

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
0	MINERvA_13Sept05_v1.mpp	\$8,189,020	\$4,654,204	\$3,534,816	\$1,360,368	2%
	<u>Notes</u>					
	Built from the 12Sept05_v2 schedule. Added Athens costs for PMT's. Basically, duplicated JMU's M&S and labor costs. Added a resource called Athens Student.					
1	Scintillator Extrusion	\$528,962	\$246,802	\$282,160	\$119,016	22%
2	WLS Fibers	\$566,158	\$408,065	\$158,093	\$184,647	0%
3	Scintillator Plane Assembly	\$1,102,872	\$338,969	\$763,903	\$444,093	0%
4	Clear Fiber Cables	\$954,327	\$446,751	\$507,576	\$86,516	0%
5	PMT Boxes	\$647,385	\$376,384	\$271,001	\$110,091	0%
5.1	PMT Box Prototyping	\$145,141	\$138,200	\$6,941	\$14,880	0%
5.1.1	Purchase specialized miling machine for work at Tufts	\$30,000	\$30,000	\$0	\$3,000	0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	30,000	30,000	0 wks	6/1/05	11/1/05	\$30,000	\$0	\$0	\$30,000

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.1.2	Set up prototyping box factory shop at Tufts	\$49,500	\$49,500	\$0	\$11,880	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
58	Tufts MandS	49,500	49,500	0 wks	10/5/05	2/14/06	\$49,500	\$0	\$0	\$49,500

Notes

WBS Description: Tufts will purchase tooling required to construct the prototypes. This task involves the work of technicians and a machinist are required to assist faculty researchers with the design and implement the four fabrication workstations which are required at each of the box factories at Tufts and at Rutgers.

M&S BOE: Contingency is Included in the following breakout:

Setup of secure, dedicated clean room workspace with partitions, work benches, computer ports, lighting, magnifiers: \$ 3,000

Diamond head fiber cutter/polisher refurbish: \$ 4,000

Box lid machining jigs: \$ 500

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Set up prototyping box factory shop at Tufts" continued

Notes

Quality Assurance testing station: Computer plus software: \$ 4,000
Interface card, cables: \$ 2,000

Contingency = 24%

Labor BOE: Two assembly technicians for six months, each working 20 hours/week:

Salaries: 2 x \$15,500 x 0.5 = \$ 15,500.

Fringes: 2 x \$ 4,340 x 0.5 = \$ 4,340.

Machinist billable hours: \$ 6,500. Contingency = 27% or \$7,123.

Schedule BOE: N/A

Comments/Changes: Costs are based upon Tufts experience with building MINOS MUX boxes; costs of that build have been updated using current vendor quotes and/or recent experience with purchases of similar components.

5.1.3	Tufts produces 100 alignment holders	\$0	\$0	\$0	\$0	0%
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Notes

WBS Description: This task involves the work of technicians and a machinist are required to assist faculty researchers with the design and implement the four fabrication workstations which are required at each of the box factories at Tufts and at Rutgers.

M&S BOE: N/A

Labor BOE: Two assembly technicians for six months, each working 20 hours/week:

Salaries: 2 x \$15,500 x 0.5 = \$ 15,500.

Fringes: 2 x \$ 4,340 x 0.5 = \$ 4,340.

Machinist billable hours: \$ 6,500. Contingency = 27% or \$7,123.

Schedule BOE: N/A

Comments/Changes:

5.1.4	Ship 50 alignment holders to JMU	\$200	\$200	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
58	Tufts MandS	200	200	0 wks	3/1/06	3/7/06	\$200	\$0	\$0	\$200

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Ship 50 alignment holders to JMU" continued

Notes

Schedule BOE: N/A

Comments/Changes:

5.1.5	Ship 50 alignment holders to Athens	\$400	\$400	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
58	Tufts MandS	400	400	0 wks	3/15/06	3/21/06	\$400	\$0	\$0	\$400

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.1.6	Prepare fiber loaded cookies for JMU and Athens	\$6,941	\$0	\$6,941	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
44	Tufts-Assmby Techs	100%	240 hrs	0 wks	4/12/06	5/23/06	\$6,941	\$0	\$0	\$6,941
46	Tufts-Physicist	50%	120 hrs	0 wks	4/12/06	5/23/06	\$0	\$0	\$0	\$0

Notes

Receive ODU's from Fermi, cut ODU's, weave the fibre ends into the cookie, epoxy the fibers into the cookie and flycut the cookie. (6 cookies)

5.1.7	Ship fiber loaded cookies to JMU and Athens	\$600	\$600	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
52	Roch MandS	600	600	0 wks	5/24/06	6/13/06	\$600	\$0	\$0	\$600

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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5.1.8	Set up Rutgers workstations	\$57,500	\$57,500	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
56	Rutgers MandS	57,500	57,500	0 wks	10/5/05	2/28/06	\$57,500	\$0	\$0	\$57,500

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.2	PMT Box Construction	\$472,514	\$213,704	\$258,810	\$91,276	0%
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5.2.1	Produce rest of alignment holders	\$32,809	\$0	\$32,809	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
44	Tufts-Assmby Techs	100%	760 hrs	0 wks	3/15/06	7/25/06	\$21,979	\$0	\$0	\$21,979
45	Tufts-Machinist	50%	380 hrs	0 wks	3/15/06	7/25/06	\$10,830	\$0	\$0	\$10,830

