

# MICE Commissioning and Operations

Paul Hodgson

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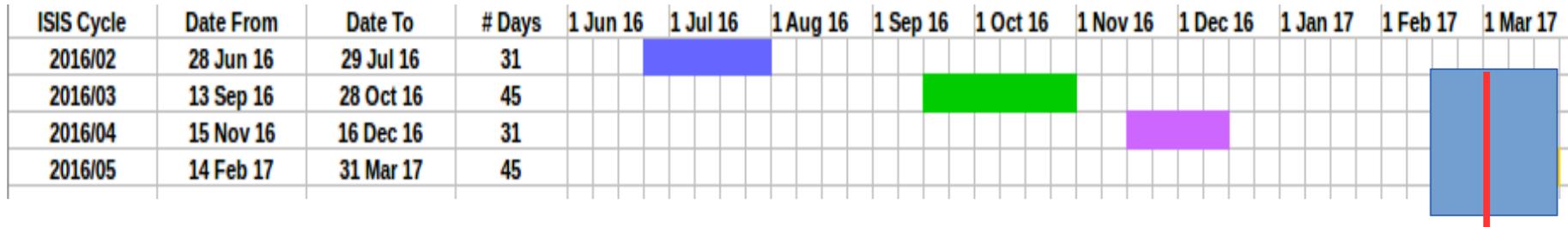
# The MICE Operational Modes

- The MICE experiment operates in two distinct modes
  - **Commissioning Mode** – Planned to coincide with ISIS shutdown periods
    - Equipment is being installed and commissioned in the experimental hall
  - **Operations Mode**
    - Normal data taking during ISIS user runs
- These different modes require careful planning to ensure the efficient running of the experiment

# Operations

- Running periods since the last report
- System performance and data-taking stability
- Shifts and manpower
- Plans for future cycles

# Operations since the last review



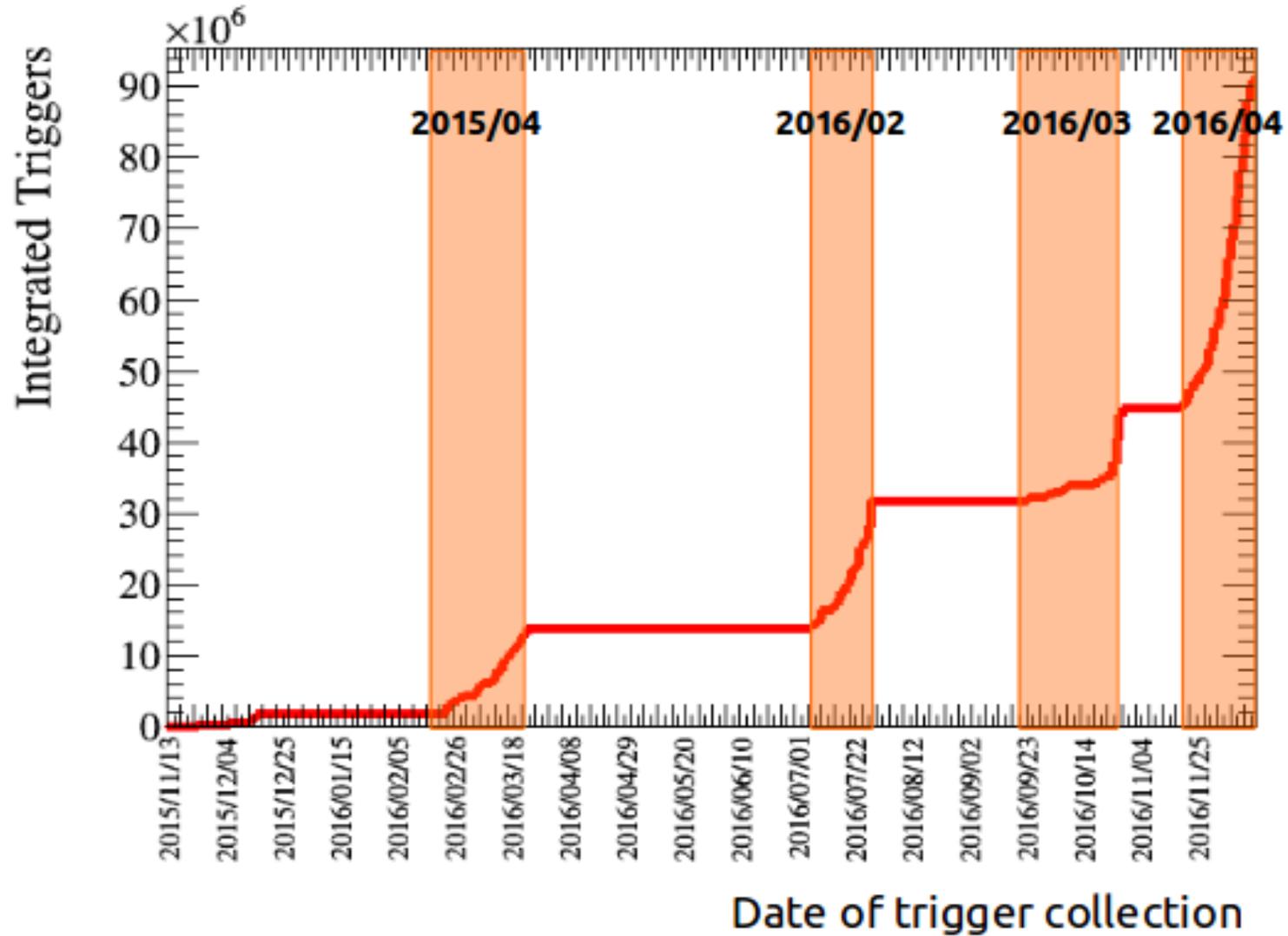
**Cycle 2016/02 (28 June 16 - 29 Jul 16):** Commissioning cycle. Data-taking was largely for calibration and magnetic field mapping.

