

# Spokesman's update

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**UPDATE:**

- **MICE Hall:**

- **North side PRY:**

- **Material arrived at Liverpool:**

- Being unpacked from the containers and then sent to RAL

- **SSs on the line; dowedled in place:**

- Positioning agreed with magnetic-field analysers (VB et al)
- Cryocoolers and “fit-out” under way; Kyle+Adrian ...

- **FC and absorber:**

- Preparation of LH2 system proceeds;
- Module offline, vessel fitter



- **Preparations:**

- **Vacuum:**

- Steady progress on installation of backing vacuum

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**STEP IV:**

# Construct/commission/operate!

- **First muon-beam data!**
  - **Weekend running in April, successful:**
    - **Calibration re-visited**
    - **Muon-beam settings used to take data:**
      - Data to begin study of preparing a beam for injection to MICE now available
  - **Success:**
    - **We achieved essentially all of our goals:**
      - Only three-hours worth of muon-beam data outstanding
    - **Snag:**
      - Unable to advance the tracker r/o commissioning with beam
- **June 2015 (2015/01a) run plan being developed:**
  - **Commissioning:**
    - **Magnets and tracker with beam**
  - **Shifts:**
    - **3 shifts / day:**
      - 2 shifters on evening shifts for data-taking, 10pm to 6am.
        - » Actual shifts may depend on magnet commissioning status on the day.
      - 1 floating shifter to cover any short-fall or request for expert running at other times. Data for calibration of TOF2, KL, EMR
- **Shift plans for 2015/01b and beyond to be discussed at EB tomorrow**

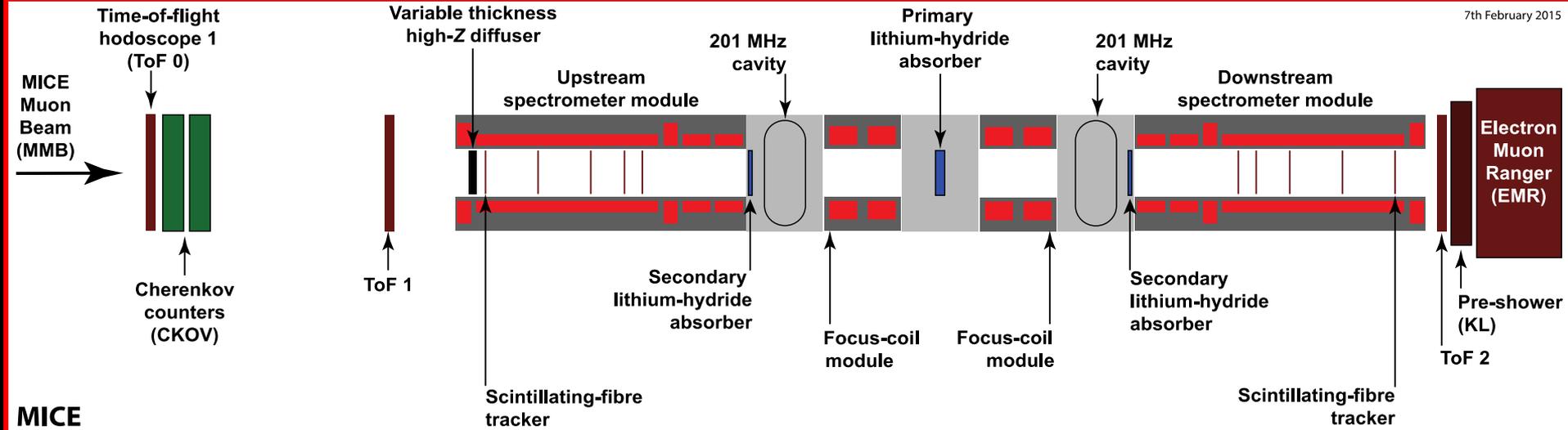
- **Partial Return Yoke implementation:**
  - Review called by MICE/ISIS Safety Committee
  - Met: 28Apr15
  - Notes from close-out:
    - Installation of south PRY “looks good”
    - Variety of actions including:
      - Panel requests cryogenic-safety analysis including catastrophic loss of vacuum.
      - Stray-field measuring plan to be put together and presented to the ISIS/MICE Safety committee.
- **RF cavity review; LBNL 29/30 April:**
  - Review called by MAP/MICE to ensure readiness to manufacture Single Cavity Modules
  - I believe review was successful:
    - Actions and notes to be circulated

