Path: c:\documents and settings\epeoples\desktop\cave plc\cave_plc.prj
Save Date: 09/16/09 09:22:23
Creation Date: 04/14/09 09:04:56
PLC Type: 450
Class ID: DirectLogic 405 Series
Link Name: Cave PLC
Description: HINS Test Cave PLC

1

_On
SP1

LD
K701

LD
K1

LDA
O3500

RX
Reset Latches
V3700

This reads in the 0-10V signals from the cave and cage vacuum controllers.

V6000 - Cave IP
V6001 - Cage IG1
V6002 - Cage IG2
V6003 - Cage Intlk Sw
V6004 - Cave PG
V6005 - Cag IP Ps readback for vacuum

2

_On
SP1

LDF
X0
K12

LDF
X14
K3

OUTX
V6000

3

_On
SP1

LD
V6000

MULB
K3e8

DIVB
Kfff

OUT
Ion Pump Voltage
V3004

OUT
Cav IP Torr
V3006

Converting the vacuum signal to volts. Multiplying by 100 instead of 10 to get more accuracy.

V = (100/4095) * X

9/2/09

This signal represents the voltage from the Varian Ion Pump Power Supply for the SC coupler tests.

4

_On
SP1

LD
V6001

MULB
K3e8

DIVB
Kfff

OUT
Cage Vac1 Volts
V3100

Converting the vacuum signal to volts. Multiplying by 100 instead of 10 to get more accuracy.

V = (100/4095) * X

9/2/09

This signal represents the voltage from the SC coupler test facility Ion Gauge Controller.

5

_On
SP1

LD
V6002

MULB
K3e8

DIVB
Kfff

OUT
Cage Vac2 Volts
V3102

Converting the switch to volts.

V = (10/4095) * X

6

_On
SP1

LD
V6003

MULB
Ka

DIVB
Kfff

OUT
Cage Vac Switch
V3104

7

6 = on and 0 = off for the switch.

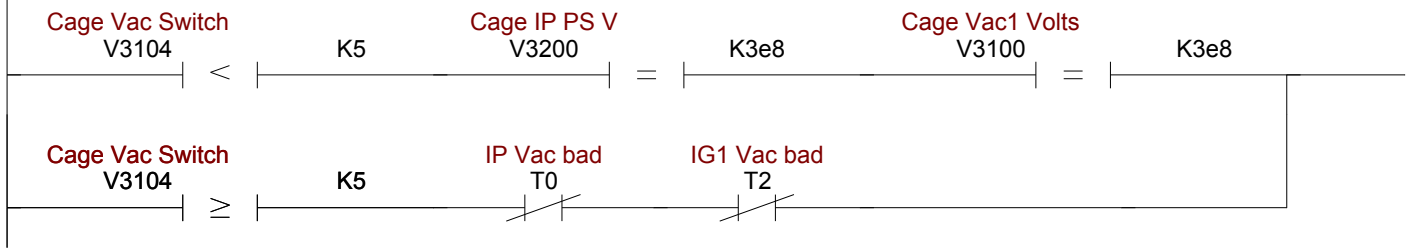
A

4/30/09
Added in analog value from IP PS currently being used in cage for vacuum. Set up interlock so that IP PS and vac controller have to both show good vacuum for a permit.
IP PS has to be between 2.7V and 5.45V for good vacuum.
Vacuum controller has to be between 6.55V and 8.1V for good vacuum.
Vac Cntlr = 10V means cable uplugged.

5/15/2009
took the vac controller interlock out and used only the IP PS controller. V3300 is a fake address.

