QUARTERLY REPORT

Report Date: **09/30/2005**	U. S. DOE Federal Project Director's Progress Report	Office of Science
Project Number: MIE-41-NL	Title: **GammaRay EnergyTrack. In-Beam Nuclear Array**	Program: **SC-90**
Report Period: **Jul - Sep 2005**	Location: **Lawrence Berkeley National Laboratory**	Project Office: **BSO**

SUMMARY ASSESSMENT

	Current Quarter	Previous Quarter
Cost:	**Satisfactory**	**Satisfactory**
Schedule:	**Satisfactory**	**Satisfactory**
Technical:	**Satisfactory**	**Satisfactory**
Overall:	**Satisfactory**	**Satisfactory**

PROJECT MANAGEMENT

DOE Office of Nuclear Physics Program Manager: **Jehanne Simon-Gillo**
Phone: **301-903-3613**
DOE Federal Project Director: **Barry Savnik**
Phone: **510-486-6108**
Contractor Manager: **I-Yang Lee**
Phone: **510-486-5727**

COST/FUNDING ($K)

	Baseline	Current Estimate	Funding Received
DOE TEC:	**17,000**	**17,000**	**3,500**
OPC:	**1,200**	**1,200**	**1,200**

CRITICAL DECISIONS

Number	Title	Baseline	Actual/Forecast
0	Mission Need	**08/03**	**08/03 A**
1	Preliminary Baseline Range	**Q2 FY04**	**02/04 A**
2A/3A	Performance Baseline/LL Items	**Q3 FY05**	**06/05A**
2B/3B	MIE Construction	**Q4 FY07**	**Q4 FY07**
4	Start of Operations	**Q3 FY10**	**Q3 FY10**

FUNDING PROFILE

Per Latest Approved Budget (FY 2005) ($K)

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	Total
TEC	**1,000**	**2,500**	**3,000**	**3,900**	**4,400**	**2,000**	**200**	**17,000**
OPC	**1,200**							**1,200**
TPC	**2,200**	**2,500**	**3,000**	**3,900**	**4,400**	**2,000**	**200**	**18,200**

Cumulative through: September 30, 2005

	TEC	OPC	TPC ($)
Remaining Contingency:	**2,325**	**-**	**2,325**
Costs Accrued:	**1,316**	**1,120**	**2,436**
Uncosted Commitments:	**49**	**43**	**92**

QUARTERLY REPORT

SCHEDULE SUMMARY

	Start Date		Completion Date		Percent Complete	
Subsystem	Baseline	Forecast/Actual	Baseline	Forecast/Actual	Baseline	Actual
Design	**03/01/04**	**03/01/04 A**	**02/08**	**02/08**	**55.9%**	**45.7%**
Procurement	**06/01/05**	**06/16/05 A**	**05/09**	**05/09**	**- 0 -**	**- 0 -**
Construction	**06/01/07**	**06/01/07**	**04/10**	**04/10**	**- 0 -**	**- 0 -**

Milestones Accomplished Since Last Report	Baseline Date	Actual Date
L2 - Award Detector Module Contract	FY05/Q4	09/30/05 A

Upcoming Milestones	Baseline Date	Planned Date
L2 - Design and Drawings of Mechanical Support Structure Complete	FY06/Q1	FY06/Q2
L2 - Complete Test/Characterization of Detector Module 1	FY06/Q3	FY06/Q3

NARRATIVE HIGHLIGHTS

The contract for the first detector module was awarded on 9/30/05 and with this we met one more Level 2 milestone. This milestone has important significance, because the detector procurement is part of the critical path of GRETINA. The mechanic design team visited the site at the National Superconducting Cyclotron Laboratory (NSCL) of Michigan State University where GRETINA will be installed to plan the space and fitment of the detector. The team learned that the hemispheres have to be assembled “back warded” to avoid conflict with the focus magnet. To avoid a decrease in detector efficiency (by more than 40%) caused by this new assembly strategy, a new detector support ring with four detector positions has to be added to the spherical support shell structure. Preliminary finite element analysis shows that adding this extra ring to the structure actually slightly decreases deflection under gravity. New quotes for outside fabrication of quarter spheres including this extra ring have been requested. The final decision to include this extra support ring is not made yet. A quarter-scale model of the hexapod support was built. For the data acquisition system, EPICS-based DAQ software now has a data save rate of 8MB/sec and is ready for end-to-end testing. Work on the decomposition algorithm continues, with plans to integrate it with the rest of the prototype data acquisition system. The prototype cable to connect the pre-amplifiers to the digitizers was received. We are presently testing the cable with the termination connectors to measure performance, including crosstalk between pairs.

