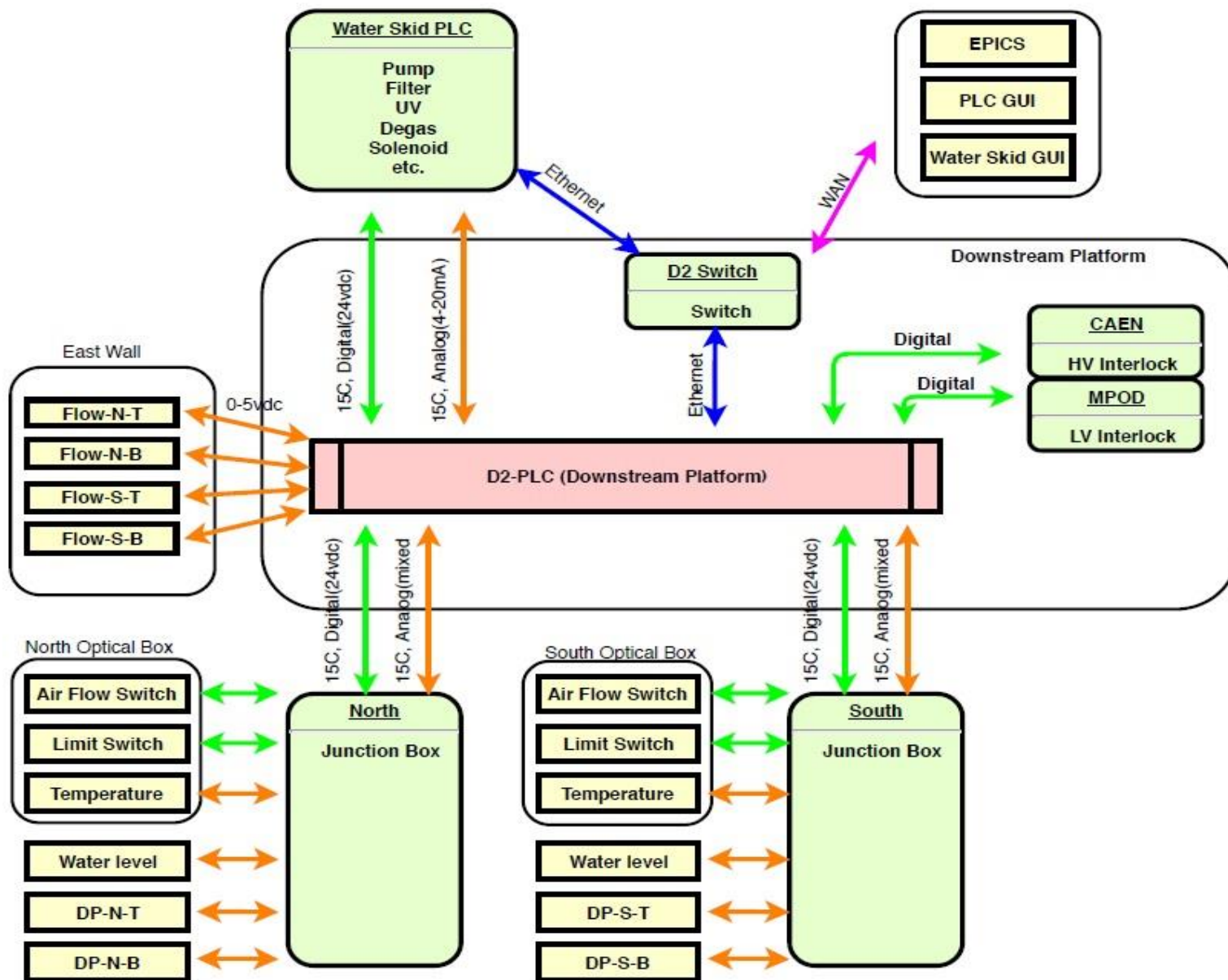


# DIRC Controls 6/18



# Programming 90% complete

```
// DIRC Environment

//Check temperature of Optical box electronic environment against shutdown limit, if over set a flag

IF DIRC_OB_N_Temp >= DIRC_OB_TempLimit THEN
DIRC_OB_N_Overtemp:= 1;
END_IF;

IF DIRC_OB_S_Temp >= DIRC_OB_TempLimit THEN
DIRC_OB_S_Overtemp:=1;
END_IF;

//Each optical box also has a ducted air flow switch and enclosure cover proximity switch
//If (no flow or high temp or no cover) then disable HV and LV

IF DIRC_OB_N_Overtemp OR DIRC_OB_N_LS OR DIRC_OB_N_FS THEN
DIRC_LV_Disable:=1;
DIRC_HV_Disable:=1;
END_IF;

IF DIRC_OB_S_Overtemp OR DIRC_OB_S_LS Or DIRC_OB_S_FS THEN
DIRC_LV_Disable:=1;
DIRC_HV_Disable:=1;
END_IF;

IF DIRC_Reset Then
DIRC_OB_N_Overtemp:=0;
DIRC_OB_S_Overtemp:=0;
DIRC_LV_Disable:=0;
DIRC_HV_Disable:=0;
End_IF;
```

