



MOM Report

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Introduction



- **MICE** Run 1 covers ISIS operating period from February 5 through March 13, 2008
 - plus a few days of machine development time at the end of the user run
- Making considerable progress in getting ready for beam
 - but, we are not yet ready
- As expected, surveys taken during ISIS run-up showed **no evidence for beam-related radiation** in either DSA or Hall
 - Hall access presently unrestricted
 - will need permanent radiation monitors in area
 - ion chambers IG5, coupled to HV/alarm trip above threshold (2 ea.)
 - DSA remains locked while ISIS is operating
 - a “splash test” to simulate worst-case accident being discussed
 - my view: do not count on unrestricted access to DSA
 - ♦ hard to prove definitively that something bad cannot happen



MOM Tasks



- **MOM has delegated authority**
 - from PM in matters of safety
 - from Spokesmouse for day-to-day running of experiment
- **MOM is first point-of-contact for MICE matters at RAL**
 - acts as shift manager during running
 - on call 24/7 as needed, e.g., to search and secure areas
- **Interfaces routinely with**
 - Project Manager (**Apsimon**)
 - CDM Principal Contractor (**Spensley**)
 - Technical Coordinator (**Nichols**)
 - Spokesmouse (**Blondel**)



MOM Requirements



- Formal registration with both ISIS and RAL
 - results in site pass, personal dosimeter
 - and a lot of spam
- Construction Design and Management training from Principal Contractor or Deputy
 - required for unaccompanied access to Hall
 - all MICE personnel require this
 - propose group session during this meeting
- RAL Safety Induction Course
- ISIS on-line training
 - requires passing test (on site)
- Awareness of all aspects of MICE status (beam, equipment, operating instructions, risks,...)



MOM Responsibilities



- **Planning of experimental runs**
 - ensure good communication within **MICE** and with relevant **ISIS** experts
 - prioritize demands for resources
- **Represent **MICE** at ISIS users beam operations meetings**
- **Coordinate all issues of safe operation of our equipment**
 - approve any extensions to operational envelope
 - in coordination with PM, CDM-PC, ISIS RPA
- **Ensure qualified shift coverage**
 - must cancel shift if not properly staffed (≥ 2 persons)
 - monitor number of hours worked by all staff (safety issue)
 - exclude unfit people from
- **Ensure adherence to CDM rules**
 - no smoking, no food/drink in Hall



MOM Pay



- **Present situation**

- incremental pay: £0
- hourly pay: decreases by about 50%
 - if you're lucky

- **Nonetheless, this role is critical to the success of the experiment**



MOM Observations (1)



- There is a MOM phone that will be passed from person to person
 - 07527 928 683
 - this phone does not work in the Hall or R76 (no phone works in the Hall)
 - works at Ridgeway House
 - need to see if there's a better network at RAL (Vodaphone?)
- Worthwhile to set up a generic MOM e-mail account
 - will make transitions much easier on RAL and ISIS staff
 - and even MICE staff
 - ideally, the account would notify the current MOM that there was mail
 - keeps MOM communications all in one place to be reviewed by MICE management



MOM Observations (2)



- **MOM start-up phase is difficult**
 - there are lots of people to meet
 - ISIS operations and RPA
 - contractors and engineers
 - Daresbury staff
 - and probably many folks I still have not identified
 - there are many meetings to attend
 - in numerous conference rooms scattered throughout the site
 - some are standing meetings, some are *ad hoc*
 - tradition of automatically including the MOM has not yet taken hold
 - searches of the Hall do not always come with much notice
- **Setting priorities and keeping work focused is not easy**
 - requires always concentrating on what is not done
 - also requires an ongoing list of what needs to be done in the synchrotron in case there is opportunity for access



MOM Observations (3)



- **Continuity is an issue**
 - it will be difficult to maintain this through many changes
 - can Spokesmouse and Deputy help without undermining the MOM?
- **Changing MOM in mid-run is not optimal**
 - and not exactly consistent with our written description of the role
- **There should be one or more specific goals we wish to accomplish during each running period**
 - priority decisions, where needed, can be made in this context
- **We appear to lack sufficient in-house (RAL) electrical engineering staff**
- **Hall shielding is becoming major perturbation on schedule**
 - need to revisit all aspects of the plan to see if we can streamline it



MOM Observations (4)



- Operations manuals for essentially all items do not exist
 - violates both promises and regulations
- We are weeks away from starting...without a decision on how to implement a log book
 - paper or electronic
 - we should already have something in place
 - certainly within the next 10 days!
- We need an on-call list of people who can show up on relatively short notice and stay for a week or so (GG)
 - likely to be mainly UK locals but could include those farther away
- What is needed to be able to enter Hall with magnets on?
 - even Q7, Q8, Q9 are an issue, not just SC magnets



Accomplishments (1)



- Target 1 tested and essentially operational
 - target 2 expected at RAL on Wednesday
- Defined and documented magnet polarity convention **MICE**
Note 198 (**Tilley, Flower**)
 - positively charged particles
 - all supplies connected + to + and - to -
 - negatively charged particles
 - all supplies connected + to - and - to +
 - optics changes in quadrupoles, if required, will be implemented at the magnet end to maintain the convention
 - what about solenoid?
- All installed magnets (except DS) are connected to power supplies according to our convention
 - D1, D2, Q1, Q2, Q3, Q4, Q5, Q6
 - and polarities checked



Accomplishments (2)



- Temporary beam monitors were tested with ^{60}Co source (**Roberts, Flower**)
 - substantial cross-talk observed + some dead channels
 - downstream monitor removed from DSA for repair (under way)
 - needed radiation survey of the device for this
 - upstream monitor in vault has substantial background and some noise issues as well
 - more diagnosis needed
 - documented as **MICE** Note 200
 - simulating expected performance so we have something to compare with
- Good progress on beam line optics (**Tilley, Roberts**)
 - working on modified solution optimized for channel without DS
 - have backup doublet solution in case Q1 power supply unavailable
 - start with positively charged beam to see protons (intensity issue)



