



**Muon Campus AIP**  
**Change Request Form**

CR#:Cryo012

1) DATE: 3/11/15	2)WBS: Cryo1.04	3) Originator: Ken Domann <i>KAD</i>
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4) WBS Description of Primary Affected Tasks: Cryogenic plant sub systems

5) Technical Description & Primary Motivation for Change: Add purchase of helium and trailer certification for additional Mu2e testing. This purchase will cover the cost of 3 helium deliveries, each for 150,000 SCF and the M&S and labor associated with the trailer certification. The total change to the Cryo AIP is to add \$261,857 to the budget with a corresponding decrease to contingency.

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

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

8) Secondary Impact & Other Comments: N/A

9) Approvals:		
AIP Project Manager:	<i>Ken Domann</i>	Date: 3/11/15
AIP Project Coordinator:	<i>Wagner</i>	Date: 3/11/15
AD Div Director:	<i>S Wagner</i>	Date: 3/11/15
Directorate:	<i>S Wagner</i>	Date: 3/11/15

## Cryo CR012 Schedule Information

WBS	Name	Dur	Start	Finish	Float
<b>Cryo1.04.08</b>	<b>Cryogenic Fluids</b>	<b>19 d</b>	<b>3/4/15</b>	<b>3/30/15</b>	<b>47 d</b>
Cryo1.04.08.01	Purchase Helium for Mu2e	1 d	3/4/15	3/4/15	47 d
Cryo1.04.08.02	Receive 1st Helium Delivery	1 d	3/12/15	3/12/15	47 d
Cryo1.04.08.03	Receive 2nd Helium Delivery	1 d	3/20/15	3/20/15	47 d
Cryo1.04.08.04	Receive 3rd Helium Delivery	1 d	3/30/15	3/30/15	47 d
Cryo1.04.08.05	Certify 2 Trailers/Connect 2 Trailers & Pump/Backfill	60 d	4/1/15	6/24/15	47 d

Cryo CR012 Material Delta

UID	WBS	Name	Start	Finish	Original M&S	New M&S	Delta	Comment
1	Cry01	Muon Campus Cryogenics - AIP	6/3/13	6/22/17	\$2,575,143	\$2,777,785	\$202,642	
833	Cry01.04	Cryogenic plant sub systems	6/17/13	2/1/16	\$1,803,903	\$1,948,647	\$144,744	
2930	Cry01.04.08	Cryogenic Fluids	3/4/15	3/30/15	\$0	\$202,642	\$202,642	New task code
2931	Cry01.04.08.01	Purchase Helium for Mu2e	3/4/15	3/4/15	\$0	\$0	\$0	New activity
2932	Cry01.04.08.02	Receive 1st Helium Delivery	3/12/15	3/12/15	\$0	\$48,248	\$48,248	New activity
2933	Cry01.04.08.03	Receive 2nd Helium Delivery	3/20/15	3/20/15	\$0	\$48,248	\$48,248	New activity
2934	Cry01.04.08.04	Receive 3rd Helium Delivery	3/30/15	3/30/15	\$0	\$48,248	\$48,248	New activity
2935	Cry01.04.08.05	Certify 2 Trailers/Connect 2 Trailers & Pump/Backfill	4/1/15	6/24/15	\$0	\$57,898	\$57,898	New activity

Cryo CR012 Hours Delta

3/11/2015

UID	WBS	CTC	Name/Resource	Old Hours	New Hours	Delta	Comments
1	Cry01		Muon Campus Cryogenics - AIP	32685	32717	32	
833	Cry01.04		Cryogenic plant sub systems	14728	14760	32	
2930	Cry01.04.08		Cryogenic Fluids	0	32	32	
2935	Cry01.04.08.05	A1301.04.08	Certify 2 Trailers/Connect 2 Trailers & Pump/Backfill FNAD_CRYO_TECH	0	32	32	New activity

