

## **Electrical Solutions Corporation**

2368 Eastman Ave, Suite 13, Ventura, CA 93003 Phone (805) 658-0848 ~ Fax (805) 658-0868

Greetings,

I have been asked to create a control drawing for an existing Vapor Recovery Compressor (VRU). The VRU has been acting strangely, and no existing control drawing could be found.

### **Problem**

During safety device testing, the compressor would sometimes shutdown, even when the safeties had been bypassed specifically for the purpose of testing.

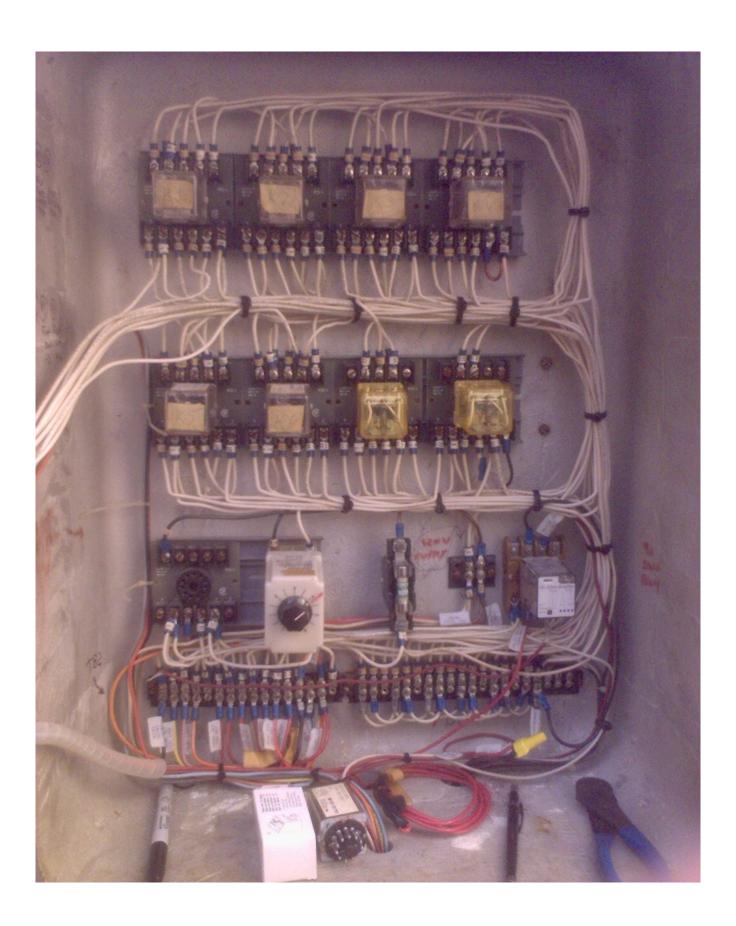
### **Solution**

- Traced out all the wiring on the skid, from device to device, from the control panel back to the MCC, and from the control panel to an emergency generator.
- Sketched a set of control drawings showing the logic of the control circuit.
- Analyzed this control circuit for consistency and found that a set of 6 control wires had been **terminated incorrectly** when the bypass switch was originally installed.
- Re-terminated the control wiring on the correct terminals.
- Modified the control drawing to show the changes I had made, and sent these sketches on to our Designer for final drafting into Autocad.

Below, you will find my field notes prior to sending them to the designer for **final drafting**.

Sincerely,

Rick Hurdle Electrical Solutions Corporation



# Electrical Solutions Corp.

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PREPARED BY CHECKED BY (805) 658-0868 Fax R. Hurdle 3/8/07 SUBJECT W.O. / A.F.E. NO. VRU #1 120 V AC (1) Brn (2) Ben (2) Lubricator ? Bra (2) FUQ-3 (3) (3) U-S KI KZ 1(3 K4 K5 K6 (21) Reset (3) (4) (1) (K8) (9) (12) (15) (18) 2 RIB (21) OF 13 Em Gen Mcc Section 2 MCC 1-63 Section 8 START BK(13) | K(15) 01(3) R(veu1-3)} Or (2) 115 RUN Gy (14) M Bu (4) Hour 1 13 (HM) 14-Meter pur (veul - 4) Starter R (31) (1) 16 (TD-1 (1) Lamp Test (7)

