…Experiments, …Facilities, …Support for Other Divisions

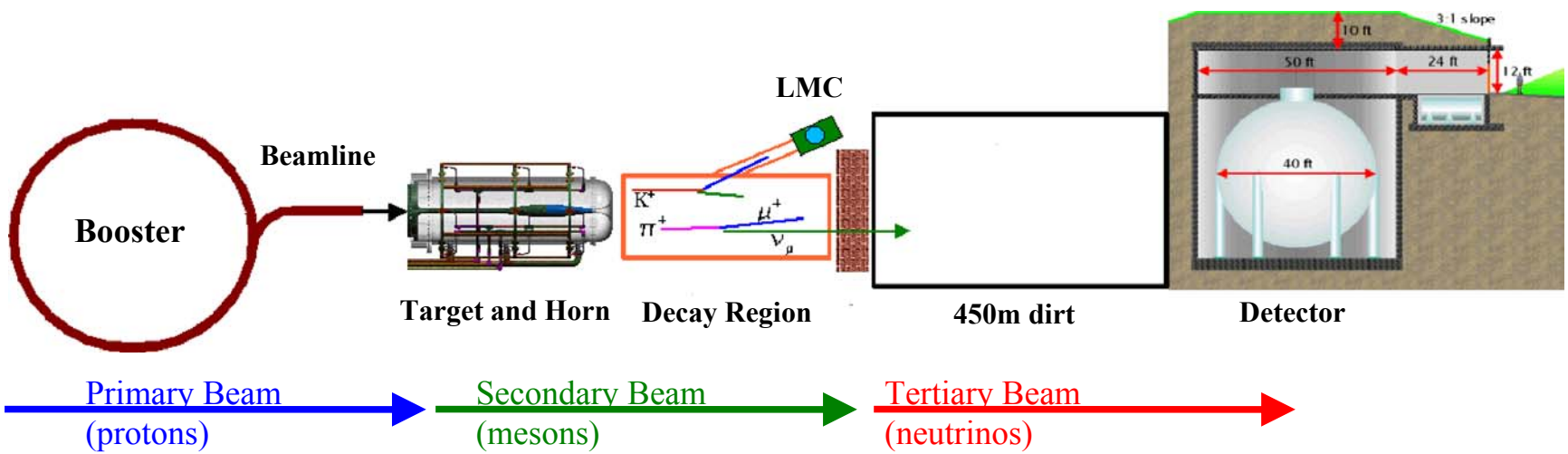
OTHER…

Michael B. Crisler
Fermilab
March 16, 2004

Outline

- Other Experiments:
  - MiniBooNE
  - MIPP
  - Test Beam
- PPD Support Departments
  - Electrical Department
  - Mechanical Department
  - Technical Centers
- Accelerator Division Support
  - Shutdown Support

