



Muon Campus AIP

Change Request Form

CR#:Cryo016

1) DATE: 12/9/15

2) WBS: Cryo1.10

3) Originator: Ken Domann / *Ken Domann*

4) WBS Description of Primary Affected Tasks: Cryo Distribution Box (CDB)

5) Technical Description & Primary Motivation for Change: The Cryo group has made a design change to the Cryo Distribution Box. This change was the result of an updated preliminary design of the Mu2e cryogenic distribution system. Two heat exchangers will be incorporated into the body of the cryo distribution box, so an additional heat exchanger was added. The schedule for heat exchanger delivery was moved up because these objects need to be delivered to the Cryo Distribution box vendor prior to Cryo Distribution box fabrication. This CR documents the costs associated with an additional heat exchanger, a slight increase in the cost of the existing heat exchanger and labor associated with processing these procurements. The net change is an increase of \$58,526 to the budget with a corresponding decrease to contingency.

6) Assessment of Cost Impact (Use attachments if needed): See Attachments.

7) Assessment of Schedule Impact (Use attachments if needed): N/A

8) Secondary Impact & Other Comments: N/A

9) Approvals:

AIP Project Manager:

Michael / Ken

Date: 12/10/2015

AIP Project Coordinator:

Mary

Date: 12/10/15

AD Div Director:

Date:

Directorate:

Date:

Cryo CR016 Labor Delta

UID	WBS	Name	New Hours	Old Hours	Delta Hours	Comment
1	Cryo1	Muon Campus Cryogenics - AIP	34440	34240	200	
2937	Cryo1.10	Cryo Distribution Box (CDB)	5299	5099	200	
2970	Cryo1.10.04	Ancillary Components	1297	1097	200	
2967	Cryo1.10.04.03	Procure Heat exchanger #1	100	0	100	
		FNAD_CRYO_EN	100	0	100	
2993	Cryo1.10.04.04	Procure Heat exchanger #2	100	0	100	New activity
		FNAD_CRYO_EN	100	0	100	

Cryo CR016 Material Delta

UID	WBS	Name	New M&S	Old M&S	Delta	Comment
1	Cryo1	Muon Campus Cryogenics - AIP	\$3,638,668	\$3,614,424	\$24,244	
2937	Cryo1.10	Cryo Distribution Box (CDB)	\$1,315,845	\$1,291,601	\$24,244	
2970	Cryo1.10.04	Ancillary Components	\$290,042	\$265,798	\$24,244	
2967	Cryo1.10.04.03	Procure Heat exchanger #1	\$64,000	\$55,756	\$8,244	
2993	Cryo1.10.04.04	Procure Heat exchanger #2	\$16,000	\$0	\$16,000	New activity

Cryo CR016 Schedule Information

UID	WBS	Name	Start	Finish	Comments
1	Cryo1	Muon Campus Cryogenics - AIP	6/3/13	6/22/17	
2937	Cryo1.10	Cryo Distribution Box (CDB)	4/15/15	6/22/17	
2970	Cryo1.10.04	Ancillary Components	4/15/15	6/22/17	
2967	Cryo1.10.04.03	Procure Heat exchanger #1	12/7/15	6/6/16	New dates
2993	Cryo1.10.04.04	Procure Heat exchanger #2	12/7/15	6/6/16	New activity

