

E.O. Lawrence Berkeley National Laboratory
GRETINA MONTHLY PROGRESS REPORT
May, 2005

I. DEPUTY CONTRACT PROJ. MGR. ASSESSMENT

1. TECHNICAL AND PROGRAMMATIC PROGRESS AND ACCOMPLISHMENTS

- A meeting with DOE in Germantown was held on May 17th. A decision was made that the project was ready to request approval of CD2A/3A for the long lead procurement of the first three detectors.
- We have completed two level 3 milestones: Preliminary Design of Mechanical Support Structure Complete and Computing Systems Requirement Document Complete.
- The Activity Hazard Document (AHD) was completed and signed.
- Cost “scrubbing” was completed.
- Risk Registry and analysis of contingency was completed.
- The review of all major material procurements was completed.

2. ACTIONS

N/A

3. COST AND SCHEDULE STATUS

3.1 VARIANCE ANALYSIS AND PROJECT COST PERFORMANCE REPORTS

	<u>Sched</u>	<u>Act</u>	<u>Variance</u>
MIE	1,139.4	1,095.6	43.8
OPC	1,091.1	1,015.7	75.4

Variance Statement:

Actual costs shown include accruals for Detector Design of \$151k and Liens totaling \$54k.

Project Impact:

These variances do not impact the MIE completion.

Corrective Action:

No action needed. Costs for detector design and LN System work will be recorded/accrued when received. Work is proceeding as planned in both cases.

3.2 MILESTONE STATUS

Level	Milestone Description	Schedule Date	Completion Date
1	CD-2A Approve Performance Baseline Range /CD-3A Approve Start of Construction for Long Lead-time Items	FY05 –Q3	
2	Award Detector Module Contract	FY05 – Q4	
2	Design and Drawings of Mechanical Support Structure Complete	FY06 – Q1	
3	Preliminary Design of Mechanical Support Structure Complete	April/05	May/05
3	Detector Module Drawings Complete	April/05	
3	Detector Module Procurement Specifications Complete	April/05	
3	Electronic Requirement Document Complete	Aug/05	
3	Computing Systems Requirement Document Complete	Aug/05	May/05
3	Quarter Sphere Design Complete	Sept/05	

Comments:

- a) **Level 3: Detector Module Drawings Complete:** It took longer to place the order of the detector design and this will require more time to complete the detector drawings.
- b) **Level 3: Detector Module Procurement Specifications Complete:** The interfaces will be fully designed after the design of the detector module is completed. Since we placed the order for the detector module later than expected, this delayed the completion of the interface specifications.

3.3 PROJECT CRITICAL PATH ANALYSIS

The critical path continues to be the production and delivery of the Detector Modules. Placement of the order for the first detector is anticipated to be mid-July.

II. DETAIL SUBSYSTEM STATUS

A. WBS 1.1. Mechanical

WBS 1.1.2 Mechanical Design

Technical Progress/Accomplishments

- We have made progress reviewing the liquid nitrogen requirement document.
- The review of the support structure preliminary design suggested a study of two manufacturing options for the quarter spheres (given the risk associated with this manufacturing process): weldment or billet. Costs and risks of both methods are being analyzed. The billet approach appears to offer lower risk.
- The FEA model of the quarter spheres is producing useful results. We have already agreed with Eurisys on a radial dimension of the detector seat (625mm). The model indicates the quarter-sphere self-deflection is about 50 microns at worst. Axle deflections are being checked. The deflections in the axle will be compensated by the hexapod.
- A 3D model of the quad cap has been submitted to the LBL shops to prepare for the prototype cap from Eurisys in June.

Significant Issues/Actions

N/A

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

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
238.5	253.1	(14.6)

Variance Discussion

Variance is due to treatment of the whole lien for the LN System as part of Act\$ prior to recognition of the schedule. No impact on either cost or schedule.

B. WBS 1.2 Detector Module

WBS 1.2.1 Procurement

Technical Progress/Accomplishments

Preparation for a meeting with Eurisys in early June is underway. Drawings of the latest Detector Design will be reviewed.

Significant Issues/Actions

A meeting with DOE in Germantown was held on May 17th. A decision was made that the project was ready to request approval of CD2A/3A for the long lead procurement of the first three detectors.

WBS 1.2.2 Test/Characterize Module 1

Technical Progress/Accomplishments

Effort on the characterization of the triple detector cluster continued.

Significant Issues/Actions

N/A

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

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
327.7	255.8	71.9

Variance Discussion

Detector Engineering and Test efforts have run lower cost than planned to-date. Eurysis is progressing with the detector design effort (accrued in Act at \$151k), but no costs have yet been recorded.

