NOvA Transition to Operations

Rob Plunkett

About me – biographical

- Rob Plunkett – Fermilab Staff Scientist
- Experience with MINOS experiment
  - MINOS Co-Spokesperson, 2006-14
  - MINOS Run Coordinator, 2005-06
- Experience with NuMI project
  - 2002-2004, Deputy Project Manager
- Previous operational experience
  - 1993-1995, Associate Dept. Head for Operations, CDF

Overview of Transition

- NOvA is operating!
- Detector commissioned, taking data
- Regular presentations to Fermilab Experimental Management Group (Directorate).
- Smooth transition from “different every day” to “stable running”.
- This talk will present
  - The operating detector’s processes
  - Organization and resources going forward.

NOvA Collaboration

ARGONNE NATIONAL LABORATORY (ANL)

UNIVERSITY OF ATHENS (GREECE) (ATH)

BANARAS HINDU UNIVERSITY (BHU)

CALIFORNIA INSTITUTE OF TECHNOLOGY (CIT)

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY (CUSAT)

INSTITUTE OF PHYSICS OF
THE ACADEMY OF SCIENCES OF THE CZECH REPUBLIC

CHARLES UNIVERSITY IN PRAGUE,

UNIVERSITY OF CINCINNATI

CZECH TECHNICAL UNIVERSITY

UNIVERSITY OF DELHI (DU)

JOINT INSTITUTE FOR NUCLEAR RESEARCH, DUBNA (JINR)

FERMILAB (FNAL)

UNIVERSIDADE FEDERAL de GOIAS

INDIAN INSTITUTE OF TECHNOLOGY, GUWAHATI

HARVARD UNIVERSITY

IIT HYBERADAD

UNIVERSITY OF HYBERADAD

INDIANA UNIVERSITY (IND)

IOWA STATE UNIVERSITY (ISU)

UNIVERSITY OF JAMMU

LEBEDEV PHYSICAL INST. (RUSSIA) (LEB)

MICHIGAN STATE UNIVERSITY (MSU)

UNIVERSITY OF MINNESOTA - DULUTH (UMD)

UNIVERSITY OF MINNESOTA (MIN)

INSTITUTE FOR NUCLEAR RESEARCH, MOSCOW (INR)

PANJAB UNIVERSITY

UNIVERSITY OF SOUTH CAROLINA (USC)

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY (SDMT)

SOUTHERN METHODIST UNIVERSITY (SMU)

STANFORD UNIVERSITY (STN)

UNIVERSITY OF SUSSEX

UNIVERSITY OF TENNESSEE (TENN)

UNIVERSITY OF TEXAS AT AUSTIN (TEX)

TUFTS UNIVERSITY (TUF)

UNIVERSITY OF VIRGINIA (UVA)

WICHITA STATE UNIVERSITY (WSU)

COLLEGE OF WILLIAM AND MARY (WM)

WINONA STATE UNIVERSITY (WIN)

38 Institutions
7 Nations

24/7 shift operations since August 2013

Logbook entries, 8/17/2014

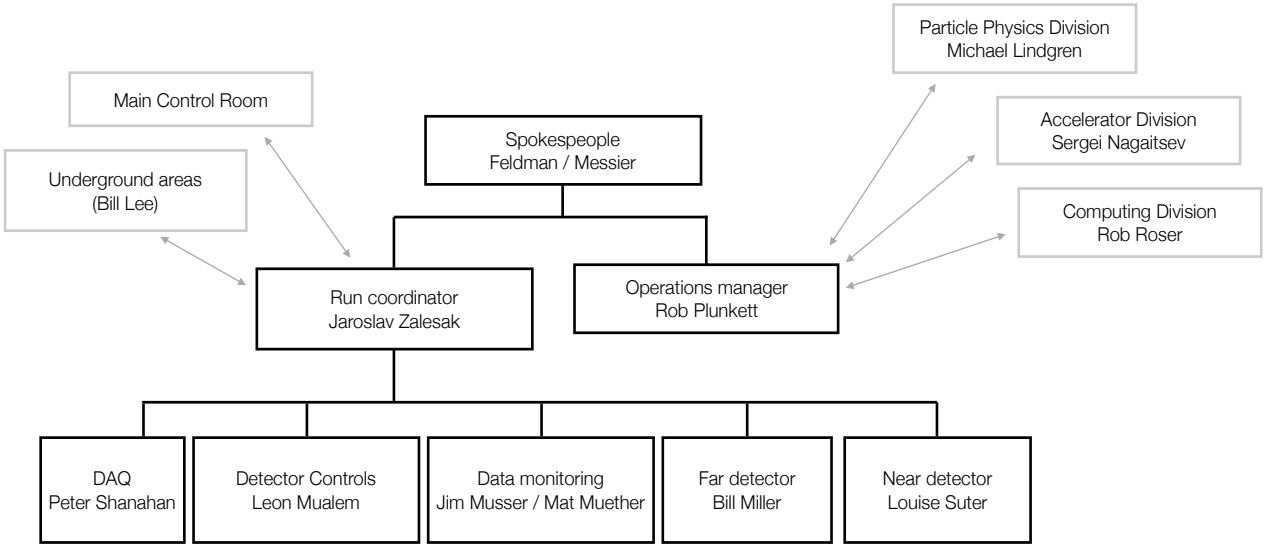
47404, Sue Kasahara (kasahara), Sun, 08/17/2014 07:43:02
Form: End Shift
Shifter: Sue Kasahara
Shift: Night
FarDet Run Summary: Run 16835 through 16839
all had 64 subruns, smoothly rolling over from run to run
Current run is 16840, it's at subrun 23
All runs were stable but the beam was up and down from 4.10 am to 7.05am
NearDet Run Summary: Started with Run 10377 and still on the same one started at subrun 28 and now it's at subrun 36