BACKUP INFORMATION

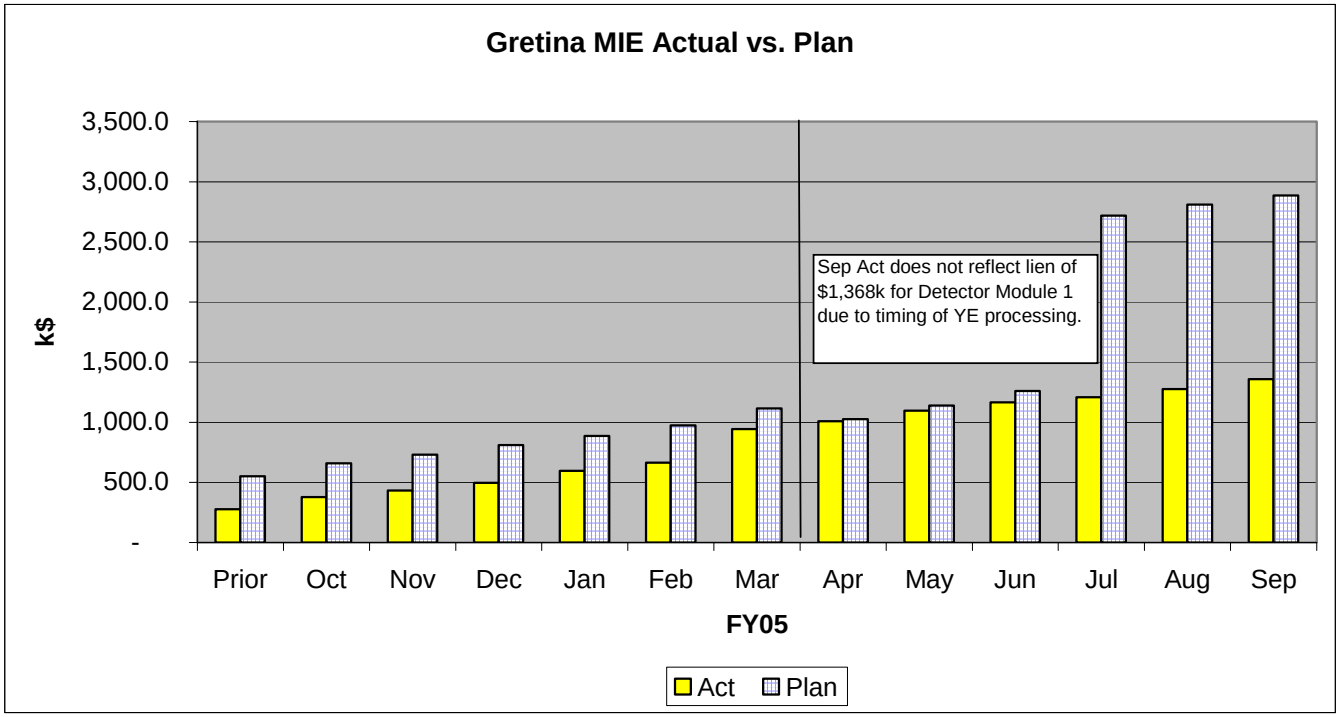
Baseline Document

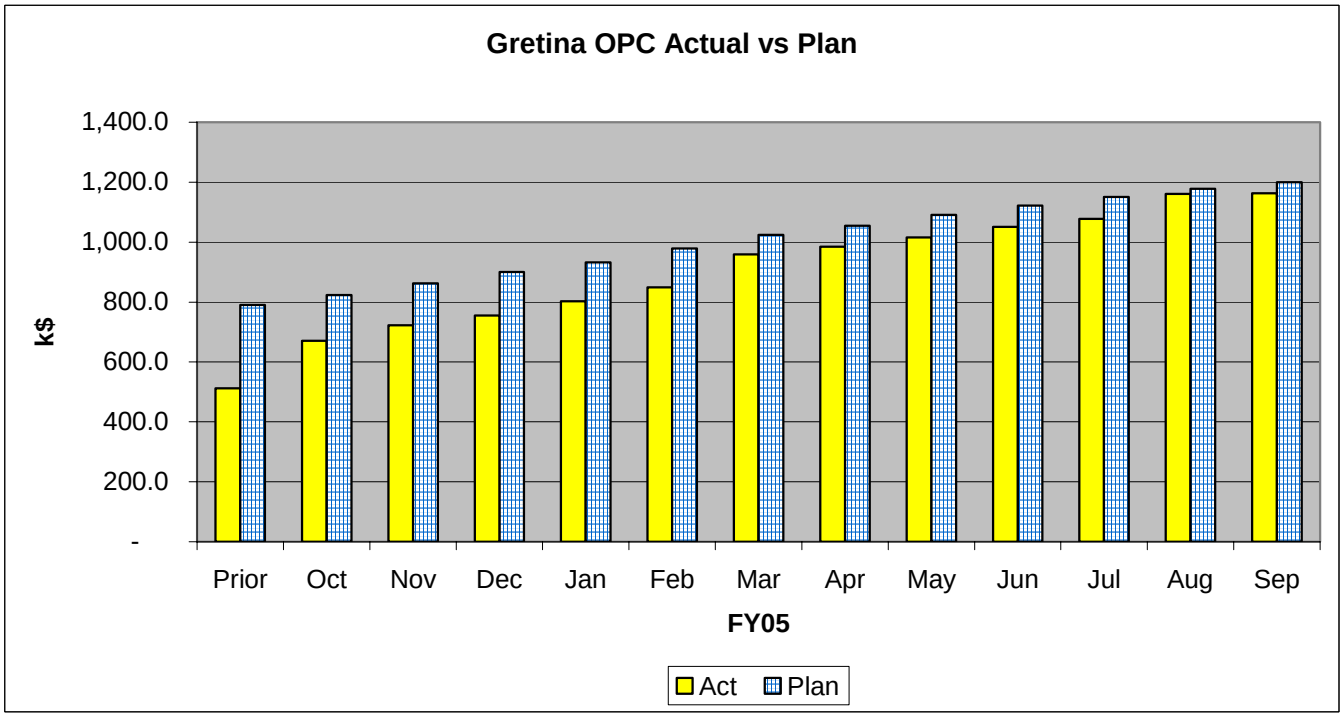
Document Title: **Project Execution Plan** Date of Document: **May 2005**

Approving Official: **Dennis G. Kovar, Associate Director, Office of Nuclear Physics, Office of Science**

