

October 23, 2003

Professor Richard D. Hazeltine, Chair  
Fusion Energy Sciences Advisory Committee  
The University of Texas at Austin  
Institute for Fusion Studies  
1 University Station, C 1500  
Austin, TX 78712-0262

Dear Professor Hazeltine:

As you know, the National Research Council (NRC) has now completed its work on the charge to review our strategy for addressing the science of a burning plasma. This full report extends the NRC interim report of last December. I would like to have FESAC's help in responding to a key recommendation of the report.

In addition to endorsing FESAC's recommendation that the U.S. should join the negotiations to build and operate ITER, the report also recommends a new effort to integrate ITER into the U.S. domestic program. "Although active planning has been undertaken by the U.S. fusion community in recent years, the addition of so major a new element as ITER requires that to ensure the continued success and leadership of the U.S. fusion science program the content, scope, and level of U.S. activity in fusion should be defined through a prioritized balancing of the program."

I believe that the fusion community and FESAC are ready to act on this recommendation. You have considered the science and technology issues in the past; it is now time to focus the program in a more complete and fundamental way than we have done before.

Therefore, to assist us in establishing priorities for the fusion program, I would like FESAC to identify the major science and technology issues that need to be addressed, recommend how to organize campaigns to address those issues, and recommend the priority order for these campaigns. Three funding scenarios should be considered:

- The current level (\$257M, increasing for inflation)
- The level authorized in the 2003 Energy Bill
  - For FY 2004, \$335,000,000
  - For FY 2005, \$349,000,000
  - For FY 2006, \$362,000,000
  - For FY 2007, \$377,000,000
  - For FY 2008, \$393,000,000,
  - For FY 2009 and beyond, \$393,000,000 plus inflation
- A level between today's funding level and that in the Energy Bill

It should be assumed that funding for ITER construction is provided in addition to these funds. The prioritization process should be organized using the program objectives<sup>1</sup>, as restated by the NRC report, as the guiding principle.

For each scenario, you will need to assemble a balanced domestic program that takes account of fusion programs abroad and that includes ITER as an integrated part of the whole. In each case, please recommend the relative priority of activities to pursue at any given time, so that we will have some guidance when funding is limited and we are unable to pursue every good opportunity.

Although the NRC report is focused on the Magnetic Fusion part of the program, I would like FESAC to include Inertial Fusion and relevant aspects of High Energy Density Physics as you recommend priorities for a balanced Fusion Energy Sciences program.

Please look at the program through 2014, the year ITER operation is expected to begin. I expect that your vision will be clearer for the first five years than for the second, and I recognize that in a program such as fusion, scientific and technology results and innovations, as well as funding realities, will affect what we actually will do in future years.

I also recognize how difficult such priority setting is for any research community. Nevertheless, having a template for making program decisions during this period of preparation for ITER operation will be essential for allocating and managing our resources effectively. I would like to receive your report by the end of July 2004.

Sincerely,

/s/

Raymond L. Orbach  
Director

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<sup>1</sup> Advance plasma science in pursuit of national science and technology goals; Develop fusion science, technology, and plasma confinement innovations as the central theme of the domestic program; pursue fusion energy science and technology as a partner in the international effort.