C. WBS 1.3 Electronics

WBS 1.3.1 Requirement Document

Technical Progress/Accomplishments

We have continued the revision of the Electronics Requirement document with members of ORNL, ANL and LBNL.

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	8.0	1.2

Variance Discussion

N/A

D. WBS 1.4 Computing Systems

WBS 1.4.1 Requirement document

Technical Progress/Accomplishments

The computing requirement document was finalized and reviewed. We met a L3 milestone three months before schedule.

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	6.1	3.0

Variance Discussion

We completed the present work without spending all the funds assigned to this task.

E. WBS 1.6 Project Management

WBS 1.6.1 Management

Technical Progress/Accomplishments

- Cost “scrubbing” was completed.
- Risk Registry and analysis of contingency was completed.
- Completed review of all major material procurements
- Jehanne Simon-Gillo, Steve Tkaczyk and Barry Savnik met at DOE in Germantown to review our progress in addressing the recommendations of the January 05 Annual Review and preparation for the CD-2A/CD-3A. The decision was made that the project was ready to request approval of CD2A/3A.

Significant Issues/Actions

A decision was made to request CD2A/3A at the May 17th meeting with DOE in Germantown.

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>
544.6	563.2	(18.6)

Variance Discussion

Significant time in project management to prepare for the meeting at DOE on May 17th accounts for this variance.

E. WBS 1.7 Environment, Safety and Health

WBS 1.7.1

Technical Progress/Accomplishments

The GRETINA Activity Hazard Document (AHD) was completed and signed.

Significant Issues/Actions

N/A

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

<u>Sched</u>	<u>Act</u>	<u>Variance</u>
10.3	9.4	0.9

Variance Discussion

N/A

III. Research and Development Status

Computing Systems:

- We have placed an order for a new readout CPU to assemble a data acquisition system with two readout crates.

Electronics:

- We have placed an order for a set of custom-made cables to connect the pre-amplifiers with the readout electronics.
- We also tested one procedure to inject charge on the segments of the detector crystals using the central contact. As we expected, it worked.