QUARTERLY REPORT

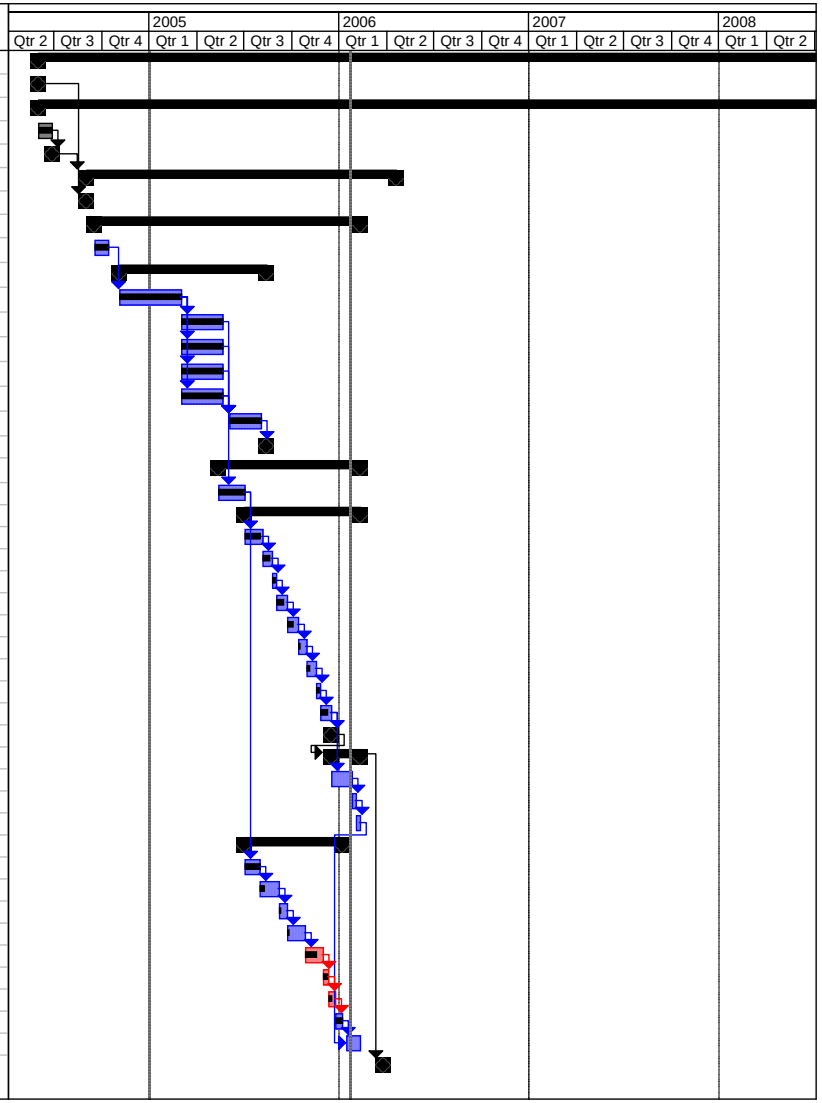
COST SUMMARY





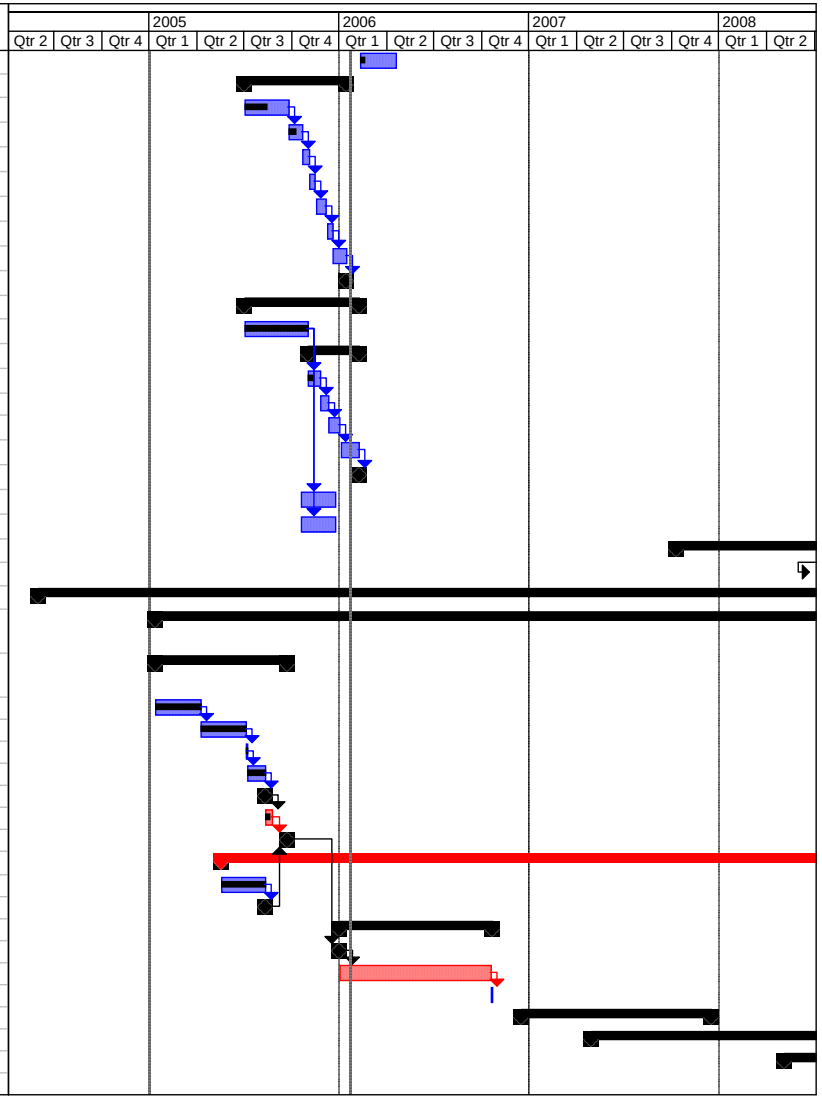
QUARTERLY REPORT

ID	WBS Ref.	Task Name	Percent Complete	Start	Finish
1	**1**	**GRETINA**	**8.44**	**3/1/04**	**9/16/10**
2		**Lvl 1: CD-1**	0	3/1/04	3/1/04
3	**1.1**	**Mechanical**	**26.18**	**3/1/04**	**4/3/08**
4	**1.1.1**	Requirement document	100	3/1/04	3/26/04
5					
6	**1.1.2**	**Design**	**55.75**	**6/1/04**	**1/17/06**
7					
8	**1.1.2.1**	**Support structure**	**68.39**	**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					
18		**Final design & Drawings**	**51.94**	**2/9/05**	**11/9/05**
19		General Final Design	100	2/9/05	3/31/05
20		**Quarter Spheres**	**43.84**	**4/1/05**	**11/9/05**
21		Geometry and Layout	80	4/1/05	5/5/05
22		FEA	67	5/5/05	5/23/05
23		Specify Manufacturing Processes	70.04	5/23/05	6/1/05
24		Wedge Plates	60	6/1/05	6/20/05
25		Hexapod Interface Hub	60.01	6/20/05	7/12/05
26		Grounding and Electrical Isolation	30	7/12/05	7/28/05
27		Telephone Poles	35	7/28/05	8/16/05
28		Alignment Target Balls	70.31	8/16/05	8/24/05
29		QuarterSphere Links	60.01	8/23/05	9/14/05
30					
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**	**46.73**	**4/1/05**	**10/4/05**
36		Layout	100	4/1/05	4/29/05
37		Tee Platform	19.73	4/29/05	6/6/05
38		Bearing Housing	30	6/6/05	6/20/05
39		Axles	14.8	6/20/05	7/26/05
40		Lower Strut Clips	61.67	7/26/05	8/29/05
41		Upper strut clips	55.01	8/29/05	9/9/05
42		RR Car mods - dwg & descr.	20	9/9/05	9/23/05
43		Strut drawing (tabulated)	99.96	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