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.2.2	Continue cookie production	\$0	\$0	\$0	\$0	0%
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Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete																																	
5.2.3	Exercise workstations at Tufts & Rutgers?	\$0	\$0	\$0	\$0	0%																																	
	<u>Notes</u> This is a place to test the first runs at both shops. Do we have the resources to do this in FY06 or not?																																						
5.2.4	Specify cables from back of PMT to end plate interface	\$0	\$0	\$0	\$0	0%																																	
	<u>Notes</u> WBS Description: This task involves M&S BOE: N/A Labor BOE: N/A Schedule BOE: N/A Comments/Changes:																																						
5.2.5	Who provides these cables?	\$0	\$0	\$0	\$0	0%																																	
	<u>Notes</u> WBS Description: This milestone is for the Comments/Changes:																																						
5.2.6	PMT Box Factory start-up at Tufts	\$10,000	\$10,000	\$0	\$0	0%																																	
	<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> <th>Cost</th> <th>Baseline Cost</th> <th>Act. Cost</th> <th>Rem. Cost</th> </tr> </thead> <tbody> <tr> <td>58</td> <td>Tufts MandS</td> <td>10,000</td> <td>10,000</td> <td>0 wks</td> <td>1/8/07</td> <td>5/25/07</td> <td>\$10,000</td> <td>\$0</td> <td>\$0</td> <td>\$10,000</td> </tr> </tbody> </table>						ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost	58	Tufts MandS	10,000	10,000	0 wks	1/8/07	5/25/07	\$10,000	\$0	\$0	\$10,000											
ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost																													
58	Tufts MandS	10,000	10,000	0 wks	1/8/07	5/25/07	\$10,000	\$0	\$0	\$10,000																													
	<u>Notes</u> WBS Description: This task involves M&S BOE: N/A Labor BOE: N/A Schedule BOE: N/A Comments/Changes:																																						
5.2.7	Tufts PMT Box Assembly Labor	\$99,898	\$0	\$99,898	\$19,980	0%																																	
	<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> <th>Cost</th> <th>Baseline Cost</th> <th>Act. Cost</th> <th>Rem. Cost</th> </tr> </thead> <tbody> <tr> <td>44</td> <td>Tufts-Assmby Techs</td> <td>89%</td> <td>2,863 hrs</td> <td>0 days</td> <td>5/28/07</td> <td>12/5/08</td> <td>\$82,798</td> <td>\$0</td> <td>\$0</td> <td>\$82,798</td> </tr> <tr> <td>45</td> <td>Tufts-Machinist</td> <td>19%</td> <td>600 hrs</td> <td>0 wks</td> <td>5/28/07</td> <td>12/5/08</td> <td>\$17,100</td> <td>\$0</td> <td>\$0</td> <td>\$17,100</td> </tr> </tbody> </table>						ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost	44	Tufts-Assmby Techs	89%	2,863 hrs	0 days	5/28/07	12/5/08	\$82,798	\$0	\$0	\$82,798	45	Tufts-Machinist	19%	600 hrs	0 wks	5/28/07	12/5/08	\$17,100	\$0	\$0	\$17,100
ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost																													
44	Tufts-Assmby Techs	89%	2,863 hrs	0 days	5/28/07	12/5/08	\$82,798	\$0	\$0	\$82,798																													
45	Tufts-Machinist	19%	600 hrs	0 wks	5/28/07	12/5/08	\$17,100	\$0	\$0	\$17,100																													
	<u>Notes</u> WBS Description: This task is for the assembly of PMT boxes at Tufts.																																						

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Tufts PMT Box Assembly Labor" continued

Notes

M&S BOE: Basis of Costing for Factory Personnel & Workplace Hours:

The workforce proposed is the same (in technicians and technician hours) with which the Tufts group built and tested 220 MINOS MUX boxes in two calendar years (2001- 2002). Our time-motion comparative estimate is that 1.5 Minerva optical boxes can be assembled and tested in the same average time as was required for 1.0 MINOS MUX box. Equivalently, 1.0 Minerva optical box fabrication and testing requires 12 technician hours. Our estimate reflects the facts that 1) a MINOS box has three times as many fiber lacings as a Minerva optical box, however 2) connections internal to the Minerva box are done with tools in a confined space, whereas these could be done by hand with relatively open access for MINOS boxes. We have allotted a 20% contingency of extra working hours into our two year costing of technician time.

Salaries and Benefits (yr 1):	\$42,700.00
Salaries and Benefits (yr 2):	\$44,300.00
Total Salaries and Benefits (yrs 1 and 2):	\$87,000.00

Machinist Hours: These costs cover billable hours by a machinist who is operating a shop machine. As stated above for M&S costing, our time-motion estimates for on-machine hours are 1) 275 opt boxes x 2 hrs/box = 550 hrs, plus 2) 21 frames x 12 hrs/frame = 250 hrs; together these sum to 800 on-machine hours by a machinist at the Tufts factory. These hours are to be covered by a machinist working 40 hours/week (37 on-machine hrs/week) at the university shop billing rate which is \$20/hour. Our costing for machinist hours provides for a total of 21.5 weeks of machinist billable hours for the two-year construction period.

Since our machinist-hours costing is based upon the same time-motion estimates as is used for SWF factory assembly labor costing, a similar contingency allotment is made.

