

Sheldon, Lee H NWP

From: Miska, Edward P NWP
Sent: Friday, August 12, 2005 12:00 PM
To: Sheldon, Lee H NWP
Subject: Field Trip Notes080805 McNary.doc

Lee,

Thanks for the comments. I incorporated them in this version.

Ed

McNary Field Trip Notes for ITB testing
8/8-10/05
EPM

Day 1-

1. Opened the box sent from Doug and found the following difficulties. The transducer signal conditioner box had some parts in it rattling around. I took it apart before powering it up. Two of the circuit board mounting nuts had come off. Replaced them.
2. Did not find any manual with the box.
3. ITB would not talk to real unit 5 PLC. Checked lots of thing. I finally changed it to 192.168.1.65 that is used by the McNary maint staff and it worked. Other settings are Subnet Mask: 255.0.0.0 and Default Gateway 10.0.0.1. Also, I did not change the DNS server address from 10.2.0.7 I was later told the subnet mask in the GDACS system was prevented access when using the test bed IP address (10.168.1.51).
4. I modified the top server addresses from the following used in the test bed:
T1_UnitA ID: 10.2.50.31 to – 192.168.222.222
T1_UnitB ID: 10.2.50.32
T1_UnitC ID: 10.2.50.103
T1_UnitD ID: 10.2.50.203
The idea is to essentially disable these items that are from adjacent units.
I later changed all of them to point to the unit 5 PLC in order to see if that would solve a PC performance problem. The thought is that possibly the communications having multiple time-outs, could be slowing the other ITB functions. Making the change did not have any perceptible benefits.
5. Once the ethernet link to the SPLC is disconnected there does not seem to be any way to get rid of the OPC error dialog boxes that keep coming up. Clearing one just removes it fleetingly. However the OPC data transfer seems to be working anyway.
6. When the “Turn Manual Off” button is hit it takes about 30 seconds before it responds.
7. When the “Start Index Test” is started the buttons to both adjust perturbation and change the values no longer respond within a reasonable time. This problem was not observed with the equipment in the GDACS test bed setup. CPU loading when the Index test is on it jumps from a minimal amount of about 5% to 55%.
8. When manual perturbation is selected, it takes about 30 seconds for the perturbation on flag to go on and be sent to the SPLC.
9. When turning “Manual on” it takes about 5 seconds for the perturbation flag to turn on. It also seems somewhat inconsistent. Often it will turn on and then in about a second, turn off. Wait about 5-10 seconds and it will usually turn on again.

7/3/2006

10. Attempts at closing "forebay chart" fails. It closes and then reappears right away.
11. When Power output data chart is maximized the other charts try to write on top of them.
12. MW signal noise was about $\pm .2$ MW.
13. When the calibration screen is selected the graphs write on top of them. This makes it very user unfriendly.
14. WK piping setup: The manifold had male connections instead of the female connections that were shown in the picture from ATC. Project supplied the needed adapters and garden hoses for the drain lines. Had to scrounge adapters for hose vs pipe threads. Had to acquire mounting equipment at the project. (Was to be shipped on plywood per earlier coordination with Doug.) Able to flush and calibrate successfully. Left at project for future use.

Day 2-

1. The OPC interface did not seem to work when the ITB was powered up again, though pinging works. There seems to be a big time delay in getting the initial data.
2. The ITB power display boxes are not large enough to show the floating point near zero number for MW. It would be better to show zero MW for the display if the value is less than .01 MW's.
3. Numerous numerical display boxes are not large enough to show all of the digits in them. The digits are centered and both ends are truncated.
4. The "Test Unit OPC" ITB display is showing 5000 CFS. The forebay is 338.3504 ft, the tailwater is 264.0311 ft, and blade degree is 16.97792. Need to check out the blade, FB, and TW values.
5. The clock value is not updating per what shows with OPC quick client viewer. It is stuck at 16:52:22. Ideal Blade before perturbation is zero.
6. Setup New SoftPLC. Unusual findings: a) BLD_DBAND was set to 1 degree. Originally it was 0.1 degree. Set it to 0.2 degree for this test; and b: 3DC_Blade_POS Positive MTR. N641:009/15=0 found. Was =1 on version that came from test bed and per what Dan had in his documentation. This value changes the control direction of the motor. How could this have changed direction and worked in the past?
7. Installed WK equipment and it is working fine. The values that show on the ATE150 display do not seem to be excessively noisy.
8. The ATE-150 Signal Conditioner does not output correctly. Doug sent us a new "dongle" to try but that did nothing to help. Doug noted that he had a wiring error on one of the cables for this part. Ed went through several tests on the Signal Conditioner box via phone coordination with Doug. Per Doug the 13 V observed for the output means the output is maxed out. The LED display blinks whenever the voltage to it is above the range it can handle which is about 10 V. Doug had Ed plug the ribbon cable to DB9 connection directly into the ATE150 box, thus bypassing any possible cable issues. Ed later tested the ATE150 analog output with a DB9 connector and 500 ohm resistor installed on pins 7 and 8. The output across the resistor is 11 V. The voltage on the output voltage BNC is 13 V. Same result as with the "dongle directly connected.
9. Per direction from Doug the pots were used to mimic an input signal and see if any change to the output occurred. It didn't. There is something in Doug's box that is not working. (This is the Box that Doug surprised us with and Ed previously rejected as unnecessary. We determined to use it only to move forward fast. Ha! The proper solution is to use the appropriate pressure transducer for the WK sensing and direct wiring to a 16 bit resolution National Instruments analog input board vs the 12 bit resolution board Doug provided.) [The amount of government labor time consumed attempting to get Doug to do the right thing, and failing at that, and then still testing this kludge is abominable. Estimated at \$10K, possibly more, since it was the main cause of failure to be able to collect field data. I do not recommend the government pay Doug to "fix" his box vs get the right transducer and NI analog input board.]
10. Dan Perrier updated the softPLC to contain the version with the perturbation software.

