

**REPORT TO THE  
BIOLOGICAL and ENVIRONMENTAL ADVISORY COMMITTEE  
(BERAC)**

**BY THE  
COMMITTEE OF VISITORS  
FOR THE REVIEW OF THE  
ENVIRONMENTAL REMEDIATION SCIENCES DIVISION**

**NOVEMBER 2004**

## Executive Summary

On April 21, 2004, Dr. Raymond Orbach, Director, Office of Science (SC), Department of Energy (DOE), charged the Biological and Environmental Research Advisory Committee (BERAC) with assembling a Committee of Visitors (COV) to assess some of the processes used to manage the research portfolio in the Environmental Remediation Sciences Division (ERSD) of the Office of Biological and Environmental Research (BER). In response to this charge, a COV was established consisting of 14 scientists from around the country, with representation from academia, the private sector, and the Federal Government; three of the scientists from the university sector also had some affiliation with National Laboratories. Four subcommittees of the COV were formed, with each assigned to the review of a different element of the ERSD research portfolio. The COV met on October 5-7, 2004, at the Germantown, Maryland, DOE headquarters building.

The ERSD portfolio of scientific awards has four elements. These four elements are the Natural and Accelerated Bioremediation Research (NABIR) program, the Environmental Management Science Program (EMSP), the Environmental Molecular Sciences Laboratory (EMSL), and the Savannah River Ecology Laboratory (SREL).

ERSD is a new division within BER, having been established in 2003. Prior to that time, the NABIR program and the EMSL were part of the portfolio supported by the BER Environmental Sciences Division (ESD), a division that also included a very large portfolio of programs focused on climate change research. In 2003, ESD was split into two divisions, the Climate Change Research Division and the ERSD. Consequent with this, two research activities were transferred from the DOE Office of Environmental Management (EM) to the DOE SC, and specifically to the new ERSD, namely the EMSP and the SREL. Thus, ERSD supports two research programs, one of which was established in an entirely separate organization within the DOE, and two research laboratories, one of which, EMSL, is a national user facility. In response to this diversity of programs, the COV exercised latitude in the application to each of these ERSD elements of the evaluation charge issued by Dr. Orbach in his April 21, 2004, letter.

### *Summary comments:*

- In general, the solicitation and review processes work well, and the current program managers appear dedicated to the ultimate success of the programs in terms of fundamental research contributing to DOE's long-term mission and goals for environmental remediation and restoration. Many of the perceived problems or shortfalls predate the current management. The current management needs to be given the resources, tools, and mandate necessary to continue to enhance the value of the investments that have been made.
- The ERSD program managers appear to be very dedicated and highly competent, but all members of the COV expressed concern about the tremendous workload of each of these individuals. They do not have adequate time to interact constructively with funded investigators or potential applicants. In particular, the fact that there is only a single support person to assist with the entire ERSD program means that the program managers are diverted from focusing on scientific issues and program development in order to spend too much time on all aspects of the paperwork that accompanies the scientific

investment, as well as on administrative functions that should more appropriately be handled by support staff members. To maintain the excellent quality of the programs, it will be essential to recruit and retain both additional technical staff and additional support staff of the highest possible caliber. This is a critical issue that merits the attention of SC management at the highest levels.

- Although the members of the panels of peer-reviewers appear to be appropriately selected, the COV strongly recommends that the panel expertise, and the range of opinion presented, be augmented through the use of mail reviews. Such reviews should be incorporated for each application that is evaluated.
- The COV believes it would be very useful if the research programs supported by BER were to set goals for, and keep records of, funding demographics in terms of underrepresented groups, junior scientists, and new investigators/independent viewpoints. If at all possible, all of SC should follow the example of the National Science Foundation and collect such information at the time each application is submitted in a way that can be included in a statistical database without being included in the tracking folder.
- The COV recognizes that the EMSP and SREL have only recently been transferred to BER from EM. Nevertheless, it is critical that ERSD develop and implement a strategic plan for the integration of all efforts supported by the Division. While integration of EMSP with NABIR may seem most obvious, EMSL and SREL could play important roles in the future through the facilitation of laboratory and field measurements, respectively. In addition, there are programs both in DOE and other Federal agencies that are directly relevant to the ERSD. Communication and coordination with these programs should be maintained and, where appropriate, joint planning and program implementation should be carried out to optimize the use of ERSD resources and to leverage investments of other agencies. Advice should continue to be obtained through workshops, BERAC, and other organizations including the National Academy of Sciences.

### *NABIR*

The NABIR program has been in place for seven years. The COV reconfirms that the integration of biology into the understanding of fate and transport of metals and radionuclides and remediation is of fundamental, critical importance to the DOE mission. The NABIR program has had some significant successes of which DOE should be justly proud. Many of the funded principal investigators (PIs) are highly respected, well known researchers in their fields, whose research programs have been advanced by NABIR funding, with research results published in peer reviewed international journals. Graduate students and post-doctoral fellows that represent the future workforce in bioremediation have been trained under the auspices of the NABIR program. In addition, it is obvious that NABIR has catalyzed many inter-DOE National Laboratory collaborations, something that was not at all common when the NABIR program was being established, resulting in increased efficiency and effectiveness in the use of DOE's human and infrastructure resources.

The COV also recognized that the DOE resources available to support NABIR are finite and somewhat less than those required for a totally comprehensive program in basic bioremediation research. Consequently, the NABIR scope has focused on a very discrete suite of target metals and radionuclides of DOE concern and on a discrete set of available DOE research sites. These factors have contributed to a narrowing of bioremediation agents as models for the NABIR

program relative to that envisioned in the original NABIR Program Plan. From the data available, it is unclear as to whether this narrowing in the models has led to a narrowing in the breadth of investigators actively supported by NABIR or whether the selection of supported investigators has caused a narrowing in the breadth of research being conducted. As detailed in the full report, it appears that additional factors associated with structuring of the solicitation and review processes contribute to further constraints in both project and investigator diversity, thus influencing both the quality and international impact of the NABIR program.

