



Muon Campus AIP
Change Request Form

CR#: BT013

1) DATE: 5/7/15	2) WBS: BT1.04.03	3) Originator: Ken Domann / <i>KD</i>
------------------------	--------------------------	--

4) WBS Description of Primary Affected Tasks: Beamline Instrumentation & Controls

5) Technical Description & Primary Motivation for Change: This Controls and Instrumentation Beam Transport AIP change request is the result of additional scope uncovered during the design phase. This includes design and building of ceramic inserts and stand needed for Toroid functionality, augmented cable pull to implement a calibration circuit in the Toroids, additional BPM transition board modifications and a BPM signal cable pull whose schedule now lines up with the 2015 shutdown BPM work. The result is to add \$89,715 to the budget with a corresponding decrease in contingency.

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

7) Assessment of Schedule Impact (Use attachments if needed): Some activities were replanned to new dates, however there is no impact to any interface milestones. See attached.

8) Secondary Impact & Other Comments: N/A

9) Approvals:		
AIP Project Manager:	<i>Brian Powell</i>	Date: <u>5/7/15</u>
AIP Project Coordinator:	<i>Mary E. C.</i>	Date: <u>5/7/15</u>
AD Div Director:	_____	Date: _____
Directorate:	_____	Date: _____

Beam Transport CR013 Schedule Info

UID	WBS	Name	Dur	Start	Finish	Comments
18	BT1.04.03	Beamline Instrumentation & Controls	305 d	10/1/14	12/17/15	
723	BT1.04.03.01	Beamline Instrumentation & Controls Design	205 d	10/1/14	7/27/15	
778	BT1.04.03.01.06	Final Design Creamic Insert	40 d	6/1/15	7/27/15	New activity
724	BT1.04.03.02	Beamline Instrumentation & Controls Implementation	180 d	4/3/15	12/17/15	
765	BT1.04.03.02.01	Beamline Toroids Procure	30 d	5/8/15	6/19/15	New dates
150	BT1.04.03.02.02	Beamline Toroids Implementation	40 d	7/28/15	9/22/15	New dates
147	BT1.04.03.02.04	Beamline BPMs Implementation	40 d	7/14/15	9/8/15	New dates
779	BT1.04.03.02.05	Beamline BPM Cable Pull	40 d	7/1/15	8/26/15	New activity
767	BT1.04.03.02.06	Beamline BLMs Procure	30 d	5/8/15	6/19/15	New dates
23	BT1.04.03.02.07	Beamline BLMs Implementation	40 d	6/22/15	8/17/15	New dates
768	BT1.04.03.02.08	SEM & Multiwires Procure	40 d	5/8/15	7/6/15	New dates
38	BT1.04.03.02.09	SEM & Multiwires Implementation	30 d	7/7/15	8/17/15	New dates
393	BT1.04.03.02.10	Instrumentation Testing	60 d	9/23/15	12/17/15	New dates
587	BT1.04.03.02.11	Controls Implementation	30 d	6/1/15	7/13/15	New dates
764	BT1.04.03.02.12	Beamline Instrumentation & Controls Complete	0 d	12/17/15	12/17/15	New dates

Beam Transport AIP CR013 Material Changes

UID	WBS	Name	Start	Finish	Original M&S	New M&S	Delta
18	BT1.04.03	Beamline Instrumentation & Controls	10/1/14	12/17/15	\$118,500	\$169,250	\$50,750
724	BT1.04.03.02	Beamline Instrumentation & Controls Implementation	4/3/15	12/17/15	\$118,500	\$169,250	\$50,750
765	BT1.04.03.02.01	Beamline Toroids Procure	5/8/15	6/19/15	\$17,500	\$20,250	\$2,750
150	BT1.04.03.02.02	Beamline Toroids Implementation	7/28/15	9/22/15	\$0	\$8,000	\$8,000
779	BT1.04.03.02.05	Beamline BPM Cable Pull	7/1/15	8/26/15	\$0	\$40,000	\$40,000

Beam Transport AIP CR013 Labor Changes

UID	WBS	Name	New Hours	Old Hours	Delta	Comments
18	BT1.04.03	Beamline Instrumentation & Controls	3565	3335	230	
723	BT1.04.03.01	Beamline Instrumentation & Controls Design	1391	1271	120	
778	BT1.04.03.01.06	Final Design Ceramic Insert	120	0	120	New activity
		FNAD_ELTN_DESIGN_EN	40	0	40	
		FNAD_ELEC_DRAFTER	80	0	80	
724	BT1.04.03.02	Beamline Instrumentation & Controls Implementation	2174	2064	110	
147	BT1.04.03.02.04	Beamline BPMs Implementation	277	197	80	
		FNAD_ELTN_TECH	100	20	80	
779	BT1.04.03.02.05	Beamline BPM Cable Pull	30	0	30	New activity
		FNAD_ELTN_DESIGN_EN	20	0	20	
		FNAD_ENGRING_PHYST	10	0	10	