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CHECKED BY Fax (805) 658-0868 R. Hurdle 2 3/8/07 SUBJECT W.O. / A.F.E. NO. VRU#1 (3) (1) Reset 010 2 5 5 01 1 5 L 5 L 5 (4) = KI K7 [2] (8) (6) (1) (3) (6) (6) Tes+ (24) (3) oil (24) 252 Reset (5) 0,0,5 old Lube KZ 107 TD-1 (3)[3] (10) (11) (25) (10) (10) (1) (10) (24) Test 5 Lube (3) (3) 260 oil FSL 0,0,5,

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PAGE 3 CHECKED BY Fax (805) 658-0868 3/8/07 R. Hurdle W.O. / A.F.E. NO. VRU #1 (3) Reset (1) (9) Jacket water TSH k3 K7 (4) (13) (13) (1) TRS+ (27) (3) (27) (27) (1) Jacket water TSH Reset Disch PSH K8 (3) BK (16) BK(16) (16) (1) Lamp Test (28) (28) (3) (28) Disch PSH

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CHECKED BY Fax (805) 658-0868 3/8/07 R. Hurdle 4 SUBJECT W.O. / A.F.E. NO. VRU #1 (1) (3) Reset Scrubber 3 LSH. KS (20) (3) (19) (19) (1) 2 (45) Lamp TRS+ 5 Scrubbe (3) LSH (29) Reset (18) Suct K6 PSL QIOIS, (23) K8 3 (3) (22) (1) (22) 111-(36) 5H6 Suction (3) BK PSL (36) (30) 0.0,5.

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PREPARED BY CHECKED BY (805) 658-0868 Fax R. Hurdle 5 SUBJECT W.O. / A.F.E. NO. VRU #1 Contacts 11-9 close immediately upon START or RESET . The relay Contacts 11-9 close times for 30 min, the the contacts open. Bypass Keyswitch TO-BP (1) Brn (11) RIB or (1) Bypass Enabled TD-BP Voltage Source (1) 10 Bu Common OMPON HC3A Check 030 m 1-999 minuetes (Pause) Signal Interval off Delay K9A SIA R (1) -3 Alarm yel 401 K9

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CHECKED BY (805) 658-0868 Fax R. Hurdle 3/8/07 W.O. / A.F.E. NO. Alarm Annunciation Hot (common) from Zone 4 Remote Annunciator Panel 1 BK BK To other R(27) Field Devices GUA Fitting To VRUE VRU3 VRU3 RAN#4 ! BK (32) Bu (36) 8k (33) VRUI Remote Alasm RANH4 1<9A Bk (33) Panel Zone 4 Tan 401 (19) (R7) 401 yel (55) 401 13 15 9 9 (48) (47) (4+) 101

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Fax (805) 658-0868	R, Hurdle CHECKED B	7 DATE 3/8/07 PAGE
Relay Pin-out VRU #	/	W.O. / A.F.E. NO.
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(K9)  Y m7 m7 m7 Y  (16) m7 n7 (10)  8 7 6 5 4  9 10 11 / 2 3  7 8 1 2  0 0 0 0 0  m7 Y M7 (1) 8 (25)  (11)  (31)	1 2 (3) 120 New 120 YAC JA I	(K9-A)  BK MT MT R  6 5 4 2  7 8 1 2  7 8 1 2  7 8 1 2  (31)
All wire 3 white unless woted.  Note: Vindicates 2 wires landed		
mT: No wire connected - empty terminal		

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3/8/07 W.O./A.F.E. NO. PREPARED BY CHECKED BY (805) 658-0868 Fax R. Hurdle SUBJECT TB3 Terminal Strip 7 (42) Alason Alason N 0 BK (33) VRW 3 RAN Ala 000 70 11 N

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CHECKED BY Fax (805) 658-0868 P. Hurdle 3/8/07 SUBJECT W.O. / A.F.E. NO. Terminal Strip TB4 & TB5 Lube Oil FSL Power Lubeoli LSL 政 Blc (28) (30) (3) (29) BK (27) (1) ww W TB4 w W BK BK W BK BK (24) (26) Disch PSH (3) 迅 Jw Suct Scrubb LSH Suc PSL RIB RAN#4 12 oV > Return from Bypass Reset JB2-1 (4) Reset 13 Bu) 2 4 or 10 TBS 8 7 6 5 2 3 02 3 MT MT R R 4 W W 139 W/ R BK 12 11 W 10 Brn Bu 84pass Reset P.B. Key. Bypass R



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PREPARED BY CHECKED BY Fax (805) 658-0868 SUBJECT W.O. / A.F.E. NO. 11- Pin Relay 8-pin Relay 14-pin Blade Relay OMRON H3CA 030 - Check ad (2) Sourcet