OK 0=FAULT
		TB200:17/18	MUD PUMP 1 (MP1) OILER PRESS. SWITCH 1=OK 0=FAULT
		TB200:19/20	MUD PUMP 1 (MP1) WATER PRESS. SWITCH 1=OK 0=FAULT
		TB200:23/24	MUD PUMP 1 (MP1) VIBRATION SWITCH
		TB200:25/26	MUD PUMP 1 (MP1) STROKE SWITCH (counter)
		TB202:15/14	MUD PUMP 2 (MP2) LOCKOUT SWITCH
		TB202:17/18	MUD PUMP 2 (MP2) BLOWER PRESS. SW 1=OK 0=FAULT
		TB202:19/20	MUD PUMP 2 (MP2) OILER PRESS. SWITCH 1=OK 0=FAULT
		TB202:23/24	MUD PUMP 2 (MP2) VIBRATION SWITCH
		TB202:25/26	MUD PUMP 2 (MP2) STROKE SWITCH (counter)
TB5:2	+24V.2R	TB204:13/14	MUD PUMP 3 (MP3) LOCKOUT SWITCH
		TB204:15/16	MUD PUMP 3 (MP3) BLOWER PRESSURE SW 1=OK 0=FAULT
		TB204:17/18	MUD PUMP 3 (MP3) OILER PRESS. SWITCH 1=OK 0=FAULT
		TB204:19/20	MUD PUMP 3 (MP3) WATER PRESSURE SW 1=OK 0=FAULT
		TB204:23/24	MUD PUMP 3 (MP3) VIBRATION SWITCH
		TB204:25/26	MUD PUMP 3 (MP3) STROKE SWITCH (counter)
		TB207:2, Terminal 7	MUD PUMP 1 (MP1) M RIG PLUG JUMPER 1=M RIG CONNECTION (24VDC JUMPER) (NOT ON B RIG)
		TB207:7	MAIN HPU OIL LEVEL LOW LEVEL SWITCH
		Jumped In Field	MAIN HPU OIL TEMPERATURE HIGH SWITCH
		Jumped In Field	MAIN HPU MOTOR OIL TRIPPED/ABERDEER MOTOR 1 OVERLOAD STATUS (NOT ON B RIG)
		Jumped In Field	MAIN HPU DIESEL ENGINE RUNNING (NOT ON B RIG)
		RACK 0, SLOT 5, Terminal 1	MUD PUMP 2 (MP2) M RIG PLUG JUMPER M RIG CONNECTED (NOT ON B RIG)
TB5:4	+24V.4D	TB259:5	BRAKE RESISTOR 1 (blower) PRESSURE SWITCH
		TB260:5	BRAKE RESISTOR 2 (blower) PRESSURE SWITCH
		TB259:7	BRAKE RESISTOR 1 TEMP SWITCH
		TB260:7	BRAKE RESISTOR 2 TEMP SWITCH
TB5:5	+24V.5B	CRO.13.0:11	MAIN HPU STOP CONTACT
		CRO.13.1:11	MAIN HPU START CONTACT/ABERDEER MTR1 START (NOT ON B RIG)
TB5:6		CRO.13.2:11	DIESEL E-STOP/ABERDEER MTR2 START (NOT ON B RIG)
TB5:7			
TB5:8			
New Added CB9 After Changes			
Termination	Wire Number	Termination	Circuit/Signal
CB9:2	+24V.3R	TB207:7	MAIN HPU OIL LEVEL LOW LEVEL SWITCH
			MAIN HPU OIL TEMPERATURE HIGH SWITCH
			MAIN HPU OIL PRESSURE HIGH SWITCH
			MAIN HPU MOTOR OIL TRIPPED/ABERDEER MOTOR 1 OVERLOAD STATUS (NOT ON B RIG)
			MAIN HPU DIESEL ENGINE RUNNING (NOT ON B RIG)
New Added CB10 After Changes			
Termination	Wire Number	Termination	Circuit/Signal
CB10:2	+24V.6A	SERVER CABINET	SERVER CABINET 24VDC Distribution
Note			
			Server Cabinet Power

Figure 3: Circuit Breaker Branch Circuits After Wiring Changes (M59 – M62, B7 – B29, and S887 – S893 Rigs)





