Absorber-Focus Coil Safety Working Group Safety Review Plans

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CENTER FOR BEAM PHYSICS

RAL Safety Meeting
October 30, 2003

Outline

- December review
- Acknowledgments

December Review

- Dates: December 9–10, 2003
- Venue: LBNL
- Inputs to reviewers (posted on web one week prior to review)
  - written design report (draft document in progress)
  - MICE technical proposal
  - technical notes referenced in design report, if needed
- Requested outputs
  - oral closeout with AFCSWG ("public")
  - oral closeout with MICE management ("private")
  - written report suitable for MICE management, RAL management and RAL safety group
- Draft charge to Committee will be prepared for approval of Drumm and MICE management

December Review

- **Report outline**

1 Introduction
2 Description of the facility
3 Critical parameters
- *3.1 Physics-driven specifications*
  - 3.1.1 Need for hydrogen absorbers
  - 3.1.2 Need for thin windows
  - 3.1.3 Need for alternative absorbers
  - 3.1.4 Cell length requirements
  - 3.1.5 Magnetic field strength requirements
  - 3.1.6 RF gradient requirements
- *3.2 Operational demands*
  - 3.2.1 Specification of field configurations needed
  - 3.2.2 Table of different absorber materials required

4 Absorber/Focus Coil Technical Description
- *4.1 Overview*
  - 4.1.1 Absorber/focus coil configuration
  - 4.1.2 System parameters
  - 4.1.3 Interface engineering and safety
- *4.2 Absorbers*
  - 4.2.1 Liquid hydrogen absorber
  - 4.2.2 Solid absorbers
- *4.3 Focus Coil*
  - 4.3.1 Design description
  - 4.3.2 Cryostat design
  - 4.3.3 Focus Coil Interactions with the Absorber
  - 4.3.4 Interfaces to absorber and MICE
- *4.4 Integration*
  - 4.4.1 Focus coils pre-integration
  - 4.4.2 Absorber pre-integration tests and QA
  - 4.4.3 Integration
  - 4.4.4 Post-integration tests and commissioning
- *4.5 Safety considerations and interlocks*

5 Hydrogen system
- *5.1 System description*
- *5.2 Safety features*
- *5.3 System Components*
  - 5.3.1 Hydrogen Storage System
  - 5.3.2 Hydrogen fill system
  - 5.3.3 Purge system
  - 5.3.4 Window failure vent system
- *5.4 Technical Specification*
  - 5.4.1 Cool-down of the absorber
  - 5.4.2 Warm Up of the Absorber
- *5.5 Safety considerations and interlocks*
- *5.6 Location in hall*

6 Operations
- *6.1 Installation and testing of absorbers*
- *6.2 Filling and purging*
- *6.3 Normal operation*
- *6.4 Repair and maintenance*
- *6.5 Off-normal situations*
- *6.6 Safety considerations and interlocks*

7 Preliminary HAZOP
8 Summary
References
Supporting Documents

December Review

- Proposed agenda (rough)
  - **Tuesday, December 9**

8:30 a.m.	Executive Session (Committee, Drumm, Spokesperson, Deputy Spokesperson)
9:00 a.m. to 3:15 p.m.	Presentations (AFCSWG members)
3:30 p.m. to 5:30 p.m.	Executive Session (Committee, Drumm,?) Additional questions given to AFCSWG

  - **Wednesday, December 10**

8:30 a.m.	Executive Session (Committee, Drumm,?)
9:00 a.m. to 10:15 a.m.	Responses to questions, if needed (AFCSWG members)
10:30 a.m. to 3:00 p.m.	Report Preparation (Committee)
3:15 p.m.	Closeout with AFCSWG
4:00 p.m.	Closeout with MICE management

December Review

- **Detailed agenda**

Tuesday, December 9

Time	Talk	Speaker
8:30 a.m. - 9:00 a.m.	EXECUTIVE SESSION	
9:00 a.m. - 9:20 a.m.	Context of Review: AFCSWG Task	Zisman
9:20 a.m. - 9:40 a.m.	Overview of Experiment and Parameter Choices	Barr
9:40 a.m. - 10:10 a.m.	Component Implementation: Magnets	Green
10:10 a.m. - 10 30 a.m.	BREAK	
10:30 a.m. - 11:00 a.m.	Component Implementation: Absorber	Cummings
11:00 a.m. - 11:30 a.m.	Component Implementation: LH_2 System	Bradshaw
11:30 a.m. - 11:55 a.m.	Component Implementation: RF System	Li
11:55 a.m. - 12:15 p.m.	Component Implementation: Detectors	Bross
12:15 p.m. - 1:15 p.m.	LUNCH	
1:15 p.m. - 1:45 p.m.	Magnetic Forces and Quench Issues	Baynham
1:45 p.m. - 2:45 p.m.	R&D, Testing and Certification Program	Lau
2:45 p.m. - 3:15 p.m.	Hazard Summary and Preliminary HAZOP	Ivaniouchenkov
3:15 p.m. - 3:30 p.m.	BREAK	
3: 30 p.m. - 5:30 p.m.	EXECUTIVE SESSION (preparation of additional questions)	
7:00 p.m.	DINNER (no host)	

December Review

Wednesday, December 10

Time	Talk	Speaker
8:30 a.m. - 9:00 a.m.	EXECUTIVE SESSION	
9:00 a.m. - 10:15 a.m.	Responses to Questions or REPORT PREPARATION	tbd
10:15 a.m. - 10 30 a.m.	BREAK	
10:30 a.m. - 12:00 p.m.	REPORT PREPARATION	
12:00 p.m. - 1:00 p.m.	LUNCH	
1:00 a.m. - 3:00 p.m.	REPORT PREPARATION	
3:00 p.m. - 3:15 p.m.	BREAK	
3:15 p.m. - 4:00 p.m.	CLOSEOUT with AFCSWG	
4:00 p.m. - 4:30 p.m.	CLOSEOUT with MICE management	
4:30 p.m.	ADJOURN	

December Review

- **Committee members**

Person	Institution	Accepted
Del Allspach	Fermilab	Yes
John Weisend	SLAC	Yes
Mikell Seely	Jlab	Yes
Jim Wells	RAL	Yes
Gianpaolo Benincasa	CERN	Yes
Harold Beeson	NASA	Yes
Kimio Morimoto	KEK	Yes, but cannot attend

- **Chairperson is John Weisend**

Acknowledgments

- Work being reviewed represents the strong efforts of the AFCSWG members

Giles Barr (Oxford)
Elwyn Baynham (RAL)
Ed Black (IIT)
Tom Bradshaw (RAL)
Mary Anne Cummings (NIU)
Mike Green (LBNL)
Shigeru Ishimoto (KEK)
Iouri Ivaniouchenkov (RAL)
Wing Lau (Oxford)

Mike Zisman (LBNL), convener

- Link to our group activities, found on main MICE web site, is http://hep04.phys.iit.edu/cooldemo/afcswg/afcswg.html
  - meeting presentations are all available, thanks to Yağmur Torun