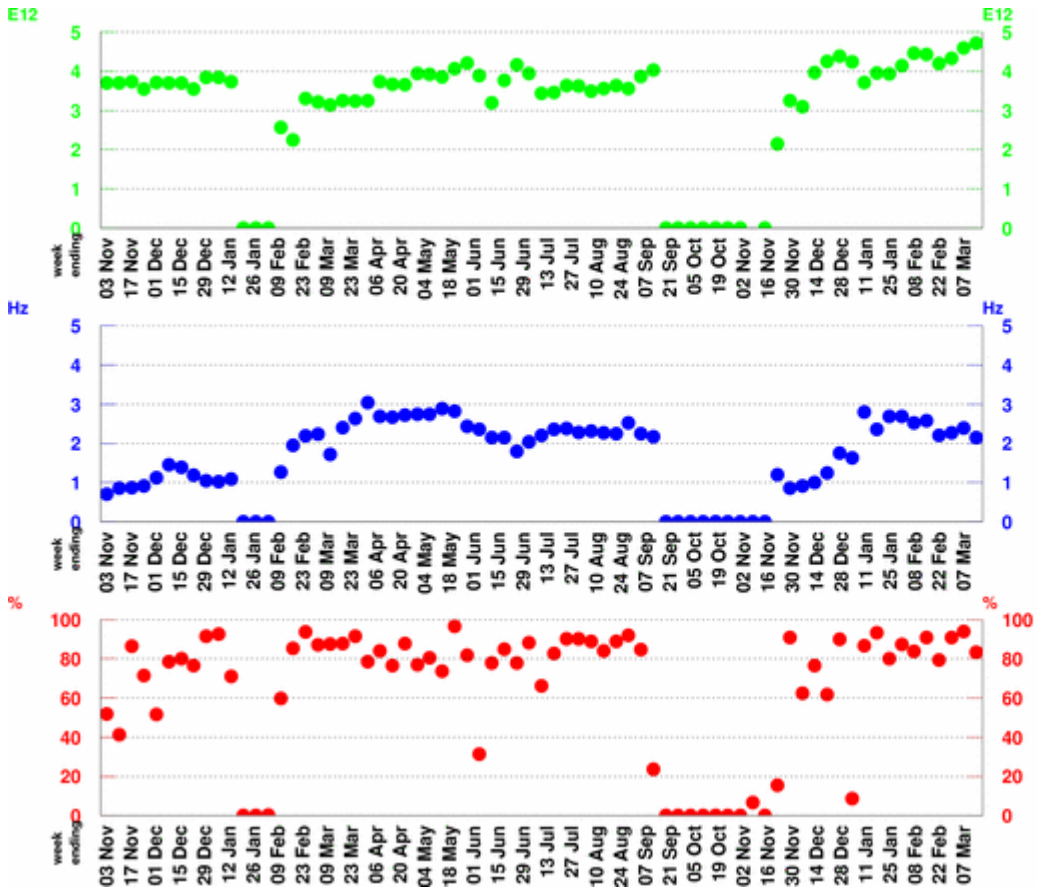
MiniBooNE



- Search ing for muon neutrino oscillations into electron neutrinos

MiniBooNE Performance

– DAQ has > 99.9% efficiency and > 98%uptime



POT per Horn Pulse

Largest week: 24.67 E12

Latest week: 4.72 E12

Horn Rate

(for time periods with beam)

Largest week: 3.04 Hz

Latest week: 2.15 Hz

Beam Uptime Fraction

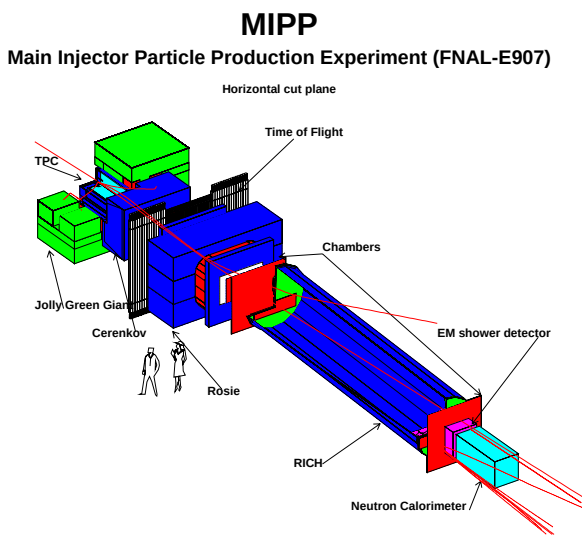
(fraction of time with beam)

Largest week: 96.7 %

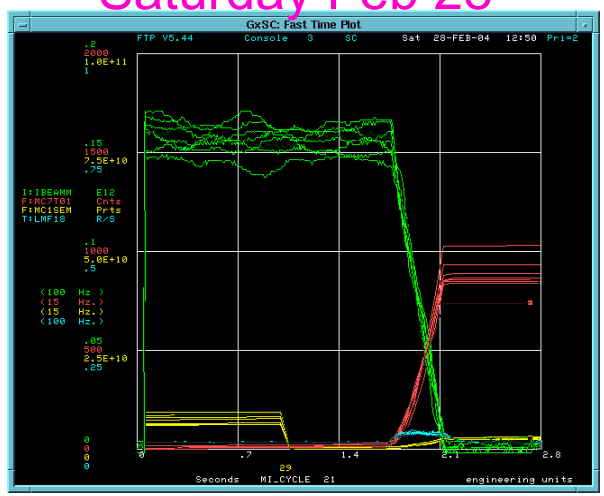
Latest week: 83.4 %

MIPP- Main Injector Particle Production experiment

- Purpose of experiment
  - Production Spectra from 5-120GeV/c $\pi^{\pm}$,$K^{\pm}$,$p^{\pm}$ beams
- Particle ID capabilities
  - TPC (dE/dX), Time of flight, Multi-Cell Cerenkov and RICH detectors, we hope for unprecedented π/K/p separation



