

1st Monthly Report of the ILC Controls Project  
January, 2007  
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February 9

**Project Definition:**

The ILC Controls effort is on multiple fronts:

- 1) Providing a controls system for the SCRF R&D program at Fermilab. This includes NML, Horizontal Test Stand(s), Vertical Test Stand(s) at 1B1. It also includes the controls system for 3.9GHz cavity testing as many of the components being developed at used at A0 as many of these will be moved/deployed at NML.
- 2) Global ILC effort. We will help write the RDR including cost estimates. We will help write the EDR and participate in controls R&D necessary for its completion. We will help participate in instrumentation R&D working on HOM BPM measurements and ATCA digitizers.
- 3) Cavity Data Management System.

**Project Manager's Summary:**

**ILC:**

In January, we contributed to the completion of the RDR for controls and final costing. This was a major milestone. We collaborated on a poster for the ILC detector test beam workshop on instrumentation/controls. This will be a prototype for the PAC poster this summer.

**Data Management:**

January's effort was on two fronts: 1) putting together a technical proposal to help flesh out the feasibility and desirability of building a data management system from scratch; and 2) evaluating a proposed commercial solution from UGS. In the process we produced a draft use scenarios document both to provide to UGS and also to assist in evaluating any software that we may choose to write in the future.

**NML:**

We've made little progress on the requirements document due to low staffing on the project. Discussions are ongoing on a naming standard for our process variables that allows an easy translation between DOOCS and EPICS variables. We need to poll the stakeholders for their view of how data should be presented. We had a talk by Argonne demonstrating a PV database called IRMIS. It looks like it might be useful for us, but don't have the resources at the moment to investigate.

Estimates were received for repair and carpeting of the control room floor. The ceiling tiles need to be replaced as well. Requisitions for both jobs will go out in February. Two quotes we received for the control room command center furniture.

The network switch hardware is installed and operational. End user switches are configured and ready to install, pending the floor painting and rack installation. A fiber link to the cryo room interface PCs is also operational. Some work has been done on relay rack layout and identifying equipment that will move from the photoinjector to NML.

Al Legan (AD) has agreed to join the effort and work on coupler and cavity tuning motor controls for the cryomodule.

We are preparing slides and background material and practicing talks for the upcoming DOE SCRF review.

## **A0**

Some progress is being made on the camera software for the OTR. Brought back the latest driver software from DESY, but it is still not working yet. Luciano has installed the firewire software to test this interface. Completed DDD panels for the OTR.

The 3.9GHz coupler conditioning test stand is operational. This test stand served as a test bed for new RF interlock hardware and coupler processing automation.

Investigating the necessary controls additions to support Tim Koeth's double dog leg beam line addition to the photoinjector.

## **HTS:**

We are drafting a document describing the archiving scheme deployed at MDB. It is the prototype for what we will be doing at NML.

A cable list in support of all the necessary interlocks and RF cabling is being compiled for the test stand. A new RF interlock system is being assembled that will support both HTS and CC2.

The slow tuner motor for CC2 now has control for de-energizing the motor windings. An application was written to automatically turn the motor off after a specified period of time. In February, a motor temperature limit interlock will be added.

A new release of the OPC-IOC driver was cut and installed at MDB and NML. Primary update was to correct the initialization procedure for ao/bo records.

## **VTS**

### **Infrastructure**

We worked on getting kernels on test area machines up to snuff with Trace to support more detailed diagnostics. We are making progress on getting the x86 linux kernel up

and running. VME single word transfers and DMAs work, but not yet interrupts. This is to get rid of the older SPARC boards.

We have found a bug in EPICS base infrastructure wrt to stdout/in/err which resulted in TCL hangs.

### **Instrumentation R&D**

#### **ATCA**

We are helping with system configuration issues in preparation for the KEK ATF BPM trip. This includes getting the vxworks development environment up on people's laptops with the capability to connect to the serial port on the front end boards.

We ported the driver code for Echotek V1 to MVME5500 utilizing tools for VxWorks 6.1 and added support for a new data acquisition mode for single trigger multiple turns, and Analyzed simulated beam and corresponding filters.

Support for labview engineering tools.

We participated in a HOM BPM study trip at DESY. This trip was successful in that we were finally able to track orbit changes with the BPMs both first orbit and multi bunch.. There are still several areas of concern such as calibration and precision, but this is a great step in the evolution.

### **Resources Used in January 2007:**

<u>Month</u>		<u>AD</u>	<u>CD</u>	<u>TD</u>	<u>PPD</u>	<u>Total Effort</u>
<b>January, 2007</b>	ILCTA	0.8	1.5	0.2	0.2	2.7
	ILC	0.4	1.2			1.6
	DM	0.2	0.25	0.35		0.8

The effort listed here is time worked and does not include vacation, sick leave, holidays, etc.

### **Purchase requisitions/procard during January, 2007:**

Eight port network switch for NML cryo room.  
Cosylab microIOC purchased for evaluation

### **Milestones:**

### **Meetings held, Reports Given:**

Meetings were held in August on the following dates:

Project Meetings: August 1,8,15,22, 29: Minutes are available in beams-doc-1526.

### **Documents:**

The following documents were written/updated and added to the ILC Document Database during September, 2006.

- DocID 380: ILC Controls Talk for AD Controls Department
- DocID 332: Controls Commodity Computing Architecture
- DocID 381: ILCTA Instrumentation/Controls Poster for Detector Test Beam Workshop
- DocID 371: Controls Chapter of ILC Reference Design Report

Detailed reports