

Detector Operations Support: Muon Campus

Peter Wilson
PPD Engineering Dept Heads
March 10, 2014

Agenda

- Operations Support Model
- Draft FY15/16 Muon Campus Budgets
- g-2 Operations Needs FY15-17
- Mu2e Operations Needs FY15-17
- Discussion

Operations Support

- One critical part of 2011-12 reorganization of engineering depts was aligning elements of the departments for support of operating experiments
- Goal: provide better operations support to IF experiments without the large dedicated groups of CDF and D0
- Cover all aspects of technical support:
 - Mechanical technicians from DDOD
 - Engineering Physicist/Application Physicists in DDOD
 - Electrical and electronics support from EED
 - Software support from EED
 - Mechanical engineering and process controls from MED
 - Alignment from AMD
- First 1+ year was shutdown... now refocus on operations

DDOD Operations Groups

DETECTOR OPERATIONS

(J. Fagan)

EXPERIMENT OPERATIONS

D. Allen Ldr.

D. Beckner
C. Cahill
J. Grado
J. Humbert
B. Vollmer

PROJECT TESTING & COMMISSIONING

P. Simon, Ldr.

R. Barger
R. Flores
W. Frank
P. Healey
B. Johnson
R. Kubinski
J. Najdzion

Former CDF and D0 groups have the primary expertise for operation and maintenance of Cryogenics and other experiment support systems. Form the backbone for muon campus cryo operations in PPD

INTENSITY FRONTIER & TEST BEAM

M.A. Soha, Ldr.

S. Hahn
B. Lee
T. Nebel
E. Schmidt
J. Taccki
(E. Skup)

Experiment Liaison Officers (ELO) coordinate between experiments (eg RunCos) and other PPD (and lab) stakeholders

Facility Coordinators (Underground Area and FTBF) coordinate activities in areas used by multiple experiments

IF&TB Group Responsibilities (from Aria S)

- **NOvA Experiment Liaison Officer**
 - Bill Lee Primary (0.4 FTE), Steve Hahn Back-up (0.1 FTE)
- **Micro BoONE Experiment Liaison**
 - Aria Soha Primary (0.4 FTE), Bill Lee Back-up (0.1 FTE)
- **MINOS Experiment Liaison Officer**
 - Steve Hahn Primary (0.4 FTE), Bill Lee Back-up (0.1 FTE)
- **MINERvA Experiment Liaison Officer**
 - Steve Hahn Primary (0.4 FTE), Bill Lee Back-up (0.1 FTE)
- **SeaQuest Experiment Liaison Officer**
 - JJ Schmidt Primary (0.1 FTE), Aria Soha Back-up (0.1 FTE)
- **Test Experiments Liaison Officer**
 - Aria Soha Primary (0.4 FTE), JJ Schmidt Back-up (0.3 FTE)
- **Underground Facility Coordinator**
 - Bill Lee Primary (0.4 FTE), Steve Hahn Deputy (0.2 FTE)
- **Test Beam Facility Coordinator**
 - Aria Soha Primary (0.5 FTE), JJ Schmidt Deputy (0.5 FTE)

All of these roles require back-ups, b/c of two-man rules, or conflicts, vacations, etc.

ELO Responsibilities (from Aria S)

- **Coordinate between experiments and all other stakeholders**
 - Act as conduit for accessing other PPD resources
 - Work with Exp RunCo to develop list of routine maintenance tasks for PPD technical groups
 - Maintain list of identified PPD technical resources for experiment needs (like a Call List);
 - Help identify appropriate FNAL technical resources for newly arising problems
 - Verify that routine maintenance is being executed
- **Mitigating/Coordinating between experiments**
- Respond to off hours requests made by Run Co (experiment makes a list of systems/items needing off-hours response)
- Know who (all) the experiment Run coordinator(s) is/are
- Attend AD Operations 9 O'clock meeting and report back to experiments
- Representing Experiments to AD (articulate problems that experiment is having which may be AD related or make-sure appropriate 'Thanks' are conveyed)
- Attend All Experimenter's meetings
- Attend Experiment Operations Meetings (Meetings are run by Run Co's)
- ELO should be kept in loop on experiment ORC's, and can, if requested, coordinate ORC inspections
 - Can help decide if an ORC is necessary
- Coordinate with spokesperson(s) or designee on what should be included in training for experimenters with respect to the experiment's areas (ITNA's, Shifter Training, CAL, etc.)
- Be familiar with shift schedule and know how to look up who's on shift
- Periodically inspect experiment areas, and alert appropriate personnel (stakeholders) of any problems

Facility Co Responsibilities (from Aria S)