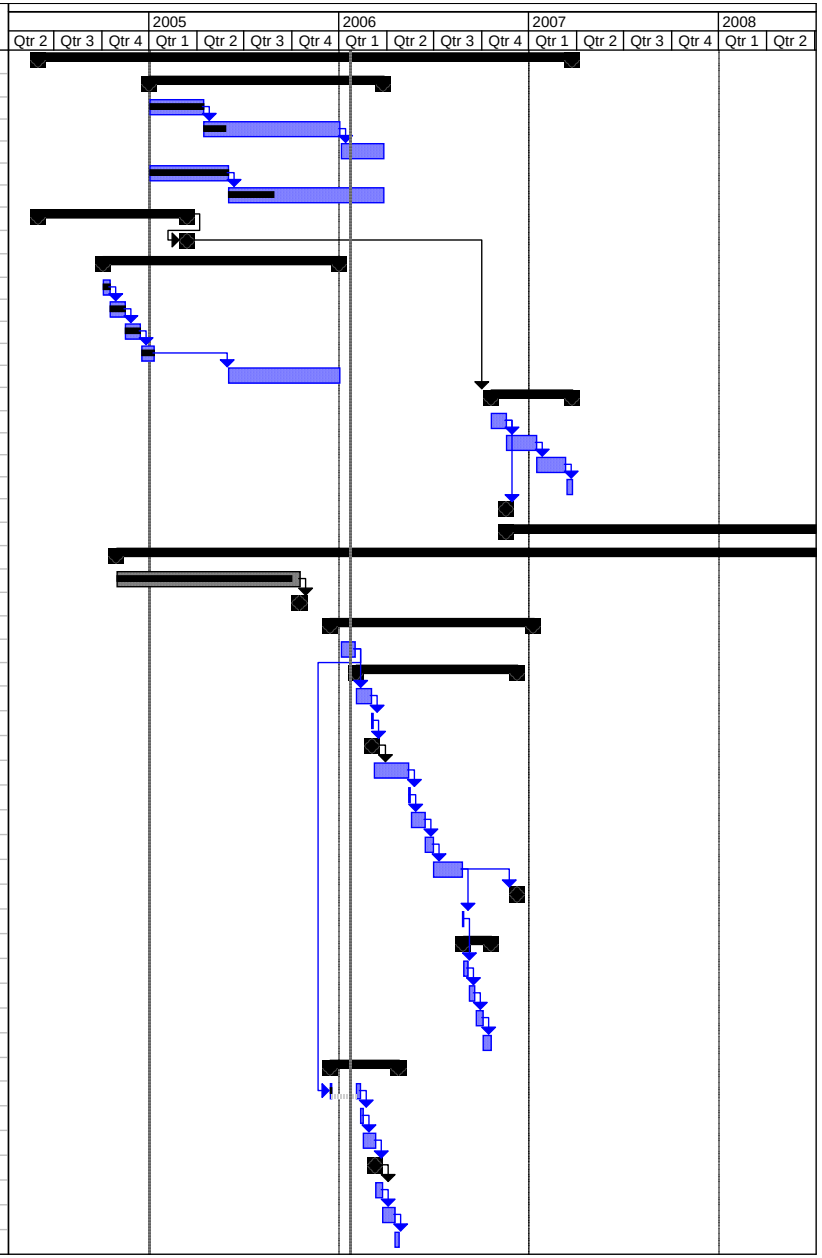
QUARTERLY REPORT

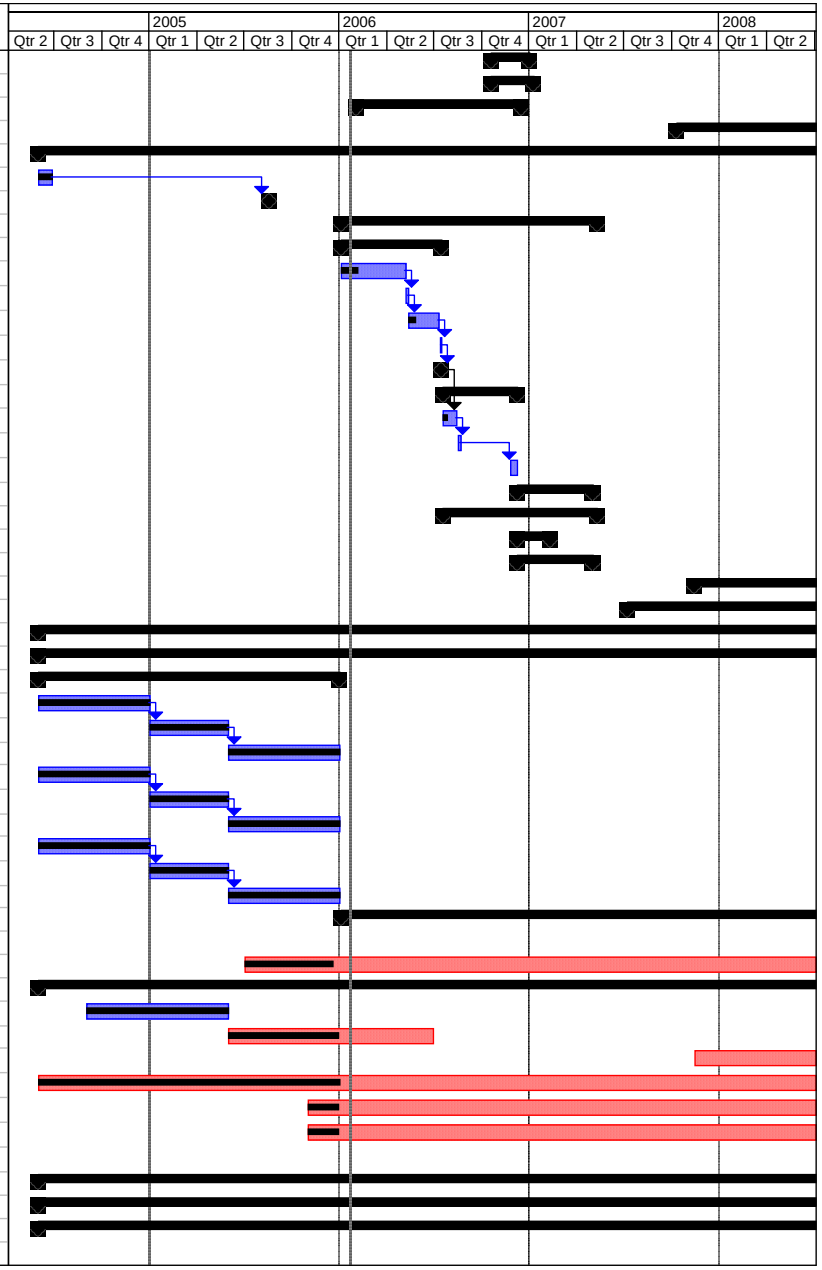
ID	WBS Ref.	Task Name	Percent Complete	Start	Finish
46	**1.1.2.2**	**Detector installation tool**	10	**11/9/05**	**1/17/06**
47	**1.1.2.3**	**Target chamber Washington Univ.**	**50**	**4/1/05**	**10/13/05**
48		Define requirements	50	4/1/05	6/22/05
49		Design Specifications	50	6/23/05	7/19/05
50		Conceptual design	0	7/20/05	8/2/05
51		Conceptual design review	0	8/3/05	8/12/05
52		Final design	0	8/15/05	9/2/05
53		Final design review	0	9/6/05	9/15/05
54		Detail Dwgs	0	9/16/05	10/13/05
55					
56	**1.1.2.4**	**LN system**	**23.84**	**4/1/05**	**11/4/05**
57		Define requirements/specifications	38.1	4/1/05	7/29/05
58		**Mechanical**	**18.39**	**8/1/05**	**11/4/05**
59		Conceptual design	50.01	8/1/05	8/23/05
60		LN Interface	0	8/24/05	9/7/05
61		Final design	0	9/8/05	9/30/05
62		Detail Dwgs	0	10/3/05	11/4/05
63					
64		Electrical	0	7/18/05	9/21/05
65		Computer control	0	7/18/05	9/21/05
66	**1.1.3**	**Production**	**0**	**7/11/07**	**4/3/08**
100		**Lvl 2: Mechanical Production Complete**	0	4/3/08	4/3/08
