

**Minutes of the Meeting of the
Fusion Energy Sciences Advisory Committee**

**April 7-8, 2005
Holiday Inn, Gaithersburg, Maryland**

Committee Members Present:

Richard D. Hazeltine (Chair) – University of Texas at Austin
Charles C. Baker – Sandia National Laboratories
Ricardo Betti – Rochester University
Jill P. Dahlburg – General Atomics
Jeffrey P. Freidburg – Massachusetts Institute of Technology
Martin J. Greenwald – Massachusetts Institute of Technology
Joseph J. Hoagland – Public Power Institute, Tennessee Valley Authority
Joseph A. Johnson, III – Florida A&M University
Rulon Linford – University of California
Kathryn McCarthy – Idaho National Engineering and Environmental Laboratory
George J. Morales – University of California, Los Angeles
Gerald A. Navratil – Columbia University
Cynthia K. Phillips – Princeton Plasma Physics Laboratory
Ned R. Sauthoff – Princeton Plasma Physics Laboratory
John Sheffield – University of Tennessee
Ronald Stambaugh – General Atomics
Ed Thomas, Jr. – Auburn University

Committee Members Absent:

Ex-Officio Members Present:

Ex-Officio Members Absent:

Dr. S. I. Abdel-Khalik
Dr. John W. Steadman

Designated Federal Officer Present:

N. Anne Davies (Associate Director, Office of Fusion Energy Sciences) – U.S. Department of Energy

Others Present: Raymond Orbach (Director, Office of Science) – U.S. Department of Energy; Office of Science: Marvin Stodolsky, Curtis Bolton, Marvin Singer, Dan Lehman, Warren M, JoAnne Wolff, Francis T, Gene Nardella, Sharon Long, Michael Roberts, Al Opdenaker, Tom V, Lee Schroeder; Kevin Shaw, DOE; Steve Dean, FPA; Charles Sefe, AAAS Science Magazine; Kazuo Fujiki, JAERI Washington Office; Princeton Plasma Physics Laboratory: Rob Goldston, Rich Hawryluk; R. Jonct, AIP; Chris Carter, Princeton; Tina Kaarsberg, Science Center; Adam Rosenberg, Krell Institute; Joel Parriott, OMB; Ron McKnight, retired; Miklos Porkolab, MIT

1. Call to Order and Opening Remarks

The Chair opened the meeting and introduced the first speaker.

2. DOE Perspective (R. Orbach)

Dr. Orbach commented that, if ITER funds were taken out, the cut in the OFES base budget for FY 2006 was similar to cuts in other parts of his program. He led a discussion on looking to NSF advisory committees as a model for FESAC.

3. OFES Perspective (A. Davies)

Dr. A. Davies presented the FY 2006 OFES Budget Request, Program Highlights, ITER plans, 7 solicitations, and 10-year goals and roadmap with milestones. The ITER program budget is increasing, but money has been reassigned from non-ITER OFES programs. Materials science research will be closed out and facilities will reduce operations. OMB wants letter from FESAC on goal recommendations. Group discussed how to get to the goals, science workforce, and research priorities.

4. Overview of the Priorities Panel Report (C. Baker, S. Prager)

Dr. A. Davies was followed by Charlie Baker who announced that the Report was available as a CD and on the OFES website. The introduction is general knowledge for policymakers and the document argues the value of fusion research under three themes: understanding high temperature plasma, creating a star on earth, and developing the science and technology to realize fusion energy. Drs. Prager and Baker summarized the 6 research areas, 15 topical science questions, 10 year goals, progress and opportunities, and their relevance to ITER.

5. Discussion

The committee agreed that the report was well done, and could be accepted with only minor changes. FESAC members added a section to the letter about deep concern for status of OFES budget in light of the priorities. Specifically, the committee was critical of the termination of the Materials and Technology Programs, the deep cuts in the HEDP program, and the implication of these and other cuts in the face of future demands on the budget from ITER.

6. Overview of the Committee of Visitors Report and Discussion (J. Freidburg)

Dr. Freidburg commented that OFES has implemented a good review process. J. Dahlburg will chair a facilities panel to evaluate potential losses with closing each facility but not to prioritize among facilities. G. Navratil will chair a PART panel to rate progress toward goals.

7. Discussion on Performance Measures

Dr. Hazeltine started discussion on the performance measures by prefacing that FESAC cannot change the OFES goals (decided by OMB), but can change rest of roadmap. A. Davies welcomed FESAC member comments on roadmap and annual measures. C. Baker said the roadmap categories do not match priorities report categories and the milestones are facility-driven, not science-driven. R. Hazeltine will write letter to Anne that it looks reasonable but will comment on three goals. FESAC recommends that OFES revise interim milestones with input from the Priorities Panel Report.

8. Public Comments

The committee next heard public comments by R. McKnight on the COV report. He defended the process as having feedback value, but numerical scale would not be helpful. It would be helpful to ask recommender to summarize "must fund" reasons. M. Porkolab commented that closing facilities has an

effect on graduate students working in plasma physics. R. Goldston suggested that not limit to SST but keep it more general.

9. Discussion of the Gallup Survey of FESAC Members

Dr. Hazeltine then reviewed the Gallup results that FESAC was successful when compared to government advisory committees. C. Baker said that members were willing to serve second term and the only negative comments were on DOE feedback to FESAC.

10. Discussion on Letters

Members discussed adding a sentence to the COV letter. There was more discussion about the priorities report letter, including the recommendation of allocation of percentage of funds instead of prioritizing research. Dr. Hazeltine adjourned meeting for the day.

SECOND DAY

11. ITER Status (N. Sauthoff)

Chair reconvened meeting at 8:07 AM and introduced N. Sauthoff, who then presented an update on ITER. The current status is in the preparatory phase, which includes technical activities to address risk and capabilities, and project management. The U.S. has been working on high-risk technical areas – magnets and blankets. Project management work includes strengthening the international team and possibly establishing a technical advisory committee. Current budget plans are optimistic that international agreement on ITER will occur soon.

12. ITPA Briefing (R. Stambaugh)

The next speaker was R. Stambaugh who presented the background history on the International Tokamak Physics Activity (ITPA). After the U.S. withdrew from ITER, ITPA was created to coordinate research in 2000. There is overlap with ITER team and ITPA committee that is organized into 7 topical groups that meet twice a year. The coordinating committee meets annually to prepare a report on the year's experiments and propose new joint experiments.

13. ESNET (M. Scott)

Dr. Mary Anne Scott introduced the FESAC members to Energy Sciences Network (ESNET), with the charge that they contribute technical requirements and get involved in ESNET planning and management. ESNET is a communications infrastructure and network services created in 1980s to support DOE research. Dr. Scott listed the planned upgrades and mentioned that the strength of the system is that it is science-oriented, not lab-centered. M. Greenwald is on the ESNET steering committee.

14. Discussion

Dr. Hazeltine led the discussion on three letters. FESAC will form another panel on COV with 10-14 members to be chaired by S. Prager. The meeting was then adjourned at 10:55 a.m.