

# Chapter 6

## Cost Summary



# Muon Tracker Mechanics

Amounts in FY 98 k\$

<u>WBS</u>	<u>Description</u>	<u>Cost</u>	<u>M&amp;S</u>	<u>EDIA</u>	<u>Labor</u>	<u>Cont (%)</u>	<u>Cont (\$)</u>
<b>Total Budget</b>							
5.2.12	Muon Tracking	5,760.60	3,861.2	565.6	1,333.8	15%	840.4
5.2.12.1	Misc Items	2,118.90	1,536.0	309.7	273.2	5%	112.0
5.2.12.2	BNL factory	222.7	107.5	31.4	83.8	20%	44.5
5.2.12.3	LANL Factory	70.3	1.6	0.0	68.7	20%	14.1
5.2.12.4	UNM Factory	5	5.0	0.0	0.0	20%	1.0
5.2.12.5	Gas System	88.3	70.0	0.0	18.3	20%	17.7
5.2.12.6	South Arm	1,666.20	1,069.6	137.8	458.8	20%	333.2
5.2.12.7	North Arm	1,589.10	1,071.4	86.7	431.0	20%	317.8
<b>AEE Budget</b>							
5.2.12	Muon Tracking	3,046.6	2,096.2	258.5	691.9	13%	380.9
5.2.12.1	Misc Items	1,344.8	1,053.4	154.8	136.6	3%	40.5
5.2.12.2	BNL factory	222.7	107.5	31.4	83.8	20%	44.5
5.2.12.3	LANL Factory	22.2	0.0	0.0	22.2	20%	4.4
5.2.12.4	UNM Factory	5.0	5.0	0.0	0.0	20%	1.0
5.2.12.5	Gas System	88.3	70.0	0.0	18.3	20%	17.7
5.2.12.6	South Arm	10.0	10.0	0.0	0.0	20%	2.0
5.2.12.7	North Arm	1,353.6	850.3	72.3	431.0	20%	270.7

## Muon Tracker Mechanics

		Amounts in FY 98 k\$					
WBS	Description	Cost	M&S	EDIA	Labor	Cont (%)	Cont (\$)
<b>RIKEN Budget</b>							
5.2.12	Muon Tracking	2,196.2	1,322.5	278.3	595.4	16%	355.9
5.2.12.1	Misc Items	774.1	482.6	154.8	136.6	9%	71.5
5.2.12.2	BNL factory	0.0	0.0	0.0	0.0	-	0.0
5.2.12.3	LANL Factory	0.0	0.0	0.0	0.0	-	0.0
5.2.12.4	UNM Factory	0.0	0.0	0.0	0.0	-	0.0
5.2.12.5	Gas System	0.0	0.0	0.0	0.0	-	0.0
5.2.12.6	South Arm	1,422.1	839.9	123.4	458.8	20%	284.4
5.2.12.7	North Arm	0.0	0.0	0.0	0.0	-	0.0
<b>Contributions (LANL, BARC, UNM)</b>							
5.2.12	Muon Tracking	517.8	442.5	28.8	46.5	20%	103.6
5.2.12.1	Misc Items	0.0	0.0	0.1	0.0	-	0.0
5.2.12.2	BNL factory	0.0	0.0	0.0	0.0	-	0.0
5.2.12.3	LANL Factory	48.1	1.6	0.0	46.5	20%	9.7
5.2.12.4	UNM Factory	0.0	0.0	0.0	0.0	-	0.0
5.2.12.5	Gas System	0.0	0.0	0.0	0.0	-	0.0
5.2.12.6	South Arm	234.1	219.7	14.4	0.0	20%	46.8
5.2.12.7	North Arm	235.5	221.1	14.4	0.0	20%	47.1

