



Department of Energy  
Office of Science  
Washington, DC 20585

June 18, 2007

Office of the Director

Professor John C. Hemminger  
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Dear Professor Hemminger:

Thank you very much for your continuing service as the Chair of the Basic Energy Sciences Advisory Committee (BESAC). During the 3-1/2 years that you have served as Chair of BESAC, the Committee has delivered the report on *Opportunities for Discovery: Theory and Computation in Basic Energy Sciences* and four Committee of Visitors reports; it is nearing completion of the report on *Grand Challenges in BES Science*; and it has transitioned to a Committee of Special Government Employees (SGE). I want to thank you for your superb guidance of the Committee as it worked on all of these reports and also for your leadership of the transition of BESAC to an SGE Committee. I am well aware that BESAC was the first to engage in the transition to SGE status and that you had a challenging time working with the DOE's General Counsel and with the members of BESAC to effect the transition. Your leadership paved the way for the smooth transitions of all of our other Federal Advisory Committees.

I am also extremely grateful that you have agreed to remain as Chair of BESAC for the next two-year term. It is particularly important that BESAC complete the report on *Grand Challenges in BES Science* in a timely way. I expect that this will be a very influential report.

I would now like BESAC to pursue a follow-on study to those studies of the past five years linking basic research with problems in energy technologies. This study should tie together the report on *Grand Challenges in BES Science* with the 10 BES reports on *Basic Research Needs (BRN)* for energy technologies. In effect this will be the final study in the series, which, as you know, began in 2002 with the BESAC study *Basic Research Needs for a Secure Energy Future*. I see three main tasks for this new study. These are:

1. Summarize the science themes that emerged from the BESAC report *Basic Research Needs for a Secure Energy Future* and the follow-on BES *Basic Research Needs* reports, and relate those science themes to the grand challenges identified by BESAC.
2. Identify the tools and facilities that will be required to accomplish the science described in these workshops. Think broadly about tools – include x-ray, neutron, and electron scattering; proximal probes and other microscopies; time resolved tools; theory and



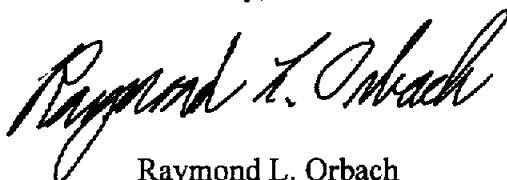
modeling; computational "end stations," i.e., community codes; and any other tools and facilities that may be important. It is more important to specify the broad characteristics of tools and facilities than to define the details of a given tool or facility at this time.

3. Identify other impediments to the successful implementation of this program of research in Basic Energy Sciences, including human resources and workforce development.

This new charge will most likely be addressed with one or two workshops. For the first element of the charge, the activity might be rather limited and might include BESAC members and participants with the appropriate expertise from the workshops that produced the *Basic Research Needs* reports and the *Grand Challenges in BES Science* report. For the second and third elements of the charge, it would be useful to include participants with the appropriate technical expertise to translate the science needs into tools and facilities.

Finally, BESAC should continue its triennial evaluations of the BES Divisions using Committees of Visitors. The established routine of evaluating one BES Division per year is working well, and the resulting COV reports have been extremely helpful to me and to BES. Based on several COV recommendations, we are working on a system that will allow the collection of demographic data; however, the implementation of that recommendation is not straightforward, because it requires the establishment of databases that can store and software that can collect personally identifying information. We are working with our general counsel and our information technology colleagues on this issue.

Sincerely,

A handwritten signature in cursive script, reading "Raymond L. Orbach".

Raymond L. Orbach