

February 28, 2003  
Dr. Charles Baker  
Director, Virtual Laboratory for Technology  
Building UCTR 302  
University of California at San Diego  
9500 Gilman Drive  
La Jolla, CA 92037-0035

Dear Charlie,

This letter contains the report on the VLT-PAC meeting held on February 26 –27, 2003 in San Diego. The charge to the committee had three parts as listed below. However, in view of the drastic technology cuts proposed in the FY04 budget, the PAC spent almost its entire time discussing the first charge, which was directly related to the FY04 and FY05 budgets. The main conclusions of our discussions are summarized on the last page, which we hope you will use in your discussions with OFES and FESAC, starting with the meeting next week in Washington D.C.

For the record, the specific charges to the VLT-PAC and our responses are listed below.

**Charge 1:** Provide advice on the VLT area plans for input into the OFES Budget Planning Meeting, particularly in light of the FY04 President's budget.

**Response 1:** Our response, which is the main component of the report, is summarized in the one page letter at the end of the document.

**Charge 2:** Review and provide advice on the draft charge for the next PAC meeting to review the overall VLT concept.

**Response 2:** We discussed this only briefly and decided that this would be the main topic of the next PAC meeting which will take place in about 6 months at MIT. In the interim you, the remainder of the PAC members and I, will do our homework so that we can actually be ready to reach some conclusions at the next PAC meeting.

**Charge 3:** Comment on the draft white paper on the approach to future technology test facilities.

**Response 3:** We did not have time to address this charge so that perhaps it should also appear on the next PAC meeting's agenda.

The fusion technology community is experiencing tough times at the present and we hope our efforts can help turn around this unexpected and unwise situation.

Best wishes,

Jeff

The PAC members attending the meeting were as follows:

Jeff Freidberg, Chairman

Don Batchelor

Rich Callis (sitting in for Jill Dahlburg)

Rich Hawryluk

Bick Hooper

Tom Jarboe

Joe Kwan

Miklos Porkolab

John Sethian

## **Response to the Proposed 2004 Budget**

The proposed FY2004 budget allocations upset the balance needed to meet the mission of the Fusion Energy Sciences Program. This program balance, between science and technology, MFE and IFE, was developed by the community over several years and endorsed by FESAC. The allocations are against the best interests of the United States fusion program, in particular for the development of fusion energy and the prospect of rejoining ITER. The most striking feature of the problem is the devastating cuts to technology.

Program balance is needed to develop attractive fusion energy on the time scale called for by President Bush. The challenges facing development of an attractive fusion power source lie as much in fusion technology as in plasma science. The proposed 2004 budget disproportionately impacts fusion technology research in the following important ways. Curtailing systems studies reduces an activity that has been proven highly beneficial in guiding fusion research. Elimination of thick, liquid wall chamber work effectively stops a key component in the development of a major IFE path. Terminating MFE chamber technology undermines the ability to demonstrate the principles of tritium fuel self-sufficiency as well as reliable heat extraction at high temperatures. Stopping work on FIRE eliminates the only US burning plasma option other than ITER. Funding of university programs and the training of future technology researchers is significantly reduced.

Under the proposed 2004 budget a number of highly skilled members of the fusion engineering community will be driven from the program. This will have three deleterious effects: It will compromise the US technology research needed to develop an attractive fusion energy source. It will undermine the source of advanced, potentially higher performance, fusion technologies. Lastly, it will remove key people that the US needs to keep in the program during the negotiation, design, and construction phases of ITER. The proposed budget squanders critically needed expertise.

An equally important serious issue with the 2004 budget, and potentially the 2005 budget as well, is that only \$2M has been allocated for direct ITER support. Even though construction does not begin until 2006, there is critical precursor work that needs to be done in the next two years if the US is to be taken seriously as a potential ITER partner. Examples include R&D on superconducting strand, and development of test facilities. Additional funds for the US fusion program will be required to conduct these activities.

We appreciate the thoughtful presentations and the professionalism of the presenters in addressing these draconian cuts. We hope that this report will assist you in conveying the negative impact of these budgets to the Department of Energy. At our next PAC meeting, we would like a presentation on a revised plan, which addresses our concerns, and we will address the two remaining charge questions at that time.