Significant Issues/Actions

N/A

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

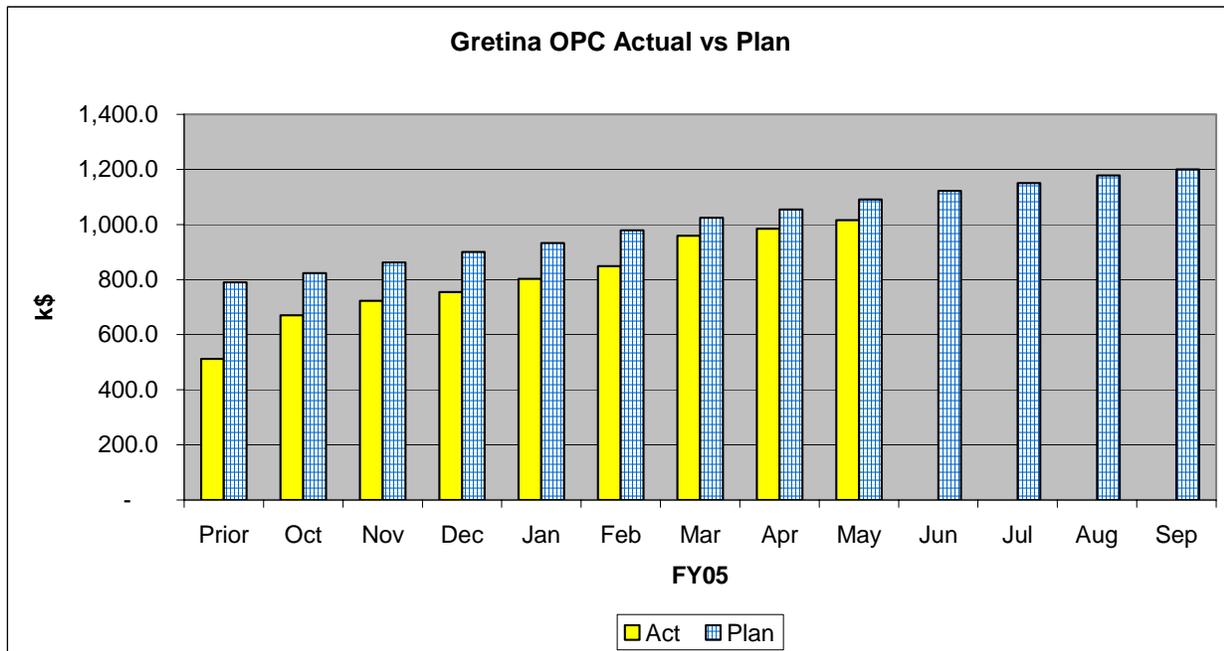
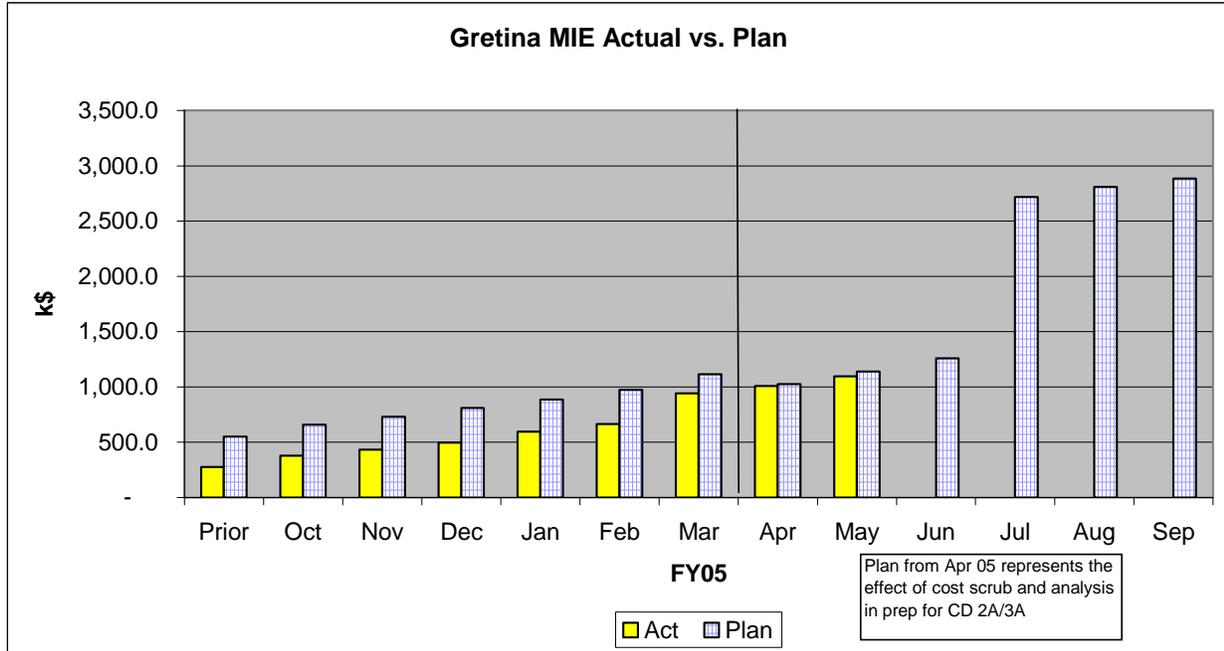
<u>Sched</u>	<u>Act</u>	<u>Variance</u>
1,091.1	1,015.7	75.4

Variance Discussion

N/A

IV. Cost Chart

The above charts compare project-to-date budgeted cost with actual for the FY05 time period.