### *EMSP*

The COV subcommittee concluded that the research being funded by EMSP is of the highest quality and that it addresses both the fundamental and applied needs of the DOE. The program is quite balanced between National Laboratories and Universities with approximately 50 percent of the lead PIs in each category. Additionally, many of the projects represent formal collaborations between scientists in the National Laboratories and in academia. It is clear that much of the research is at the “cutting-edge,” is highly interdisciplinary, and spans a wide range of specialties representative of the breadth of the environmental problems present in the DOE complex.

The COV applauds the EMSP for its use of symposia at the American Chemical Society meetings and the series of sub-program workshops that it sponsors to maintain communication between EMSP investigators and with DOE site managers. The EMSP should consider inviting members of the scientific community that do not currently receive funding from the program to these workshops and symposia in an effort to expand the portfolio of EMSP investigators. This could be extremely effective in bringing young investigators into the program. Additionally, it would be helpful to sponsor symposia at other professional society meetings such as the American Geophysical Union, again with the intent of increasing the breadth of investigators participating in EMSP projects.

### *EMSL*

The current vision of EMSL as the “premier science facility of BER” needs to be carried to the next level of detail to guide resource investments and future emphasis. This need for more detailed planning is best addressed in a partnership of BER and ERSD with EMSL and with the leadership of the Pacific Northwest National Laboratory (PNNL), where EMSL is located. This was also identified as an issue by participants in the 2001 External Review of EMSL that was conducted under the auspices of BER. The “experiments” of the Grand Challenges research programs and the Collaborative Access Teams are exciting and may provide considerable insight as to the scientific areas in which EMSL could have greatest impact. In particular, the question as to whether the appropriate balance should be skewed more toward large multi-user groups or more toward smaller groups and the identification of specific interdisciplinary areas on which to focus will be addressed, but the outcomes of these “experiments” are likely at least five years into the future. Additional strategic guidance is needed in the interim. EMSL and PNNL leadership must be made fully aware of the major expectations that ERSD has for the Laboratory, and any constraints associated with achieving these goals must be clearly articulated to, and by, both the Laboratory and BER.

## *SREL*

Responsibility for the SREL was transferred from the DOE EM to the DOE SC, and specifically to ERSD, in FY 2003. Support for SREL is provided through a cooperative agreement, and the Laboratory was transferred without modification of this agreement and without specific acknowledgement of the goals and mission of the SC. ERSD has implemented an effective process focused on aligning SREL activities with those of the Division. Clearly, major transformation in the mission of SREL needs to be made to bring it into alignment with the DOE and the ERSD missions. In reviewing the documents provided at the COV meeting, the COV members noticed that there has been significant mission “creep” on the part of SREL; i.e., expansion of research projects without concurrent expansion of funding base and without clear applicability to DOE mission needs. Many of the ongoing projects do not relate to the ERSD mission. In addition to SREL moving its scientific activities closer to those of interest to ERSD, there should also be some expansion of ERSD interests to ensure that they encompass the capabilities and opportunities presented by SREL. These changes should be reflected in the next cooperative agreement.

### *Concluding remark*

The COV, as a whole, would like to thank the management and staff of ERSD and BER for the warm welcome, access to files and documents, honest responses to numerous questions, and the efforts to make the COV members comfortable and their time productive. The opportunity to provide input into, and suggestions for, the management of these nationally important programs is greatly appreciated, and the COV hopes that this report will help all four programs achieve their full potentials.

## List of acronyms used in this report:

BER	Office of Biological and Environmental Research
BERAC	Biological and Environmental Research Advisory Committee
BES	Office of Basic Energy Sciences
COV	Committee of Visitors
DOE	Department of Energy
EM	Office of Environmental Management
EMSL	Environmental Molecular Sciences Laboratory
EMSP	Environmental Management Science Program
ERSD	Environmental Remediation Sciences Division
ESD	Environmental Sciences Division
FY	Fiscal Year
GPRA	Government Performance Results Act of 1993
NABIR	Natural and Accelerated Bioremediation Research program
NSF	National Science Foundation
NSTC	National Science and Technology Council
OSTP	Office of Science and Technology Policy
PART	Program Assessment and Rating Tool
PI	Principal Investigator
PNNL	Pacific Northwest National Laboratory
SC	Office of Science
SREL	Savannah River Ecology Laboratory
SRS	Savannah River Site
UGA	University of Georgia

## INTRODUCTION

On April 21, 2004, Dr. Raymond Orbach, Director, Office of Science (SC), Department of Energy (DOE), charged the Biological and Environmental Research Advisory Committee (BERAC) with assembling a Committee of Visitors (COV) to assess some of the processes used to manage the research portfolio in the Environmental Remediation Sciences Division (ERSD) of the Office of Biological and Environmental Research (BER). The charge letter issued by Dr. Orbach is found in Appendix A. In response to this charge, a COV was established consisting of 14 scientists from around the country, with representation from academia, the private sector, and the Federal Government; three of the scientists from the university sector also had some affiliation with National Laboratories. Four subcommittees of the COV were formed, with each assigned to the review of a different element of the ERSD research portfolio. The complete roster of the COV is found in Appendix B. The COV met on October 5-7, 2004, at the Germantown, Maryland, DOE headquarters building, and the agenda for the meeting is found in Appendix C. What follows is the report from that meeting.