11. The blade error value shown on the Cam display did not show correctly.
12. The cam screw direction flag on the existing cam implementation was opposite from the one in the prior implementation. Was it working wrong previously? We checked to make sure the current implementation direction was right.
13. The cam deadband was set to 0.2 from the 1 degree band found programmed in. One degree is too large for the testing we are doing. Follow up work probably needs to be done to determine proper deadband settings.
14. After the program was modified and running for a time, the PLC was rebooted from the Flash Disk to assure proper operation. During startup a cam error came in that Dan said was normal. (This nuisance error should be tagged for elimination but since it only occurs on cold start, it is low priority.) A little later the annunciator window for cam error was on and would not clear. Dan checked the DO that drives the ann window and found it to be off. That means there seems to be something else crossed wired into the ann that is improperly resulting in an cam error ann. The operator this morning said they were able to clear the ann without any problem. What is going on?
15. Dan added several minor status input changes to the SoftPLC version with the perturbation to make it the same as the current McNary implementation.
16. We were told that additional points would need to be added a few months in the future.
17. The forebay values other than the primary one were off by about 4 feet. We did not pursue this since we did not have good WK flow values, but it is a significant issue for proper cam operation.

Day 3 -

1. WKCal window – Values can not be entered when the “Start Index Test” is functioning.
2. WKCal window: Did something that bombed the program. Not sure what.
3. WKCal Window – Discovered that “Lo V” and “Hi V” values are not enterable and are the same value.
4. When closing the “Test Unit” form by using the standard windows “x” in the upper right and then opening it again, values are reset to the default values. The OPC seems to keep running though. How should this work and what is being sent to the SPLC when the form is closed?
5. The limits screen has “Head” that seems to be the same as “Forebay” on other screens. (This problem was noted months ago.)
6. On the Limits screen - if the Head DB or filter value is less than 1, the head value never passes the stability filter, even though the value is not changing.
7. On the Limits screen – If the Tail DB or filter value is less than 1, the value never passes the stability filter, even though the value is not changing.
8. On the Limits screen – If the Gate DB or filter value is less than 1, the value never passes the stability filter, even though the value is not changing.
9. On the Limits screen – If the Blade DB is less than 1, the value never passes the stability filter, even though the value is not changing.
10. On the Limits screen – If the Flow filter DB is less than 1, the value never passes the stability filter, even though the value is not changing.
11. On the Limits screen – If the Power DB is less than 1, the value never passes the stability filter, even though the value is not changing.
12. General comment: Whenever the “Start Index Test” is running lots, of problems come up. a) The zero problem to the perturbation value; b) ability to change settings for perturbation values is erratic; c) normal windows functions can’t be accessed because all screens are overwritten; d) mouse focus disappears.
13. If the input graphing screens are closed with the “x” they will reappear elsewhere on the screen. It is impossible to get rid of them even though they are in the way of other information. Moving

them to be overlapped and mostly off screen works though.

14. The "test unit" flow display is static at 5000, no mater what the flow should be.

General conclusions:

1. It appears that next to no software testing at ATC was done. Way too many bonehead problems were found.
2. Next to no documentation has been supplied on using the ITB and associated equipment. He sent a lot while we were in the field though.
3. There are about 90% more things on the WKCal screen than seem to be needed.
4. There are about 80% more things on the filter screen than seem to be needed.

I informed Roy Richardson, Ken Wanderscheid, and the desk operator of the status as left.