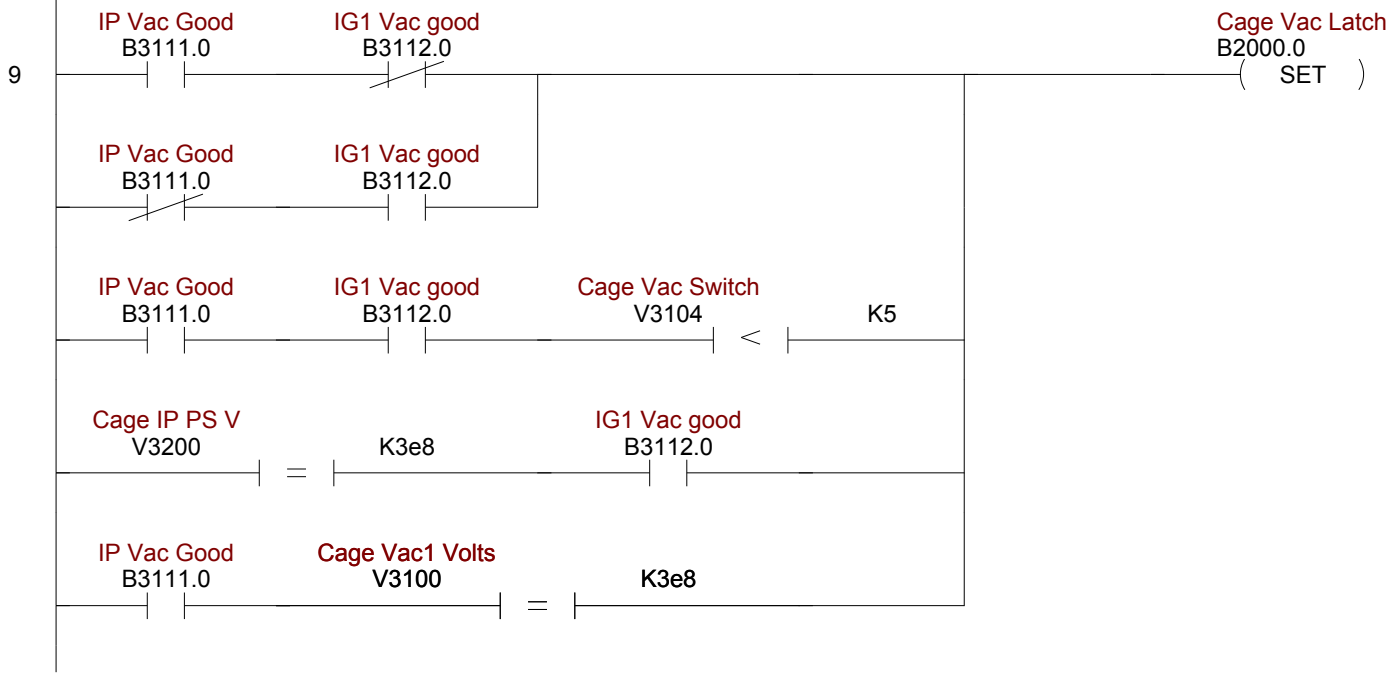
9/2/09
Permit ok = good vac for IP PS & IG & switch = 1 or vac signals = 10V and switch = 0.
Permit bad otherwise.
Permit Good States:
Vac > 5e-6 & switch = on or Vac = 10 (unplugged) & switch = off
Vac disabled on Cage page looking at switch signal only, not latch.
Switch = on -> vac enabled.

8



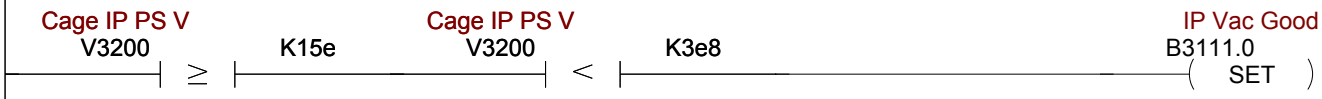
9/2/09
Permit Bad States:
IP PS = good & IG = bad or IP PS = bad or IG = good (switch irrelavant)
IP PS = good & IG = good & switch = off (vac not enabled, so not using vac)
Either cable unplugged and the other isn't (switch don't matter)

9/10/09
This is here just as a debug.



9/2/09
Latch set if IP PS vac good. 350<= Vac < 1000.

10



9/2/09
Latch rest if IP vac bad.
9/10/09
If bad for longer than 3s, then set timer T0 = 1. Vac < 350.

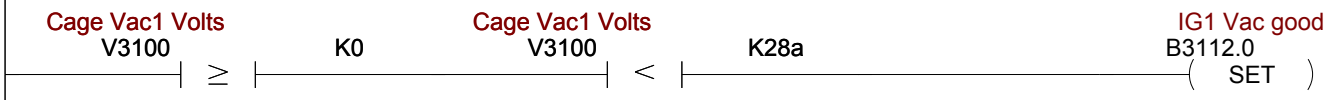
11

9/10/09
If IP vac bad, then reset good status to bad.

12

9/2/09
Latch set if IG1 vac good. 0 <= Vac < 650

13



9/2/09
Latch reset if IG2 vac bad.

9/10/09
If bad for longer than 3s set time T2 = 1. Vac >= 650.

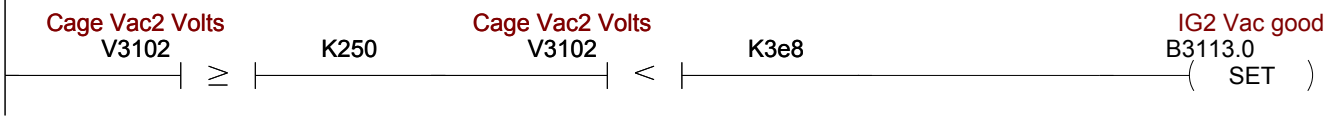
14

9/10/09
If IG1 vac bad then reset good status to bad.

15

9/2/09
Latch set if IG2 vac good. 0 <= Vac < 650.

16



9/2/09
Latch reset if IG2 vac bad.

9/10/09
If vac bad for 3s set T3 =1. Vac >= 650.

17

9/10/09
If IG2 vac bad then reset good status to bad.

18

9/2/09
Reset button added to reset vac after going bad, this will be ignored for now! B3300.0 is a fake address.