In 1993, the U.S. Congress enacted the Government Performance Results Act of 1993 (GPRA), an Act intended, among other things, to "... improve Federal program effectiveness ... [and] improve internal management of the Federal Government" (<http://www.whitehouse.gov/omb/mgmt-gpra/gplaw2m.html>). In 2004, the Office of Management and Budget developed the Program Assessment and Rating Tool (PART), a process used to provide formal ratings effectiveness of over 25 percent of Federal Government programs. In response to both GPRA and PART, the DOE SC implemented a number of strategic planning and evaluation processes, including the use of a COV program, to ensure that there are continuing improvements in the management of its over \$3 billion research budget. The COV charged with the evaluation of the ERSD programs is the second COV established to review programs within the BER.

To the extent that there is such a thing as a conventional COV process for programs, the COV reviews *established* programs of grants and other awards, addressing the (1) appropriateness of the solicitations issued; (2) quality and effectiveness of the program's merit/peer review procedures used to evaluate applications received in response to solicitations; (3) selection of reviewers; (4) process by which peer review and other factors are used to select those applications for which awards will be made; (5) appropriateness of the resulting portfolio of awards, with regard to scientific issues and geographic and demographic balance; and (6) management of the awards, once made.

The ERSD portfolio of scientific awards has four elements. These four elements are the Natural and Accelerated Bioremediation Research (NABIR) program, the Environmental Management Science Program (EMSP), the Environmental Molecular Sciences Laboratory (EMSL), and the Savannah River Ecology Laboratory (SREL). As indicated below, only the NABIR program fits into the traditional mold of programs reviewed by a COV.

ERSD is a new division within BER, having been established in 2003. Prior to that time, the NABIR program and the EMSL were part of the portfolio supported by the BER Environmental Sciences Division (ESD), a division that also included a very large portfolio of programs focused on climate change research. In 2003, ESD was split into two divisions, the Climate Change

Research Division and the ERSD. Consequent with this, two research activities were transferred from the DOE Office of Environmental Management (EM) to the DOE SC, and specifically to the new ERSD, namely the EMSP and the SREL. Thus, ERSD supports two research programs, one of which was established in an entirely separate organization within the DOE, and two research laboratories, one of which, EMSL, is a national user facility. In response to this diversity of programs, the COV exercised latitude in the application to each of these ERSD elements of the evaluation charge issued by Dr. Orbach in his April 21, 2004, letter.

*General comments that were made by at least two of the four COV subcommittees*

The COV, as a whole, would like to thank the management and staff of ERSD and BER for the warm welcome, access to files and documents, honest responses to numerous questions, and the efforts to make the COV members comfortable and their time productive. The opportunity to provide input into, and suggestions for, the management of these nationally important programs is greatly appreciated, and the COV hopes that this report will help all four programs achieve their full potentials.

With regard to the COV process itself, several suggestions are offered:

- BER management should strongly consider presenting guidelines for non-disclosure at the beginning of the COV meeting. Although non-disclosure is implied in the Conflict of Interest form signed by COV members, this should be explicit and include a non-disclosure signature page. Further, peer-reviewers (whether they be panel reviewers or mail reviewers) need to be informed that their reviews may be disclosed to individuals other than the BER program staff, such as members of COVs.
- It would be helpful to begin the breakout sessions for programs such as NABIR and EMSP with summary presentations of the goals of the program; the highlights of the program-sponsored research; what the program managers feel are the most important research results to date; what surprising or unexpected findings have resulted; how previously-funded research has contributed to changes in the program objectives or goals; and a detailed self-evaluation of the program – what do the program managers think are the successes/failures/challenges?
- Detailed statistics as to the percent of applications funded, relative to the total number of applications received, would be valuable. Similarly valuable would be data as to the number of new (relative to the specific research program) investigators funded for each solicitation as opposed to the number of investigators who are either the recipient of renewal awards or who have (or had) other projects funded by the program.
- The individual files should be examined in advance and flagged for missing documentation (reviews, progress reports, etc.) so that the COV does not have to spend inordinate amounts of time seeking missing papers.
- In the list of grants provided, all of the investigators on any given project should be listed, not just the lead investigator and the lead institution. When this information is not available, it is not possible to assess the extent of funding for specific investigators or groups of investigators.

With regard to program management:



- The COV believes it would be very useful if the research programs supported by BER were to set goals for, and keep records of, funding demographics in terms of underrepresented groups, junior scientists, and new investigators/independent viewpoints. If at all possible, all of SC should follow the example of National Science Foundation (NSF) and collect such information at the time each application is submitted in a way that can be included in a statistical database without being included in the tracking folder.
- It would be very useful if a timeline/document page were affixed to every application by ESRD staff. This document should contain a check-off list for all critical milestones of the application process. All correspondence and/or decisions pertaining to the application should be noted on this list. Where possible, materials in a file should be organized in chronological order to facilitate a rapid understanding of the status of an application both by a program manager and by other parties such as a COV.
- In general, the solicitation and review processes work well, and the current program managers appear dedicated to the ultimate success of the programs in terms of fundamental research contributing to DOE's long-term mission and goals for environmental remediation and restoration. Many of the perceived problems or shortfalls predate the current management. The current management needs to be given the resources, tools, and mandate necessary to continue to enhance the value of the investments that have been made.
- Although the members of the panels of peer-reviewers appear to be appropriately selected, the COV strongly recommends that the panel expertise, and the range of opinion presented, be augmented through the use of mail reviews. Such reviews should be incorporated for each application that is evaluated.
- The ERSR program managers appear to be very dedicated and highly competent, but all members of the COV expressed concern about the tremendous workload of each of these individuals. They do not have adequate time to interact constructively with funded investigators or potential applicants. In particular, the fact that there is only a single support person to assist with the entire ERSR program means that the program managers are diverted from focusing on scientific issues and program development in order to spend too much time on all aspects of the paperwork that accompanies the scientific investment, as well as on administrative functions that should more appropriately be handled by support staff members. To maintain the excellent quality of the programs, it will be essential to recruit and retain both additional technical staff and additional support staff of the highest possible caliber. This is a critical issue that merits the attention of SC management at the highest levels. This may be an issue that the chairmen of the various SC Advisory Committees could help with as a collective body. The COV recommends this be discussed by BERAC with the suggestion that it explore the possibility of joint action with the other SC Advisory Committees.

