

October 5, 2000

Professor Richard D. Hazeltine, Chair  
Fusion Energy Sciences Advisory Committee  
Institute for Fusion Studies, RLM 11.218  
University of Texas at Austin  
Austin, TX 78712

Dear Professor Hazeltine:

For many years, the U.S. magnetic fusion community has recognized that burning plasma physics is the next frontier of fusion research. In this regard, it is important to note that the September 1990 Fusion Policy Advisory Committee report recommended "...construction as soon as possible of the U.S. Burning Plasma Facility." In the last two decades, the program has made several attempts, both international and domestic, to move forward on design and construction of a tokamak experimental device in which the science of burning plasmas could be explored. For various reasons, all these attempts failed.

In the last few years, the U.S. fusion community has reconsidered its priorities and reorganized its efforts. The FESAC Report on Priorities and Balance within the Fusion Energy Sciences Program includes burning plasma physics as a part of a major thrust area, and the draft Integrated Program Planning Activity report includes a section on burning plasma physics. However, the community needs to come to consensus on two aspects of this issue. Therefore, I would like FESAC to address the scientific issues of burning plasma physics, as follows:

1. What scientific issues should be addressed by a burning plasma physics experiment and its major supporting elements? What are the different levels of self-heating that are needed to contribute to our understanding of these issues?
2. Which scientific issues are generic to toroidal magnetic confinement and which ones are concept-specific? What are the relative advantages of using various magnetic confinement concepts in studying burning plasma physics?

As a part of your considerations, please address how the Next Step Options program should be used to assist the community in its preparations for an assessment in 2004, as recommended in the Priorities and Balance report.

I would like you to provide your report to the Office of Science by the end of July 2001.

Sincerely,

/s/

Mildred S. Dresselhaus  
Director  
Office of Science