First 120 GeV proton beam Saturday Feb 28



Meson Test Beam Facility

- Typical test beam operation will operate with:
  - Tune for 120 GeV protons or 60 GeV pions
  - ~4E10 protons/pulse on the primary target, with about 10,000 secondaries arriving at the user areas
  - .4 sec slow spill with 1 spill/minute
  - ~10 hours/day for about 2-4 weeks of running

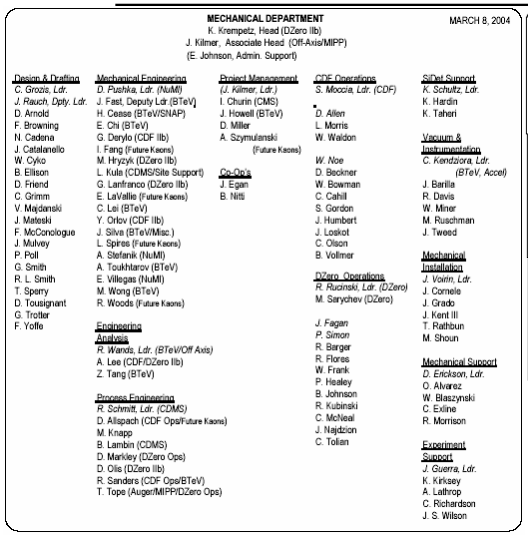
Experiments at the Test Beam

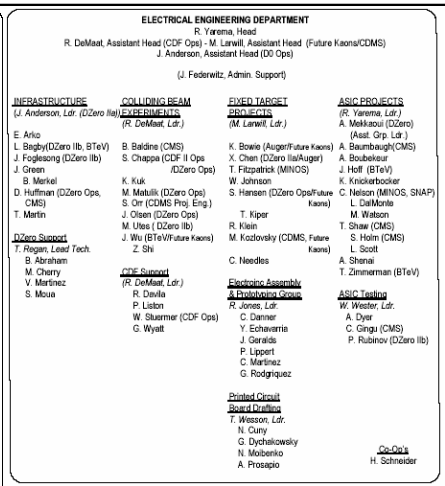
- The first test beam user (T926-RICE) ran with:
  - ~10,000 counts of 120 GeV protons in a 1.2 μsec fast spill
  - 1 spill per minute
  - Beam was delivered in three 12 hour shifts

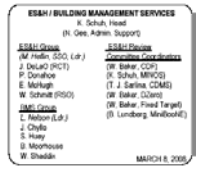
PPD Support Departments

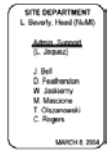
- Organization in Transition
  - Risks
    - The future program is a moving target
  - Mitigation
    - Focus on organizational flexibility
  - Priorities *TODAY*
    - Operate the Collider Detectors
    - Help the Accelerator Div. Improve the luminosity
    - Install NUMI/MINOS
    - Support “Paying Customers”
    - Take care of future experiments as best we can…

PPD Support Departments









- Walk through the PPD Org Chart to see:
- What we do
- How we're deployed
  - Direct Support for CDF & D0
  - NUMI/MINOS Installation
  - Accelerator Support
  - Future Experiments

PPD Support Departments EE

ELECTRICAL ENGINEERING DEPARTMENT
R. Yarema, Head
R. DeMaat, Assistant Head (CDF Ops) - M. Larwill, Assistant Head (Future Kaons/CDMS)
J. Anderson, Assistant Head (D0 Ops)

(J. Federwitz, Admin. Support)

INFRASTRUCTURE
(J. Anderson, Ldr. (DZero IIa))

E. Arko
L. Bagby(DZero IIb, BTeV)
J. Foglesong (DZero IIb)
J. Green
B. Merkel
D. Huffman (DZero Ops, CMS)
T. Martin

DZero Support
T. Regan, Lead Tech.
B. Abraham
M. Cherry
V. Martinez
S. Moua

COLLIDING BEAM EXPERIMENTS
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M. Matulik (DZero Ops)
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J. Olsen (DZero Ops)
M. Utes (DZero IIb)
J. Wu (BTeV/Future Kaons)
Z. Shi

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P. Liston
W. Stuermer (CDF Ops)
G. Wyatt

FIXED TARGET PROJECTS
(M. Larwill, Ldr.)

