Status and Construction Schedule of ATF2

by T.Tauchi ATF2 Meeting, Annecy, 9–11 October 2006

Japanese Fiscal year	JFY2005							JFY2006								JFY2007																					
					200	5									20	06									·		2	007							200)8	
Activity	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10) 11	12	1	2	3	4	5	6	7	8	9	10) 1	1	.2 1	2	3	
Beam operation	A	TF							A	ſF			ATF	7							AT	F			ATF							A	TF		A	TF2	
Conventional Facilities																pl	lan							pre	para	tion		floo	r	ut	ility	7@A	ATF	2 sh	i d		
Magnets									24	-Q				test			5-Q, Bends (3), 6,8pc			poles		test			Final double			et test			-						
Magnet Support											S	supj	port							mo	vers	3 (27)														
Alignment																																					
Power supplies								þ	oroto	otyp	e									pro	oduc	ction						test	t								
QBPM						ł	prot	otyp	e	pro	dctic	on-1							рі	rodu	ictio	n-2															
IP-BPM								рі	rotot	ype	-1			test	-	p	roto	type	e 2			test					pro	oduc	tior	1							
Shintake monitor (BSM)							m	odif	icati	on	to th	ne h	half	wav	eler	ngth	; i.	e. 5	32n	ım v	vith	preo	cise	pha	se c	ontr	rol						tes	t at K	EK		
Laserwire														R	&D	at A	TF-	extr	ract	ion											pr	odu	acti	on			
Other instrumentation																																					
Feedforward & FONT4/5														•		R8	kD a	and	pro	duc	tion				•								test	at K	EK	1	
Vacuum																																					
Cable plant																															<u> </u>						
Control system																											<u>.</u>	<u> </u>									
Installation																																	1				
Funding Process								JF	Y20	06			call for UK fund JFY2007 JFY20					2008			_																

Component	Sub-component	Number	Comments	Status	Drosont	Now
Component	Sub-component	(no spares)	Comments	Status	11656111	INCW
	Quadrupole	29	with QD0,QF1	production	27	2
	Sextupole	5		design	0	5
	Octupole	2		design	0	2
Magnet	Bend	3	FF-bends =3	design	0	3
	H. Steering	3	horizontal		0	3
	V. Steering	2	vertical		0	2
	Cable of ext.kicker	2	re-location of two kickers		0	2
	Movers	27	20Q-magnets, QD0,QF1 and 5 sextupoles	SLAC	27	0
Magnet Support	Base	27	for each magnet except for the FD support	design	0	27
Magnet Support	Bends	3	support with base		0	3
	FD support	1	active movers for QD0,QF1,SD0,SF1 and BSM	CERN/LAPP and KEK	1	0
Power Supply	HA system	40	8(ExtQ), 6(MatQ), 5(Sext), 2(Oct), 16(FFQ), 3(B)	production		40
Vacuum	Beam pipe (m)	93.154	ATF extraction line at present and ATF2 beam line $(50, 612m)$	design	0	93.154
	Q-BPM for Q & Sext	33	(50.01511) (D18-21X) IHEP-Os except for QD0 QE1 SD0 SE1	production	30	-6
	O-BPM (s-hand)		with larger diameter (40mm) final doublet system	design	0	0
BPM		-	with larger diameter (40mm), mar doublet system		0	т
	stripline	4	especially for commissioning	production	0	4
	IP-BPM	3	2nm resolution for position jitter at IP	prototype	0	3
Wire scanner	Metal wire	5	exsit at the extraction line - relocation	existing	5	0
whe seamer	Laserwire	5	upgrade of the metal wire scanners	R&D	0	5
ID DCM	Shintake monitor	1	upgrade of the FFTB monitor, i.e. 532nm	upgrade	1	0
IF - DSIVI	Urakawa monitor	1	laser cavity type	R&D	0	1
Fast orbit	Feedforward	1	from DR to extraction line	R&D	0	1
correction	Feedback	1	intra-train fast feedback based on digital circuit	R&D	0	1
Commissioning	Screen monitor	4		exisiting	4	0
tools	Carbon wire scanner	1	beam size monitor at IP	design	0	1
ICT	beam loss	1	beam current monitor		0	1
Beam dump	ATF2 Beam dump	1	design is the same as the ATF one		0	1

reduction of dispersion





July 1, 2006



e

ATF2 Area view from west

.....

Beam Instrumentation and Magnets at FF

4 Screen monitors for commissioning, (1 at the ATF-EXT)

5 Stripline BPMS for commissioning

5 Wire scanners/Laserwires



Caution : not final dimension !



Laserwire signals at QD6 and QF5, SF5, QF5(2)

Sextupole Location

T.Okugi





Amplitude of GM

2nd mini-workshop on nano project at ATF,

11 Dec.2004

M.Masuzawa,



Floor tilt comparison



Tolerance of 8µrad for Bend at ATF2. (Kuroda) [10% beam size growth]

M.Masuzawa, 2nd mini-workshop on nano project at ATF, 11 Dec.2004

air temp







(1)Alignment target

(2) top halved line

(3)Magnet mechanical Center

(4) bottom halved line

August, 2006

BPM mount test

- go through the mount procedure
 - no geometrical difficulty for both sides of the magnetalig
- alignment accuracy
 - repeatability: 100um (overall the procedure), 20um (if the adapter was not removed)
- relation with the reference plane of the magnet is still under testing...

the reference jig













fix the BPM





September, 2006

BPM mount test (accuracy)