Cryo Pre CR012 CAP

Control Account		FY12	FY13	FY14	FY15	FY16	FY17	Cumulative
A1301.02.01.01 Cryo AIP General Project OS - FY13	Scheduled	0.00	51,346.42	0.00	0.00	0.00	0.00	51,346.42
A1301.02.01.02 Cryo AIP General Project OS - FY14	Scheduled	0.00	3,594.05	129,557.05	0.00	0.00	0.00	133,151.10
A1301.02.01.03 Cryo AIP General Project OS - FY15	Scheduled	0.00	0.00	2,134.07	30,214.73	0.00	0.00	32,348.80
A1301.02.01.04 Cryo AIP General Project OS - FY16	Scheduled	0.00	0.00	0.00	3,106.86	130,736.21	0.00	133,843.07
A1301.02.01.05 Cryo AIP General Project OS - FY17	Scheduled	0.00	0.00	0.00	0.00	3,754.32	116,470.08	120,224.40
A1301.03 Cryo Basic Engineering	Scheduled	0.00	33,093.96	236,082.70	70,985.99	73,406.86	49,000.83	462,570.34
A1301.04.01 Cryo LN2 system	Scheduled	0.00	4,514.95	409,013.92	0.00	0.00	0.00	413,528.87
A1301.04.02 Cryo Gas management system	Scheduled	0.00	57,841.53	178,224.26	0.00	0.00	0.00	236,065.78
A1301.04.03 Cryo ODH system	Scheduled	0.00	0.00	49,757.63	0.00	0.00	0.00	49,757.63
A1301.04.04 Cryo Refrigerator System	Scheduled	0.00	149,077.19	1,134,055.74	157,480.87	315,558.09	0.00	1,756,171.89
A1301.04.05 Cryo Compressor System	Scheduled	0.00	59,453.27	367,138.94	0.00	0.00	0.00	426,592.21
A1301.04.06 Cryo Interconnect Piping	Scheduled	0.00	225,594.62	512,339.28	0.00	0.00	0.00	737,933.91
A1301.04.07 Cryo Interconnect Electrical & Controls	Scheduled	0.00	46,627.36	119,526.30	0.00	0.00	0.00	166,153.66
A1301.05.01 MuZe Interface Connection	Scheduled	0.00	0.00	70,813.93	206,847.51	1,018,711.31	312,773.87	1,609,146.62
A1301.05.02 g-2 Interface Connection	Scheduled	0.00	27,198.92	0.00	0.00	0.00	0.00	27,198.92
A1301.06 Cryo Safety Documents	Scheduled	0.00	0.00	155,311.42	0.00	0.00	0.00	155,311.42
A1301.07 g-2 Cryo Checkout	Scheduled	0.00	0.00	0.00	65,416.12	0.00	69,534.72	134,950.84
A1301.08 Cryo g-2 Acceptance Tests	Scheduled	0.00	0.00	11,968.50	102,502.33	0.00	0.00	114,470.83
A1301.09 Cryo MuZe Acceptance Tests	Scheduled	0.00	0.00	0.00	0.00	0.00	97,719.37	97,719.37
Grand Total	Scheduled	0.00	658,342.28	3,375,923.74	636,554.41	1,542,166.80	645,498.87	6,858,486.10

Cryo Post CR012 Cap

Control Account		FY12	FY13	FY14	FY15	FY16	FY17	Cumulative
A1301.02.01.01 Cryo AIP General Project Oversight - FY13	Scheduled	0.00	51,346.42	0.00	0.00	0.00	0.00	51,346.42
A1301.02.01.02 Cryo AIP General Project Oversight - FY14	Scheduled	0.00	3,594.05	129,557.05	0.00	0.00	0.00	133,151.10
A1301.02.01.03 Cryo AIP General Project Oversight - FY15	Scheduled	0.00	0.00	2,134.07	30,214.73	0.00	0.00	32,348.80
A1301.02.01.04 Cryo AIP General Project Oversight - FY16	Scheduled	0.00	0.00	0.00	3,106.86	130,736.21	0.00	133,843.07
A1301.02.01.05 Cryo AIP General Project Oversight - FY17	Scheduled	0.00	0.00	0.00	0.00	3,754.32	116,470.08	120,224.40
A1301.03 Cryo Basic Engineering	Scheduled	0.00	33,093.96	236,082.70	70,985.99	73,406.86	49,000.83	462,570.34
A1301.04.01 LN2 system	Scheduled	0.00	4,514.95	409,013.92	0.00	0.00	0.00	413,528.87
A1301.04.02 Gas management system	Scheduled	0.00	57,841.53	178,224.26	0.00	0.00	0.00	236,065.78
A1301.04.03 ODH system	Scheduled	0.00	0.00	49,757.63	0.00	0.00	0.00	49,757.63
A1301.04.04 Cryo Refrigerator system	Scheduled	0.00	149,077.19	1,134,055.74	157,480.87	315,558.09	0.00	1,756,171.89
A1301.04.05 Cryo Compressor System	Scheduled	0.00	59,453.27	367,138.94	0.00	0.00	0.00	426,592.21
A1301.04.06 Cryo Interconnect Piping	Scheduled	0.00	225,594.62	512,339.28	0.00	0.00	0.00	737,933.91
A1301.04.07 Cryo Interconnect Electrical & Controls	Scheduled	0.00	46,627.36	119,526.30	0.00	0.00	0.00	166,153.66
A1301.04.08 Cryogenic Fluids	Scheduled	0.00	0.00	0.00	261,857.93	0.00	0.00	261,857.93
A1301.05.01 Mu2e Interface Connection	Scheduled	0.00	0.00	70,813.93	206,847.51	1,018,711.31	312,773.87	1,609,146.62
A1301.05.02 g-2 interface connection	Scheduled	0.00	27,198.92	0.00	0.00	0.00	0.00	27,198.92
A1301.06 Cryo Safety Documents	Scheduled	0.00	0.00	155,311.42	0.00	0.00	0.00	155,311.42
A1301.07 Testing/Checkout	Scheduled	0.00	0.00	0.00	65,416.12	0.00	69,534.72	134,950.84
A1301.08 Cryo g-2 Acceptance Tests	Scheduled	0.00	0.00	11,968.50	102,502.33	0.00	0.00	114,470.83
A1301.09 Cryo Mu2e Acceptance Tests	Scheduled	0.00	0.00	0.00	0.00	0.00	97,719.37	97,719.37
Grand Total	Scheduled	0.00	658,342.28	3,375,923.74	898,412.34	1,542,166.80	645,498.87	7,120,344.02