K. Bowie (Auger/Future Kaons)
X. Chen (DZero IIa/Auger)
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W. Johnson
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M. Kozlovsky (CDMS, Future Kaons)
C. Needles

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C. Martinez
G. Rodgriquez

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N. Cuny
G. Dychakowsky
N. Moibenko
A. Prosapio

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S. Holm (CMS)
L. Scott
A. Shenai
T. Zimmerman (BTeV)

ASIC Testing
W. Wester, Ldr.
A. Dyer
C. Gingu (CMS)
P. Rubinov (DZero IIb)

Co-Op's
H. Schneider

- Direct Support for Collider Operations

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- All Conventional Electronics

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Co-Op's
H. Schneider

- Custom ASIC Development
  - Old processes becoming obsolete (e.g. processes for SVX, SVX2, SVX3, DDR, TXM, DBC2, MASDA)
  - New processes have more complex models, require new techniques,and are considerably more expensive.
  - New tools are needed for improved first time success.
  - Some chips such as the LHC pixels devices have taken close to 10 years to develop.
  - Physicists continue to place greater demands on IC designers.
  - Need to begin acquiring new tools and learning new design techniques now.

PPD Support Departments MD

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K. Krempetz, Head (DZero IIb)
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R. L. Smith
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C. Exline
R. Morrison

Experiment Support
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K. Kirksey
A. Lathrop
C. Richardson
J. S. Wilson

- Process Engineering
  - Core Competence
    - Process Controls
    - Gas and Fluid systems
    - Cryogenics
  - Current Priorities
    - CDF & D0 Operations Support
    - CDMS
    - Future (BTeV, IIb)

PPD Support Departments MD

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J. S. Wilson

- Engineering Analysis
  - Core Competence
    - numerical finite element analysis
      - Stress
      - Magnetics
      - Heat Transfer
      - Fluid Flow
  - Current efforts:
    - Lithium Lens
    - Proton Driver
    - Off-Axis Neutrino
    - BTeV, NUMI, MIPP, MuCool

PPD Support Departments MD

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- CDF & D0 Operations Groups

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M. Wong (BTeV)
R. Woods (Future Kaons)

Engineering Analysis
R. Wands, Ldr. (BTeV/Off Axis)
A. Lee (CDF/DZero IIb)
Z. Tang (BTeV)

Process Engineering
R. Schmitt, Ldr. (CDMS)
D. Allspach (CDF Ops/Future Kaons)
M. Knapp
B. Lambin (CDMS)
D. Markley (DZero Ops)
D. Olis (DZero IIb)
R. Sanders (CDF Ops/BTeV)
T. Tope (Auger/MIPP/DZero Ops)

Project Management
(J. Kilmer, Ldr.)
I. Churin (CMS)
J. Howell (BTeV)
D. Miller
A. Szymulanski (Future Kaons)

Co-Op's
J. Egan
B. Nitti

CDF Operations
S. Moccia, Ldr. (CDF)

D. Allen
L. Morris
W. Waldon

W. Noe
D. Beckner
W. Bowman
C. Cahill
S. Gordon
J. Humbert
J. Loskot
C. Olson
B. Vollmer

DZero Operations
R. Rucinski, Ldr. (DZero)
M. Sarychev (DZero)

J. Fagan
P. Simon
R. Barger
R. Flores
W. Frank
P. Healey
B. Johnson
R. Kubinski
C. McNeal
J. Najdzion
C. Tolian

SiDet Support
K. Schultz, Ldr.
K. Hardin
K. Taheri

Vacuum & Instrumentation
C. Kendziora, Ldr. (BTeV, Accel)
J. Barilla
R. Davis
W. Miner
M. Ruschman
J. Tweed

Mechanical Installation
J. Voirin, Ldr.
J. Cornele
J. Grado
J. Kent III
T. Rathbun
M. Shoun

Mechanical Support
D. Erickson, Ldr.
O. Alvarez
W. Blaszynski
C. Exline
R. Morrison

Experiment Support
J. Guerra, Ldr.
K. Kirksey
A. Lathrop
C. Richardson
J. S. Wilson

- Vacuum & Instrumentation
  - Accelerator Support
    - MCP Profile Monitors
    - Foil targets
    - Pump repairs
    - F.S. Profile Monitors
    - Booster Loss Robot
  - PPD
    - BTeV