## **NABIR**

### *Overview*

In performing its review of the Natural and Accelerated Bioremediation Research program, a subset of the COV membership reviewed NABIR program descriptions, strategic planning documents, grant solicitations, the NABIR website, and 20 of 202 funding actions that occurred in the period of FY 2002-FY 2004. The NABIR program was developed to move the field of bioremediation forward by validating the relevant biology under conditions found in the field and by, at a minimum, initiating dialogue between scientists and engineers about the potential application of bioremediation to contaminated lands owned or managed by DOE. As part of this effort, the program was designed to elucidate the mechanisms and role of microbial activity in dealing with heavy metal contamination by focusing on the integration of chemistry, geology, physics, and biology at a fundamental basic science level that could be translated into field applications.

The NABIR program has been in place for seven years. The COV reconfirms that the integration of biology into the understanding of fate and transport of metals and radionuclides and remediation is of fundamental critical importance to the DOE mission. The NABIR program has had some significant successes of which DOE should be justly proud. Many of the funded principal investigators (PIs) are highly respected, well known researchers in their fields, whose research programs have been advanced by NABIR funding, with research results published in peer reviewed international journals. Graduate students and post-doctoral fellows that represent the future workforce in bioremediation have been trained under the auspices of the NABIR program. In addition, it is obvious that NABIR has catalyzed many inter-DOE National Laboratory collaborations, something that was not at all common when the NABIR program was being established, resulting in increased efficiency and effectiveness in the use of DOE's human and infrastructure resources.

Since its establishment, there has been an unusually high rate of turnover in the program managers responsible for NABIR. This has arisen because of a number of factors, including promotion to more senior positions elsewhere in either the Federal Government or in academia, the completion of Intergovernmental Personnel Action assignments, and the need to reassign BER staff members with specific scientific expertise to other high priority programs. It is noteworthy that, despite this turnover, research progress has been made. The current NABIR management team members are dedicated champions for the program and are committed to ensuring that NABIR is successful and that it evolves in ways that continually improve its alignment with the DOE science and environmental missions.

The COV also recognized that the DOE resources available to support NABIR are finite and somewhat less than those required for a totally comprehensive program in basic bioremediation research. Consequently, the NABIR scope has focused on a very discrete suite of target metals and radionuclides of DOE concern and on a discrete set of available DOE research sites. These factors have contributed to a narrowing of bioremediation agents as models for the NABIR program relative to that envisioned in the original NABIR Program Plan. From the data available, it is unclear as to whether this narrowing in the models has led to a narrowing in the breadth of investigators actively supported by NABIR or whether the selection of supported

investigators has caused a narrowing in the breadth of research being conducted. As detailed below, it appears that additional factors associated with structuring of the solicitation and review processes contribute to further constraints in both project and investigator diversity, thus influencing both the quality and international impact of the NABIR program.

The COV has developed some constructive criticisms that, it is hoped, will enhance the program's overall effectiveness and increase not only the depth but also the breadth of NABIR's contributions to the DOE mission. Properly addressing breadth is crucial to achieving the main objectives of NABIR, as the full range of complexity that is manifested in the subsurface, with particular emphasis on the array of bacterial interactions, must be investigated.

### *Specific comments*

The April 21, 2004, charge letter from Dr. Orbach asks the COV to

*“For both the DOE laboratory projects and university grants, assess the efficacy, fairness, and quality of the process used to: (a) solicit, review, recommend, and document funding actions, and (b) monitor active projects and programs for progress and outcomes. For example, is the review process rigorous and fair, are funding decisions adequately documented and justified, does the solicitation process for projects provide sufficient and useful guidance to prospective applicants, and is the progress and outcomes of multi-year projects adequately monitored and evaluated to justify decisions about continued funding?”*

*“Assess the efficacy and quality of processes used to manage ongoing programs. For example, does the process (a) consider the depth and balance in a research portfolio, (b) solicit and encourage some exploratory, high-risk research, (c) link the research to mission needs of DOE, (d) enable the support of coherent suites of projects that are integrated and collectively of added scientific value to programs, (e) ensure a reasonable and appropriate turnover of funded investigators to enable and foster the support of new projects and scientists by programs, and (f) result in a portfolio of elements and programs that have national and international scientific standing?”*

Because the answers to these questions are not mutually independent, the COV findings are not segregated into individual responses. The findings are as follows:

- In general, the process of solicitation, review, and funding for NABIR follows a traditional grants process. However, what may be unusual relative to processes used at other funding agencies is the extent to which program managers are empowered to define the research portfolio through the formulation of the solicitation, structuring of the review panel, and selection of the approved projects within the allocation of available resources to keep NABIR focused, on target, and true to its goals. The COV believes that this is important to NABIR being able to achieve its goals, but it is unclear as to whether or not submitting investigators are aware of this full range of management of the program.
- Metrics for assessing the success in meeting the objectives of the NABIR research elements have not been established, and it is therefore very difficult to say definitively that NABIR funded research has resulted in expected outcomes.