Total Machinist Hours (yrs 1 and 2) \$ 17,248

Labor BOE: N/A

Schedule BOE: Production planning has assumed a two-year period. It is possible that with better tooling in the factory workstations, the fabrication period could be shortened. However, this possibility cannot be evaluated reliably until the workstations are in place and have been exercised.

Comments/Changes: Costs are based upon Tufts experience with building MINOS MUX boxes.

5.2.8	Rutgers PMT Box Assembly Labor	\$121,753	\$0	\$121,753	\$0	0%				
ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
42	Rutgers-Tech	120%	3,840 hrs	0 wks	5/28/07	12/5/08	\$105,754	\$0	\$0	\$105,754
43	Rutgers-Machinist	18%	571.4 hrs	0 wks	5/28/07	12/5/08	\$15,999	\$0	\$0	\$15,999

Notes

WBS Description: This task is for the assembly of PMT boxes at Rutgers.

M&S BOE: Allowance for shipment of manufactured PMT Boxes and Frames: \$ 17,505

Labor BOE: Basis of Costing for Factory Personnel & Workplace Hours:

The workforce proposed is the same (in technicians and technician hours) with which the Tufts group built and tested 220 MINOS MUX boxes in two calendar years (2001- 2002). Our time-motion comparative estimate is that 1.5 Minerva optical boxes can be assembled and tested in the same average time as was required for 1.0 MINOS MUX box. Equivalently, 1.0 Minerva optical box fabrication and testing requires 12 technician hours. Our estimate reflects the facts that 1) a MINOS box has three times as many fiber lacings as a Minerva optical box, however 2) connections internal to the Minerva box are done with tools in a confined space, whereas these could be done by hand with relatively open access for MINOS boxes. We have allotted a 20% contingency of extra working hours into our two year costing of technician time.

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Rutgers PMT Box Assembly Labor" continued

Notes

Machinist Hours: These costs cover billable hours by a machinist who is operating a shop machine. As stated above for M&S costing, our time-motion estimates for on-machine hours are 1) 275 opt boxes x 2 hrs/box = 550 hrs, plus 2) 21 frames x 12 hrs/frame = 250 hrs; together these sum to 800 on-machine hours by a machinist at the Rutgers factory. These hours are to be covered by a machinist working 40 hours/week (37 on-machine hrs/week) at the university shop billing rate which is \$20/hour. Our costing for machinist hours provides for a total of 21.5 weeks of machinist billable hours for the two-year construction period.

Since our machinist-hours costing is based upon the same time-motion estimates as is used for SWF factory assembly labor costing, a similar contingency allotment is made.

Total Machinist Hours (yrs 1 and 2) \$ 17,248

TOTAL FUNDS for this Task, including Contingency of 20% : \$ 121,753

Schedule BOE: N/A

Comments/Changes:

5.2.9	Tufts PMT Box Assembly Components	\$101,852	\$101,852	\$0	\$35,648	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
58	Tufts MandS	101,852	101,852	0 wks	5/28/07	12/5/08	\$101,852	\$0	\$0	\$101,852

Notes

WBS Description: This task is for the assembly of PMT boxes at Tufts.

M&S BOE: Tufts will manufacture 274 of MINERvA Optical Boxes. Our cost estimate is broken out in terms of piece count per Box:

Extruded steel enclosure; machined steel endcap lids, steel rod frame: \$ 100 per Box
 Precision fiber cookie: \$ 70 per Box
 PMT-to-cookie alignment plate: \$ 30
 Connector feed-through plate; electrical cables and connectors: \$ 150
 Mu-foil sheath for PMT interior region \$ 20
 Optical box pieces contingency @ 35% \$ 130 per box

 TOTAL COST PER BOX: \$ 500.00

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes: We assume that PMT component costs for Tufts to manufacture 275 of PMT boxes will be the same for Rutgers to make its 275 boxes. Contingency allows for Design uncertainties which reside with the interior cables and connectors, and also with the method of feeding fiber and cable connections from the interior to exterior of the Box.

The Mu-foil sheath may not be needed for every Box, if it is decided that the outer spectrometer steel will not be magnetized.

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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5.2.10	Rutgers PMT Box Assembly Components	\$101,852	\$101,852	\$0	\$35,648	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
56	Rutgers MandS	101,852	101,852	0 wks	5/28/07	12/5/08	\$101,852	\$0	\$0	\$101,852

Notes

WBS Description: This task is for the assembly of PMT boxes at Rutgers.

M&S BOE: Rutgers will manufacture 274 of MINERVA Optical Boxes. Our cost estimate is broken out in terms of piece count per Box:

Extruded steel enclosure; machined steel endcap lids, steel rod frame:	\$ 100 per Box
Precision fiber cookie:	\$ 70 per Box
PMT-to-cookie alignment plate:	\$ 30
Connector feed-through plate; electrical cables and connectors:	\$ 150
Mu-foil sheath for PMT interior region	\$ 20
Optical box pieces contingency @ 35%	\$ 130 per box

TOTAL COST PER BOX: \$ 500.00

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes: We assume that PMT component costs for Tufts to manufacture 275 of PMT boxes will be the same for Rutgers to make its 275 boxes. Contingency allows for Design uncertainties which reside with the interior cables and connectors, and also with the method of feeding fiber and cable connections from the interior to exterior of the Box.