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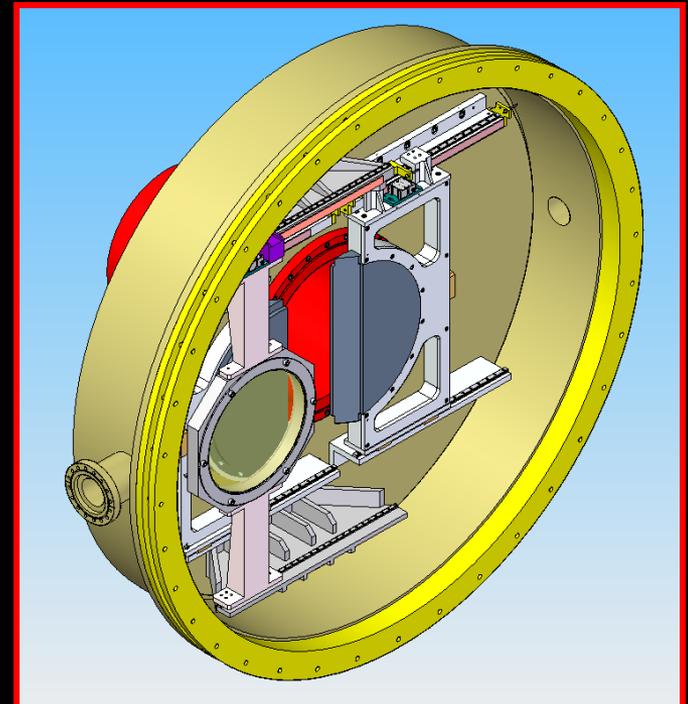
# COOLING DEMO

# Cooling demo configuration

7th February 2015



- **Secondary absorber position:**
  - In the space between the cavity and the spectrometer
  - Initial design: N. Collomb
- **Optimum cell length identified:**
  - ~ —8 cm shorter than in MICE Note 452;
  - J. Pasternak, J.B. Lagrange investigating minimum
  - Draft paper in preparation (see later)



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**PAPERS**

# Papers:

Table 2: Physics and technical papers being prepared by the collaboration.

Title	Lead authors
<b>Step I physics</b>	
Electron Muon Ranger: performance in the MICE Muon Beam <b>EMR: draft being prepared by authors and wise-persons</b>	A. Blondel, F. Drielsma, R. Asfandiyarov
<b>KL: upper limit on pi-contamination; progressing to analysis Note</b> Measurement of the pion contamination in the MICE Muon Beam	D. Orestano, D. Nugent, P. Soler
<b>Step IV physics</b>	
Commissioning of the MICE experiment in the Step IV configuration <b>As last time: work organised; focus on getting experiment off the ground</b>	C. Rogers
<b>Ionization cooling demonstration</b>	
Design and expected performance of the MICE demonstration of ionization cooling <b>Draft in preparation</b>	V. Blackmore, J. Pasternak, C. Rogers
<b>Technical</b>	
The MICE target upgrade <b>Draft being assembled.</b>	C. Booth
The design construction of the MICE Electron Muon Ranger <b>Draft under review in the EMR group</b>	R. Asfandiyarov, A. Blondel, F. Drielsma
The Reconstruction Software for the MICE Scintillating Fibre Trackers <b>Draft at advanced stage: issue in track-fit being debugged</b>	S. Dobbs
The MICE Analysis and User Software framework	D. Ragaram

**Need to push on the papers; particularly those marked in red!**

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# **OUTCOME OF APRIL RLSR/MPB REVIEWS**

At the last RLSR a revised project schedule was defined and this is now referred to as the re-baselined schedule and is the master schedule against which progress will be monitored to the completion of the experiment. Very good technical progress has been made since the last meeting with the first stage of the PRY wall now installed in the MICE Hall. Furthermore, data-taking at weekends has begun in preparation for Step IV and to shake-out the controls and data analysis systems (which is a Project Board issue).