Although the 2001 Strategic Plan for NABIR is well written with defined goals, it has neither strategies for implementation nor metrics to assess progress as the different phases are implemented. Progress reports submitted by PIs need to be more reflective of outcomes generated, beyond simply the number of publications generated. It would be useful if a template were developed for such progress reports that specifically requests the information needed to assess research progress.

- Milestones should be generated for the component research programs, and these should be monitored for completion. Contingencies for course correction should be included in program planning to allow each NABIR program element to be responsive to discoveries and developments in real time.
- A relatively small cadre of investigators appears to reap the majority of the NABIR funding. Individual PIs are the recipients of multiple awards, and there are several cases where numerous awards are made to a single institution. While this is clearly a reflection of the expertise of individual scientists and of institutional commitment to supporting research in a given area, the COV is concerned that the NABIR program is becoming inbred and that it does not have sufficient exposure to a diversity of approaches. Potential PIs not fully familiar with the NABIR goals may have difficulty deciphering solicitations and thus may be needlessly excluded from competition. The program should increase its outreach to new (to NABIR) researchers. In addition to ensuring clarity and openness of solicitations, the program should consider providing funding for seed/pilot projects to “new” investigators.
- The NABIR program already funds suites of projects that hold the promise of synergism and leveraging of available resources, but their “added scientific value” has not been clearly demonstrated. Depth of understanding of a single microorganism or process may in some instances not be as valuable to real-world field processes as breadth of understanding encompassing broader ecological components. Some of the purely lab-oriented studies may be too narrow in scope to be truly “integrative,” and there is too little iteration and integration between laboratory and field research. Further, budgetary constraints apparently led to the elimination of the original System Integration, Prediction, and Optimization element, further reducing efforts that are critical if NABIR is to achieve its full potential.
- There appear to be “favored bacteria” and entrenched approaches that may not be sufficiently open to external scrutiny or opposite viewpoints. Additional independent investigators should be encouraged in studies that bring new approaches and additional, metabolically different bacterial strains to the mix; this will be critical for assessing whether current approaches are too narrow or are misdirected.
- The committee believes that NABIR researchers need to stay focused on the broader, original goals of NABIR rather than on the narrower focus of fate and transport of metals and radionuclides. For example, there appears to be under-recognition of the importance of co-contaminants in microbial processes affecting the target elements. On the one hand, NABIR needs to remain focused; on the other hand, microbial activity is greatly influenced by the full suite of compounds present in the environment, and this needs to be considered in detail.
- The appearance of a small cadre of investigators is further reinforced by the significant use of funded PIs from the program serving as peer reviewers of applications submitted to elements of the NABIR program from which they do not receive funding. Since the fields of environmental and geomicrobiology/engineering

have grown since the inception of NABIR, there are many more reviewers available than was once the case. NABIR needs to invite broader review of programs from non-NABIR-funded researchers, international researchers, United States Geological Survey scientists, and members of professional societies. One way to achieve this broader review is to complement panel reviews with mail reviews from additional experts.

- Having separate review panels for each NABIR element may hinder the original concept of integration and cross-fertilization of research between the elements. There needs to be some assessment of the funded projects as to progress both within and across each element.
- With specific regard to linkage to mission needs of DOE, the NABIR program needs to be more pro-active in its attempts to transfer knowledge to the staff and engineers at the individual sites. Suggestions as to how to enhance dialogue between scientists and site managers include workshops, short courses, and technical presentations.
- It would be valuable if the program were to organize international conferences involving both investigators supported by NABIR and those supported by other programs as a means of helping to evaluate the national/international impact of NABIR-supported science and as a means of integrating NABIR research into broader (geo)microbiological and environmental scientific communities.
- There is a need for development of new sensors and associated technologies (networking, computer data integration, sensor calibration and verification) for long-term management of sites. Although NABIR may need to argue for other related programs to fund the bulk of such research, it should be integrated with the NABIR program.
- Better integration of science and engineering and greater representation of combined science/engineering teams and approaches is needed.
- Several projects were funded on Arsenic, which is not one of the identified target elements. It should be noted, however, that in the wrap-up session with NABIR program managers, it was indicated that these projects were funded because of Congressional interest in the topic.
- There is inadequate justification for funding researchers in other countries, such as Canada, the United Kingdom, and Denmark when there are researchers in the United States who are fully capable of doing the same types of analyses and who have appropriate background and expertise. As noted above, this reflects the concern that there may be insufficient efforts to attract domestic scientists to this program.

Questions of funding fairness and monitoring were sometimes difficult to evaluate because of the lack of sufficient documentation in a number of the files:

- Several grant files contained documentation on fewer than the three requisite reviews, so the review process is not adequately documented for these applications.
- Most files examined do not contain annual or final progress reports. Such reports are critical to evaluation of the success of individual projects and of the NABIR program as a whole, specifically with regard to whether or not key objectives within the NABIR elements have been met.

- A number of grant applications were highly criticized in the written review comments, but still received numerical rankings of 7, 8, or 9 (out of a possible 10). For some applications with lower rankings, the low rankings were not sufficiently justified by the written comments. Thus, in the files reviewed, the numerical rankings often did not seem to agree with the written comments.
- It is not clear that application declinations contain sufficient information for a PI either to be able to change or modify an application so as to make it ultimately acceptable to the NABIR program or to understand fully why it was not better received.

NABIR is clearly a program that is important to the DOE's mission, and it is one that is deserving of careful review and management. The efforts not only of the management and staff, but also of the funded investigators, program reviewers, past committee members, and other contributors need to be acknowledged.

