Computing within AFRD

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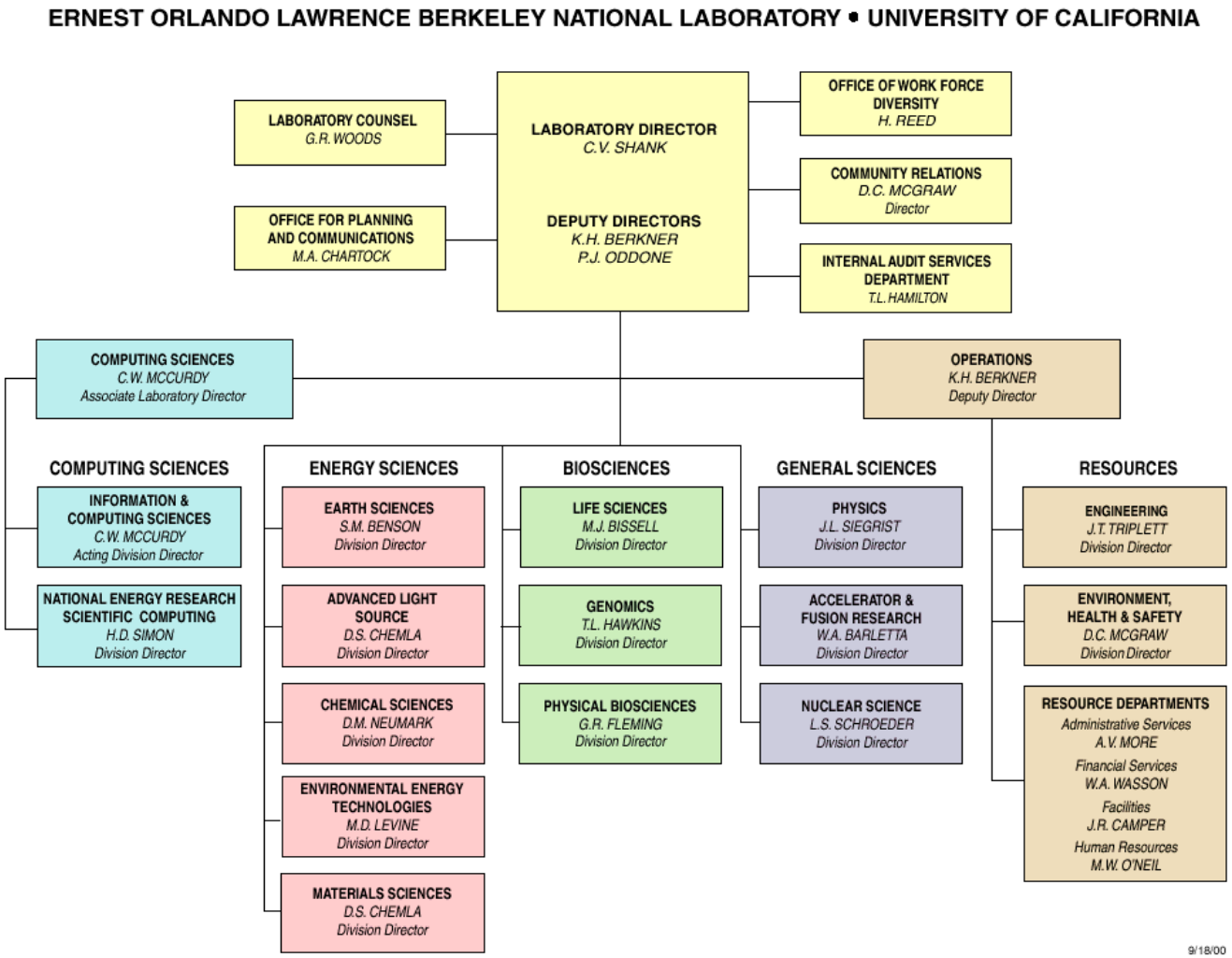
Overview

- Interview typical users
- Meet with division leaders
- AFRD has no computer policy
- Wide range of computing requirements

AFRD within LBNL



AFRD Snapshot

- About 120 scientists and administrators
- About 250 including matrix, faculty and students
- FY 2000 funding $76M
  - $65M non-WFO
  - $11M WFO
- Organized into 6 units