# Muon Tracker Front-End Electronics

Amounts in FY 98 k\$

<u>WBS</u>	<u>Description</u>	<u>Cost</u>	<u>M&amp;S</u>	<u>EDIA</u>	<u>Labor</u>	<u>Cont (%)</u>	<u>Cont (\$)</u>
<b>Total Budget</b>							
5.3.13	MuTrFEE	5,648.50	3,096.90	2,043.3	508.3	19%	1,046.6
5.3.13.1	Prior Years	493.3	0.00	493.3	0.0	0%	0.0
5.3.13.2	Anodes-specific Components	1,247.10	1,094.10	132.1	20.9	20%	249.4
5.3.13.3	Anodes FEE Assembly, Test, Installation	179.7	26	38.3	115.4	20%	35.9
5.3.13.4	Cathodes-specific Components	1,043.70	693.2	332.8	17.8	23%	239.7
5.3.13.5	Front End Module Interfaces	866.4	653.3	200.8	12.3	20%	171.2
5.3.13.6	FEM Chassis	106.3	61.20	33.9	11.2	20%	21.3
5.3.13.7	Cathodes FEMs Assembly, Test, Installation	388	74.00	82.9	231.2	20%	77.6
5.3.13.8	Cooling System	150.2	107.40	38.1	4.7	20%	30.0
5.3.13.9	In-Magnet Mechanics	362.4	236.70	93.6	32.1	20%	72.5
5.3.13.10	External Mechanics	81.9	34.20	38.1	9.6	20%	16.4
5.3.13.11	Detector-Fee Circuit, Power & Grounding	91.1	32.00	59.1	0.0	20%	18.2
5.3.13.12	Online Interfaces	96.3	43.00	0.0	53.3	6%	5.9
5.3.13.13	Ancillary Systems	41.7	41.70	0.0	0.0	20%	8.3
5.3.13.14	Detector-FEE Integration	0	0.00	0.0	0.0	-	0.0
5.3.13.15	Systems Engineering	500.3	0.00	500.3	0.0	20%	100.1
5.3.13.16	Project Management	0	0.00	0.0	0.0	-	0.0

## Muon Tracker Front-End Electronics

		Amounts in FY 98 k\$					
<u>WBS</u>	<u>Description</u>	<u>Cost</u>	<u>M&amp;S</u>	<u>EDIA</u>	<u>Labor</u>	<u>Cont. (%)</u>	<u>Cont. (\$)</u>
<b>AEE Budget</b>							
5.3.13	MuTrFEE	3,951.6	1,743.1	1,941.0	267.6	18%	699.6
5.3.13.1	Prior Years	493.3	0.0	493.3	0.0	0%	0.0
5.3.13.2	Anodes-specific Components	743.2	600.6	132.1	10.4	20%	148.6
5.3.13.3	Anodes FEE Assembly, Test, Installation	101.4	20.0	19.1	62.3	20%	20.3
5.3.13.4	Cathodes-specific Components	731.9	397.6	325.5	8.9	22%	162.7
5.3.13.5	Front End Module Interfaces	578.1	371.2	200.8	6.1	20%	113.6
5.3.13.6	FEM Chassis	73.5	33.6	33.9	6.0	20%	14.7
5.3.13.7	Cathodes FEMs Assembly, Test, Installation	227.5	62.0	41.4	124.1	20%	45.5
5.3.13.8	Cooling System	99.1	58.6	38.1	2.3	20%	19.8
5.3.13.9	In-Magnet Mechanics	197.0	121.8	59.2	16.0	20%	39.4
5.3.13.10	External Mechanics	60.0	17.1	38.1	4.8	20%	12.0
5.3.13.11	Detector-Fee Circuit, Power & Grounding	75.1	16.0	59.1	0.0	20%	15.0
5.3.13.12	Online Interfaces	49.6	22.9	0.0	26.7	7%	3.6
5.3.13.13	Ancillary Systems	21.7	21.7	0.0	0.0	20%	4.3
5.3.13.14	Detector-FEE Integration	0.0	0.0	0.0	0.0	-	0.0
5.3.13.15	Systems Engineering	500.3	0.0	500.3	0.0	20%	100.1
5.3.13.16	Project Management	0.0	0.0	0.0	0.0	-	0.0

# Muon Tracker Front-End Electronics

Amounts in FY 98 k\$

<u>WBS</u>	<u>Description</u>	<u>Cost</u>	<u>M&amp;S</u>	<u>EDIA</u>	<u>Labor</u>	<u>Cont (%)</u>	<u>Cont (\$)</u>
<b>RIKEN Budget</b>							
5.3.13	MuTrFEE	1,696.8	1,353.8	102.3	240.7	20%	347.0
5.3.13.1	Prior Years	0.0	0.0	0.0	0.0	0%	0.0
5.3.13.2	Anodes-specific Components	503.9	493.5	0.0	10.4	20%	100.8
5.3.13.3	Anodes FEE Assembly, Test, Installation	78.3	6.0	19.1	53.1	20%	15.7
5.3.13.4	Cathodes-specific Components	311.7	295.6	7.3	8.9	25%	76.9
5.3.13.5	Front End Module Interfaces	288.3	282.1	0.0	6.1	20%	57.7
5.3.13.6	FEM Chassis	32.8	27.6	0.0	5.2	20%	6.6
5.3.13.7	Cathodes FEMs Assembly, Test, Installation	160.5	12.0	41.4	107.1	20%	32.1
5.3.13.8	Cooling System	51.1	48.8	0.0	2.3	20%	10.2
5.3.13.9	In-Magnet Mechanics	165.4	114.9	34.5	16.0	20%	33.1
5.3.13.10	External Mechanics	21.9	17.1	0.0	4.8	20%	4.4
5.3.13.11	Detector-Free Circuit, Power & Grounding	16.0	16.0	0.0	0.0	20%	3.2
5.3.13.12	Online Interfaces	46.8	20.1	0.0	26.7	5%	2.4
5.3.13.13	Ancillary Systems	20.0	20.0	0.0	0.0	20%	4.0
5.3.13.14	Detector-FEE Integration	0.0	0.0	0.0	0.0	0%	0.0
5.3.13.15	Systems Engineering	0.0	0.0	0.0	0.0	0%	0.0
5.3.13.16	Project Management	0.0	0.0	0.0	0.0	0%	0.0