101	**1.2**	**Detector Module**	**3.56**	**3/1/04**	**9/9/09**
102	**1.2.1**	**Purchasing**	**2.31**	**10/11/04**	**6/12/09**
103	**1.2.1.1**	**Detector requirements and procurement specs**	**100**	**10/11/04**	**6/22/05**
104		Write Detector requirements	0	10/11/04	1/5/05
105		Define interfaces	100	1/6/05	4/1/05
106		Define Interfaces ETC	0	4/4/05	4/4/05
107		Write procurement specification	0	4/5/05	5/9/05
108					
109		Receive bids	0	5/10/05	5/23/05
110		**LvL 1: CD 2/3A**	0	6/22/05	6/22/05
111	**1.2.1.2**	**Detector Procurement**	**2.25**	**2/15/05**	**6/12/09**
112		Detector Design Contract	100	2/15/05	5/9/05
113					
114		**FY05: Detector Module 1**	**0**	**9/30/05**	**7/19/06**
115		**LvL 2: Award Contract Module 1**	0	9/30/05	9/30/05
116		Module 1 Fab and Delivery	0	9/30/05	7/18/06
117		Flat Procurement Burden	0	7/19/06	7/19/06
118		**FY06: Dectector Module 2**	**0**	**9/12/06**	**9/14/07**
121		**FY07: Dectector Module 3, 4 & 5**	**0**	**1/26/07**	**10/16/08**
126		**FY08: Dectector Module 6 & 7**	**0**	**2/1/08**	**2/13/09**
130		**FY09: Detector Module 7 (Final)**	**0**	**1/30/09**	**6/12/09**