The Mu-foil sheath may not be needed for every Box, if it is decided that the outer spectrometer steel will not be magnetized.

5.2.11	Install ODUs into Cookie	\$4,350	\$0	\$4,350	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
44	Tufts-Assmby Techs	7%	150.4 hrs	0 days	5/21/07	5/30/08	\$4,350	\$0	\$0	\$4,350

Notes

WBS Description: This task involves fiber cookie loading

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.3	PMT Box Frame Construction	\$5,880	\$5,880	\$0	\$2,352	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	5,880	5,880	0 wks	12/25/06	3/16/07	\$5,880	\$0	\$0	\$5,880

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"PMT Box Frame Construction" continued

Notes

WBS Description: This task involves construction of lattice-work mounting frames, totaling 42 sectioned pieces. Pieces include steel framework, aluminum standoff pieces, hinges, assorted joint pieces, nuts, bolts, screws. Half (21) of the frame sections will be made at Tufts, and half at Rutgers.

M&S BOE: Costing is based upon a design layout plus vendor costs for component metal stock pieces, for 42 of lattice-work mounting frames. Each frame includes steel runners, aluminum standoffs, hinges, assorted joint pieces, nuts, bolts, screws. Costing is based upon vendor cost for single order of metal stock. Steel pieces per frame = \$100; Aluminum standoffs per frame = \$ 50; hinges, joint pieces, nuts, bolts, screws per frame = \$ 50.

Total Mounting Frames Component Parts for 42 Frames (yr 1) \$ 11,760
 Contingency = 40%

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes: Costing is based upon a design layout plus vendor costs for component metal stock pieces, for 42 of lattice mounting-frames sections.

5.4	PMT Installation in Box	\$4,413	\$0	\$4,413	\$1,583	0%
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Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.4.1	Install first 10% of PMT's into boxes (Tufts)	\$500	\$0	\$500	\$125	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
33	JMU-Undergrad	20%	64 hrs	0 days	8/6/07	9/28/07	\$500	\$0	\$0	\$500

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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5.4.2 Install first 10% of PMT's into boxes (Rutgers) \$0 \$0 \$0 \$0 0%

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.4.3 Install first bulk PMT's into boxes (Tufts) \$2,664 \$0 \$2,664 \$1,146 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
32	JMU-Tech	100%	80 hrs	0 wks	1/14/08	1/25/08	\$2,664	\$0	\$0	\$2,664

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.4.4 Install first bulk PMT's into boxes (Rutgers) \$0 \$0 \$0 \$0 0%

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.4.5 Install last bulk PMT's into boxes(Tufts) \$1,250 \$0 \$1,250 \$312 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
33	JMU-Undergrad	200%	160 hrs	0 wks	6/9/08	6/20/08	\$1,250	\$0	\$0	\$1,250

Notes

WBS Description: This task involves

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
"Install last bulk PMT's into boxes(Tufts)" continued						
<u>Notes</u>						
M&S BOE: N/A						
Labor BOE: N/A						
Schedule BOE: N/A						
Comments/Changes:						

5.4.6	Install last bulk PMT's into boxes (Rutgers)	\$0	\$0	\$0	\$0	0%
<u>Notes</u>						
WBS Description: This task involves						
M&S BOE: N/A						
Labor BOE: N/A						
Schedule BOE: N/A						
Comments/Changes:						

5.5	Ship Completed PMT Boxes	\$19,437	\$18,600	\$837	\$0	0%
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5.5.1	Ship first 10% of PMT boxes from Tufts to Fermi	\$900	\$900	\$0	\$0	0%				
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
58	Tufts MandS	900	900	0 wks	10/1/07	10/26/07	\$900	\$0	\$0	\$900

Notes

WBS Description: This task involves shipments from Tufts to FNAL of wood-frame shipping containers with completed optical boxes and mounting frames. This will take place at two-month intervals. Regular UPS shipments of optical box components will be made to Rutgers and to James Madison University.

M&S BOE: Shipping will be carried out via non-dedicated freight truck with delivery within one week of departure. Costing is based upon current knowledge of commercial rates for US government work; costing includes fabrication of rugged shipping containers to hold each shipment; the containers will not be re-cycled.

For each shipment, our container structure can accommodate 24 optical boxes and 2 mounting frames; the container is designed for transport by forklift. Using current vendor quotes for a container size and weight which we shipped to FNAL during 2002, we estimate the shipping cost per shipment to be \$ 855 plus contingency of 20% = \$ 1026/shipment. For container materials and fabrication costs, we have extrapolated using our container design plus costs from a container of similar volume and sturdiness which was built at Tufts previously. We estimate materials plus fabrication costs for one container per shipment to be \$220/container plus 40% contingency = \$308/container. Costs for twelve shipments over two years are then 12 x \$1334/shipment which totals to \$16,000.

BoE categories: Vendor quote; one-time as previously built; designed.

Shipping via non-dedicated truck including 20% contingency: \$ 12,312
Shipping container materials, fabrication; 40% contingency: \$ 3,688

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Ship first 10% of PMT boxes from Tufts to Fermi" continued

Notes

Frequent UPS shipment of box components- Tufts to JMU
 And Rutgers. 20% Contingency: \$ 6,800

Total Shipping/Container Costs (yrs 1 and 2) \$ 22,800

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.5.2	Ship first 10% of PMT boxes from Rutgers to Fermi	\$900	\$900	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
56	Rutgers MandS	900	900	0 wks	3/21/07	4/17/07	\$900	\$0	\$0	\$900

Notes

WBS Description: This task involves shipments from Tufts to FNAL of wood-frame shipping containers with completed optical boxes and mounting frames. This will take place at two-month intervals. Regular UPS shipments of optical box components will be made to Rutgers and to James Madison University.