## Muon Identifier Mechanics

		<u>Amounts in FY 98 (k\$)</u>		
<u>WBS</u>	<u>Description</u>	<u>Cost</u>	<u>Cont (%)</u>	<u>Cont (k\$)</u>
<b>Total AEE Budget</b>				
5.2.13	Muon ID Mechanics	2881.3	10%	3178.9
5.2.13.1	LST's	970.7	0%	970.7
5.2.13.2	LST QA	24.0	20%	28.8
5.2.13.3	QA Infrastructure	54.3	20%	65.2
5.2.13.4	Assembly Infrastructure	261.0	21%	316.2
5.2.13.5	Panels - Large	276.6	12%	309.6
5.2.13.6	Panel Assmebly	589.8	20%	707.8
5.2.13.7	Gas System	149.5	21%	181.2
5.2.13.8	HV System, LV and Signals Out	126.2	16%	146.5
5.2.13.9	Rail System	29.6	30%	38.5
5.2.13.10	Expenses in PEH	64.0	23%	78.9
5.2.13.11	Previous Commitments to ORNL	335.5	0%	335.5



# Muon Identifier Front-End Electronics

Amounts in FY 98 k\$

<u>WBS</u>	<u>Description</u>	<u>Cost</u>	<u>M&amp;S</u>	<u>EDIA</u>	<u>Labor</u>	<u>Cont (%)</u>	<u>Cont (\$)</u>
<b>Total Budget</b>							
5.3.13	Muon ID FEE	1,203.0	442.8	678.4	81.8	22%	263.6
5.3.13.1	Design Muon ID FEE	401.2	11.0	368.9	21.2	24%	95.0
5.3.13.2	Prototypes of Muon ID FEE	378.6	117.6	240.4	20.6	24%	89.3
5.3.13.3	Fabrication of Muon ID FEE	367.9	310.2	35.8	21.9	18%	68.0
5.3.13.5	Assembly of Muon ID FEE	16.6	2.0	5.5	9.0	22%	3.6
5.3.13.6	Testing of Muon ID FEE	16.6	2.0	5.5	9.0	22%	3.6
5.3.13.9	Reviews	22.2	0.0	22.2	0.0	18%	3.9
<b>AEE Budget</b>							
5.3.13	Muon ID FEE	1,051.0	290.7	678.4	81.8	22%	233.5
5.3.13.1	Design Muon ID FEE	401.2	11.0	368.9	21.2	24%	95.0
5.3.13.2	Prototypes of Muon ID FEE	378.6	117.6	240.4	20.6	24%	89.3
5.3.13.3	Fabrication of Muon ID FEE	217.9	160.1	35.8	21.9	17%	37.9
5.3.13.5	Assembly of Muon ID FEE	14.6	0.0	5.5	9.0	25%	3.6
5.3.13.6	Testing of Muon ID FEE	16.6	2.0	5.5	9.0	22%	3.6
5.3.13.9	Reviews	22.2	0.0	22.2	0.0	18%	3.9
<b>RIKEN Budget</b>							
5.3.13	Muon ID FEE	152.0	152.0	0.0	0.0	20%	30.1
5.3.13.1	Design Muon ID FEE	0.0	0.0	0.0	0.0	-	0.0
5.3.13.2	Prototypes of Muon ID FEE	0.0	0.0	0.0	0.0	-	0.0
5.3.13.3	Fabrication of Muon ID FEE	150.0	150.0	0.0	0.0	20%	30.1
5.3.13.5	Assembly of Muon ID FEE	2.0	2.0	0.0	0.0	20%	0.0
5.3.13.6	Testing of Muon ID FEE	0.0	0.0	0.0	0.0	-	0.0
5.3.13.9	Reviews	0.0	0.0	0.0	0.0	-	0.0