QUARTERLY REPORT

ID	WBS Ref.	Task Name	Percent Complete	Start	Finish
133	**1.2.2**	**Test/Characterize Module 1**	**35.91**	**3/1/04**	**12/19/06**
134	**1.2.2.1**	**Detector Engineering and Test**	**32.19**	**10/1/04**	**12/22/05**
135		Detector Engineer (FY05)	100	10/1/04	1/11/05
136		Detector Eng ETC	15	1/11/05	9/30/05
137		Detector Engineer (FY06)	0	10/3/05	12/22/05
138		Detector Testing	100	10/1/04	2/28/05
139		Detector Testing ETC	29.68	3/1/05	12/22/05
140	**1.2.2.2**	**Develop test procedures and apparatus**	**100**	**3/1/04**	**12/10/04**
152		**Lvl 2: Detector Test Procedures and Apparatus Cor**	0	12/10/04	12/10/04
153	**1.2.2.3**	**Develop database**	**47.02**	**7/1/04**	**9/29/05**
154		Define database requirements	100	7/1/04	7/15/04
155		Define backup and recovery	100	7/16/04	8/12/04
156		Select and procure package	0	8/13/04	9/10/04
157		Customize System	0	9/13/04	10/8/04
158		Contine support	0	3/1/05	9/29/05
159	**1.2.2.4**	**Test/characterize Module 1**	**0**	**7/19/06**	**12/19/06**
160		Detector acceptance test	0	7/19/06	8/15/06
161		Test/characterize detectors with source	0	8/16/06	10/11/06
162		Test/characterize detectors with beam	0	10/12/06	12/8/06
163		Review test results	0	12/11/06	12/19/06
164		**Lvl 2: Complete Mod 1 Acceptance Test**	0	8/15/06	8/15/06
165	**1.2.3**	**Test/Char Mod 2 thru 7**	**0**	**8/15/06**	**9/9/09**
207	**1.3**	**Electronics**	**0.69**	**7/28/04**	**8/13/08**
208	**1.3.1**	Requirement document	100	7/28/04	7/15/05
209					
210	**1.3.2**	**Electronics Prototype**	**0.07**	**9/12/05**	**10/6/06**
211	**1.3.2.1**	System Architecture	0	10/3/05	10/28/05
212	**1.3.2.3**	**Digital signal processing module**	**0**	**10/31/05**	**9/6/06**
213		Write requirements and spec documents	0	10/31/05	11/29/05
214		Review	0	11/30/05	12/2/05
215					
216		Design and layout	0	12/5/05	2/7/06
217		Review	0	2/8/06	2/10/06
218		Procure and assembly	0	2/14/06	3/13/06
219		Material procured	0	3/14/06	3/27/06
220		Test	0	3/28/06	5/22/06
221		**Lvl 2: Complete Test of DSP Proto Mod.**	0	9/6/06	9/6/06
222		Continue support	0	5/23/06	5/25/06
223		**Test Stand**	**0**	**5/26/06**	**7/17/06**
224		Write requirements and specification docume	0	5/26/06	6/2/06
225		Design	0	6/5/06	6/16/06
226		Procure and assembly	0	6/19/06	6/30/06
227		Material procured	0	7/3/06	7/17/06
228	**1.3.2.4**	**Cables**	**0.87**	**9/12/05**	**1/20/06**
229		Write requirements and specification documents	4.69	9/12/05	11/9/05
230		Review	0	11/10/05	11/14/05
231		Design	0	11/15/05	12/7/05
232					
233		Procure and assembly	0	12/8/05	12/21/05
234		Material procured	0	12/22/05	1/12/06
235		Test	0	1/13/06	1/20/06