Beam Transport AIP Pre CR013 CAP

Control Account	FY12	FY13	FY14	FY15	FY16	Cumulative
A1303.01.02.01 Project Management Oversight FY13	Scheduled	0.00	56,415.81	0.00	0.00	56,415.81
A1303.01.02.02 Project Management Oversight FY14	Scheduled	0.00	0.00	0.00	0.00	56,415.81
A1303.01.02.03 Project Management Oversight FY15	Scheduled	0.00	139,404.50	0.00	0.00	139,404.50
A1303.01.02.04 Project Management Oversight FY16	Scheduled	0.00	0.00	3,062.52	118,198.79	121,261.31
A1303.02.01 Beam Transport Lambertson (MLAW) Magnet	Scheduled	0.00	0.00	0.00	2,374.71	32,909.15
A1303.02.02.01 Beam Transport Extraction Kicker Magnets (RKB 2)	Scheduled	0.00	0.00	295,983.41	0.00	295,983.41
A1303.02.02.02 Beam Transport Extraction Kicker Power Supplies	Scheduled	0.00	6,218.93	163,023.76	0.00	169,242.68
A1303.02.02.03 Beam Transport Kicker Loads & Cooling System	Scheduled	0.00	0.00	32,213.32	348,017.93	458,641.41
A1303.02.02.04 Beam Transport Recycler Ring Extraction Inert Installa	Scheduled	0.00	6,218.93	389,354.87	33,663.44	429,237.24
A1303.03.01.01 RR to P1 Vertical Bending Dipole ADCW (1)	Scheduled	0.00	0.00	426,269.95	177,816.02	197,119.49
A1303.03.01.02 RR to P1 Permanent Magnets ROA (4)	Scheduled	0.00	0.00	24,275.42	0.00	24,275.42
A1303.03.01.03 RR to P1 Trim Quad STQB (4+1)	Scheduled	0.00	0.00	0.00	58,902.55	58,902.55
A1303.03.01.05 RR to P1 Vertical Dipole Correctors (1-1)	Scheduled	0.00	0.00	159,220.31	0.00	159,220.31
A1303.03.02.01 RR to P1 Lambertson PS	Scheduled	0.00	0.00	8,653.56	0.00	8,653.56
A1303.03.02.02 RR to P1 Vertical Magnet PS	Scheduled	0.00	0.00	50,020.25	10,489.67	60,509.92
A1303.03.02.03 RR to P1 Trim Dipole PS(2)	Scheduled	0.00	0.00	50,020.25	10,489.67	60,509.92
A1303.03.02.04 RR to P1 Trim Quad PS(4)	Scheduled	0.00	0.00	26,087.02	0.00	26,087.02
A1303.03.03 Beam Transport RR to P1 Instrumentation	Scheduled	0.00	0.00	30,932.88	0.00	30,932.88
A1303.03.04 Beam Transport RR to P1 Installation	Scheduled	0.00	0.00	0.00	264,774.05	264,774.05
A1303.04.01.01 Beamline B2 Dipole Magnet (1) (V714 Replacement)	Scheduled	0.00	0.00	0.00	456,427.59	456,427.59
A1303.04.01.01.02 Beamline Existing Magnets to be Repurposed	Scheduled	0.00	0.00	39,771.00	9,730.06	49,501.06
A1303.04.01.01.03 Beamline CDA Magnet (-17C Replacement)	Scheduled	0.00	0.00	5,094.81	15,337.52	20,432.33
A1303.04.01.02 Beamline PS	Scheduled	0.00	0.00	1,170.09	41,543.02	42,713.11
A1303.04.01.03 Beam Line Installation & Mechanical	Scheduled	0.00	0.00	10,704.52	199,273.97	218,098.12
A1303.04.01.04 RR to AP-Q Target Station and RR to M3 Line optics	Scheduled	0.00	0.00	79,833.55	373,296.51	453,130.06
A1303.04.02 Beam Transport Electrical Infrastructure	Scheduled	0.00	0.00	67,641.57	0.00	67,641.57
A1303.04.03 Beamline Instrumentation & Controls	Scheduled	0.00	0.00	10,433.98	169,962.38	180,396.36
Grand Total	Scheduled	0.00	66,853.67	2,094,870.67	2,758,328.14	316,558.43

