

Systems Tests: FY11 Needs

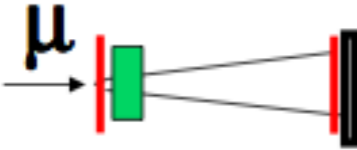
Daniel M. Kaplan, IIT
MAP Level 1 Manager for Systems Tests

MAP Technical Board Meeting
Nov. 1, 2010

Latest MICE Schedule

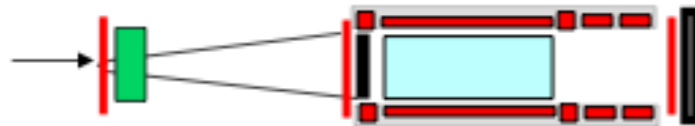
MICE Schedule as of March 2010

Run date:



STEP I

(running now)
-> Aug2010



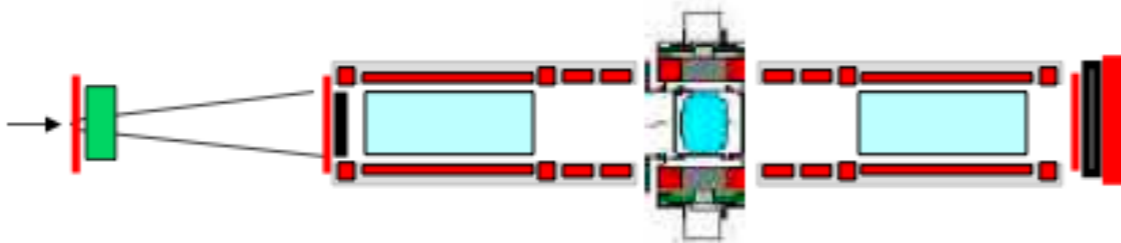
STEP II

Q2 2011



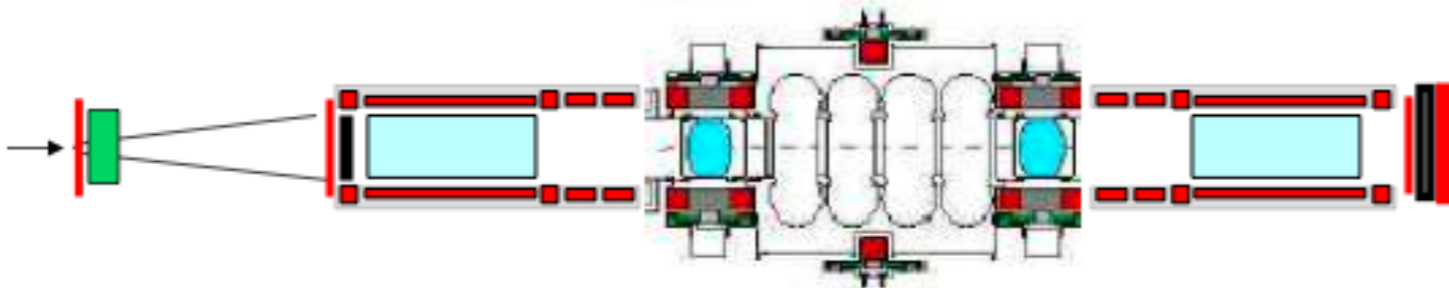
STEP III/III.1

Q3-Q4 2011



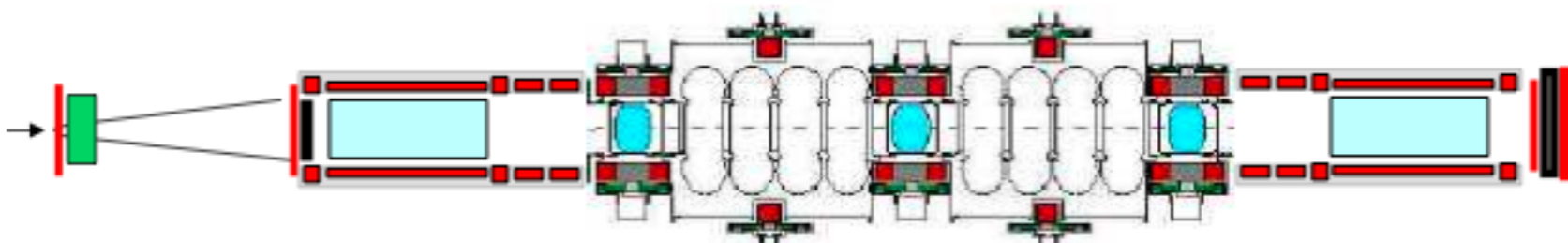
STEP IV

≥Q3 2011



STEP V

2012-2013



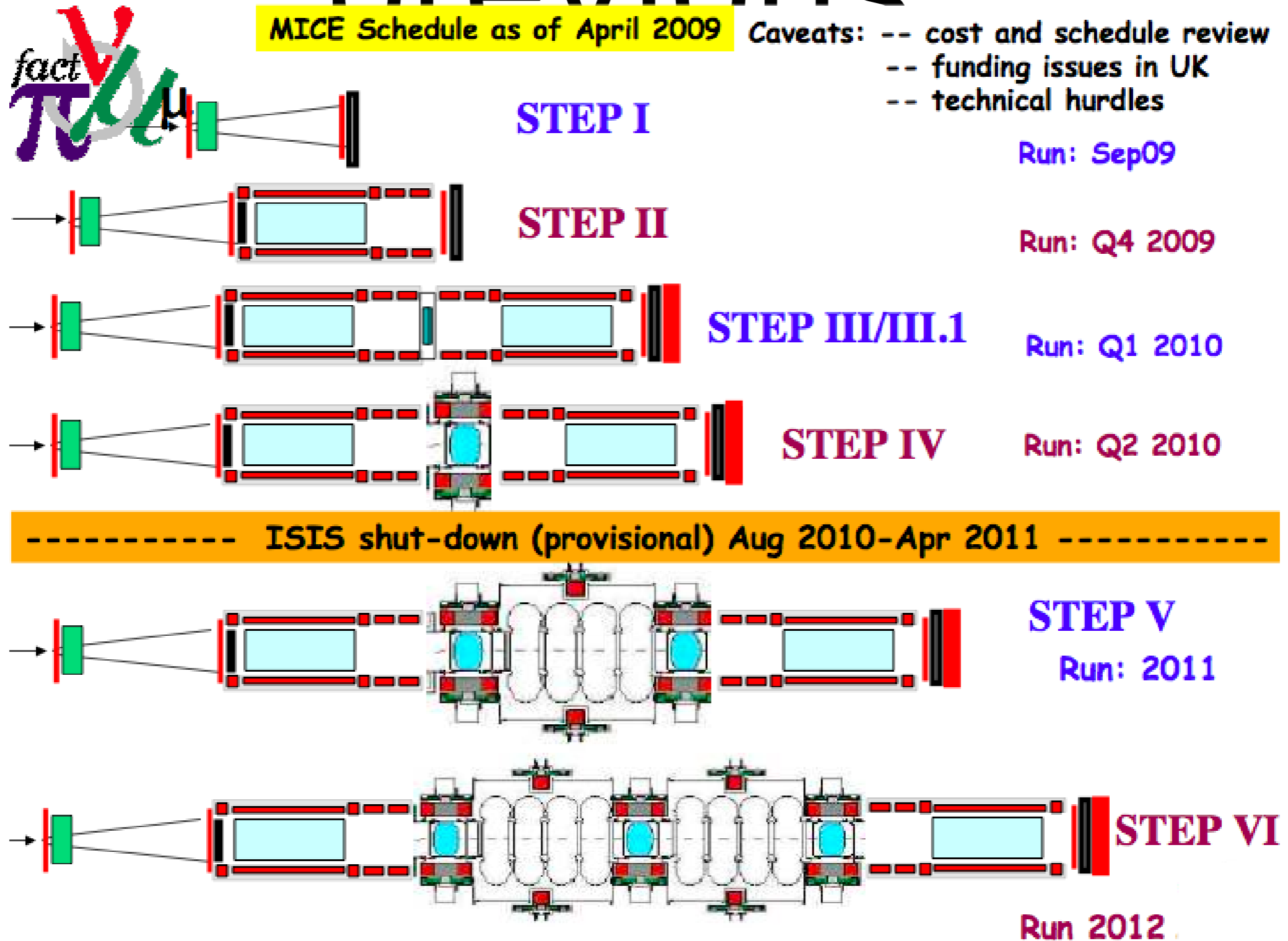
STEP VI

≥2013

As of 1 year previous:

MICE Schedule as of April 2009

Caveats: -- cost and schedule review
-- funding issues in UK
-- technical hurdles



Avoiding further delay

- MICE schedule already substantially delayed due to Spectrometer Solenoid & CC issues
- Crucial to move ahead on US MICE responsibilities ASAP
- further delays would have serious knock-on effects

MICE: US Costs to Complete

- Have just become available from Steve Virostek, following thorough reviews of both projects
- Costs reviewed and concurred with by Mike Zisman, Alan Bross, & DMK

