

SURA Jefferson Laboratory Committee report

J. L. Matthews, Chair

Massachusetts Institute of Technology

November 9, 2005

Agenda

- **Preparing for DOE Contract Competition: SURA Steps** (J. Draayer)
- **Special reports**
 - **Report from the Jefferson Lab Director** (C. Leemann)
 - **Chief Scientist's Overview of JLab Scientific Program** (A. Thomas)
 - **Report from the 12 GeV Upgrade Project Director** (A. Lung)
- **JLab Performance**
 - **Report on JLab Environment, Health and Safety, FY 2005** (C. Ferguson)
 - **Report on the Science and Technology Peer Review, FY 2005** (H. Loweth)
 - **Report from the User Group Chair** (G. Cates)
 - **June 2005 User Group Meeting**
 - **August 2005 Program Advisory Committee Meeting**
 - **Users' Concerns and Feedback**
- **Status Report on SURA Program Targeted on Improving Minority Representation in Science at the Ph.D. Level** (D. Ernst)
- **Preparation for DOE Contract Competition: JLab Steps** (C. Leemann, M. Dallas)

Agenda

- **Preparing for Competition** (J. Draayer)
 - *Guiding principles*
 - *Respect the scientific culture of the Laboratory*
 - *Be responsive to DOE expectations*
 - *Organizational issues*
 - *LLC jointly owned by SURA and CSC with small Board of Directors*
 - *JLab managed by Director (C. Leemann)*
 - *Chief Scientist (A. Thomas) and COO (M. Dallas) will report to him*
 - *Draft RFP issued 9/16/05*
 - *SURA submitted questions and comments*
 - *Replies awaited*
 - *Final RFP expected (weeks? months?), after which SURA/CSC has 30 days to submit proposal*

Agenda (*cont'd*)

- **Report from the Jefferson Lab Director (C. Leemann) (*highlights*)**
 - **12 GeV Science review validated JLab's forefront program**
 - **“Lehman” review – no action items, project ready for next step**
 - **Over 100 experiments completed**
 - **Significant progress on difficult parity-violation experiments**
 - **Controversial *pentaquark* : performed high statistics run and superb analysis**
 - **JLab portion of SNS project completed on cost and on schedule, technical specs exceeded**
 - **CEBAF Center addition almost ready for occupancy**
 - **Safety “turnaround” – three awards received**
 - **Funding still uncertain, but Secretary Bodman is a science advocate**
 - **JLab priorities**
 - **Build 12 GeV on fastest possible track**
 - **Deliver outstanding physics from 6 GeV program**
 - **Become world leader and R&D provider for SRF**
 - **Realize full potential of other core competencies (e.g. FEL)**

Agenda (*cont'd*)

- **Overview of JLab Scientific Program (A. Thomas) (*highlights*)**
 - **JLab's program central to all of nuclear physics**
 - **Quark-gluon structure of nucleons and nuclei, confinement, few-nucleon problems, correlations, hadrons in nuclear medium, strangeness in nuclei**
 - **JLab ideal facility to study QCD on non-perturbative regime**
 - **New paradigm for nuclear physics: study nuclear structure in terms of QCD, make precision studies of the Standard Model of particle physics**
 - ***Pentaquark*: JLab showed that it could respond quickly, schedule and run an order-of-magnitude better experiment, and make definitive analysis of results**
 - **Parity violation (“HAPPEX”) experiment running, results eagerly awaited**
 - **New data on the form factor of the pion**
 - **Baryon spectroscopy (“missing states”): *Excited Baryon Analysis Center* established to facilitate analysis and interpretation of data**
 - **Hypernuclear spectrometer (to study “strange” particles) installed in Hall C**
 - **Lattice QCD can now make meaningful predictions of physical quantities**
 - **Further advances in high-performance computing**

Agenda (*cont'd*)

- **Report from the 12 GeV Upgrade Project Director (A. Lung) (*highlights*)**
 - **New Capabilities in Halls A, B, C**
 - **New Hall D**
 - **9 GeV tagged (mono-energetic) polarized photons, “4 π ” hermetic detector**
 - **DOE put together “Integrated Project Team”**
 - **Schedule (funding permitting)**
 - **FY 2004-5** **Conceptual Design**
 - **FY 2006** **Advanced Conceptual Design**
 - **FY2007-9** **Project engineering and design**
 - **FY2008-12** **Construction**
 - **FY2011-13** **Pre-ops, beam commissioning**
 - **“Spectacularly successful” Lehman review in July**
 - **26 reviewers plus 5 DOE observers**
 - **No action items identified**
 - **All requirements for CD-1 have been met**
 - **Working with DOE ONP to identify path forward**
 - **Compelling science program plus solid project planning**

Agenda (*cont'd*)

- **Report from the User Group Chair (G. Cates)**
 - **User group contains over 1000 active physicists from over 100 institutions in 30-40 countries**
 - **192 Ph.D.s completed, 153 Ph.D.s in progress**
 - **SURA-sponsored thesis prize**
 - **June 2005 User Group Meeting very well attended, excellent speakers**
 - **Theme of meeting “The Challenges of QCD and the opportunities of the 12 GeV Upgrade”**
 - **SURA-sponsored student poster competition**
 - **Users’ Concerns and Feedback**
 - **“Angst” (and some mis-information) regarding re-competition**
 - **Composition of new Board?**
 - **Will current SURA benefits continue?**
 - **How will the onsite structure change?**
 - **What will the new entity bring to the Lab that we don’t have already?**
 - **In general, will science remain at the top of the agenda?**
 - **What is JLab doing about the limitations on the maximum energy?**
 - **12 GeV upgrade: funding? Timing? Effect on 6 GeV program**
 - **Some administrative issues...**
 - **August 2005 Program Advisory Committee Meeting (B. Schoch, chair)**
 - **15 proposals, 3 letters-of-intent, on wide variety of topics**
 - **8 proposals approved**

Agenda (*cont'd*)

- **Status Report on SURA Program Targeted on Improving Minority Representation in Science at the Ph.D. Level** (D. Ernst)
 - See Tabs 24, 25, 26
 - Build regional program, supported by SURA, modeled on successful program at Vanderbilt/Fisk (13 students currently in program)
 - Two research directions: Grid computing and materials science at SNS
- **Preparation for DOE Contract Competition: JLab Steps** (C. Leemann, M. Dallas)
 - M. Dallas described structure and expected contents of proposal and proposal team organization
 - Need to define benefits of new entity
 - If final RFP released by Nov. 18, proposal in by Christmas