M&S BOE: Shipping will be carried out via non-dedicated freight truck with delivery within one week of departure. Costing is based upon current knowledge of commercial rates for US government work; costing includes fabrication of rugged shipping containers to hold each shipment; the containers will not be re-cycled.

For each shipment, our container structure can accommodate 24 optical boxes and 2 mounting frames; the container is designed for transport by forklift. Using current vendor quotes for a container size and weight which we shipped to FNAL during 2002, we estimate the shipping cost per shipment to be \$ 855 plus contingency of 20% = \$ 1026/shipment. For container materials and fabrication costs, we have extrapolated using our container design plus costs from a container of similar volume and sturdiness which was built at Tufts previously. We estimate materials plus fabrication costs for one container per shipment to be \$220/container plus 40% contingency = \$308/container. Costs for twelve shipments over two years are then 12 x \$1334/shipment which totals to \$16,000.

BoE categories: Vendor quote; one-time as previously built; designed.

Shipping via non-dedicated truck including 20% contingency: \$ 12,312
 Shipping container materials, fabrication; 40% contingency: \$ 3,688
 Frequent UPS shipment of box components- Tufts to JMU
 And Rutgers. 20% Contingency: \$ 6,800

Total Shipping/Container Costs (yrs 1 and 2) \$ 22,800

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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5.5.3	Ship first bulk PMT boxes from Tufts to Fermi	\$4,200	\$4,200	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
58	Tufts MandS	4,200	4,200	0 wks	1/28/08	2/22/08	\$4,200	\$0	\$0	\$4,200

Notes

WBS Description: This task involves shipments from Tufts to FNAL of wood-frame shipping containers with completed optical boxes and mounting frames. This will take place at two-month intervals. Regular UPS shipments of optical box components will be made to Rutgers and to James Madison University.

M&S BOE: Shipping will be carried out via non-dedicated freight truck with delivery within one week of departure. Costing is based upon current knowledge of commercial rates for US government work; costing includes fabrication of rugged shipping containers to hold each shipment; the containers will not be re-cycled.

For each shipment, our container structure can accommodate 24 optical boxes and 2 mounting frames; the container is designed for transport by forklift. Using current vendor quotes for a container size and weight which we shipped to FNAL during 2002, we estimate the shipping cost per shipment to be \$ 855 plus contingency of 20% = \$ 1026/shipment. For container materials and fabrication costs, we have extrapolated using our container design plus costs from a container of similar volume and sturdiness which was built at Tufts previously. We estimate materials plus fabrication costs for one container per shipment to be \$220/container plus 40% contingency = \$308/container. Costs for twelve shipments over two years are then 12 x \$1334/shipment which totals to \$16,000.

BoE categories: Vendor quote; one-time as previously built; designed.

Shipping via non-dedicated truck including 20% contingency:	\$ 12,312
Shipping container materials, fabrication; 40% contingency:	\$ 3,688
Frequent UPS shipment of box components- Tufts to JMU	
And Rutgers. 20% Contingency:	\$ 6,800

Total Shipping/Container Costs (yrs 1 and 2) \$ 22,800

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.5.4	Ship first bulk PMT boxes from Rutgers to Fermi	\$4,200	\$4,200	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
56	Rutgers MandS	4,200	4,200	0 wks	1/28/08	2/22/08	\$4,200	\$0	\$0	\$4,200

Notes

WBS Description: This task involves shipments from Tufts to FNAL of wood-frame shipping containers with completed optical boxes and mounting frames. This will take place at two-month intervals. Regular UPS shipments of optical box components will be made to Rutgers and to James Madison University.

M&S BOE: Shipping will be carried out via non-dedicated freight truck with delivery within one week of departure. Costing is based upon current knowledge of commercial rates for US government work; costing includes fabrication of rugged shipping containers to hold each shipment; the containers will not be re-cycled.

For each shipment, our container structure can accommodate 24 optical boxes and 2 mounting frames; the container is designed for transport by forklift. Using current vendor quotes for a

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Ship first bulk PMT boxes from Rutgers to Fermi" continued

Notes

materials and fabrication costs, we have extrapolated using our container design plus costs from a container of similar volume and sturdiness which was built at Tufts previously. We estimate materials plus fabrication costs for one container per shipment to be \$220/container plus 40% contingency = \$308/container. Costs for twelve shipments over two years are then 12 x \$1334/shipment which totals to \$16,000.

BoE categories: Vendor quote; one-time as previously built; designed.

Shipping via non-dedicated truck including 20% contingency: \$ 12,312
 Shipping container materials, fabrication; 40% contingency: \$ 3,688
 Frequent UPS shipment of box components- Tufts to JMU
 And Rutgers. 20% Contingency: \$ 6,800

Total Shipping/Container Costs (yrs 1 and 2) \$ 22,800

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.5.5	Ship last bulk PMT boxes from Tufts to Fermi	\$4,200	\$4,200	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
58	Tufts MandS	4,200	4,200	0 wks	6/23/08	7/18/08	\$4,200	\$0	\$0	\$4,200

Notes

WBS Description: This task involves shipments from Tufts to FNAL of wood-frame shipping containers with completed optical boxes and mounting frames. This will take place at two-month intervals. Regular UPS shipments of optical box components will be made to Rutgers and to James Madison University.

