

## MINUTES

Biological and Environmental Research Advisory Committee (BERAC Meeting)  
Office of Biological and Environmental Research  
Office of Science  
U.S. Department of Energy

DATE: October 7, 2005

LOCATION: Teleconference Meeting

PARTICIPANTS: Approximately 25 people participated in the teleconference meeting. Eleven BERAC members were present on the call.

Keith Hodgson	Patricia Maurice
James Adelstein	Melvin Simon
Michelle Broido	Janet Smith
Ray Gesteland	Lisa Stubbs
Jonathan Greer	Warren Washington
Margaret Leinen	

Information on the BERAC membership can be found at:  
<http://www.sc.doe.gov/ober/berac/members.html>

Urgency in delivering reports to Ray Orbach and the programs so that they can begin to follow their advice.

Order of reports:  
GTL report  
Structural biology report  
EMSL review report

### **Jonathan Greer - summary of GTL report**

- Subcommittee meeting August 15, 2005, in Chicago, IL. Charge from Ray Orbach on August 2005.
- Would GTL-1 have value alone? What if GTL scale was reduced? Would impact effectiveness, but depends on how implemented. Facility operation versus research. Stretching out the time frame of the program scope though would jeopardize overall GTL progress and national energy and environmental needs. Some reduction could be done – 25-30% - and could partially be recouped by unexpected or even expected increases in efficiency.
- Importance of GTL 2, 3, 4 to achieve GTL mission goals? Absolutely essential for GTL to achieve its long term goals in time frame of GTL. Interactions of the facilities critical. Planning for 2, 3, 4 should be done immediately and simultaneously to maximize benefit. Could any or all of these be constructed in a distributed form,

i.e., and multiple sites? No reason why not. Best proposals to be selected based on merit regardless of scope.

- Additional comments. If any facilities distributed, it would be essential to have the group managed by a single management process as well as the facilities overall.
- Reduction in 2, 3, 4? Modest reductions could be recouped by technology advances but larger reductions would be more than linear in their negative impacts.

Comments/Discussion:

- Issue of commitment? Prioritization? Original plan laid out as series of 4 facilities with an interchange among the order in recent years. Questions of whether this is the most sensible strategy have come up. Better to launch in a less phased approach from a science impact perspective especially given the interdependency of 2, 3, 4. Every year the budget put forward needs to be defended especially if large construction projects being proposed. Once proposed and approved there is an understanding that the funds will be available over the life of the project even more so than for other budget items. Did the subcommittee provide an adequate answer? Absolutely. The questions on the table have been clearly addressed with a number of options.
- In looking at impacts how much was taken; were the needs of people working in environmental engineering/remediation taken into consideration? Are other agencies working on projects that could impact these projects? No specific DOE mission areas were discussed since the impacts will be across all mission areas. Do not believe that anyone else is doing this especially in response to DOE mission needs with focus on relevant microbes/organisms. Quite a unique program especially when considering the amount of information that will be collected on individual organisms. Are there other centers that could serve as models about whether it makes sense to bring everything on line at the same time or sequentially. We are very familiar with what NIH is doing/proposing. May actually work with NIH on some of the later facilities. NIH is not contemplating anything like the first facility. Model that we have for computing at the national labs are far more complex than anything at NIH. In fact, NIH depending more and more on DOE system computing model.
- Had long discussion at last BERAC meeting on low hanging fruit. Do not want this facility to focus on this, but to do the harder things. This could be a concern if the facility is too small. Facility metrics should be based on the quality of things done not just the number of things done. This is addressed in the report.

Move for approval. Seconded. All members voted for approval. None opposed.

Comments from others – None.

**Jonathan Greer - summary of synchrotron structural biology resources report. Subcommittee meeting held August 15, 2005. Charge from January 2005.**

- Conclusion that beamlines and instrumentation are well matched to current need. Duplication most justified in areas of need saturation. Would need to do a survey to determine if there is true need. Two exceptions. Hardest problems where highest

brightness beamlines needed. Additional APS and SSRL high brightness beamlines under construction. Could do survey to determine additional need. More effective to increase automation for example than just building more beamlines. Do need more beamlines for microcrystal studies. Capability that would deliver GTL dividends as well. Subcommittee considered other synchrotron capabilities but overall these seemed well matched to current need.

- Direct offshoot to the above for question 2. Does not make sense to devote additional resources to low intensity beamlines at this time. Additional information received from Wayne Hendrickson on the two low intensity beamlines addressed by the report. These beamlines are producing world class science and are very productive. All world class science not being done on 3<sup>rd</sup> generation undulator sources. Report may want to consider this additional report. Answer to question 2 could be modified (second sentence) to address this useful report – make it a positive versus a negative statement.

#### Comments/Discussion

Lots of sensitivity in the community on regional facilities. Almost as if being asked to comment on a specific proposal without being given more information. Not the role of BERAC to decide on specific beamlines – this is the responsibility of granting agencies who could/should do reviews of all proposals received, but BERAC can/should make general comments. Should also include words about regional facilities. Do existing regional resources in the northeast meet demand? BERAC does not really have the data to make this determination. Not BERAC's role to make decisions on X4A – needs to be peer reviewed through normal channels.