Beam Transport AIP Post CR013 CAP

Control Account	FY12	FY13	FY14	FY15	FY16	Cumulative
A1303.01.02.01 Project Management Oversight FY13	Scheduled	0.00	56,415.81	0.00	0.00	56,415.81
A1303.01.02.02 Project Management Oversight FY14	Scheduled	0.00	0.00	139,404.50	0.00	139,404.50
A1303.01.02.03 Project Management Oversight FY15	Scheduled	0.00	0.00	3,062.52	118,198.79	121,261.31
A1303.01.02.04 Project Management Oversight FY16	Scheduled	0.00	0.00	2,374.71	32,909.15	35,283.86
A1303.02.01 Beam Transport Lambertson (MLAW) Magnet	Scheduled	0.00	0.00	295,983.41	0.00	295,983.41
A1303.02.02.01 Beam Transport Extraction Kicker Magnets (RKB 2)	Scheduled	0.00	6,218.93	163,023.76	0.00	169,242.68
A1303.02.02.02 Beam Transport Extraction Kicker Power Supplies	Scheduled	0.00	0.00	32,213.32	348,017.93	488,641.41
A1303.02.02.03 Beam Transport Kicker Loads & Cooling System	Scheduled	0.00	6,218.93	389,354.87	33,663.44	429,237.24
A1303.02.02.04 Beam Transport Recycler Ring Extraction Insert Installa	Scheduled	0.00	0.00	426,269.95	177,816.02	801,205.46
A1303.03.01.01 RR to P1 Vertical Bending Dipole ADCW (1)	Scheduled	0.00	0.00	24,275.42	0.00	24,275.42
A1303.03.01.02 RR to P1 Permanent Magnets RQA (4)	Scheduled	0.00	0.00	58,902.55	0.00	58,902.55
A1303.03.01.03 RR to P1 Trim Quad STOB (4+1)	Scheduled	0.00	159,220.31	0.00	0.00	159,220.31
A1303.03.01.05 RR to P1 Vertical Dipole Correctors (1+1)	Scheduled	0.00	8,653.56	0.00	0.00	8,653.56
A1303.03.02.01 RR to P1 Lambertson PS	Scheduled	0.00	50,020.25	10,489.67	0.00	60,509.92
A1303.03.02.02 RR to P1 Vertical Magnet PS	Scheduled	0.00	0.00	50,020.25	10,489.67	60,509.92
A1303.03.02.03 RR to P1 Trim Dipole PS(2)	Scheduled	0.00	26,087.02	0.00	0.00	26,087.02
A1303.03.02.04 RR to P1 Trim Quad PS(4)	Scheduled	0.00	30,932.88	0.00	0.00	30,932.88
A1303.03.03 Beam Transport RR to P1 Instrumentation	Scheduled	0.00	0.00	264,774.05	0.00	264,774.05
A1303.03.04 Beam Transport RR to P1 Installation	Scheduled	0.00	0.00	456,427.59	0.00	456,427.59
A1303.04.01.01 Beamline B2 Dipole Magnet (1) (V714 Replacement)	Scheduled	0.00	39,771.00	9,730.06	0.00	49,501.06
A1303.04.01.02 Beamline Existing Magnets to be Repurposed	Scheduled	0.00	0.00	15,337.52	0.00	20,432.33
A1303.04.01.03 Beamline CDA Magnet (-17C Replacement)	Scheduled	0.00	5,094.81	15,337.52	0.00	20,432.33
A1303.04.01.02 Beamline PS	Scheduled	0.00	1,170.09	41,543.02	0.00	42,713.11
A1303.04.01.03 Beam Line Installation & Mechanical	Scheduled	0.00	10,704.52	199,273.97	8,119.63	218,098.12
A1303.04.01.04 RR to AP-0 Target Station and RR to M3 Line optics	Scheduled	0.00	0.00	79,833.55	373,296.51	453,130.05
A1303.04.02 Beam Transport Electrical Infrastructure	Scheduled	0.00	67,641.57	0.00	0.00	67,641.57
A1303.04.03 Beamline Instrumentation & Controls	Scheduled	0.00	10,433.98	169,962.38	0.00	180,396.36
Grand Total	Scheduled	0.00	68,853.67	2,094,870.67	2,817,560.56	5,328,325.55