- systematic offset in the BPM mount procedure
 - jig to align the adapter < pole aperture
 - BPM diameter < inner diameter of the adapter (30um)
- pole aperture measurement
 - 2 x (A+C) + rod dia. (31.95mm)
 - checked several magnets in Nikko -> big variation
- relation between pole and the reference plate
 - direct measurement with a height gauge -> 215um difference from design for No08 magnet



00	R Graphics: Device 2 (ACTIVE)	
	mean: 32.059mm	
1	[*] rms: 70.4um	
Frequency		
	31.90 31.95 32.00 32.05 32.10 32.15 aperture	

August, 2006

BPM electronics test status

- SLAC people bring down-mix boxes (6?)
- The boards (without the box) have been tested at SLAC
 - done: gain and noise
 - not yet tested: cross-talk, non-linearlity, stability
- Test plan in KEK during their stay
 - stability test: measure same signal with more than two electronics and compare, record readbacks (temp., LO power, ...) from the box and check its correlation
- power consumption: 8V, 0.75A, temperature of the box: 37~38 degC





HA system by SLAC

 Example : a power system with Ethernet control that will provide 200A in a 4 out 5 redundant module configuration.





20

HA Power supply system for 40 magnets of

8(ExtQ), 6(MatQ), 5(Sext), 2(Oct), 16(FFQ), 3(B)

		1 1								1 I	
	AC	48 47 46	AC	48 47 46	AC	48 47 46	AC	48 47 46	AC	48 47 46	AC
		45		45		45		45		45	
	DCCT	44 43 42	DCCT	44 43 42	DCCT	44 43 42	DCCT	44 43 42	DCCT	44 43 42	DCCT
	EPSC	41	EPSC	41	EPSC	41	EPSC	41	EPSC	41	EPSC
	EPSC	40	EPSC	40	EPSC	40	EPSC	40	EPSC	40	EPSC
5	EPSC	39	EPSC	39	EPSC	39	EPSC	39	EPSC	39	EPSC
-	EPSC	38	EPSC	38	EPSC	38	EPSC	38	EPSC	38	EPSC
Ď	EPSC	37	EPSC	37		37	EPSC	37	EPSC	37	EPSC
5		35		35		35	FPSC	35	EPSC	35	FPSC
		34		34		34	EPSC	34	EPSC	34	EPSC
2		33		33		33		33	EPSC	33	EPSC
		32		32		32		32		32	
		31		31		31		31		31	
3	EQ150A 4.5 KW	30 29	EQ150A 4.5 KW	30 29	PLC	30 29	FFS 50A 1.5 KW	30 29	FFQ 50A 1.5 KW FFQ 50A 1.5 KW	30 29	FFQ 50A 1.5 KW FFQ 50A 1.5 KW
L J V	Fan	28	Fan	28		28	Fan	28	Fan	28	Fan
	ran	27	Tan	27		27	Tan Tan	27		27	
	EQ150A 4.5 KW	25 25 24	EQ150A 4.5 KW	25 25 24	MQ150A 4.5 KW	25 24	FFS 50A 1.5 KW FFS 50A 1.5 KW	25 24	FFQ 50A 1.5 KW FFQ 50A 1.5 KW	25 25 24	FFQ 50A 1.5 KW FFQ 50A 1.5 KW
	Fan	23 22	Fan	23 22	Fan	23 22	Fan	23 22	Fan	23 22	Fan
	EQ150A 4.5 KW	21 20 19	EQ150A 4.5 KW	21 20 19	MQ150A 4.5 KW	21 20 19	FFS 50A 1.5 KW FFS 50A 1.5 KW	21 20 19	FFQ 50A 1.5 KW FFQ 50A 1.5 KW	21 20 19	FFQ 50A 1.5 KW FFQ 50A 1.5 KW
1000	Fan	18 17	Fan	18 17	Fan	18 17	Fan	18 17	Fan	18 17	Fan
	EQ150A 4.5 KW	16 15 14	MQ150A 4.5 K/V	16 15 14	MQ150A 4.5 KW	16 15 14	FFO 50A 1.5 KW FFO 50A 1.5 KW	16 15 14	FFQ 50A 1.5 KW FFQ 50A 1.5 KW	16 15 14	FFQ 50A 1.5 KW FFQ 50A 1.5 KW
+ 5	Fan	13 12	Fan	13 12	Fan	13 12	Fan	13 12	Fan	13 12	Fan
	EQ150A 4.5 KW	11 10 9	MQ15DA 4.5 KW	11 10 9	MQ150A 4.5 KW	11 10 9	FF D 200A 6 KW	11 10 9	FFD 200A 6 KW	11 10 9	FF D 200A 6 KW
<u>ז</u> ז	Fan	8 7	Fan	8 7	Fan	8 7	Fan	8 7	Fan	8 7	Fan
	Bulk Power Supply P = 22.5 kW	6 5 4 3 2 1	Bulk Power Supply P = 22.5 kW	6 5 4 3 2	Bulk Power Supply P = 18 kW	6 5 4 3 2	Bulk Power Supply P = 16.5 KW	6 5 4 3 2 1	Bulk Power Supply P = 18 KW	6 5 4 3 2 1	Bulk Power Supply P = 18 kW



Japanese Fiscal Year

Summary

(1) Almost on schedule; i.e. the commissioning in February 2008 (2) Budget "reduction" at KEK - increase international contributions which have been recommended by KEK review committee and LCPAC06. - or delay the schedule

(3) In summer 2007, the floor will be constructed.
(4) ATF will be operated for Oct.-Dec. 2007 as much as possible.