Shift Summary: Physics run-stable data taking

47405, Gary Feldman (feldman), Sun, 08/17/2014 08:24:34
Form: Start Shift
Shifter: Zwaska/Feldman
Shift: Day
Far Detector power configuration: All on
Near Detector power config: All on
List runs in progress: FD/16840/54/1 ND/10377/36/2
Are Online Monitors running?: Yes
Are Event Displays running and auto-advancing?: True

Shift Plans:Quiet running with all detectors complete, cold, and at full gain.

Operations organization



Operations Leadership

- The **Run Coordinator**
  - Optimizing the use of the near and far detectors to meet the physics goals of the experiment.
  - Directing detector systems development and maintenance and decide the priority and scheduling of detector systems development and maintenance.
  - Scheduling shifts, maintaining shift procedures, and maintaining the systems expert on-call list.
  - Supported by Deputy Run Coordinators
- The **Operations Manager** is responsible for
  - Oversight of NOvA operations
  - Long-term strategic planning of NOvA operations; regular oversight of procedures and status of operations.
  - Liaison between the NOvA Operations group and the Fermilab operations support groups inside the Particle Physics Division, Computing Division, and the NOvA Far Detector Laboratory Operations Manager.

Operations Groups

- The **DAQ** working group
  - Development, maintenance, and online support of the data acquisition systems. Initiate and track problems with the DAQ hardware and software, contact the appropriate personnel, and ensure that appropriate repairs are carried out.
- The **DCS (Detector Control Systems)** group
  - Development, maintenance, and online support of the detector controls hardware and software. Initiate and track problems with the DCS hardware and software, contact the appropriate personnel, and ensure that appropriate repairs are carried out.
- The **Data Monitoring** group
  - Development, maintenance, and online support of tools to monitor data quality and with giving regular feedback on the performance of detector hardware
- The **Far Detector** group
  - Responsible for executing maintenance and repair work scheduled by the Run Coordinator on the far detector.
- The **Near Detector** group
  - Responsible for executing maintenance and repair work scheduled by the Run Coordinator on the near detector.

Hardware Support

- Collaboration/Fermilab teamwork
  - Draft of TSW in approval process.
- Power supplies – Fermilab PREP or equivalent (commercial).
- Power distribution – U. of Va.
- Front end boards – Harvard/FNAL knowledge transfer. Harvard to maintain consulting.
- Data concentrator chain and timing – FNAL PREP or equivalent
- Detector controls – Fermilab IFIX + universities

Computing Support

- TSW between NOvA Experiment and Fermilab Computing sector: nova-docdb-11788
- Fully integrated into CD annual Portfolio Review process
- Core computing support
  - Network, web, security, etc.
- Scientific Computing
  - Detector DAQ clusters (FEF)
  - Offline resources and common tools
  - Databases (calibration, beam monitoring, etc.)
- Electronics support for some components
- Collaboration offsite resources employed when appropriate (for example Monte Carlo generation).

Budgeting for Far and Near Detector Operations

- MOU via U. of Minnesota for far detector laboratory.
  - Dedicated oversight at FNAL
  - NOvA Far Detector Laboratory Operations Manager
- Annual Operations budget through Particle Physics Division for both detectors
- Computing operations through Computing Division.
- Standard for Fermilab Experiments

Documentation

- MOU between The University of Minnesota and Fermilab for Operation of the NOvA Far Detector Laboratory and the NOvA Far Detector: nova-docdb-11785
- NOvA Technical Scope Of Work: nova-docdb-9306
- TSW between NOvA Experiment and Fermilab Computing sector: nova-docdb-11788
- Operational readiness clearance for NOvA far detector, nova-docdb-11843
- Operational readiness clearance for NOvA near detector, nova-docdb-11419
- NOvA Shift Handbook: nova-docdb-10512
- Expert On Call List: nova-docdb-8806
- NOvA 2014 Computing Portfolio Review: nova-docdb-11221
- NOvA Far Detector Building On-Call List: nova-docdb-10685
- Repair and restart procedures.

Conclusions

- After commissioning with beam, operations is in place for NOvA.
- Detectors complete and running.
- Fermilab Experiment Management Group reviews NOvA operations status.
- Analysis needs being addressed by collaboration.
- Service positions filled by dedicated collaboration.