## **EMSP**

### *Overview:*

The EMSP subcommittee of the COV had immediate access to 26 files out of the 257 funding actions made in the FY 2002-FY 2004 period. Had the subcommittee requested additional files, they would have been made available. Sixteen of the 26 were examined by at least 2 subcommittee members. Ten of the 16 were for funded awards and were selected at random from currently funded research projects. The remaining six files, divided into two groups of three, were chosen by the program managers as representative of successful applications that ranked at the margin for funding and unsuccessful applications with similar rankings.

The COV subcommittee concluded that the research being funded by EMSP is of the highest quality and that it addresses both the fundamental and applied needs of the DOE. The program is quite balanced between National Laboratories and Universities with approximately 50 percent of the lead PIs in each category. Additionally, many of the projects represent formal collaborations between scientists in the National Laboratories and in academia. It is clear that much of the research is at the “cutting-edge,” is highly interdisciplinary, and spans a wide range of specialties representative of the breadth of the environmental problems present in the DOE complex.

### *Specific comments:*

#### **Documentation Available**

- The subcommittee found the documentation for award decisions to be incomplete. Most of the files for awards made to academic investigators contained concise, written justification for the award decisions. However, this was not always the case for awards made to investigators at National Laboratories. Additionally, the six applications that obtained a “middle” ranking by the review panels lacked written justification for final disposition. Thus, it was not possible for the subcommittee of the COV to determine why three of these latter applications were funded while funding was declined on the remaining three. The subcommittee of the COV recommends that a written justification for the program managers’ decisions be placed in every file.
- When the EMSP was managed by the EM, applications were first reviewed for scientific merit by external, peer reviewers and were subsequently reviewed for “relevancy” by EM technical managers and engineers. Some project files contained evidence of the relevancy portion of the review process, but this information was missing for many of the 13 successful applications that were examined. No information on relevancy was present in the folders of the three unsuccessful applications that were reviewed. The subcommittee recommends that materials associated with a formal relevancy review should be placed in the file if such a review has been conducted.

#### **The Call and Submittal Process**

- Requests for applications are well organized with a great deal of site specific technical information available in electronic form to facilitate the preparation of applications by members of the scientific community. Adequate time is allotted between issuing the request for applications and the deadline for submittal.

- The electronic submittal process is still inadequate and very difficult to use. DOE should seriously consider adopting a modified form of the electronic grant submittal program developed by the NSF. This latter package is now very robust and simple to use and may better serve the scientific community.
- The COV was surprised to find that in some instances existing investigators are notified that they may submit applications for renewal even though an open request for applications is not made to the scientific community. This practice is undesirable because it does not convey an atmosphere of “openness.” Furthermore, by limiting a funding cycle only to renewals, the EMSP may be missing the opportunity to fund a more valuable application from a new investigator. The COV strongly encourages the EMSP to open up every funding cycle to competition for new projects.

### **The Review Process**

- Applications submitted to the EMSP are assigned to three panel members (one primary and two secondary reviewers) who each prepare a written review prior to the convening of the panel meeting. Written reviews are also obtained on an “as needed basis” if the program manager feels that a wider range of expertise is needed than is represented by the panel members. Review panels have been comprised of highly qualified individuals representing an appropriate range of: 1) technical specialties, 2) years of experience, 3) government versus academic affiliations, 4) geographic distribution, and 5) diversity.
- The subcommittee was pleased that scientific merit played a dominant role in the determination of the fate of an application. Concomitantly, the subcommittee members recognize the need for consideration of relevance in the final determination of an application’s disposition.
- The time to decision appears to be appropriate, but the calendar time of the decision is often not optimal for the start of research projects at universities. Often the timing of an award requires that investigators wait one full year before they are able to recruit graduate students to work on research projects funded by EMSP.
- The size of the awards has remained unchanged since the initiation of the EMSP. The actual size of the awards is small and may not be adequate to fund research at National Laboratories. The ERSD should consider increasing the maximum allowable size of individual awards and reduce the number of projects funded in a given cycle.
- It would be valuable if the PI of each application were to receive verbatim copies of technical reviews after sufficient information has been removed to maintain confidentiality. PIs should also receive copies of the relevancy reviews if applicable. Additionally, the COV feels that each PI should receive written notification from the program manager indicating the rationale for the decision to award or decline funding of his/her application.

### **Information Management**

- The web-based information management system of the EMSP is excellent, but the information contained therein is not current. The COV subcommittee found that it lacked final reports on some previously funded projects. Nevertheless, the system contains a large amount of useful information on the reports and findings of the EMSP research portfolio. This information is extremely valuable to future PIs, DOE managers, and other stake-holders. The subcommittee recommends that the web-based information



management system be brought up to date and maintained for the duration of the program.

### **Communication and Future Planning**

- The COV applauds the EMSP for its use of symposia at the American Chemical Society meetings and the series of sub-program workshops that it sponsors to maintain communication between EMSP investigators and with DOE site managers. The EMSP should consider inviting members of the scientific community that do not currently receive funding from the program to these workshops and symposia in an effort to expand its portfolio of investigators. This could be extremely effective in bringing young investigators into the program. Additionally, it would be helpful to sponsor symposia at other professional society meetings such as the American Geophysical Union, again with the intent of increasing the breadth of investigators participating in EMSP projects.
- The establishment of EMSP lead scientists at Hanford and the Savannah River Site (SRS) is useful in facilitating information transfer between the scientific community and site managers. The EMSP should consider broadening this effort to other sites such as the Idaho National Engineering and Environmental Laboratory and the Oak Ridge National Laboratory.
- The COV recognizes that the EMSP has just recently been transferred to SC/BER/ERSD from EM. It is critical that ERSD develops a strategic plan for the EMSP and the integration of the efforts done in this program with other ERSD program elements (NABIR, EMSL, and SREL). While integration of EMSP with NABIR may seem most obvious, EMSL and SREL could play important roles in the future of this program through the facilitation of laboratory and field measurements, respectively. In addition, there are programs in both DOE and other Federal agencies that are directly relevant to the EMSP and ERSD. Communication and coordination with these programs should be maintained and, where appropriate, joint planning and program implementation should be carried out to optimize the use of EMSP and ERSD resources and to leverage investments of other agencies. The Office of Science and Technology Policy (OSTP) and the National Science and Technology Council (NSTC) can – and should – facilitate this process. Staff should participate in OSTP/NSTC activities where and when appropriate. Advice should continue to be obtained through workshops, BERAC, and other organizations including the National Academy of Sciences.