PPD Support Departments MD

MECHANICAL DEPARTMENT MARCH 8, 2004

K. Krempetz, Head (DZero IIb)
J. Kilmer, Associate Head (Off-Axis/MIPP)
(E. Johnson, Admin. Support)

Design & Drafting
C. Grozis, Ldr.
J. Rauch, Dpty. Ldr.
D. Arnold
F. Browning
N. Cadena
J. Catalanello
W. Cyko
B. Ellison
D. Friend
C. Grimm
V. Majdanski
J. Mateski
F. McConologue
J. Mulvey
P. Poll
G. Smith
R. L. Smith
T. Sperry
D. Tousignant
G. Trotter
F. Yoffe

Mechanical Engineering
D. Pushka, Ldr. (NuMI)
J. Fast, Deputy Ldr.(BTeV)
H. Cease (BTeV/SNAP)
E. Chi (BTeV)
G. Derylo (CDF IIb)
I. Fang (Future Kaons)
M. Hryzyk (DZero IIb)
L. Kula (CDMS/Site Support)
G. Lanfranco (DZero IIb)
E. LaVallie (Future Kaons)
C. Lei (BTeV)
Y. Orlov (CDF IIb)
J. Silva (BTeV/Misc.)
L. Spires (Future Kaons)
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- Mechanical Installation
- Mechanical Support
- Experiment Support
  - All fully Occupied with NUMI/MINOS Installation

PPD Support Departments MD

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J. Guerra, Ldr.
K. Kirksey
A. Lathrop
C. Richardson
J. S. Wilson

- How are we deployed?
  - Direct RUN II Support
  - NUMI/MINOS Installation
  - Accelerator Support

PPD Support Departments TC

TECHNICAL CENTERS
R. Ray, Head
H. Nguyen, Deputy Head
K. Kephart, Associate Head M. Demarteau, Associate Head
(S. Schultz,Admin. Support)

ALIGNMENT & METROLOGY
R. Bernstein, Ldr.
G. Adkins
V. Bocean (Accel.)
M. Chau
G. Coppola
J. Greenwood (Accel.)
S. Lakanen
B. Oshinowo (Accel.)
T. Sager
G. Wojcik

C. Bradford
G. Crutcher
E. Dijak
J. Kyle
M. O'Boyle
C. Wilson
J. Wilson
R. Wyatt

CABLE T.V.
L. Jackson, Ldr
T. Cunneen
R. Dice
A. Rodriguez
M. Seales

CO-OP's

DETECTOR SUPPORT CENTER
(K. Kephart, Ldr)
A. Denham-Taylor
M. Morfin
W. Newby
I. Ramos
P. Richards
C. Serritella

THIN FILM
E. Hahn, Ldr.
S. Aponte
I. Pischalnikova
S. Upton
G. Terechkina

LAB 3
J. Krider, Ldr.
D. Butler
D. Graham
(W. Pritchard)

SCINTILLATION DETECTOR DEVELOPMENT
A. Pla-Dalmau, Ldr.
E. Baldina
(A. Bross)
I. Kubantseva

MACHINE DEV. & MAINT.
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J. Blomquist
P. Gorak
S. Kindelberger (CMS/Accel.)
C. Lindenmeyer
R. Miksa
J. Schellpfeffer
J. Zimmerman

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S. Carlson
S. Doerr
T. Nebel
J. Taccki

APACHE POINT OBSERVATORY
W. Boroski, Ldr. (SDSS)
F. Leger, Deputy Ldr
S. Bastian
C. Gonzalez
W. Jordan (t)
J. Yarger (t)

SILICON DETECTOR CENTER
(M. Demarteau, Ldr.)
B. Flaugher, Deputy Ldr
(C. Kennedy, Admin Support)
J. Judd, Infrastructure Support

MICRODETECTOR ASSEMBLY
H. Gonzalez, Ldr
S. Austin
T. Griffin
M. Herren
L. Jones
I. Sirotenko
L. Wish

PRECISION METROLOGY
M. Roman, Ldr
G. Gillespie
L. Mokhov
J. Montes
W. Pritchard
R. Safarik
E. Skup
G. Teafoe

MICRODETECTOR DEVELOPMENT
G. Sellberg, Ldr.
S. Jakubowski
N. Ronzhina

MICROBONDING
T. Hawke, Ldr
M. J. Jonas

TESTING & REPAIR
J. Calderon, Ldr
L. Rychenkova

- Alignment & Metrology
- Cable TV
  - Mostly direct accelerator support…
- Alignment gets additional support from SiDet Precision Metrology at times of peak load.