- Control access to area, to protect equipment and personnel
- Coordinate activities in area (make sure groups don't conflict, and everyone follows appropriate safety guidelines)
- Maintain and enforce procedures for
 - Access
 - Installing
 - Operating
 - Storing
 - Removing
- work with FESS & AD to coordinate Power Outages
- Work with CD for Networking needs/outages, etc.
- Run regular meetings to coordinate area activities
- Maintain a calendar, and/or elog/ and/or website for the area
- Schedule Tours (General Public, physicists, potential experimenters, congressmen, DOE-types, etc)
- Arrange for tour guides, or ensure proper escorts for tourists
- Lead Tours of area
- Sign-off on ORC's for the area,
 - Can, if requested, coordinate the ORC inspection
 - Can help decide if an ORC is necessary
- CAL Training; if appropriate for area
- Respond when contacted in the event of any emergency involving the area.

EED Support Groups

INFRASTRUCTURE & SUPPORT

M. Matulik, Ldr.

S. Chappa

J. Bell

R. Davila

D. Featherston

W. Jaskierny

C. Danner

P. Lippert

V. Martinez

D. Huffman

M. Cherry

T. Cunneen

Prior experience with support for operating experiments (eg CDF and D0) being applied to IF experiments

ONLINE SUPPORT

(P. Shanahan, Ldr.)

W. Badgett

G. Savage

A. L. Soha

D. Torretta

Created in 2012, Experience in CDF and D0 support
Focus on support of DAQ and slow controls, small project development
Not dedicated to single experiment (except Aron Soha – CMS)

Online Support Group (from Peter Shanahan)

- The PPD/EED/Online Support group provides support for online software and hardware systems.
- The group's stakeholders include:
 - HEP projects
 - **Operating experiments**
 - Hardware engineers in SCD/ESE and PPD/EED
 - CD/RSI group
 - Software engineers in SCD
 - SCD/FEF/Scientific Linux & Architecture Management group
 - PPD/DDO/Intensity Frontier & Test Beam group
 - ROC management
 - XOC management
 - PPD/EED management
 - PPD management
- In the development phase of projects and experiments, the group provides input to hardware and software engineers in the development of requirements and specifications of new systems.
- In the operational phase of experiments, the group provides support for maintenance and improvements of online software systems, including user interfaces, control-and-monitoring software, data acquisition software, database utilities, and control room systems. The group also provides support for maintenance and improvements of detector readout and control-and-monitoring hardware.
- In each of these phases, as well as for detector R&D, the group supports development, deployment, and maintenance of hardware and software for test stand systems, in collaboration and coordination with the stakeholders.

MED Support Group

PROCESS CONTROLS

D. Markley, Ldr.

M. Sarychev, Dep. Ldr.

M. Knapp

J. Loskot

T. Martin

W. Noe

Experience in CDF and D0 support

Develop process control (PLC) solutions
and provide operational support

FY15/16 PPD Budgeted Effort (Jan '14 upload)

	g-2		Mu2e	
	FY15	FY16	FY15	FY16
Alignment		1.0		
Elec Eng	0.4	0.4		0.1
Elec Tech	0.25	0.25		
Mech Eng	0.35	0.4		0.2
Mech Tech	2.5	2.0		1.0

Improving Operations Support

- Need good coordination between IF&TB Operations group and rest of PPD technical staff
 - They are the prime interface from the operating experiments
 - See more in Aria's talks
- Look for opportunities for technical staff to help with operations
 - Eg EED Infrastructure group handling MINERvA PMTs
- Identify primary contacts for engineering help
 - MED
 - EED
- Plan meetings in Eng Dept Head meeting with each experiment over coming weeks

Muon Campus Cryo Operations

- Do we need 24/7 operators?
 - Very large investment in g-2 and Mu2e magnets
- Criteria: required response time to solve a problem
 - If presence in the building needed in less than 1(?) hour then should have person on site 24/7
 - Need to keep in mind that even problems that can be addressed remotely might be interrupted by off-site network interruption
- Note that CDF and D0 operators often worked on routine maintenance and repair projects during their shifts. Not all time was spent sitting in front of screens
- Although LAr TPC experiments probably don't need 24/7 operators, a combine PPD cryo operations could also monitor these experiments (MicroBooNE, LAr1-ND, ICARUS, LBNE)

Muon Campus Cryo Operations – a model

- Base operations at D0 Assembly building
 - Home of operations crews and Controls group
 - Existing cryo control and work space
- Weekday day shift run shifts at D0
 - Can work on other projects in the building part of time
 - Operator has smartphone to “page” them in case of alarm
 - Scheduled checklist
 - Walkthrough of g-2/Mu2e with two people at shift change
 - If project activities drive other multi-shift work in DAB could have more shifts at DAB
- Other shifts run out of XOC
 - Experimenters on shift ensure multiple people in building