GRETINA Schedule May 2005

ID	Work Breakdown Ref	Task Name	% Complet	Start	Finish	Gantt Chart															
						2005				2006				2007				2008			
						Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	
1	1	GRETINA	16%	3/1/04	9/16/10																
2		Lvl 1: CD-1	100%	3/1/04	3/1/04																
3	1.1	Mechanical	21%	3/1/04	4/3/08																
4	1.1.1	Requirement document	100%	3/1/04	3/26/04																
5		Lvl 3: Mech Req Doc Complete	100%	3/26/04	3/26/04																
6	1.1.2	Design	42%	6/1/04	1/17/06																
7		Lvl 4: Start Mech design	100%	6/1/04	6/1/04																
8	1.1.2.1	Support structure	65%	6/15/04	11/9/05																
9		Define requirements/spec	100%	6/15/04	7/13/04																
10		Conceptual Design	100%	8/2/04	5/13/05																
11		General Conceptual Design	100%	8/2/04	11/30/04																
12		Split Hemisphere	100%	12/1/04	2/16/05																
13		Rotation System	100%	12/1/04	2/16/05																
14		Translating Structure	100%	12/1/04	2/16/05																
15		Site Interface	100%	12/1/04	2/16/05																
16		Complete Conceptual Design	100%	3/1/05	5/2/05																
17		Lvl 3: Conceptual Design Review Complete	100%	5/13/05	5/13/05																
18		Final design & Drawings	30%	2/9/05	11/9/05																
19		General Final Design	100%	2/9/05	3/31/05																
20		Quarter Spheres	27%	4/1/05	11/9/05																
21		Geometry and Layout	70%	4/1/05	5/5/05																
22		FEA	60%	5/5/05	5/23/05																
23		Specify Manufacturing Processes	30%	5/23/05	6/1/05																
24		Wedge Plates	50%	6/1/05	6/20/05																
25		Hexapod Interface Hub	35%	6/20/05	7/12/05																
26		Grounding and Electrical Isolation	15%	7/12/05	7/28/05																
27		Telephone Poles	20%	7/28/05	8/16/05																
28		Alignment Target Balls	0%	8/16/05	8/23/05																
29		QuarterSphere Links	0%	8/23/05	9/14/05																
30		Lvl 3: Quartersphere Design Complete	0%	9/14/05	9/14/05																
31		Fabrication Prints	0%	9/14/05	11/9/05																
32		Quarter Spheres	0%	9/14/05	10/24/05																
33		Grounding and Electrical Isolation	0%	10/24/05	11/1/05																
34		Telephone Poles	0%	11/1/05	11/9/05																
35		Translation and Rotation	20%	4/1/05	10/4/05																
36		Layout	80%	4/1/05	4/29/05																
37		Tee Platform	10%	4/29/05	6/6/05																
38		Bearing Housing	10%	6/6/05	6/20/05																
39		Axles	10%	6/20/05	7/26/05																
40		Lower Strut Clips	10%	7/26/05	8/29/05																
41		Weldment - RR car and strut clips	10%	8/29/05	9/9/05																
42		RR Car mods - dwg & descr.	0%	9/9/05	9/23/05																
43		Strut drawing (tabulated)	0%	9/23/05	10/4/05																
44		Design Review	0%	10/12/05	11/9/05																
45		Lvl 2: Complete Design and Drawings of Mech Support Structure	0%	12/22/05	12/22/05																

GRETINA Schedule May 2005

ID	Work Breakdown Ref	Task Name	% Complete	Start	Finish	2005												2006				2007				2008
						Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1					
519	1.5	System Assembly	0%	4/4/07	9/16/10																					
520		Lvl 2: Elec & Computing Subsys Ready for Prototype Assem.	0%	4/4/07	4/4/07																					
521	1.5.1	Prototype	0%	4/5/07	6/11/07																					
533		Lvl 1: CD-2B/CD-3B	0%	7/10/07	7/10/07																					
534		Lvl 2: Prod Elec and Comp Subsys. Ready for Final Assembly	0%	6/12/09	6/12/09																					
535	1.5.2	Production	0%	6/15/09	2/23/10																					
572		Lvl 1: CD-4: Approve Start of Operations	0%	9/16/10	9/16/10																					
573	1.6	Project Management	17%	3/1/04	9/16/10																					
574	1.6.1	Management	15%	3/1/04	9/16/10																					
575	1.6.1.1	Initial phase (FY04-FY05)	78%	3/1/04	9/30/05																					
576		Contractor Project Manager - FY04	100%	3/1/04	9/30/04																					
577		CPM - FY05	100%	10/1/04	2/28/05																					
578		CPM - FY05 ETC	42%	3/1/05	9/30/05																					
579		Project Engineer - FY04	100%	3/1/04	9/30/04																					
580		Proj Engineer - FY05	100%	10/1/04	2/28/05																					
581		Proj Engineer - FY05 ETC	42%	3/1/05	9/30/05																					
582		Project Control Analyst - FY04	100%	3/1/04	9/30/04																					
583		Project Controls Analyst - FY05	100%	10/1/04	2/28/05																					
584		Project Controls Analyst - FY05 ETC	42%	3/1/05	9/30/05																					
585	1.6.1.2	Long term	0%	10/3/05	9/30/09																					
589	1.6.1.3	Final phase (-0.5 of FY10)	0%	10/1/09	9/16/10																					
594	1.6.1.4	Quality Assurance Manager	0%	4/1/05	12/22/09																					
595	1.6.1.5	Subsystem Managers	14%	3/1/04	11/3/09																					
596		Design Phase	100%	6/1/04	2/28/05																					
597		Design ETC	25%	3/1/05	3/27/06																					
598		Mechanical (Production)	0%	8/14/07	9/4/08																					
599		Detector	25%	3/1/04	9/3/09																					
600		Electronics	0%	8/1/05	8/13/09																					
601		Computing Systems	0%	8/1/05	8/13/09																					
602		Systems assembly	0%	6/15/09	11/3/09																					
603	1.6.2	General Project Expenses	21%	3/1/04	4/15/10																					
620	1.7	Environment and Safety	29%	3/1/04	2/1/10																					
621	1.7.1	Perform safety analysis of all subsystems	31%	3/1/04	4/14/09																					
636	1.7.2	Conduct global safety review	0%	1/26/10	2/1/10																					