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J. Wish

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G. Gillespie
L. Mokhov
J. Montes
W. Pritchard
R. Safarik
E. Skup
G. Teafoe

MICRODETECTOR DEVELOPMENT
G. Sellberg, Ldr.
S. Jakubowski
N. Ronzhina

MICROBONDING
T. Hawke, Ldr
M. J. Jonas

TESTING & REPAIR
J. Calderon, Ldr
L. Rychenkova

- Specialty Technical Centers Groups
  - Scintillation Detector Development
  - Carbon Fiber Structures
  - Thin Film & Vacuum Deposition
  - Detector Support
  - CNC Routing
  - Machine Development
  - Apache Point Observatory

PPD Support Departments TC

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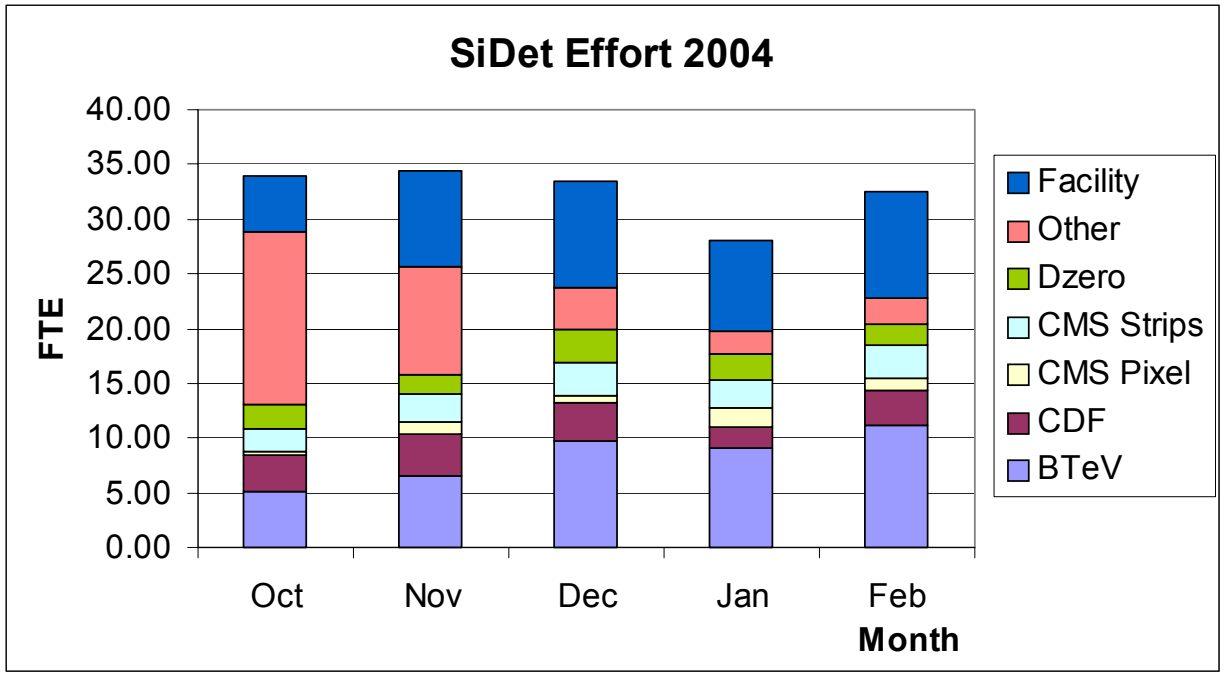
- Silicon Detector Center: Dedicated facility for the design and construction of silicon detectors (SiDet)
  - Extensive experience with:
    - Micron precision assembly
    - Design, engineering, and fabrication of mechanically stiff, low-mass structures
    - Thermal management issues