19

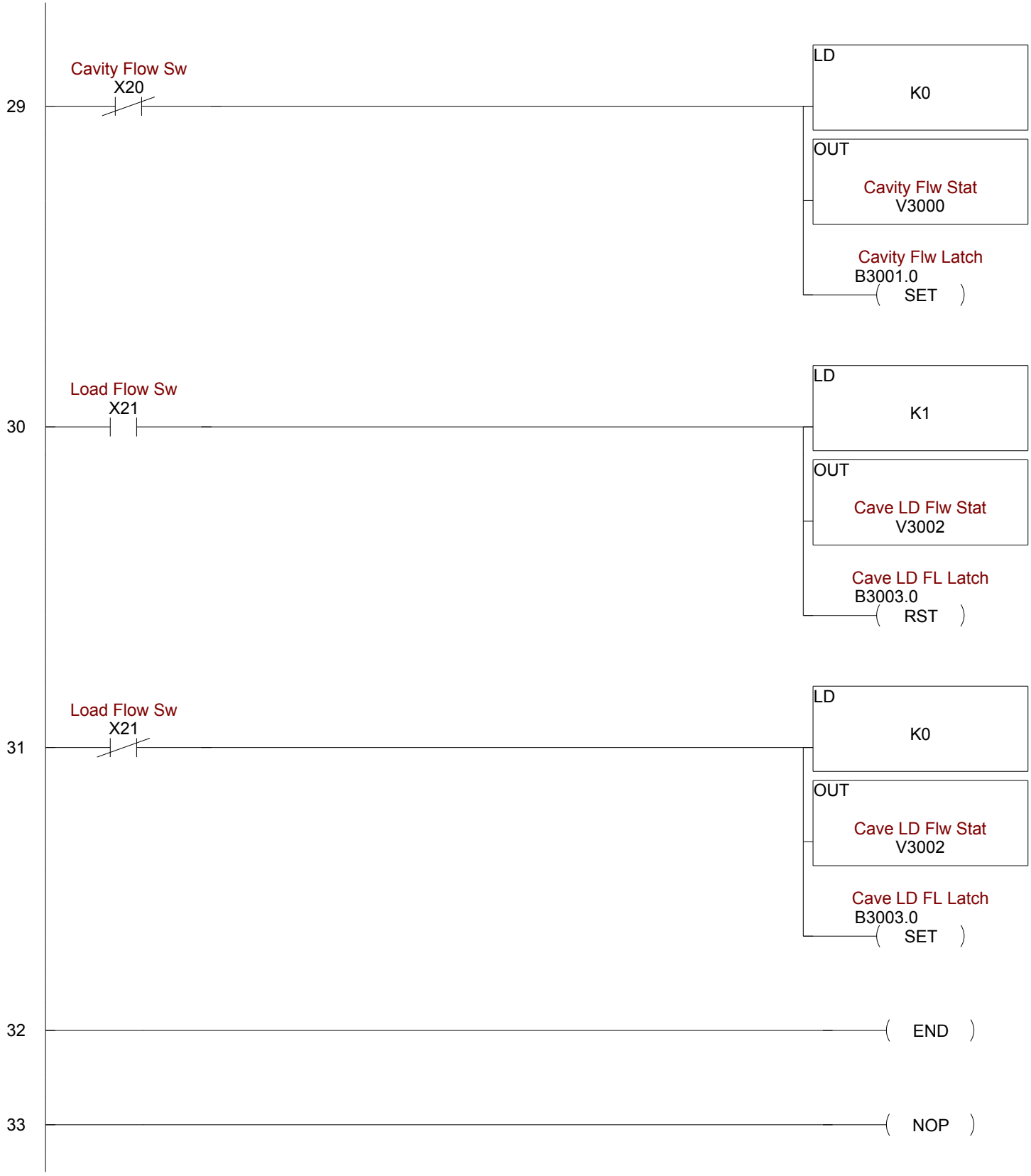
Converting the vacuum signal to volts. Multiplying by 100 instead of 10 to get more accuracy.

V = (100/4095) * X

20

21


22
_On
SP1
LD
V6100
OUT
Cave Cavity RTD
V3010
23
Ion Pump Voltage
V3004
<
K15e
TMR
T1
K10
Ion Pump Voltage
V3004
≥
K352
24
Cavity Flow Sw
X20
Load Flow Sw
X21
T1
Cave Intlk Sum
Y0
OUT
25
Vac Reset
V3500
=
K1
IP Volt HI Latch
B3005.0
RST
IP Pres HI Latch
B3007.0
RST
26
Ion Pump Voltage
V3004
≥
K352
IP Volt HI Latch
B3005.0
SET
27
Ion Pump Voltage
V3004
<
K15e
IP Pres HI Latch
B3007.0
SET
28
Cavity Flow Sw
X20
LD
K1
OUT
Cavity Flw Stat
V3000
Cavity Flw Latch
B3001.0
RST


29
Cavity Flow Sw
X20
LD
K0
OUT
Cavity Flw Stat
V3000
Cavity Flw Latch
B3001.0
SET
30
Load Flow Sw
X21
LD
K1
OUT
Cave LD Flw Stat
V3002
Cave LD FL Latch
B3003.0
RST
31
Load Flow Sw
X21
LD
K0
OUT
Cave LD Flw Stat
V3002
Cave LD FL Latch
B3003.0
SET
32
END
33
NOP