M&S BOE: Shipping will be carried out via non-dedicated freight truck with delivery within one week of departure. Costing is based upon current knowledge of commercial rates for US government work; costing includes fabrication of rugged shipping containers to hold each shipment; the containers will not be re-cycled.

For each shipment, our container structure can accommodate 24 optical boxes and 2 mounting frames; the container is designed for transport by forklift. Using current vendor quotes for a container size and weight which we shipped to FNAL during 2002, we estimate the shipping cost per shipment to be \$ 855 plus contingency of 20% = \$ 1026/shipment. For container materials and fabrication costs, we have extrapolated using our container design plus costs from a container of similar volume and sturdiness which was built at Tufts previously. We estimate materials plus fabrication costs for one container per shipment to be \$220/container plus 40% contingency = \$308/container. Costs for twelve shipments over two years are then 12 x \$1334/shipment which totals to \$16,000.

BoE categories: Vendor quote; one-time as previously built; designed.

Shipping via non-dedicated truck including 20% contingency: \$ 12,312
 Shipping container materials, fabrication; 40% contingency: \$ 3,688
 Frequent UPS shipment of box components- Tufts to JMU
 And Rutgers. 20% Contingency: \$ 6,800

Total Shipping/Container Costs (yrs 1 and 2) \$ 22,800

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Ship last bulk PMT boxes from Tufts to Fermi" continued

Notes

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.5.6 Ship last bulk PMT boxes from Rutgers to Fermi \$4,200 \$4,200 \$0 \$0 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
56	Rutgers MandS	4,200	4,200	0 wks	6/23/08	7/18/08	\$4,200	\$0	\$0	\$4,200

Notes

WBS Description: This task involves shipments from Tufts to FNAL of wood-frame shipping containers with completed optical boxes and mounting frames. This will take place at two-month intervals. Regular UPS shipments of optical box components will be made to Rutgers and to James Madison University.

M&S BOE: Shipping will be carried out via non-dedicated freight truck with delivery within one week of departure. Costing is based upon current knowledge of commercial rates for US government work; costing includes fabrication of rugged shipping containers to hold each shipment; the containers will not be re-cycled.

For each shipment, our container structure can accommodate 24 optical boxes and 2 mounting frames; the container is designed for transport by forklift. Using current vendor quotes for a container size and weight which we shipped to FNAL during 2002, we estimate the shipping cost per shipment to be \$ 855 plus contingency of 20% = \$ 1026/shipment. For container materials and fabrication costs, we have extrapolated using our container design plus costs from a container of similar volume and sturdiness which was built at Tufts previously. We estimate materials plus fabrication costs for one container per shipment to be \$220/container plus 40% contingency = \$308/container. Costs for twelve shipments over two years are then 12 x \$1334/shipment which totals to \$16,000.

BoE categories: Vendor quote; one-time as previously built; designed.

Shipping via non-dedicated truck including 20% contingency: \$ 12,312
 Shipping container materials, fabrication; 40% contingency: \$ 3,688
 Frequent UPS shipment of box components- Tufts to JMU
 And Rutgers. 20% Contingency: \$ 6,800

Total Shipping/Container Costs (yrs 1 and 2) \$ 22,800

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.5.7 All PMT Boxes Shipped to Fermilab \$0 \$0 \$0 \$0 0%

Notes

WBS Description: This milestone is for the

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"All PMT Boxes Shipped to Fermilab" continued

Notes

Comments/Changes:

5.5.8 Deliver PMT Boxes to Near Hall - Oversight Rigger \$320 \$0 \$320 \$0 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
19	T&M Oversight RiggerF	50%	4 hrs	0 wks	7/21/08	7/21/08	\$320	\$0	\$0	\$320

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

5.5.9 Deliver PMT Boxes to Near Hall - MT Crew \$517 \$0 \$517 \$0 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
20	FNAL Mtech Rigger Crew	50%	4 hrs	0 wks	7/21/08	7/21/08	\$517	\$0	\$0	\$517

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6 PMT Procurement and Testing \$1,227,560 \$1,010,167 \$217,393 \$93,015 0%

6.1 PMT R&D, Alignment Station, and Test Stand \$159,291 \$154,991 \$4,300 \$20,472 0%

6.1.1 Purchase 10% of photomultiplier tubes \$91,575 \$91,575 \$0 \$0 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	91,575	91,575	0 wks	10/3/05	2/17/06	\$91,575	\$0	\$0	\$91,575

Notes

WBS Description: This task involves

M&S BOE: N/A

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Purchase 10% of photomultiplier tubes" continued

Notes

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes: pmt in a ham holder

6.1.2 Purchase alignment station materials (JMU) \$8,500 \$8,500 \$0 \$2,040 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
57	JMU MandS	8,500	8,500	0 wks	10/3/05	12/9/05	\$8,500	\$0	\$0	\$8,500

Notes

WBS Description: Purchase of alignment stand materials for use at JMU.