Cost to complete SS's

Manpower	Hours	Type	\$/hr [^]	Total (k\$)
Analysis	280	Cryo Engr	160	45
Design Mods	280	Cryo Engr	160	45
Management	350	Sr Mech Engr	200	70
Fab Oversight	350	Sr Cryo Engr	140	49
Fab Oversight	420	Mech Engr	150	63
Testing/Training	140	Sr Mech Engr	200	28
Testing/Training	140	Mech Engr	150	21
Commissioning @ RAL	170	Mech Engr	150	26
Documentation	140	Sr Mech Engr	200	28
Documentation	140	Mech Engr	150	21
Fab/Procurement	Qty	Unit	\$k/ea	Total (k\$)
Cryocoolers (PT415)	1	ea	53	53
Contract Mods	2	magnets	25	50
Training Utilities	2	magnets	21	42
Training Cryogens	2	magnets	20	40
Shipping to FNAL	2	ea	5	10
Shipping to RAL	2	ea	10	20

Total cost: \$610k

Contingency: \$173k

Total w/contin.: \$783k

[^]manpower rates are with full LBNL burden

Cost to complete RFCC's

MICE RFCC Module Cost to Complete

RFCC Module Costs (w/o Coupling Coil)

Manpower	% Time*	Type	\$/hr^	FY11 (k\$)	FY12 (k\$)	FY13 (k\$)	Total (k\$)
Ongoing Design	15%	Mech Engrn	150	79	34	0	113
Fab Oversight	20%	Mech Engrn	150	30	45	75	150
Assy Oversight	10%	Mech Engrn	150	0	23	53	75
Documentation	10%	Mech Engrn	150	0	0	75	75
Management	10%	Sr Mech Engrn	200	40	40	20	100
Fab/Procurement	Qty	Unit	\$k/ea	FY11 (k\$)	FY12 (k\$)	FY13 (k\$)	Total (k\$)
Vacuum Vessels	2	ea	84	42	126	0	168
Vacuum System	1	ea	36	0	0	36	36
Support Stands	2	ea	17	17	17	0	34
Cavity Tuner Assys	50	ea	5	31	92	133	255
Beryllium Windows	8	ea	21	0	0	168	168
RF Windows	8	ea	18	0	0	144	144
RF Couplers	18	ea	7	0	84	42	126
Cavity Prep	10	ea	12	50	72	0	122
Assembly Fixturing	1	lot	60	0	36	24	60
Vessel/CC Integration	2	modules	70	0	40	100	140
Cavity Check Fit	2	modules	40	0	20	60	80
Shipping Skids	2	ea	18	0	18	18	36
Packaging for Shipping	2	modules	6	0	0	12	12
Shipping to RAL	2	ea	10	0	0	20	20
				288	646	979	

Coupling Coil Costs (including MuCool)

Manpower	% Time*	Type	\$/hr^	FY11 (k\$)	FY12 (k\$)	FY13 (k\$)	Total
Fab Oversight	30%	Mech Engrn	150	90	90	0	180
Fab Oversight	10%	Sr Cryo Engrn	140	28	28	0	56
Design Issues	5%	Sr Cryo Engrn	140	21	7	0	28
Consulting Fees		SINAP Cryo Eng		16	4	0	20
Travel				20	20	0	40
Fab/Procurement	Qty	Unit	\$k/ea	FY11 (k\$)	FY12 (k\$)	FY13 (k\$)	Total (k\$)
Cryocoolers (PT415)	6	ea	53	159	159	0	318
CC Conductor	60	km	1.4	84	0	0	84
CC Materials	1	lot	20	20	0	0	20
CC Sensors	1	lot	40	40	0	0	40
Shipping (MC to FNAL)	1	ea	6	6	0	0	6
Shipping (CC to LBNL)	2	ea	6	0	12	0	12
				484	320	0	

Overall RFCC Totals:

FY11 (k\$) FY12 (k\$) FY13 (k\$)
772 966 979

FY11 M&S Needs

Item	Cost (k\$)*	
SS's	783	
RFCC's	772	
Total	1555	
Less FY10 carryover	400	1155

* All costs fully burdened

Additional Request

- To make progress on cooling (MICE & 6D)systematics studies, we need a postdoc – given funding and hiring delays, start with 1/2 in FY11

Item	Cost (k\$)*
1/2 postdoc	41

* All costs fully
burdened

Additional Request

- Assuming that the SS arrive, Fermilab will need PD for setup, commissioning & operations of the FTs. Last person with experience (David Adey) leaves in May.

System Tests FY11 Budget Request

Item	Cost (k\$)*
M&S	1155
PD FTE	100
Total	1255

*All costs fully
burdened

- Note: MICE travel assumed to come out of IIT MICE NSF grant

Additional Request

- MICE support in PPD @ Fermilab. In the past these types of effort have been captured in a muon code in PPD. This year?
 - 1 mm technician (SS vacuum systems)
 - 4-6 mm EE
 - Setup/commissioning/FT firmware upgrade) + travel
 - 1 mm tech (Beam Profile Monitors) + travel