

E.O. Lawrence Berkeley National Laboratory
GRETINA MONTHLY PROGRESS REPORT
October, 2004

I. DEPUTY CONTRACT PROJ. MGR. ASSESSMENT

1. TECHNICAL AND PROGRAMMATIC PROGRESS AND ACCOMPLISHMENTS

We have tentatively made the decision to use warm FETs and 4-crystal detector module. We have decided that to move ahead and have Eurisys doing the design of this configuration we will need a sole source justification. We are writing the draft of the sole source. Ortec has informed us that they do not intend to bid for the Gretina detector module.

The mechanical design requirements document has been completed, reviewed and posted to the Gretina document database. This completes a L3 milestone. The conceptual design of the support structure started.

Sergio Zimmermann visited Eurisys and discussed several options regarding the 4-crystal detector module.

MOU for Washington University in Saint Louis was submitted and we are waiting for their comments. We are working on the MOU for ANL, which involves the electronics, computing and assembly subsystems.

2. ACTIONS

N/A

3. COST AND SCHEDULE STATUS

3.1 VARIANCE ANALYSIS AND PROJECT COST PERFORMANCE REPORTS

		k\$	
	<u>Sched</u>	<u>Act</u>	<u>Variance</u>
MIE	631.6	378.4	253.2
OPC	836.4	671.5	164.9

Variance Statement:

The MIE design effort continues to lag plan. This is due primarily to the effort being placed on answering the questions raised concerning the 4-crystal configuration. Also, without some key dimensions for the 4-crystal design the mechanical support structure will lag.

Project Impact:

N/A

Corrective Action:

To increase the scheduled expenditure we have to advanced the mechanical design. For this we have finished the MOU for Washington University in Saint Louis (which is responsible for the target chamber) and the purchase order for ORNL for the liquid nitrogen system will be placed shortly. Also, we are pursuing a sole source justification to hire Eurisys to start the 4-crystal detector design. When the design is done, we will have the mechanical dimensions of the detector to complete the mechanical design of the support structure.

3.2 MILESTONE STATUS

L3 milestone, Mechanical Design Requirements Review was held in early Oct. The document was posted to the project document database. The document about 3 vs. 4 crystals and warm vs. cold FET is completed and we are waiting for DOE guidance if we will need a formal review at this point.

3.3 PROJECT CRITICAL PATH ANALYSIS

N/A

II. DETAIL SUBSYSTEM STATUS

A. WBS 1.1. Mechanical

WBS 1.1.1 Requirement Document

Technical Progress/Accomplishments

The mechanical design requirements document has been completed, reviewed and posted to the document database.

MOU for Washington University in Saint Louis was submitted and we are waiting for their comments.

Significant Issues/Actions

N/A

WBS 1.1.2 Mechanical Design

Technical Progress/Accomplishments

The conceptual design of the support structure started. Progress is slow because we need mechanical drawings of the detector module. Sergio Zimmermann visited Eurisys and discussed this point with Dr. Daniel Gutknecht. He asked for the final dimensions of the crystals before he progresses on the preliminary design of the cryostat. ORNL has already settled on dimensions for the quad cluster. LBNL personnel are now checking these dimensions using different approaches.

Significant Issues/Actions

An updated mechanical design schedule has been started to reflect further knowledge on the support structure and also the delay caused by the uncertainties regarding the detector module dimensions. The two significant changes at this point are from three sections (hemisphere, structure/tracks, translation/rotation) to two sections (quarter spheres, rotation/support/translation) and also a delay in the completion schedule. No significant impact on cost is expected at this time.

WBS 1.1 Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
211.8	109.8	102.0

Variance Discussion

The design is progressing on the assumption that 4-crystals will be used. However, the engineers recognized that they will need additional information from Eurisys to continue the support structure design. This has delayed portions of the design effort, but will have no impact overall.

B. WBS 1.2 Detector Module

WBS 1.2.1 Procurement

Technical Progress/Accomplishments

We have analyzed, together with the GRETINA Integrated Project Team (IPT), ways to proceed with the procurement of the detector design and, latter on, the procurement of the detectors themselves. We have decided that the best course of action is to write a sole source justification for Eurisys.

Work to write this sole source justification started. Ortec has informed us that they are not interested in bidding for the detector module. They promised to send us a letter confirming this decision.