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Termination	Wire Number	Termination	Circuit/Signal	Note
			MUD PUMP 1 (MP1) LOCKOUT SWITCH	RACK 0, SLOT 4, Terminal 2
		TB200-13/14	MUD PUMP 1 (MP1) BLOWER PRESS. SW 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 5
		TB200-15/16	MUD PUMP 1 (MP1) OILER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 8
		TB200-17/18	MUD PUMP 1 (MP1) WATER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 3, Terminal 7
		TB200-19/20	MUD PUMP 1 F RIG JUMPER	RACK 0, SLOT 4, Terminal 18
		TB200-21	MUD PUMP 1 M RIG JUMPER	RACK 0, SLOT 4, Terminal 19
		TB201-22	MUD PUMP 1 (MP1) VIBRATION SWITCH	RACK 0, SLOT 7, Terminal 2
		TB200-23/24	MUD PUMP 1 STROKE SWITCH (counter)	RACK 0, SLOT 7, Terminal 14
		TB200-25/26	MUD PUMP 2 (MP2) LOCKOUT SWITCH	RACK 0, SLOT 4, Terminal 3
		TB202-13/14	MUD PUMP 2 (MP2) BLOWER PRESS. SW 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 6
		TB202-15/16	MUD PUMP 2 (MP2) OILER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 9
		TB202-17/18	MUD PUMP 2 (MP2) WATER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 14
		TB202-19/20	MUD PUMP 2 (MP2) F RIG Jumper	RACK 0, SLOT 6, Terminal 2
		TB202-21	MUD PUMP 2 (MP2) M RIG Jumper	RACK 0, SLOT 6, Terminal 3
		TB202-22	MUD PUMP 2 (MP2) VIBRATION SWITCH	RACK 0, SLOT 7, Terminal 3
		TB202-23/24	MUD PUMP 2 STROKE SWITCH (counter)	RACK 0, SLOT 7, Terminal 15
		TB202-25/26	MUD PUMP 3 (MP3) LOCKOUT SWITCH	RACK 0, SLOT 4, Terminal 4
		TB204-13/14	MUD PUMP 3 (MP3) BLOWER PRESSURE SW 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 7
		TB204-15/16	MUD PUMP 3 (MP3) OILER PRESS. SWITCH 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 12
		TB204-17/18	MUD PUMP 3 (MP3) WATER PRESSURE SW 1=OK 0=FAULT	RACK 0, SLOT 4, Terminal 15
		TB204-19/20	MUD PUMP 3 (MP3) VIBRATION SWITCH	RACK 0, SLOT 7, Terminal 4
		TB204-23/24	MUD PUMP 3 STROKE SWITCH (counter)	RACK 0, SLOT 7, Terminal 16
		TB204-25/26	MAIN HPU OIL LEVEL LOW LEVEL SWITCH	RACK 0, SLOT 2, Terminal 7
TB85:1	CB-24VDC	TB207-7	MAIN HPU OIL LEVEL HIGH LEVEL SWITCH	RACK 0, SLOT 5, Terminal 2
		Jumped in Field	MAIN HPU OIL TEMPERATURE LOW SWITCH	RACK 0, SLOT 5, Terminal 3
		Jumped in Field	MAIN HPU OIL TEMPERATURE HIGH SWITCH	RACK 0, SLOT 5, Terminal 4
		Jumped in Field	MAIN HPU OIL PRESSURE HIGH SWITCH	RACK 0, SLOT 5, Terminal 5
		TB200-1	MUD MIX 1 START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 8
		TB201-1	MUD MIX 2 START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 9
		TB232-1	DESANDER MOTOR START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 16
		TB233-1	DESILTER MOTOR START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 17
		TB234-1	DEGASSER MOTOR START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 18
		TB235-1	WATER PUMP 1 START/STOP CONTROLS	RACK 0, SLOT 6, Terminal 14
		TB236-1	WATER PUMP 2 START/STOP CONTROLS	RACK 0, SLOT 6, Terminal 15
		TB237-1	TRIP TANK 1 START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 16
		TB238-1	TRIP TANK 2 START/STOP CONTROLS	RACK 0, SLOT 4, Terminal 17
		TB243-1	SPARE MCC S61 START/STOP	RACK 0, SLOT 6, Terminal 14
		TB244-1	SPARE MCC S62 START/STOP	RACK 0, SLOT 6, Terminal 15
		TB251-1	GENERATOR 1 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 12
		TB253-1	GENERATOR 2 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 13
		TB255-1	GENERATOR 3 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 14
		TB257-1	GENERATOR 4 RAD FAN START/STOP CONTROLS	RACK 0, SLOT 5, Terminal 15
		TB260-5	BRAKE RESISTOR 1 (blower) PRESSURE SWITCH	RACK 0, SLOT 7, Terminal 5
		TB260-5	BRAKE RESISTOR 2 (blower) PRESSURE SWITCH	RACK 0, SLOT 7, Terminal 6
		TB260-7	BRAKE RESISTOR 1 TEMP SWITCH	RACK 0, SLOT 7, Terminal 7
		TB260-7	BRAKE RESISTOR 2 TEMP SWITCH	RACK 0, SLOT 7, Terminal 8
		CB5	SERVER CABINET 24VDC Distribution	Server Cabinet Power