M&S BOE:

Nikon camera and lens - \$6,500
Misc materials - \$2,000

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.1.3 Purchase alignment station materials (Athens) \$8,500 \$8,500 \$0 \$2,040 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
50	Athens MandS	8,500	8,500	0 wks	10/3/05	12/9/05	\$8,500	\$0	\$0	\$8,500

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.1.4 Purchase test stand materials (JMU) \$23,208 \$23,208 \$0 \$7,659 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
57	JMU MandS	23,208	23,208	0 wks	12/12/05	4/7/06	\$23,208	\$0	\$0	\$23,208

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Purchase test stand materials (JMU)" continued

Notes

WBS Description: This task involves

M&S BOE:

component	quantity	price (\$)	Comments
motorized linear stages	1	5,000	Velmex quote
neutral filter	1	750	
optic fibers	500 m	1,000	
WLS fibers	50m	650	
LEDs		20	
holder for fiber bundles	1	500	
misc. (glue, optical grease)		1,000	
HV power supply(HP-E3631A)	1	1,238	catalogue
HV meter (HP 34401A)	1	1,150	catalogue
Jorway 73A module		1675	vendor quote
HV cables (RG59 SHV)	200	100	
HV connectors		100	
crimping tools		25	
DAQ PC		2,500	
DAQ consulting		7,500	unsure, need numbers from Gary Drake
total		23,208	

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.1.5	Purchase test stand materials (Athens)	\$23,208	\$23,208	\$0	\$7,659	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
50	Athens MandS	23,208	23,208	0 wks	12/12/05	4/7/06	\$23,208	\$0	\$0	\$23,208

Notes

WBS Description: This task involves

M&S BOE: N/A

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Purchase test stand materials (Athens)" continued

Notes

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.1.6	Assemble test stand (JMU)	\$2,124	\$0	\$2,124	\$531	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
33	JMU-Undergrad	40%	272 hrs	0 wks	12/12/05	4/7/06	\$2,124	\$0	\$0	\$2,124

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.1.7	Assemble test stand (Athens)	\$2,176	\$0	\$2,176	\$544	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	40%	272 hrs	0 wks	12/12/05	4/7/06	\$2,176	\$0	\$0	\$2,176

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.2	Encapsulate, Align, and Test Initial PMT's	\$51,395	\$31,000	\$20,395	\$5,099	0%
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6.2.1	Purchase initial alignment and testing materials (JMU)	\$15,500	\$15,500	\$0	\$0	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	15,500	15,500	0 wks	4/10/06	7/14/06	\$15,500	\$0	\$0	\$15,500

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Purchase initial alignment and testing materials (JMU)" continued

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.2.2 Purchase initial alignment and testing materials (Athens) \$15,500 \$15,500 \$0 \$0 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	15,500	15,500	0 wks	4/10/06	7/14/06	\$15,500	\$0	\$0	\$15,500

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.2.3 Pittsburg puts a PC board onto PMT's first? \$0 \$0 \$0 \$0 0%

Notes

WBS Description: This milestone is for the

Comments/Changes:

6.2.4 Conduct initial PMT alignment (JMU) \$1,749 \$0 \$1,749 \$437 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
33	JMU-Undergrad	40%	224 hrs	0 days	6/14/06	9/19/06	\$1,749	\$0	\$0	\$1,749

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: 100-day startup period. 18 days assumed for initial (10%) of tubes to be tested (354 total capacity at one site)

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Conduct initial PMT alignment (JMU)" continued

Notes

Comments/Changes:

6.2.5 Conduct initial PMT alignment (Athens) \$4,480 \$0 \$4,480 \$1,120 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	100%	560 hrs	0 wks	6/14/06	9/19/06	\$4,480	\$0	\$0	\$4,480

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: 100-day startup period. 18 days assumed for initial (10%) of tubes to be tested (354 total capacity at one site)

Comments/Changes:

6.2.6 Conduct initial PMT testing (JMU) \$6,998 \$0 \$6,998 \$1,749 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
33	JMU-Undergrad	160%	896 hrs	0 days	4/2/07	7/6/07	\$6,998	\$0	\$0	\$6,998

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: 100-day startup period. 18 days assumed for initial (10%) of tubes to be tested (354 total capacity at one site)

Comments/Changes:

6.2.7 Conduct initial PMT testing (Athens) \$7,168 \$0 \$7,168 \$1,792 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	160%	896 hrs	0 wks	9/20/06	12/26/06	\$7,168	\$0	\$0	\$7,168

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Conduct initial PMT testing (Athens)" continued

Notes

Schedule BOE: 100-day startup period. 18 days assumed for initial (10%) of tubes to be tested (354 total capacity at one site)

Comments/Changes:

6.3	Bulk PMT Procurement and Testing	\$1,016,873	\$824,176	\$192,697	\$67,444	0%
6.3.1	Procure Next 45% of Bulk PMTs	\$412,088	\$412,088	\$0	\$0	0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	412,088	412,088	0 wks	10/2/06	1/19/07	\$412,088	\$0	\$0	\$412,088

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.3.2	Align first bulk purchase PMTs (JMU)	\$13,989	\$0	\$13,989	\$4,896	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
32	JMU-Tech	20%	376 hrs	0 days	1/22/07	12/14/07	\$12,521	\$0	\$0	\$12,521
33	JMU-Undergrad	10%	188 hrs	0 days	1/22/07	12/14/07	\$1,468	\$0	\$0	\$1,468