## EMSL

### *Overview:*

The COV review of the EMSL took place on October 5-6, 2004. It focused on the processes used by ERSD to manage the EMSL program, specifically on processes related to the operation of EMSL as a user facility. This review did not address the processes involved in managing the research at EMSL since the actual research is funded by other programs and, hence, is outside the scope of this review. COV members reviewed the materials assembled and spoke with the program managers and the Associate Director for BER during the process.

Overall, EMSL is making good progress toward fulfilling BER's vision of it as the "premier scientific user facility" of the Office. It has over 100 instruments, clustered into 6 major groupings, including world class capabilities in high performance computing, high performance mass spectrometry, and high field magnetic resonance. In its short existence, it has attracted more than 1500 users annually and is currently experimenting with 2 new approaches for further stimulating the interaction of users into larger interdisciplinary teams and charting new interdisciplinary areas.

### *Specific comments:*

BER and EMSL management must now grapple with several critical strategic issues:

#### **Vision**

- The current vision of EMSL as the "premier science facility of BER" needs to be carried to the next level of detail to guide resource investments and future emphasis. This need for more detailed planning is best accomplished in a partnership of BER and ERSD with EMSL and with the leadership of the Pacific Northwest National Laboratory (PNNL), at which EMSL is located. This was also identified as an issue by participants in the 2001 External Review of EMSL that was conducted under the auspices of BER. The "experiments" of the Grand Challenges research programs and the Collaborative Access Teams are exciting and may provide considerable insight as to the most impactful areas for EMSL. In particular, the question as to whether the appropriate balance should be skewed more towards large multi-user groups or more towards smaller groups and the identification of specific interdisciplinary areas on which to focus will be addressed, but the outcomes of these "experiments" are likely at least five years into the future. Additional strategic guidance is needed in the interim. EMSL and PNNL leadership must be made fully aware of the major expectations that ERSD has for the Laboratory, and any constraints associated with achieving these goals must be clearly articulated to, and by, both the Laboratory and BER.

#### **Replacement and augmentation of capital equipment**

- The original investment for instrumentation in EMSL was well over \$100M. To continue to remain a state-of-the-art facility and to attract the kind of talent needed to advance interdisciplinary science, it is critical that this equipment be updated/replaced and supplemented on an ongoing basis. This need has been recognized by all involved, including BER and the 2001 review team. BER does not appear to have a clear plan for

accomplishing this in light of what appear to be continued flat budgets. The guiding vision and bounding constraints of such a plan need to be articulated and shared with all involved. Since the budgeting process requires considerable time, this “equipment renewal plan” should include an interim plan for living within flat budgets and a longer term plan tied to the Strategic Vision discussed above that would open up new funding opportunities for significant recapitalization.

#### **Upcoming peer review**

- Either ERSD or BERAC will soon be conducting another external peer review of EMSL, and this will be a valuable opportunity for assessing the impact of the science conducted at EMSL and its success as a user facility. It is critical to EMSL’s success as a user facility that it (a) attract some of the leading researchers in the respective areas addressed by EMSL and (b) that the problems chosen will have significant impact on the overall understanding of important science areas including those critical to DOE and other agencies funding the research. To provide both the quality of guidance and stature of the review that is desired, it is critical that reviewers be nationally recognized leaders in fields associated with the respective areas of EMSL. Given the demands on time and scheduling constraints of such leading researchers, planning for the review should begin about six months before the expected review date. Also, because a significant percentage of the research performed at EMSL addresses needs of BER’s sister office, the Office of Basic Energy Sciences (BES), BES program managers should be invited to this review. Peer reviews of EMSL should continue on a regular basis, with three years as a suggested interval.

#### **Best practices for EMSL as a user facility**

- PNNL has made significant progress in identifying user models for EMSL. Given the complex nature of EMSL as a user facility and the large operational budgets required for EMSL, it is critical to extend this activity to a full benchmarking of EMSL operations, to include best practices and lessons learned from BES user facilities; formal benchmarking of EMSL policies, practices, and costs against selected other user facilities; and a review of the solicitation and review processes for allocating instrument and computer time.
- In addition to the above recommendations, the COV was concerned with the potential negative impact of the turnover in top level management at EMSL and PNNL on EMSL’s performance. This is an area that BERAC or some other appropriate body might want to address.

## **SREL**

### *Overview:*

A subcommittee of the COV met October 5-6, 2004, to review the mission and operation of the SREL. Information provided and reviewed included a background and overview presentation by Michael Kuperberg of ERSD; general information documents; Annual Reports (2002-2004); the DOE (Environmental Management) – SREL Cooperative Agreement; a University of Georgia Self Study (December 2002) and SREL response (September 2003); the report of the ERSD External Programmatic Review (November 2003); internally issued memoranda generated by ERSD and SREL staff; and the report of the ERSD Staff Project Review (August 2004).