Cryo Pre CR016 CAP

Control Account		FY13	FY14	FY15	FY16	FY17	Cumulative
Cry01.02.01.01 Cryo AIP General Project Oversight - FY13	Scheduled	51,346.42	0.00	0.00	0.00	0.00	51,346.42
Cry01.02.01.02 Cryo AIP General Project Oversight - FY14	Scheduled	3,594.06	129,557.05	0.00	0.00	0.00	133,151.10
Cry01.02.01.03 Cryo AIP General Project Oversight - FY15	Scheduled	0.00	2,134.07	30,214.73	0.00	0.00	32,348.80
Cry01.02.01.04 Cryo AIP General Project Oversight - FY16	Scheduled	0.00	0.00	3,820.92	170,506.37	0.00	174,327.29
Cry01.02.01.05 Cryo AIP General Project Oversight - FY17	Scheduled	0.00	0.00	0.00	5,329.44	165,459.60	170,789.04
Cry01.02.01.07 Cryo AIP Gen Proj OS - FY15 Supp	Scheduled	0.00	0.00	74,049.03	0.00	0.00	74,049.03
Cry01.03 Cryo Basic Engineering	Scheduled	33,093.96	236,082.70	0.00	0.00	0.00	269,176.66
Cry01.04.01 LN2 system	Scheduled	4,514.95	409,013.92	0.00	0.00	0.00	413,528.87
Cry01.04.02 Gas management system	Scheduled	57,841.53	178,224.26	0.00	0.00	0.00	236,065.78
Cry01.04.03 ODH system	Scheduled	0.00	49,757.63	0.00	0.00	0.00	49,757.63
Cry01.04.04 Cryo Refrigerator system	Scheduled	149,077.19	1,134,055.74	152,524.20	0.00	0.00	1,435,657.13
Cry01.04.05 Cryo Compressor System	Scheduled	59,453.27	367,138.94	0.00	0.00	0.00	426,592.21
Cry01.04.06 Cryo Interconnect Piping	Scheduled	225,594.62	512,339.28	0.00	0.00	0.00	737,933.91
Cry01.04.07 Cryo Interconnect Electrical & Controls	Scheduled	46,627.36	119,526.30	0.00	0.00	0.00	166,153.66
Cry01.04.08 Cryogenic Fluids	Scheduled	0.00	0.00	261,857.93	0.00	0.00	261,857.93
Cry01.05.01 MU2e Interface Connection	Scheduled	0.00	70,843.93	320,085.24	646,830.81	70,325.02	1,108,055.00
Cry01.05.02 g-2 interface connection	Scheduled	27,198.92	0.00	0.00	0.00	0.00	27,198.92
Cry01.06 Cryo Safety Documents	Scheduled	0.00	155,311.42	0.00	0.00	0.00	155,311.42
Cry01.07 Testing/checkout	Scheduled	0.00	0.00	65,416.12	0.00	70,041.98	135,458.10
Cry01.08 Cryo g-2 Acceptance Tests	Scheduled	0.00	11,968.50	102,502.33	0.00	0.00	114,470.83
Cry01.09 Cryo MU2e Acceptance Tests	Scheduled	0.00	0.00	0.00	0.00	97,077.96	97,077.96
Cry01.10 Cryo Distribution Box (CDB)	Scheduled	0.00	0.00	322,703.66	383,633.72	1,475,978.67	2,182,316.05
Grand Total	Scheduled	658,342.28	3,375,923.74	1,333,174.17	1,206,300.34	1,878,883.22	8,452,623.75

Cryo Post CR016 CAP

Control Account	FY13	FY14	FY15	FY16	FY17	Cumulative
Cryo1.02.01.01 Cryo AIP General Project Oversight - FY13	Scheduled	51,346.42	0.00	0.00	0.00	51,346.42
Cryo1.02.01.02 Cryo AIP General Project Oversight - FY14	Scheduled	3,594.06	129,557.05	0.00	0.00	133,151.10
Cryo1.02.01.03 Cryo AIP General Project Oversight - FY15	Scheduled	0.00	2,134.07	30,214.73	0.00	32,348.80
Cryo1.02.01.04 Cryo AIP General Project Oversight - FY16	Scheduled	0.00	0.00	3,820.92	170,506.37	174,327.29
Cryo1.02.01.05 Cryo AIP General Project Oversight - FY17	Scheduled	0.00	0.00	0.00	5,329.44	170,789.04
Cryo1.02.01.07 Cryo AIP Gen Proj OS - FY15 Supp	Scheduled	0.00	0.00	74,049.03	0.00	74,049.03
Cryo1.03 Cryo Basic Engineering	Scheduled	33,093.96	236,082.70	0.00	0.00	269,176.66
Cryo1.04.01 LN2 system	Scheduled	4,514.95	409,013.92	0.00	0.00	413,528.87
Cryo1.04.02 Gas management system	Scheduled	57,841.53	178,224.26	0.00	0.00	236,065.78
Cryo1.04.03 ODH system	Scheduled	0.00	49,757.63	0.00	0.00	49,757.63
Cryo1.04.04 Cryo Refrigerator system	Scheduled	149,077.19	1,134,055.74	152,524.20	0.00	1,435,657.13
Cryo1.04.05 Cryo Compressor System	Scheduled	59,453.27	367,138.94	0.00	0.00	426,592.21
Cryo1.04.06 Cryo Interconnect Piping	Scheduled	225,594.62	512,339.28	0.00	0.00	737,933.91
Cryo1.04.07 Cryo Interconnect Electrical & Controls	Scheduled	46,627.36	119,526.30	0.00	0.00	166,153.66
Cryo1.04.08 Cryogenic Fluids	Scheduled	0.00	0.00	261,857.93	0.00	261,857.93
Cryo1.05.01 Muze Interface Connection	Scheduled	0.00	70,813.93	320,085.24	646,830.81	70,325.02
Cryo1.05.02 g-2 interface connection	Scheduled	27,198.92	0.00	0.00	0.00	27,198.92
Cryo1.06 Cryo Safety Documents	Scheduled	0.00	155,311.42	0.00	0.00	155,311.42
Cryo1.07 Testing/Checkout	Scheduled	0.00	0.00	65,416.12	0.00	135,458.10
Cryo1.08 Cryo g-2 Acceptance Tests	Scheduled	0.00	11,968.50	102,502.33	0.00	114,470.83
Cryo1.09 Cryo Muze Acceptance Tests	Scheduled	0.00	0.00	0.00	0.00	97,077.96
Cryo1.10 Cryo Distribution Box (CDB)	Scheduled	0.00	0.00	322,703.66	515,721.31	2,240,841.53
Grand Total	Scheduled	658,342.28	3,375,923.74	1,333,174.17	1,338,387.93	8,511,149.23