**Cycle 2016/03 (13 Sep 16 – 28 Oct 16):** Materials programme : Empty target data-taking in solenoid mode.

**Cycle 2016/04 (15 Nov 16 – 16 Dec 16):** Materials programme : LiH running; Emittance change measurements for a variety of input beam emittance and momentum settings. Solenoid mode.

**Cycle 2016/05 (1 Feb 17 – 6 Mar 17):** LiH running; Emittance program in flip mode. Shortened run to prepare for Liquid Hydrogen installation.

# Data Summary



# Major issues

- Data-taking is generally extremely stable. There have been some issues which have limited the total data-taking time
- Magnet ramps offer the potential of a quench. This has happened at the start of the current user cycle (the first time the channel had been ramped in flip mode so perhaps not unexpected) and tends to delay data-taking by a few days
- ISIS has had significant downtime in some cycles (2016/05 for example had ~1 week of downtime, which is 1/3 of our planned run time)

# Shifts

- Data-taking shifters typically sit a 5-day block of 8-hour shifts in a team of 2.
- When Spectrometer Solenoid magnets are operating, the magnets must be monitored. This requires one shifter in the MLCR around the clock. This implies that 3 shifters are required even if no data is being taken.

Cycle	# shifts offered	# shifts taken	Shift mode
2016/02	100	100	16 hours / day
2016/03	106	96	16 hours / day
2016/04	168	148	24 hours / day
2016/05	100	94	24 hours / day

- Shifts are being supported by the collaboration

# Manpower

- Over the last 6 months there has been some manpower loss which has not been replaced : students have graduated, 2 senior RAs have moved on and several key collaborators have found other positions.
- This has put some pressure on available manpower for shift operations. We are now more dependent on academics for shift support and they are constrained by teaching, and other, commitments which are not easily circumvented.
- We mitigate by offering shifts well in advance (currently 1 month) to allow academics to fit in around other commitments, but full 24/7 running over an entire user cycle is becoming harder to fill.

# Next user cycles

- 2017/01 (May 2 – June 2) : Liquid Hydrogen running
- ~~2017/02 (July 11 – August 4)~~ : Nominally the last Step IV
- data-taking run – now cancelled by ISIS.
- 2017/02 (Sept 19 – Oct 27) : Requested to replace the lost run.