Committee	Id	Action	Owned by	Lead
RLSR	1	The project should undertake a cost-benefit analysis to determine replacing the Lithium Hydride secondary absorbers with plastic.	MIPO/ MEMO	Preece/ Rogers
	2	The project needs to maintain a very close scrutiny on the staffing requirements in the MICE Hall for the installation and commissioning of the equipment for Step IV and Cooling Demonstration to maintain schedule.	MIPO	Preece
	3	The US should ship the RF modules sequentially in order to maintain maximum contingency in the schedule for the Cooling Demonstration.	MIPO	Palmer/ Bross
	4	The STFC Executives should urgently identify solutions to resolve the RF Engineering staffing shortfall, so that proper planning can be undertaken by the project.	STFC	Long

We wish to congratulate the MICE collaboration for all the hard work that they have performed, and for all the excellent progress that has been made in the 5 months since the last MPB. Most of all, congratulations on beginning to take calibration beam data in preparation for Step IV running!

<b>Technical Systems</b>			
1	Strengthen the team preparing the controls and monitoring system.	MIPO	Long/Preece
2	Work together with the suppliers of the RF system in order to advance full testing with cavities in the MICE hall. (Also see RLSR recommendation).	MIPO	Preece
3	Carefully monitor the status of the decay solenoid system and consider implementing a deeper study to the possible cause of its quenching.	MIPO/MEMO	Boyd/Nichols
<b>Data Acquisition, Simulation and Reconstruction</b>			
4	Review the requirements for accurate end-to-end simulation (e.g. G4 beamline) of the full beam-line, and quantify the effects on final analysis of using an approximate simulation. This should form part of the review of the Accelerator Physics Beam Dynamics programme recommended below.	EB	Long
<b>Commissioning, Operations and Data Analysis</b>			
5	Maintain momentum in the implementation of the practical safety and operational steps required between now and the start of Step IV data taking.	MIPO/MEMO	Nichols
6	Continue the beam-line optics studies in order to further optimise the process of transfer matrix measurement and incoming beam channel matching.	MIPO/MEMO	Pasternak
7	Report, in a MICE note to the collaboration, the definitions and methods used for the determination of the betatron functions and emittances.	MEMO	Rogers
8	Carry out an independent review of the beam dynamics analysis using this as an opportunity to renew contacts with the Accelerator Physics community. The aim is to ensure that the best set of techniques and tools are used in cross-checking the analysis of the muon dynamics, so that the best values are extracted from the experimental data.	EB	Long
9	Define strategies to provide online feedback, quickly, to ensure end-to-end efficiency and quality given the restricted time available.	MEMO	Boyd
10	MICE management to request Professor Womersley to write to Jim Siegrist (DOE) and a representative from the NSF (C. Denise Caldwell or F. Fleming Crim) to point out the opportunity for U.S. physicists to engage fully in the operations, data-taking and analysis of this unique experiment, and to fully exploit the significant capital investment, during the Cooling Demonstration.	EB	Long

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**EVENT**

# Draft announcement

On the 25th June 2015 the STFC Rutherford Appleton Laboratory is hosting an event to mark the start of the study of ionization cooling with the international Muon Ionization Cooling Experiment (MICE). Ionization cooling is the technique by which it is proposed to reduce the muon-beam phase space in a future neutrino factory or muon collider.

The event, which has been jointly organised by the collaboration and STFC, will start with an “extended seminar on the physics potential of muon-accelerator based experiments in the field of new physics at the energy frontier. The staged development of the programme and the technologies required will be discussed. A short course, the start of the MICE experiment and its future development will be presented. A public lecture will be given. Finally, a short reception after the public lecture will allow for formal discussion of the scientific and technological opportunities that the programme has to offer.

The event will take place in the backavance lecture Theatre at the Rutherford Appleton Laboratory through time for the event.

- 13:30–17:00 — Extended seminar on the physics and technology of cold muon beams
- 17:30–18:30 — Public lecture by a distinguished scientist
- 18:30–19:00 — Reception
- 19:00 — Adjourn

Details of the programme will be circulated in due course.