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David Ebner, A & E Contracts
Army Corps of Engineers, Portland
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Subject: Contracting Officer's determination of technical direction

Re: Contract W9217N-04-D-0009

Dear Dave,

We're still stumped by the same problem, four months into this project. The prohibition from connecting my equipment to the GDACS system still prevents the interface specified in the contract.

On Sept 2nd I send an Email asking for some direction, and the response was that a stand-alone 3-D cam would be provided by Mid-October for this project. In mid-September we were informed this was delayed until mid-December, and then at the end of September we were told there wasn't going to be any 3-D cam; but no name was given as to who made this decision.

This is a resubmission of a request for technical direction from USACE as to how I'm supposed to get these signals from the GDACS system.

The following is an overview of where we've been with this, and a proposal that I believe will make it through all of the wickets that have been identified:

1. The values for Head, Tail, Gate and Blade must come from the GDACS transducers
2. No writing of data back to the GDACS system to avoid possible virus infection
3. Index Test Box must be able to move blades to facilitate index tests.

Glossary

- Seawell 3-D Cam. This is an obsolete system that had serious problems from the initial installation that were never adequately corrected. This system is unacceptable for interfacing the Index Test Box for the demonstration.
- NWP 3-D cam by USACE. This stand-alone configuration using a SoftPLC computer was developed by Rod Hurst and Steve Atkinson. This system is the intended platform for the demonstration of the Index Test Box, but even if it works, this configuration still won't provide the universal compatibility for

multiple installations as called for by the contract. According to Dan Perrier, this software doesn't have the signals we need anyway.

- NWPR 3-D cam is a combined unit using a SoftPLC computer. The functionality includes both the GDACS program plus the 3-D cam program. This is the preferred embodiment of the 3-D cam system in the Pacific Northwest, but due to the GDACS Committee's prohibition I can't get access to the necessary signals.

A brief history

Two weeks into this project, Rod Wittinger realized from the pictures taken by Ryan Sollars at McNary dam that a Seawell 3-D cam was installed on Unit #5 instead of the NWP 3-D cam developed by USACE.

The availability of the NWP 3-D cam was a precondition of the contract terms stipulating the head, tail, gate and blade signals from the unit would be provided to the Index Test Box by USACE.

When this problem became known, you wrote telling me to hold off on conversations with ACSI and the GDACS committee until internal conversations at USACE resolved the conflict.

A short while later I was told that a stand-alone NWP 3-D cam would be installed "in two weeks," providing the necessary interface for the Index Test Box demonstration. If all had gone according to this plan, an NWP stand-alone 3-D cam would have been on the unit when I came out there in August. However, when I arrived at McNary, this installation had not been done; the Seawell cam was still on the unit.

As I was preparing to return home on August 27, I was told a NWP 3-D cam would be put on Unit #5 "by mid October," providing the necessary interface to meet the contract requirement.

In mid September I was told the plan had changed, and that a NWPR 3-D cam (GDACS + 3-D cam version) would be installed on Unit #5 for now, and that a stand-alone NWP 3-D cam would be installed by mid-December to provide the necessary interface to demonstrate the Index Test Box.

Last week, Ed Miska and Lee Sheldon both told me there had been another change, no 3-D cam would be provided as previously stated. Neither Ed nor Lee knew who had made this decision that effectively blocks any testing of this new equipment.

At every turn, the need for dedicated funding before providing assistance has been restated. There is no money allocated to pay for development and deployment of the stand alone NWP 3-D cam or modified GDACS + 3-D cam needed to facilitate this project's tests and avoid direct connection to GDACS.

With all that has happened to date, I have diminished confidence that a stand-alone NWP variant of the 3-D cam will ever be made available for this project - and even

if it does become available, it will not satisfy the contractual goal of multiple connectivity to GDACS equipped units.

Possible Methods that could be used

1. As in the original proposal, ATE Co would provide all of the pressure transducers, making the Index Test Box completely independent of the powerhouse instrumentation. *This was changed during contract negotiations by USACE to use normal powerhouse signals from the GDACS system.*

2. Install another RS-232 board in the SoftPLC and modify the GDACS program to send Head, Tail, Gate and Blade values to the Index Test Box. The Index Test Box would send new blade position values to the GDACS 3-D cam over the RS-232 port. *Dan Perrier said he didn't want to modify the GDACS software to output data to the Index Test Box. His preference was to:*

3. Use the RSLinx SDK software to communicate directly with the stand-alone 3-D cam SoftPLC using the OPC technique. *After conferring with Ed Miska, I purchased the RSLinx OEM version of this software to communicate OPC with the SoftPLC in the stand-alone 3-D cam configuration. Just after the software arrived here, we were told there isn't going to be a stand-alone 3-D cam. This method won't work because the GDACS Committee won't allow the direct communication with the GDACS computer.*

Note: The proposed stand-alone NWP 3-D cam would facilitate a one-time demonstration of the Index Test Box, but will not satisfy the contractual requirement for a GDACS compatible index testing system that could be used throughout the system.

4. While at McNary, we discussed another proposal. The Index Test Box could monitor the normal RS-232 interface between the GDACS SoftPLC computer and the PanelMate display and get all of the necessary information without affecting normal unit operation. This method still connects to the GDACS input, and could conceivably inject a virus into the system. Additionally, this bi-directional monitor on the normal communication to the front panel display has been discouraged by ACSI, who recommend an OPC communication system to the SoftPLC, which again, is precluded by the GDACS prohibition.

And my current favorite:

5. IMC Company makes the Ethernet to fiber optic converters currently used with the GDACS System. They also make a unidirectional version of this device that would assure one-way communication from GDACS to the Index Test Box to prevent writing any virus back into the GDACS SoftPLC.

For this first demonstration project, the unidirectional transmit board could be daisy chained into the GDACS SoftPLC. This would not require any modification to the GDACS software, and would be completely transparent to normal GDACS operation.

To get blade position control by the Index Test Box, the Index Test Box would have the 3-D cam function built into it, and be programmed to drive the Indexer for the stepping motor on the mechanical 2-D cam directly. This would bypass the GDACS 3-D cam function and avoid any communication to the GDACS that might infect it with a virus.

Note: Another benefit of this method is the credibility of the IMC unidirectional communication system. This system was developed for some unnamed military group for a project that could not be discussed, in numbers they could not specify. If it's good enough to protect a secret military project with unidirectional communication, it should work for us here.

Once the unidirectional communication method is demonstrated, costs of this method could be reduced by removing the two Ethernet/fiber optic media converters and just connect the Index Test Box input to the Ethernet output pin on the GDACS SoftPLC. If the receive pin on the GDACS SoftPLC isn't connected to anything, there's no way any Virus could be written back into it.

This method would also work with the RS-232 port, but this would require some modification of the GDACS SoftPLC software program to implement the output data stream.

Lee Sheldon informs me that the HOTS committee is meeting on the 28th. This might be a good time to present this (or some other) proposal for comment and implementation.

Best regards,

Doug Albright