Accomplishments (3)



- **ISIS electricians worked several late nights to get the DSA magnets connected**
 - to power
 - to the interlock chassis
 - to earth
- **ISIS staff are working diligently to complete water connections for all magnets and power supplies**
 - D1, D2, Q1, Q2, Q3 magnets connected
 - Q4, Q5, Q6 still not (requires DSA access)
 - D2, Q4, Q5, Q6, Q7, Q8, and Q9 power supplies still do not have water
- **Hall infrastructure work now organized by **Tim Hayler****
 - A/C, cabling, floor modifications, false floor for components, RF power...
 - will maintain schedule, collect and monitor milestones



Accomplishments (4)



- **MLCR is now more or less operational (Kyberd, Graulich, Verguilov, Colin Barry and crew)**
 - cabling is mostly done
 - target operated successfully from there
 - DAQ equipment moving in
 - network installation proceeding



MICO Meeting Organization



- To succeed, we need to focus on managing the project—and our technical progress—against milestones
 - MICO meeting must be a tool to this end
 - in particular, action items must be identified; these must include a person responsible and a date for completion
 - these will be monitored and tracked weekly (as opposed to weakly!)
 - need someone to serve as secretary
- Propose change in how this meeting operates in the future
 - Technical Coordinator will present a summary each week of upcoming milestones and action items over the next few-month period
 - status reports must focus on progress towards these milestones
 - or reasons why they are not being met, plus proposed remedial action
 - “show and tell” presentations should be reserved for video conferences and review committees, not MICO
- Meeting will be kept short (takes a lot of discipline)



Sample Agenda



- Action item and milestone summary [**Nichols**]
- ISIS issues [**Rogers**...as needed]
- Target 1 & 2 [**Booth**]
- Cryogenics (decay solenoid, Linde plant, LH₂) [**Courthold**]
- Hall infrastructure (mech., electr. & RF) [**Hayler**]
- PPS [**Alexander**]
- Controls [**Martlew/Oates**]
- DAQ [**Graulich**]
- Spectrometer Solenoids + RFCC module [**Virostek**]
- AFC module (incl. absorber) and integration [**Lau**]
- Detectors (beam line + **MICE**) [**Bross**]
- Commissioning needs [**MOM**]

≤ 5 min. each; if nothing new to report, simply indicate so



Proposed Goal (1)



- Critical “deliverable”: **get beam to the end of the DSA**
 - this requires many pieces to fall into place in a short time
 - target 2 must be installed at RAL and pulsing correctly
 - target 1 must be allowed to pulse in ISIS
 - requires permission to do some testing during the ISIS user run
 - ◊ we must be fully ready for this to happen!
 - a **synchrotron access is needed to open gate valve**
 - magnet power supplies must be operable
 - requires completion of all cabling (magnets, mains, interlocks)
 - ◊ and **certification** that supplies are usable
 - ◊ which means interlocks tested (**requires a short access to synchrotron vault**)
 - requires availability of water (Q4, Q5, Q6 not connected yet)
 - ◊ ideally, with flow switches operable
 - DAQ + at least one detector must be available to record particles
 - what level of PPS is needed for initial operation?



Proposed Goal (2)



- there are other items “nice to have”
 - these would improve running, but would not necessarily hold us off
 - examples:
 - network connection to power supplies for readout and remote control
 - availability of Q1 power supply (have optics solution for “doublet”)
 - availability of CKOV and TOFO
 - ◊ with properly aligned stand
- availability of MICE water is an issue
- question of ISIS MPS is also an issue
 - we have discussed an interim technical solution to get us on the air
 - requires minor modifications of ISIS circuitry to work with MICE
 - ◊ known for a while, but not yet implemented
 - ◊ not much time left for this
- This “simple” goal is enough to keep everybody very busy!
 - and I will leave without seeing it met ☹



Target Discussion



- A meeting was held on February 8 to update ISIS management on target status
- In general, progress on Target 1 was well-received
 - need to try to understand and mitigate observed “sticking” when stepper motor is at its up and down limits
 - need to unlock and open isolation valve
 - **GOOD NEWS: we should be able to get some actual pulses after T2 test**
 - with likelihood of **additional time in post-run machine development run**
- For Target 2, criterion is 1 week of operation (500K pulses) before operating Target 1 (**⇒ February 20**)
 - need, over time, to familiarize ISIS crew with its operation
 - need to make sure laser system is operationally safe
 - suggestion is that we make spare vacuum chamber...just in case
 - ISIS MCR needs to be able to monitor Target 2 test process



Final Remarks



- We do not control all aspects of our own fate
 - but those we do control need to get done expeditiously
- We must press to do things in parallel where possible
 - e.g., ordering cables and trays prior to having final locations
- We must focus on the key items and avoid getting distracted
- By the end of this running period we must strive to have **STARTED TO RUN**



Kudos



- Thanks to **Kevin Tilley**, **Paul Flower**, and **Tom Roberts** for their efforts on the beam line preparations
- Thanks to **Bastian Söllner** and **Mike Courthold** for laboring so hard with Linde refrigerator (not yet completed)
- Thanks to **Colin Barry** for coordination efforts on cabling
- Thanks to **Martin Hughes** and the ISIS electrical staff for yeoman efforts to get the magnets connected
- Thanks to **John Govans** and the ISIS plant crew for the water connections
- Thanks especially to **Willie Spensley**, our "badder cop," without whom none of this progress would happen