SiDet Manpower

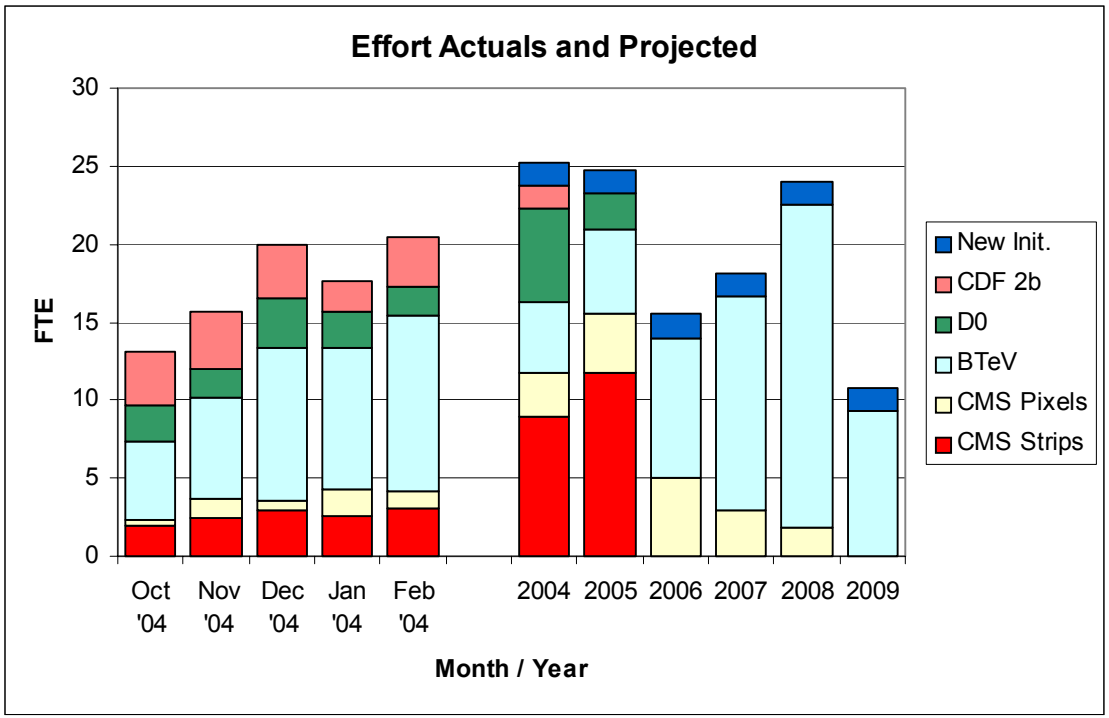
- Effort reported on various projects



  - Note: ‘Other’ refers to work for other departments, like beams, alignment, etc.

SiDet Projected Manpower

- Project manpower, actuals for FY04 and projection



PPD Support Departments

- How Have We Supported Accelerator Division?
  - Direct Permanent Transfer of Personnel
  - Temporary “Loan” of PPD Staff to AD Departments
  - Bring AD Work to PPD Groups
  - “Task Group” approach for accelerator shotdowns

AD Support

- Shutdown Task Groups:
  - Analyze PPD tech activities relative to priorities
    - RUN II
    - NUMI/MINOS Installation
    - “Paying Customers” eg CMS, NASA
  - Cross-reference against database of Work Restrictions
    - Bad backs, bad elbows, lifting restrictions
  - Put together a team to send to AD…

PPD Support for Fall 2003 Shutdown

166 - PPD's potential pool of technicians and related support staff

- 53 assigned directly to AD Mechanical Support Dept designated tasks (Recycler, MI, Tevatron, etc.)
- 24 assigned directly to other AD tasks
  - 15 Alignment
  - 4 on-going detector construction
  - 5 misc. (back-up personnel, labor coordinators)
- 41 assigned to shutdown-related experiment tasks (CDF, DZero, NuMI)

PPD Support for March '04 Shutdown

164 - PPD's potential pool of technicians and related support staff

- 7 assigned to date directly to AD Mechanical Support Dept designated tasks (NuMI, MI,Linac,P-Bar)
- 25 assigned directly to other AD tasks
  - 18 Alignment
  - 7 on-going AD shutdown tasks (NuMI, TeV)
- 41 assigned to shutdown-related experiment tasks (CDF, DZero, NuMI / MINOS)

Conclusion

- PPD Support Departments are very busy (now)
  - CDF/D0 Operations Support
  - NUMI/MINOS Near Detector & Beam Installation
  - CMS, BTeV, future experiments…
- Technician Resources coming free in FY05
  - Some absorbed by BTeV ramp up.
  - Some downsizing expected.