This BERAC charge came from specific language in the FY 2005 Appropriation Bill. That is why it was so specific. It was language not a proposal.

Janet Smith will draft a modified sentence.

Comments on question 1. Microcrystal and microbeam studies both important. Janet Smith will make this modification as well.

Might also want to insert comments on automation though we do not really know where this will all end up. Things will be kicking in soon. Role of industry. There are new products out there now.

Move for approval pending discussed changes. Second. All in favor. None opposed.

#### **Michelle Broido - summary of BERAC EMSL review May 17-19, 2005.**

In response to original charge from Ray Orbach, it was not clear if questions could be adequately addressed without business process review as well. It was decided that the questions in Ray Orbach's letter would stand, but that SC Office of Project Assessment would run a parallel business process review. Dan Lehman and Michelle Broido ran the

two reviews concurrently. Some joint sessions and independent sessions held during the review. BERAC review team found this very useful. Many thanks to PNNL and EMSL staff and reviewers.

Quality of EMSL science and EMSL management issues? Commentary and suggestions on how to make EMSL even better. Appropriate for BER to support this national resource (13 members on the subcommittee in agreement with this). People very impressed with what they saw at EMSL in spite of some preconceptions that they would not be impressed.

Two problems that go along with this statement at the time of the site visit though things have already changed since May 2005. Not a shared vision between EMSL, PNNL and BER. Also the issue of budget.

#### General observations

- Assumption that EMSL function is as a national user facility. This is the basis of the report. If this is not EMSL's primary mission then many of the report comments would need to be revisited.
- Issue of funding came up in several places. In addition to BER funding there is money at EMSL that comes from grants to individual EMSL scientists that can/should benefit EMSL and EMSL users overall. Encourage overall strategy to achieve greater funding.
- Q1 – Does management structure foster the highest quality science? At the time of the review there was not a coherent vision so it was difficult to make an absolute determination on this though high quality work was being done none-the-less. Shared vision the highest priority. Relates to national user facility role. Need to balance PNNL research – need for broadly constructed review committee that met regularly.
- Q2- Cutting edge science and BER relevance? Yes – cutting edge and relevant. Varies across the different facilities within EMSL, but overall yes.
- Q3 – Appropriately structured to support a full range of national research priorities. No, because no facility can do this though a broad range is being supported. Even greater impact could be achieved if projects at EMSL took advantage of more than one of the 6 EMSL “sub-facilities.” Very few projects use more than one of these.
- Q4 – Is user model appropriate? Best range of users being attracted? No consistent user model. Varies greatly across EMSL facilities. Some issue multiple calls a year that are merit reviewed. Others more based on word of mouth. All facilities strongly encouraged to issue public calls so that the road scientific community knows about EMSL. Important to note that even though there is an insular group using EMSL they are of high quality and could be broader.

- Q5 – Changes needed to impact DOE science goals? Shared mission/vision critical. Strategic plan needed that support vision and goals. Capabilities to study radiological samples does not exist at EMSL – this by definition limits some of the environmental studies that could be done at EMSL. Does this capability need to be brought into or adjacent to EMSL? This involves fiscal issues as well.
- Q6 – Priority in the BER ERSD portfolio under a flat budget? Increase budget needed in spite of low likelihood that the appropriation will be increased. More of ERSD budget to go to EMSL though this would impact research programs that take advantage of EMSL. BER could work with other federal agencies if value of EMSL to other agencies shown and developed more robustly. Opportunities for joint calls among agencies that support geosciences research for example.
- Q7 – Well defined and appropriate plan for capital equipment refresh? Equipment management plan? Long term plan? No plan except for computer facility in spite of EMSL innovativeness. EMSL cannot do this alone but needs to be done with BER (and other agencies). Need to prioritize refresh, replacement, retirement of existing equipment. A scientific advisory committee could help with this process. This will likely result in decommissioning of some equipment.
- Q8 – Access to equipment purchased with non-BER funds? Available to users at least at some level but both the acquisition and use of such equipment has been on an *ad hoc* basis. Important for EMSL to develop a more robust plan for acquiring and managing such equipment to make it available to the broad user community.

#### Comments/Discussion

Elaborate on meaning of shared vision. What are the issues? BER and EMSL had reasonable agreement as to its mission as a national user facility. Were left with questions (not absolutes) about how PNNL saw EMSL fitting into its overall organization, PNNL centric versus a national user facility.

Can this facility be used to support non-environmental research? Committee did talk about this. No question that the bulk of EMSL primarily supports environmental issues. EMSL also recognized for its potential support of other national needs. Review team suggested as a mission starting point that the primary emphasis should be on environmental science, but not only this. If strong national needs arise that EMSL could make significant contributions to EMSL should not be precluded from addressing these.

Mentioned several times that there is not an understanding/agreement of mission between the three parties. (Discussed above.) Since the site visit there has been substantial progress on developing a shared division that has been signed by all three parties. Agreement is that EMSL should be a national user facility so the comments in the report are all valid.

Moved to approve. All in favor. None opposed.

Additional comments.

Allison Campbell, EMSL Director – Thanks to the review team for thoughtful and helpful comments.