AFRD Groups

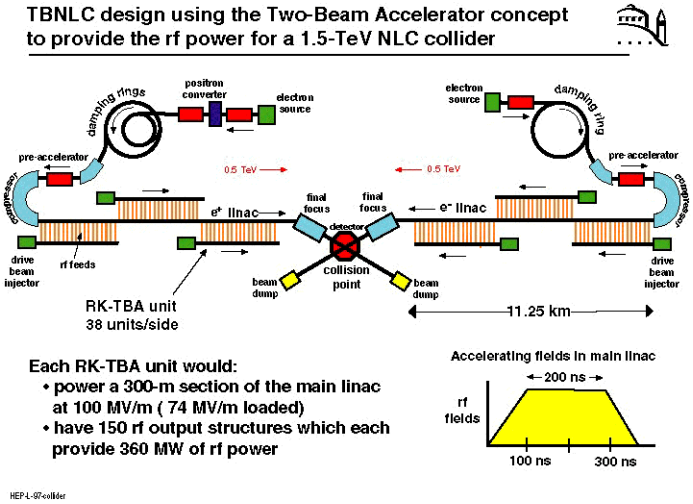
- Administration
- Center for Beam Physics
- Fusion Energy
- Ion Beam Technology
- Supercon
- Projects

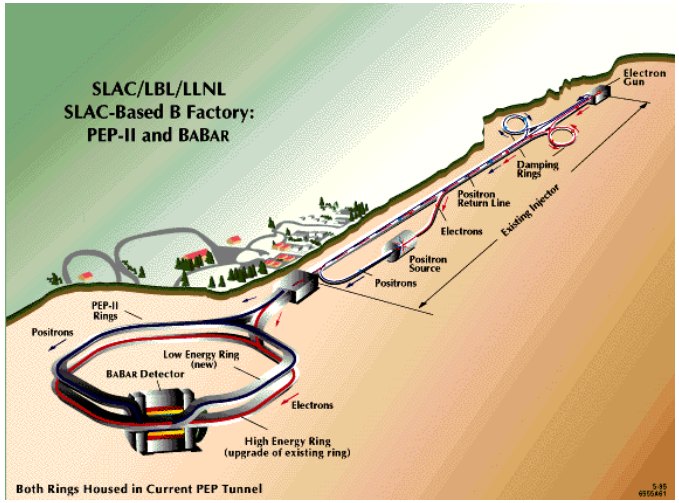
Recharges by Group

- No accounting of total computer costs by division. Responsibility of each group.
- For first 11 months of FY00 (K$):

