

April 11, 2005

Dr. Ray Orbach
Director, Office of Science
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Dr. Orbach:

The Fusion Energy Sciences Advisory Committee (FESAC) has reviewed the enclosed report, "Scientific Challenges, Opportunities and Priorities for the US Fusion Energy Sciences Program," and submits it to you with our strong endorsement.

The Report responds to your letter of October 23, 2003, which noted that "it is now time to focus the program in a more complete and fundamental way than we have done before." Thus FESAC appointed a 25-member panel, chaired by Dr. Charles Baker with Vice Chair Professor Stewart Prager, and including scientists from virtually all scientific areas in fusion research. This panel then appealed broadly to the fusion community for advice and help, including the formation of working groups on specific topics and numerous workshops and briefings at community meetings. We are grateful to Dr. Baker and the panel for their extraordinary effort, and for the extraordinary breadth and quality of the final report.

Beginning with three overarching themes of fusion research,

- to understand matter in the high-temperature plasma state,
- to create a star on earth,
- to develop the science and technology to realize fusion energy,

the panel then identified the central scientific questions and campaigns, providing a useful and transparent summary of the fusion research program. From this survey, closely coupled to the scientific vision of our community, arose four recommendations, beginning with the statement that "The scientific challenges of fusion energy...should be addressed by a research program that encompasses a broad range of key scientific questions." The recommendations include a selection of the most important research campaigns, a clear description of how each campaign fits into the overarching issues of the plasma and fusion energy science, and a recommended funding distribution among them. Further, the panel has recommended and prioritized new research opportunities.

However, FESAC is deeply troubled by the President's proposed budget for FY 2006 and its implications for later years. In particular, the core program cannot shoulder a

significant portion of the ITER construction costs without dismantling the fusion scientific enterprise.

Already, the proposed FY2006 budget compromises an essential feature of a viable domestic fusion energy science program, highlighted in the priorities panel report: a strategic balance among the major scientific campaigns. We note that the NRC Report on Burning Plasmas recommended that “the US fusion program [should] focus on addressing compelling scientific issues and thereby strengthen the underlying science base of a fusion energy source.” It will not be possible to address the central scientific questions and campaigns noted above with the implied long-term reductions in the core research program.

We repeat our thanks and congratulations to the Panel for its superb work.

Yours truly,

Richard Hazeltine
Chair, Fusion Energy Sciences Advisory Committee

Enclosure

cc: N. A. Davies
FESAC