QUARTERLY REPORT

ID	WBS Ref.	Task Name	Percent Complete	Start	Finish
236	**1.3.2.5**	**Crates**	**0**	**7/18/06**	**9/29/06**
243	**1.3.2.6**	**Power supplies (low and high voltage)**	**0**	**7/18/06**	**10/6/06**
252	**1.3.2.7**	**Trigger and Timing**	**0**	**10/31/05**	**9/13/06**
279	**1.3.3**	**Electronics Production**	**0**	**7/11/07**	**8/13/08**
340	**1.4**	**Computing Systems**	**1.56**	**3/1/04**	**4/7/09**
341	**1.4.1**	Requirement document	100	3/1/04	3/26/04
342					
343	**1.4.2**	**CS Prototype**	**3.58**	**10/3/05**	**2/6/07**
344	**1.4.2.1**	**System Architecture**	**21.39**	**10/3/05**	**4/14/06**
345		Develop Requirements & Specifications	30	10/3/05	2/2/06
346		Requirements Review	0	2/3/06	2/9/06
347		Design & Document	20	2/10/06	4/7/06
348		Design Review	0	4/10/06	4/14/06
349					
350	**1.4.2.2**	**DAQ Specifications and design**	**17.14**	**4/17/06**	**9/6/06**
351		Design acquisition system (hw, net, servers)	30	4/17/06	5/12/06
352		Design Review	0	5/15/06	5/19/06
353		Design specifications for procurement	0	8/23/06	9/6/06
354	**1.4.2.3**	**Event Building**	**0**	**9/7/06**	**1/30/07**
369	**1.4.2.4**	**Event Processing**	**0**	**4/17/06**	**2/6/07**
424	**1.4.2.5**	**Hardware**	**0**	**9/7/06**	**11/9/06**
442	**1.4.2.6**	**Slow control/monitoring**	**0**	**9/7/06**	**1/30/07**
454	**1.4.3**	**CS Production**	**0**	**8/14/07**	**4/7/09**
556	**1.5**	**System Assembly**	**0**	**4/4/07**	**9/16/10**
610	**1.6**	**Project Management**	**26.16**	**3/1/04**	**9/16/10**
611	**1.6.1**	**Management**	**27.97**	**3/1/04**	**9/16/10**
612	**1.6.1.1**	**Initial phase (FY04-FY05)**	**100**	**3/1/04**	**9/30/05**
613		Contractor Project Manager - FY04	100	3/1/04	9/30/04
614		CPM - FY05	100	10/1/04	2/28/05
615		CPM - FY05 ETC	100	3/1/05	9/30/05
616		Project Engineer - FY04	100	3/1/04	9/30/04
617		Proj Engineer - FY05	100	10/1/04	2/28/05
618		Proj Engineer - FY05 ETC	100	3/1/05	9/30/05
619		Project Control Analyst - FY04	100	3/1/04	9/30/04
620		Project Controls Analyst - FY05	100	10/1/04	2/28/05
621		Project Controls Analyst - FY05 ETC	100	3/1/05	9/30/05
622	**1.6.1.2**	**Long term**	**0**	**10/3/05**	**9/30/09**
626	**1.6.1.3**	**Final phase (~0.5 of FY10)**	**0**	**10/1/09**	**9/16/10**
631	**1.6.1.4**	Quality Assurance Manager	9.11	4/1/05	12/22/09
632	**1.6.1.5**	**Subsystem Managers**	**21.45**	**3/1/04**	**11/3/09**
633		Design Phase	100	6/1/04	2/28/05
634		Design ETC	54.06	3/1/05	3/27/06
635		Mechanical (Production)	0	8/14/07	9/4/08
636		Detector	0	3/1/04	9/3/09
637		Electronics	3.65	8/1/05	8/13/09
638		Computing Systems	3.65	8/1/05	8/13/09
639		Systems assembly	0	6/15/09	11/3/09
640	**1.6.2**	**General Project Expenses**	**18.96**	**3/1/04**	**4/15/10**
657	**1.7**	**Environment and Safety**	**9.44**	**3/1/04**	**2/1/10**
658	**1.7.1**	**Perform safety analysis of all subsystems**	**10.49**	**3/1/04**	**4/14/09**
673	**1.7.2**	**Conduct global safety review**	0	**1/26/10**	**2/1/10**