Figure 5: Circuit Breaker Branch Circuits Before Wiring Changes (F34 – F37, and M36 – B06 Rigs)

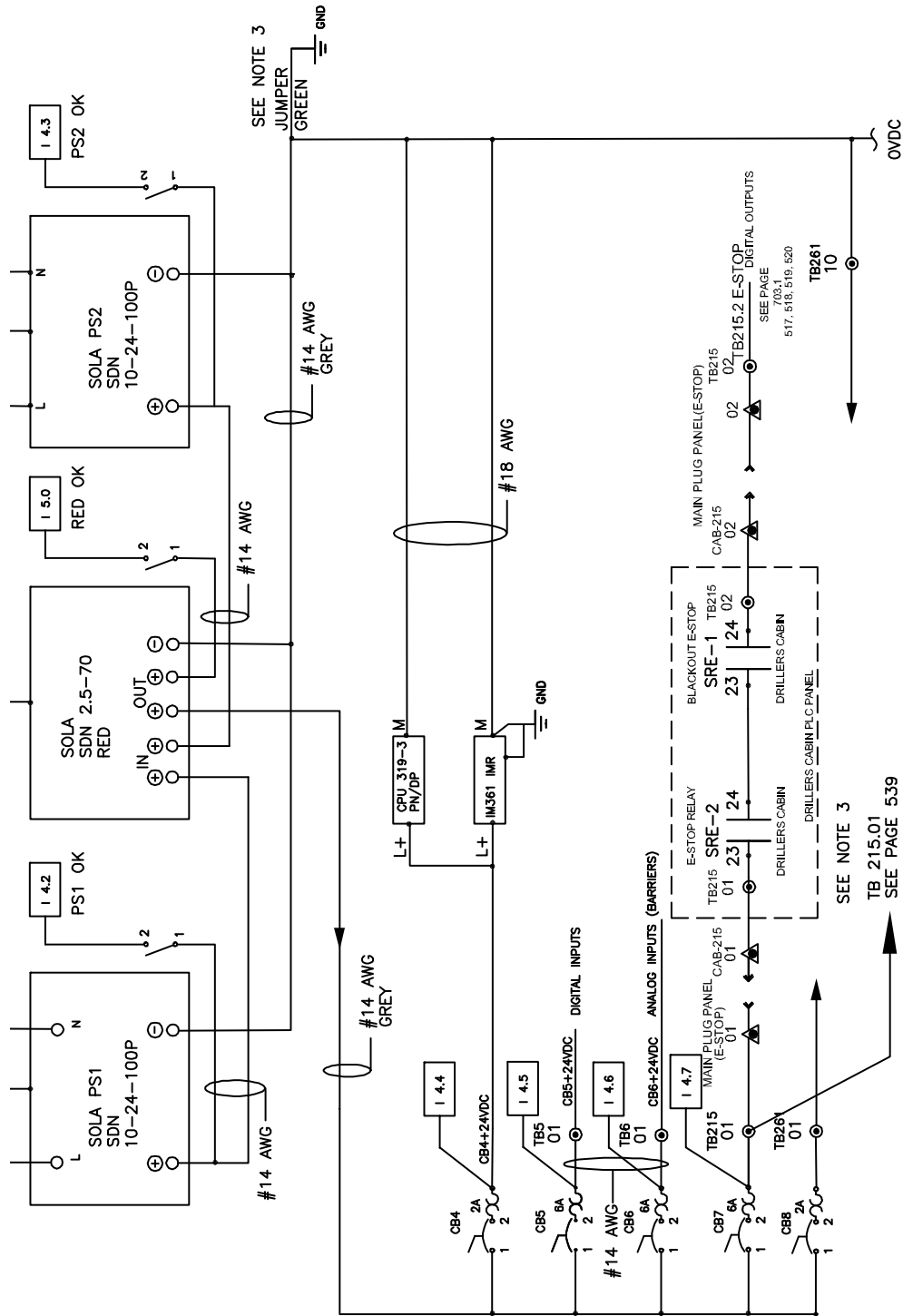
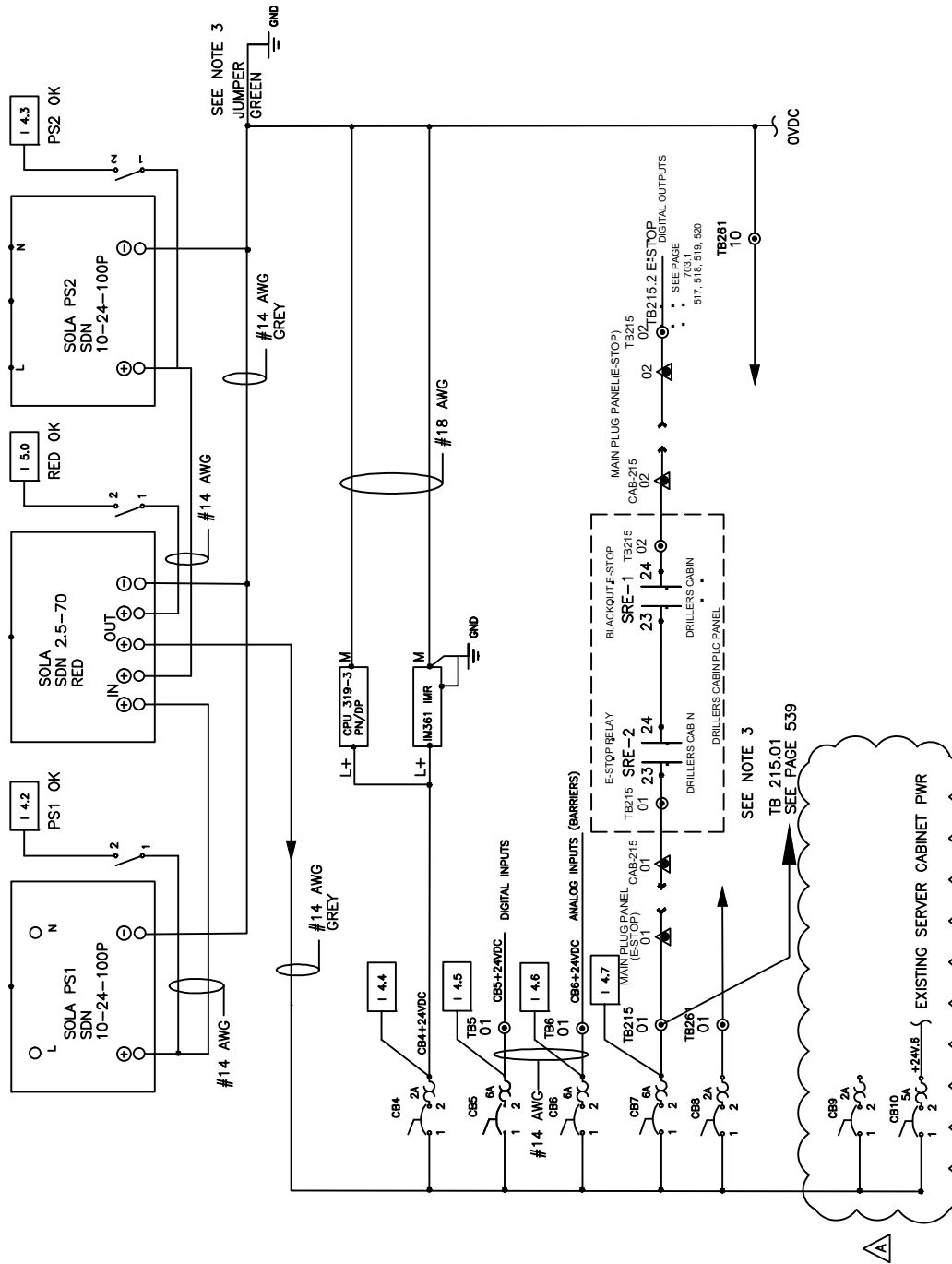


Figure 6: Schematic Before Modification (F34 – F37, M36 – B06 Rigs)







- NOTES:**
1. USA PACE RIG
  2. WIRE #18 AWG GRAY UNLESS OTHERWISE SPECIFIED.
  3. FOR GROUND FAULT SYSTEM MODIFICATION ONLY.

Figure 8: Schematic After Modification (F34 – F37, M36 – B06 Rigs)