Admin	$ 0.2
CBP	109
Fusion	50
IBT	94
Supercon	3
Projects	31
Total	$288

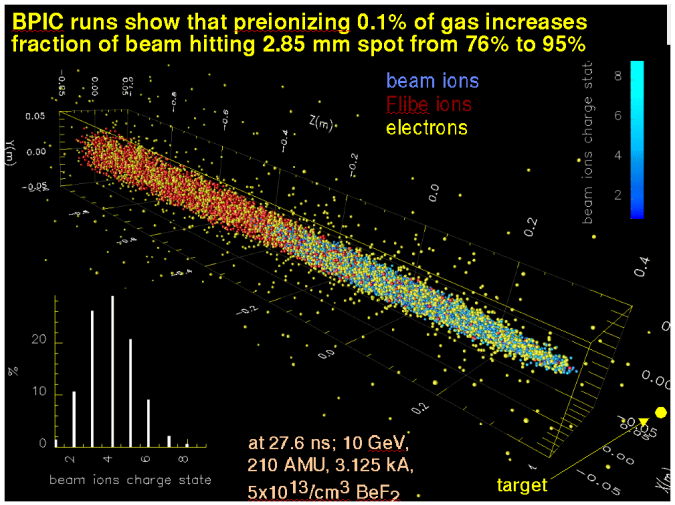
Center for Beam Physics

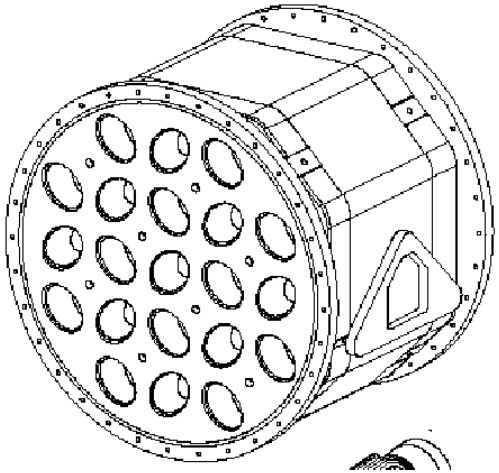




- NLC
- PEP-II (B factory)
- LHC
- TBA
- Small to large scale computing

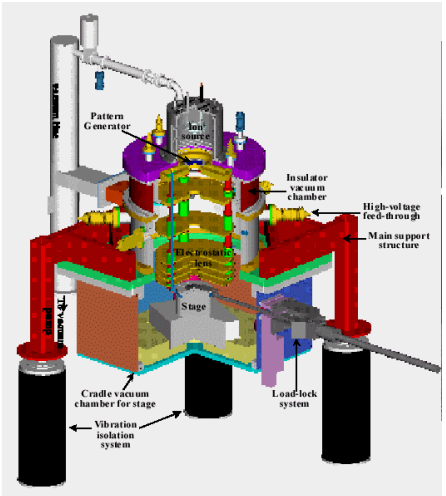
Fusion Energy

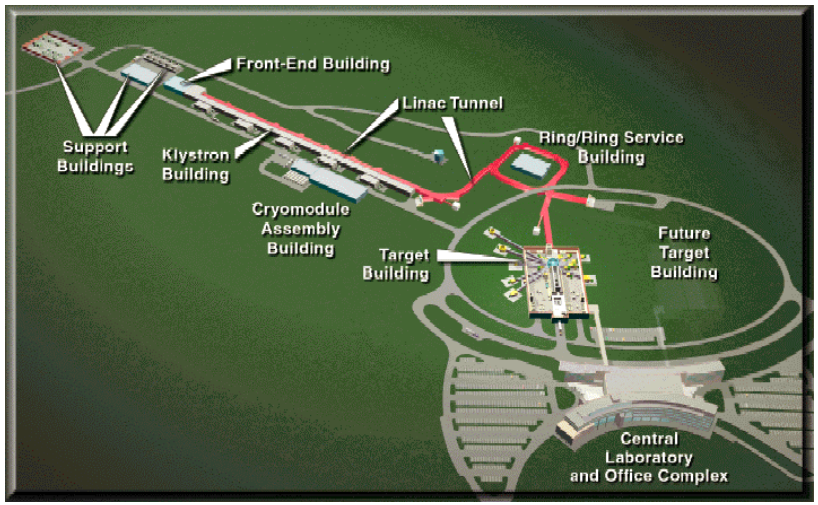




- Inertial Confinement
- Single Beam Experiment
- Multiple Beam Experiment
- Integ Research Experiment
- Lots of large-scale computing