To DO: Liquid Level Scaling and Alarms  
Temp Sensor Scaling and Alarms

# Tag List -90% complete

1	remark	CSV-Import-Export				
2	remark	Date = Thu Jun 07 06:20:04 2018				
3	remark	Version = RSLogix 5000 v20.04		23		
4	remark	Owner = halldusers				
5	remark	Company = jefferson lab				
6		0.3				
7	TYPE	SCOPE	NAME	DESCRIPTION	DATATYPE	SPECIFIER ATTRIBUTES
8	TAG	DIRC_Environment	DIRC_BB_N_B_DP	North bottom barbox diff pressure	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
9	TAG	DIRC_Environment	DIRC_BB_N_B_F	North bottom barbox Flow	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
10	TAG	DIRC_Environment	DIRC_BB_N_T_DP	North top barbox diff pressure	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
11	TAG	DIRC_Environment	DIRC_BB_N_T_F	North Top barbox Flow	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
12	TAG	DIRC_Environment	DIRC_BB_S_B_DP	South bottom barbox diff pressure	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
13	TAG	DIRC_Environment	DIRC_BB_S_B_F	South bottom barbox Flow	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
14	TAG	DIRC_Environment	DIRC_BB_S_T_DP	South top barbox diff pressure	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
15	TAG	DIRC_Environment	DIRC_BB_S_T_F	South Top barbox Flow	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
16	TAG	DIRC_Environment	DIRC_HV_Disable	Disable Caen	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
17	TAG	DIRC_Environment	DIRC_LV_Disable	Disable MPOD	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
18	TAG	DIRC_Environment	DIRC_OB_N_FS	North Optical Box Air Flow Switch	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
19	TAG	DIRC_Environment	DIRC_OB_N_LS	North Optical Box Proximity Switch	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
20	TAG	DIRC_Environment	DIRC_OB_N_Overtemp	North Optical Box Over Temp flag	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
21	TAG	DIRC_Environment	DIRC_OB_N_Temp	North Optical Box Temp Data	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
22	TAG	DIRC_Environment	DIRC_OB_S_FS	South Optical Box Air Flow Switch	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
23	TAG	DIRC_Environment	DIRC_OB_S_LS	South Optical Box Proximity Switch	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
24	TAG	DIRC_Environment	DIRC_OB_S_Overtemp	South Optical Box Over Temp flag	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
25	TAG	DIRC_Environment	DIRC_OB_S_Temp	South Optical Box Temp Data	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
26	TAG	DIRC_Environment	DIRC_OB_TempLimit	Optical Box Temp Limit for flag	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
27	TAG	DIRC_Environment	DIRC_Reset	Reset/Clear Flags Interlocks	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
28	TAG	DIRC_Environment	DIRC_WS_AlarmReset	WaterSkid Master Clear Alarm	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
29	TAG	DIRC_Environment	DIRC_WS_Flow	Water flow data	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)
30	TAG	DIRC_Environment	DIRC_WS_PumpEnable	WaterSkid Turn on Pumps	BOOL	(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)
31	TAG	DIRC_Environment	DIRC_WS_Temp	Water Temp Data	REAL	(RADIX := Float, Constant := false, ExternalAccess := Read/Write)



## DIRC Controls Cables

### WaterSkid to Platform PLC

#### Digital

		<u>DownStream PLC</u>
DI 01	Pump Enable (24VDC, Digital)	Local:1.O.Data.14
DI 02	Master Clear Alarm (24VDC, Digital)	Local:1.O.Data.15
DI Return	Return (24VDC, Digital)	Local:1.Return
DO 04	Water Cart Alarm (24VDC, Digital)	Local:2.I.Data.0
DO Return	Return (24VDC, Digital)	Local:2.Return

#### Analog

AO 00	Water Flow (Analog, 4-20mA)	Local:7.I.Ch0Data
AO 00	Water Flow Return (Analog, 4-20mA)	Local:7.I.Ch0Data
AO 01	Water Loop Temp (Analog, 4-20mA)	Local:7.I.Ch1Data
AO 01	Water Loop Temp Return(Analog, 4-20mA)	Local:7.I.Ch1Data

### Junction Box (2x)

J1 01	AirFlow Switch (24vdc)	Local:2.I.Data.8
J1 02	AirFlow Switch Return(24vdc)	Local:2.Return
J2 01	Limit Switch (24vdc)	Local:2.I.Data.10
J2 02	Limit Switch Return(24vdc)	Local:2.Return
J3 01	Temp Supply	Local:9.Supply
J3 02	Temp Return	Local:9.Return
J3 03	Temp Data	Local:9.I.Ch2Data
J4 01	Water Level Sup	Local:7.I.Ch2Data
J4 02	Water Level Ret	Local:7.I.Ch2Data
J5 01	DP Supply	Local:8.I.Supply
J5 02	DP Return	Local:8.I.Return
J5 03	DP Data	Local:8.I.Ch4Data
J6 01	DP2 Supply	Local:8.I.Supply
J6 02	DP2 Return	Local:8.I.Return
J6 03	DP2 Data	Local:8.I.Ch5Data

**Belden 9541 060100, 24AWG, 15C, 35ft (2x)**

**Note:**

Extra conductors if we need more I/O from the water skid after a running for a few months

Examples: Individually command pumps, UV lights, Vacuum head temp, etc.

**Belden 9541 060100, 24awg, 15C, 50ft (4x)**

**Note:**

Liquid Level currently configured for 4-20mA

- (4) Spare Analog 0-5VDC channels
- (4) Spare Analog 4-20mA channels
- (4) Spare Digital 24VDC Input channels
- (4) Spare Digital 24VDC Output channels

Title		
Size	Number	Revision
A		
Date:	6/7/2018	Sheet of
File:	C:\Users\...WaterSkidtoPlatform.SchDoc	Drawn By:



# To Do:

- Purchase Connector/Cable/Jct box (in stock)
  - Build/Install Water Skid Control Cable, JctBox Cable
  - Install CAEN/MPOD Interlock cables (Mixed w/ ComCAL)
  - Liquid Level Sensor >?
    - Can be 24vdc with 0-5vdc out
    - Or 4-20mA loop
    - Programming
  - Limit Switch >?
    - Anticipating 24vdc (can be 5vdc)
- 
- Consider Designing Feedthrough Panel for PLC side connections?