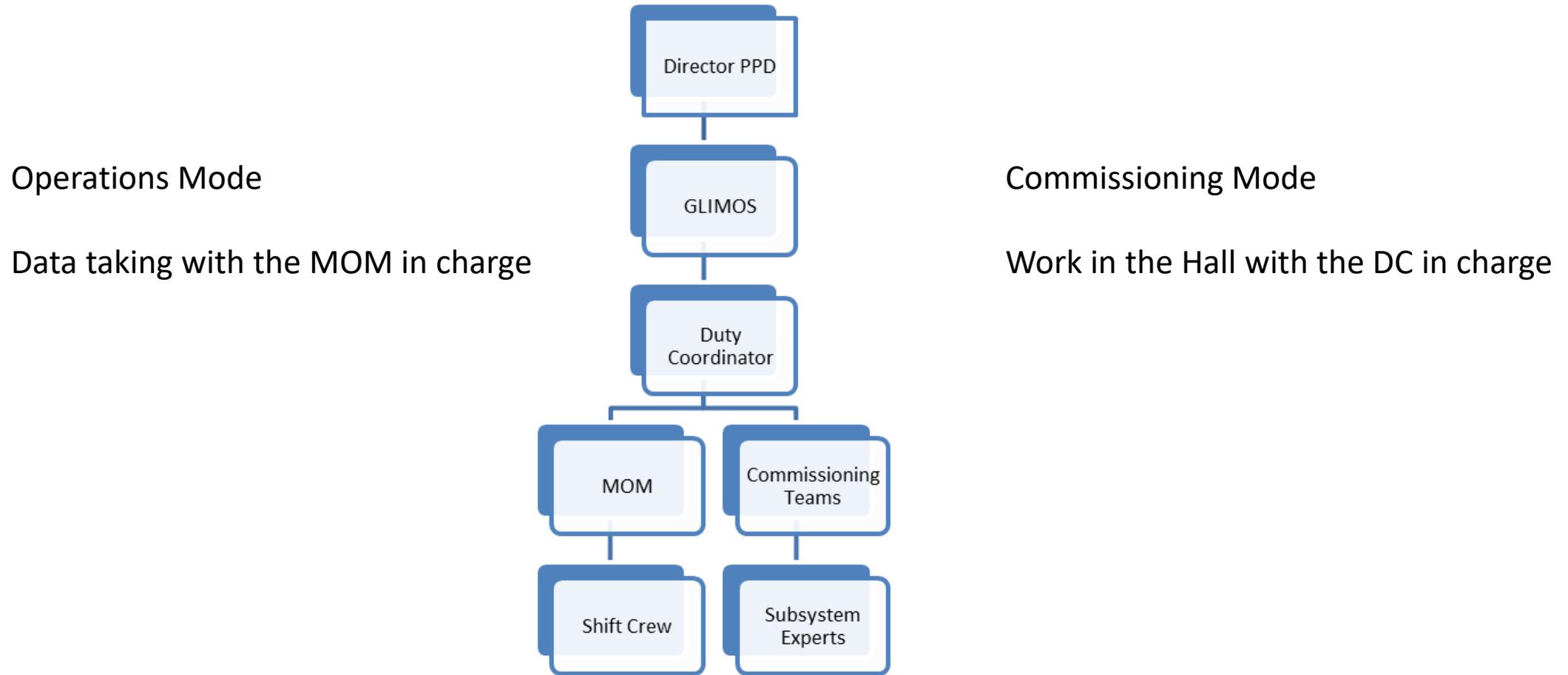
# Summary of Operations

- LiH materials programme is well advanced
- Emittance change measurements are underway
- Liquid Hydrogen measurements are planned for cycle 2017/01
- The manpower pool has shrunk a little in recent months. Data-taking can still be maintained but requires careful and active management.

# The Duty Coordinator Role

- The Duty Coordinator (DC) role can be summarised as follows:
- To run the experiment on a day to day basis in a **safe** manner, as defined above, working with the GLIMOS and the MICE Operations Manager.
- The Duty Coordinator is expected to be present in the MICE control room at all times during commissioning and be on call during operations.
- The role of the DC has been defined in order to minimise conflicts between the MICE operational modes and ensure **safe** operation of the experiment

# The Basic Organisational Chart



# Current Status of the DC System

- There are currently 4 DCs in post
  - Paul Hodgson
  - Craig Macwaters
  - Victoria Blackmore (Standby DC)
  - Alan Young (New in post)
- There is a DC rota with coverage extending through 2017
- The interleaving of DC/MOM and Commissioning/Ops has worked well over the past year

# Changes to the DC System

As a result of experience gained over the last year a number of minor changes have been implemented

- Additional electrical safety training for the DC's
- Improved key lockout procedures
- Improved documentation for various procedures (Lockout box usage, Magnet ramping and equipment status records etc.)

# Summary

- The implementation of the DC/MOM system has enhanced coordination between the operations and commissioning phases of the experiment
- The lines of communication are now much clearer
- The implementation of the STFC SHE safety framework within MICE is now more robust with a DC either on call or at the hall when required