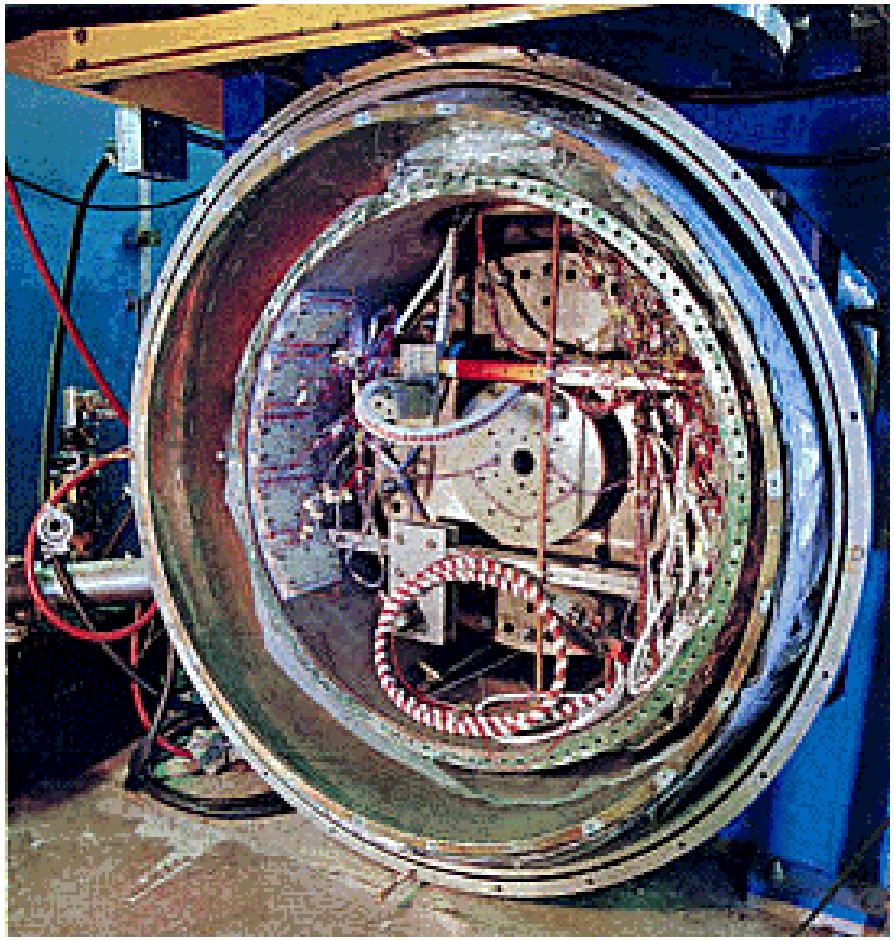
Ion Beam Technology





- Microbeam fab
- SNS ($1.4B)
- RIA
- BNCT
- Plasmas, surface modification
- Small scale computing

Superconducting Magnets



- Develop 14T magnets
- SC technology for next generation of HEP accelerators
- Muon
- Small scale computing

Projects

- Take R&D and make facilities
- DARHT (non-NERSC)
- LHC
- NLC

Method

- Select typical users in each AFRD unit
- One-hour informal interview with same list of questions
- Open-ended
- Get AFRD statistics from division office
- Meet with division leadership on mid-range computing question

Findings Summary

- AFRD has no:
  - computer policy on platform or software
  - system administration person or policy
  - backup policy (non lab-wide, re. RPM)
  - position on mid-range computing
- But:
  - AFRD staff generally satisfied
  - have little AFRD-ICSD interaction
- Details to follow

Hardware Platforms

- AFRD keeps no accounting of hardware
- Full mixture of PCs, Macs, Unix, Linux, HP, Sun and SGI
  - Large matrixed-in component with Dells replacing HPs for CAD and engineering functions
- No clusters
- Surprising number of Macs used by physicists
  - Nice C, C++ development environment
  - Good floating point performance
  - Nice graphics for interfacing NERSC
  - Better stability than Windows platforms
- Real-time control computers
  - Epics, Labview, etc.

Maintenance and Backup

- Maintenance both self-help and ICSD
  - Help desk: wide variety of responses
  - Often felt that poorest person sent over, best kept in-house
  - Maintenance on an ad-hoc basis
- No AFRD backup policy
  - Inconsistent with LBNL archiving polity
  - Macdumps - generally okay, some problems (Apple Retrospect program used and liked)
  - UNIX- some use lab backup
  - Some do own backup
  - Backups thought to be too expensive
  - Most practice backup with some backup policy

Remote Access

- Generally comfortable with that provided
- None to Macs?
- Some dissatisfaction with Netscape
  - too big, slow, buggy
- SSH got good marks
  - easy to install and use
  - a little more difficult under Linux
- No follow-up on recent security scans
- Many surprised we have no firewall
- One keeps mail at LLNL and LBNL
  - some routing problems

Video Conferencing

- Used a great deal within AFRD, due to many collaborations with other labs
- Started with fast-scan to SLAC
- Many ISDN-based
- Now moving to 100BaseT connection
- Still complex and requires expert to start up
- Increase in video conferencing is going to require more conference rooms be added

Improving Satisfaction of ICSD

- Strengthen help desk
  - poor on Oracle, Pro Card problems
  - Be more phone-oriented, some had to use web ticket
- No programming support offered
  - AFRD had a large programmer support team
- Apple Inc. has excellent web-based help
  - Implement similar at ICSD?
  - Direct Mac users to Apple web site
- Long time to install new network port
- Shipping/receiving not in administrative DB

Mid-Range Computing Issues

- Don't know about T3E time availability
  - not well advertised or understood
- High-level meeting produced no answers to AFRD interest in mid-range computing, but it did not seem to fit AFRD culture.
- Should we buy more nodes for IBM?
- No code-steering on NERSC (to see intermediate results)
- Should any LBNL scientist get a minimum time automatically, but compete for more?

Conclusions

- AFRD has no computing policy or structure
- We don’t feel that strong computing policy is needed
- AFRD comprises a number of small groups
  - Large matrixed-in engineering contingent
- Range from small desktop to 50Khrs/year NERSC
- General satisfaction with computing environment
- No policy on mid-range due to lack of knowledge