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.3.3	Align first bulk purchase PMTs (Athens)	\$13,536	\$0	\$13,536	\$4,738	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	90%	1,692 hrs	0 wks	1/22/07	12/14/07	\$13,536	\$0	\$0	\$13,536

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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"Align first bulk purchase PMTs (Athens)" continued

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.3.4 Test first bulk purchase PMTs (JMU) \$58,893 \$0 \$58,893 \$20,613 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
32	JMU-Tech	80%	1,504 hrs	0 days	1/22/07	12/14/07	\$50,083	\$0	\$0	\$50,083
33	JMU-Undergrad	60%	1,128 hrs	0 days	1/22/07	12/14/07	\$8,810	\$0	\$0	\$8,810

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.3.5 Test first bulk purchase PMTs (Athens) \$57,904 \$0 \$57,904 \$20,266 0%

ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	385%	7,238 hrs	0 wks	1/22/07	12/14/07	\$57,904	\$0	\$0	\$57,904

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete				
6.3.6	Procure Last 45% of Bulk PMTs	\$412,088	\$412,088	\$0	\$0	0%				
ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	MandS	412,087.95	412,087.95	0 wks	10/1/07	1/18/08	\$412,088	\$0	\$0	\$412,088

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete				
6.3.7	Align final bulk purchase PMTs (JMU)	\$5,762	\$0	\$5,762	\$2,017	0%				
ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
32	JMU-Tech	20%	128 hrs	0 days	1/21/08	5/9/08	\$4,262	\$0	\$0	\$4,262
33	JMU-Undergrad	30%	192 hrs	0 days	1/21/08	5/9/08	\$1,500	\$0	\$0	\$1,500

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete				
6.3.8	Align final bulk purchase PMTs (Athens)	\$5,120	\$0	\$5,120	\$1,792	0%				
ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	100%	640 hrs	0 wks	1/21/08	5/9/08	\$5,120	\$0	\$0	\$5,120

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
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6.3.9	Test final bulk purchase PMTs (JMU)	\$18,549	\$0	\$18,549	\$6,492	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
32	JMU-Tech	80%	512 hrs	0 days	1/21/08	5/9/08	\$17,050	\$0	\$0	\$17,050
33	JMU-Undergrad	30%	192 hrs	0 days	1/21/08	5/9/08	\$1,500	\$0	\$0	\$1,500

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.3.10	Test final bulk purchase PMTs (Athens)	\$18,944	\$0	\$18,944	\$6,630	0%
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ID	Resource Name	Units	Work	Delay	Start	Finish	Cost	Baseline Cost	Act. Cost	Rem. Cost
25	Athens Student	370%	2,368 hrs	0 wks	1/21/08	5/9/08	\$18,944	\$0	\$0	\$18,944

Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

6.4	Ship Completed PMT's	\$0	\$0	\$0	\$0	0%
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6.4.1	Ship first 10% of PMT's from JMU to Tufts	\$0	\$0	\$0	\$0	0%
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Notes

WBS Description: This task involves

M&S BOE: N/A

Labor BOE: N/A

Schedule BOE: N/A

Comments/Changes:

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
6.4.2	Ship first 10% of PMT's from Athens to Rutgers	\$0	\$0	\$0	\$0	0%
	<u>Notes</u>					
	WBS Description: This task involves					
	M&S BOE: N/A					
	Labor BOE: N/A					
	Schedule BOE: N/A					
	Comments/Changes:					
6.4.3	Ship first bulk PMT's from JMU to Tufts	\$0	\$0	\$0	\$0	0%
	<u>Notes</u>					
	WBS Description: This task involves					
	M&S BOE: N/A					
	Labor BOE: N/A					
	Schedule BOE: N/A					
	Comments/Changes:					
6.4.4	Ship first bulk PMT's from Athens to Rutgers	\$0	\$0	\$0	\$0	0%
	<u>Notes</u>					
	WBS Description: This task involves					
	M&S BOE: N/A					
	Labor BOE: N/A					
	Schedule BOE: N/A					
	Comments/Changes:					
6.4.5	Ship last bulk PMT's from JMU to Tufts	\$0	\$0	\$0	\$0	0%
	<u>Notes</u>					
	WBS Description: This task involves					
	M&S BOE: N/A					
	Labor BOE: N/A					
	Schedule BOE: N/A					

WBS	Name	Cost	M&S Cost	Labor SWF	Contingency Total	% Complete
"Ship last bulk PMT's from JMU to Tufts" continued						
<u>Notes</u>						
Comments/Changes:						
6.4.6	Ship last bulk PMT's from Athens to Rutgers	\$0	\$0	\$0	\$0	0%
<u>Notes</u>						
WBS Description: This task involves						
M&S BOE: N/A						
Labor BOE: N/A						
Schedule BOE: N/A						
Comments/Changes:						
6.4.7	All PMT's Shipped	\$0	\$0	\$0	\$0	0%
<u>Notes</u>						
WBS Description: This milestone is for the						
Comments/Changes:						
7	Electronics and DAQ	\$1,289,154	\$763,390	\$525,764	\$15,680	0%
8	Frame, Absorbers and Stand	\$906,882	\$640,110	\$266,772	\$0	0%
9	Module Assembly and Installation	\$467,361	\$378,566	\$88,795	\$157,166	0%
10	Project Management	\$498,360	\$45,000	\$453,360	\$150,144	0%