Sergio Zimmermann visited Eurisys and reviewed several aspects of the detector design with Dr. Daniel Gutknecht (e.g., connector type, cooling, assembly support, etc.). This review was based on a document submitted previously to Eurisys.

Significant Issues/Actions

N/A

WBS 1.2.2 Test/Characterize Module 1

Technical Progress/Accomplishments

Work on the document that describes the Detector Test Procedures and Apparatus continued. This document represents a Level 2 milestone for Dec. 2004.

Work on the relational database requirements and structure continued.

Significant Issues/Actions

N/A

WBS 1.2 Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
78.8	16.1	62.7

Variance Discussion

Most of the effort on the detector module subsystem on the MIE during this period is on WBS Develop Test Procedures and Apparatus and Develop Database. The work on the test procedure and apparatus is mainly done with scientific or R&D effort. We are now reporting these results for the L2 milestone. Work on the database is progressing more slowly but this will not impact the overall schedule because it is not on the critical path.

C. WBS 1.3 Electronics

WBS 1.3.1 Requirement Document

Technical Progress/Accomplishments

Progress on the requirement document continued. John Weizeorick will take the lead and write the remaining of the document.

Significant Issues/Actions

N/A

WBS 1.3 Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
9.2	5.7	3.5

Variance Discussion

Delay on this item does not impact the rest of the MIE.

D. WBS 1.4 Computing Systems

WBS 1.4.1 Requirement document

Technical Progress/Accomplishments

Computing Requirements Document: This document is being developed using a template based on IEEE Standard 830-1998, "IEEE Recommended Practice for Software Requirements Specifications".

Significant Issues/Actions

N/A

WBS 1.4 Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
9.1	12.7	(3.6)

Variance Discussion

Delay on this item does not impact the rest of the MIE. Over spending on this WBS was caused by incorrectly charging this WBS for the R&D computing systems requirement document work. To complete this task we will use R&D funds and the task will be completed without further charging this WBS.

E. WBS 1.6 Project Management

WBS 1.6.1 Management

Technical Progress/Accomplishments

We continued our efforts to get organized for CD2/3A.

Significant Issues/Actions

N/A

WBS 1.6.2 General Project Expenses

Technical Progress/Accomplishments

N/A

Significant Issues/Actions

N/A

WBS 1.6 Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
297.2	233.8	63.4

Variance Discussion

Lower than planned travel expenses and tight control of other misc. expenses contribute to the favorable variance.

E. WBS 1.7 Environment, Safety and Health

WBS 1.7.1

Technical Progress/Accomplishments

We are collecting information for the ES&H document.

Significant Issues/Actions

N/A

WBS 1.7 Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
25.4	.3	25.1

Variance Discussion

N/A

III. Research and Development Status

Technical Progress/Accomplishments

The beam test of the 3-crystal prototype detector module at the 88 Cyclotron is scheduled for December 1st. The design of the target chamber for the Cave 4C was completed and put in the 88 shop. Purchased parts were ordered. The 88 shop is making progress on the fabrication.

Regarding the scanning table, small discrepancies on the cap position was traced to misalignment on the scanning table. X-Ray of the crystal will be performed to locate the actual position of the crystals.

The dimensions of the 4-crystals are being checked at LBNL using different approaches. All approaches should provide similar results.

Different connectors and cables are being study for the detector module. These options were reviewed with Eurisys.

Development of Run Control Software for Detector Testing is ongoing. This software will provide a graphics user interface and keep records of test runs, including test conditions, software and hardware configuration and revision information, and data. The preliminary spec was developed in late September and work in October consisted of gathering various pieces of code and infrastructure techniques.

Data acquisition upgrades: the system being used for detector testing was upgraded significantly. We were able to correct a memory mapping problem in the vxWorks configuration which did not allow DMA transfers on the VME backplane to run in block transfer mode, and we brought the VME controller gigabit Ethernet interface into service.

A hardware problem in the digitizer modules that causes errors in some events when using DMA has been encountered. Work is ongoing to further characterize and correct this. The error is in about 1% of events and is software detectable, so even if it could not be solved the hardware would still be useable.

Significant Issues/Actions

N/A

R&D Variance Analysis (Cumulative To-date) (\$k)

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
789.7	512.3	277.4

Variance Discussion

N/A

IV. Cost Chart

The above charts compare budgeted costs with actuals for the FY05 time period from project inception to Sept 30, 2005