Responsibility for the SREL was transferred to SC/BER/ERSD in FY 2003. Under the terms of the Cooperative Agreement negotiated between the EM and the University of Georgia (UGA) Research Foundation, the DOE is to provide up to \$53M over five years to (1) provide the public with an independent evaluation of the ecological effects of the SRS operations on the environment through a program of ecological research, education, and outreach and (2) evaluate ecological resources and apply ecological science to understanding SRS environmental problems. The program was transferred without modification of the Cooperative Agreement and without specific acknowledgement of the goals and mission of the SC, specifically ERSD.

The COV evaluated the efforts of ERSD program managers to understand existing programs at the SREL and to initiate actions that will lead to alignment of the SREL activities with ERSD programmatic responsibilities and priorities. It was unclear to the COV as to whether or not SREL was accountable to EM as to the nature, quality, and quantity of SREL research activities at the time of transfer. ERSD has also initiated processes to ensure proper stewardship of monies expended under this Cooperative Agreement.

### *Specific comments:*

- As a result of the transfer of responsibility for SREL from DOE EM to DOE SC, ERSD has instituted a process of review to align the SREL mission and projects with those of the Division. Both the external and internal reviews conducted by ERSD staff and external peer reviewers have been appropriate and comprehensive. These reviews provide valuable information for use in the development of a new cooperative agreement between the UGA and DOE that ensures scientific alignment of SREL with ERSD; they should also allow metrics for research accountability to be included in the new Cooperative Agreement. The COV believes that both ERSD and SREL are making the requisite steps toward this goal of alignment and accountability. An accurate assessment of effectiveness and efficiency can not be determined until the new Cooperative Agreement is drafted.
- ERSD used an adequate number of external reviewers during the Programmatic Review conducted in November 2003. The Internal Review conducted in August 2004 similarly used an adequate number of SC staff members and led to explicit recommendations. The credentials of the reviewers, both external and internal, were of sufficient breadth to obtain an unbiased analysis of the SREL mission and projects. ERSD staff should be commended for the efforts taken to assess whether or not each individual project

currently being conducted at SREL is in some way aligned with any aspect of the overall BER program.

- ERSD has implemented an effective process for issues related to alignment and accountability, but difficult decisions remain to be made. Major transformation in the mission of SREL needs to be made to bring it into alignment with the DOE and the ERSD missions. In reviewing the documents provided at the COV meeting, the COV members noticed that there has been significant mission “creep” on the part of SREL; i.e., expansion of research projects without concurrent expansion of funding base and without clear applicability to DOE mission needs. Many of the ongoing projects do not relate to the ERSD mission. In addition to SREL moving its scientific activities closer to those of interest to ERSD, there should also be some expansion of ERSD interests to ensure that they encompass the capabilities and opportunities presented by SREL. These changes should be reflected in the next Cooperative Agreement.

*Additional comments relative to the development of the next Cooperative Agreement:*

- The SREL mission and research objectives should be redefined to meet its SC home, and specific performance metrics should be set for these objectives. There should be, at a minimum, annual mission and project reviews similar in scope and content to the external and internal program reviews conducted in November 2003 and August 2004, respectively. Based on review of documents provided, the COV is concerned that publications from SREL-based research are not, as a rule, in top tier journals nor of as high profile as would be expected of such a research laboratory. Higher expectations need to be set for publications that arise from ERSD-funded activities.
- The COV believes that the number of graduate students, and particularly so for postdoctoral fellows, at SREL is relatively low. Once the SREL mission is better defined and aligned with ERSD, SREL should consider more effective development and use of graduate students and fellows.
- SREL is currently overseen by three programmatic and administrative entities – the UGA, the SRS, and ERSD. Each of these entities has a different mission and set of responsibilities that conflict, creating problems for SREL. Lines of authority and responsibility need to be resolved in the next Cooperative Agreement. A key issue/question the COV developed and that must be resolved can be stated as follows: *Is the ERSD program one of the scientific programs addressed by SREL scientists within their UGA charter OR is the SREL itself the program that is part of ERSD?* In the former question, the mission of SREL is defined by UGA, and ERSD is just one of the funding agencies that supports research that SREL would undertake. Under this scenario, UGA would have the administrative burden (and all operation and maintenance responsibilities) for operation of the laboratory. SREL staff could also freely pursue other forms of external funding support (“work for others”). Under the latter scenario, ERSD has all administrative (and operations and maintenance) responsibilities and the official role of UGA is uncertain. This would also restrict the activities of SREL staff in their pursuit of external or “work for other” efforts as would be consistent with the restrictions at other National Laboratories.
- With regard to the issue of “work for others” or external funding from agencies other than DOE, the COV had a significant concern that because of the tremendous amount of salary support provided to SREL under the Cooperative Agreement, SREL scientists are

unfairly advantaged over other academicians when applying for external funding. Put succinctly, DOE funding pays for SREL scientists to prepare applications to other funding sources, including supporting the acquisition of preliminary data that might be needed to be competitive. Such resources are not typically available to other academicians.

- ERSD should continue efforts to obtain budget detail for all activities undertaken at SREL. The COV agrees that budget information provided to date is insufficient to account for proper and effective expenditure of ERSD funds. Budgetary detail should be a major component of the next Cooperative Agreement.
- The COV believes that ERSD should consider naming SREL as an additional Field Research Site in accordance with the findings and recommendations of the April 2004 assessment report prepared by a Subcommittee of the BERAC. Creation of a field site at SREL may lead to more effective and efficient development of SREL's mission and projects.

## **Concluding Remark**

The COV, as a whole, would like to thank the management and staff of ERSD and BER for the warm welcome, access to files and documents, honest responses to numerous questions, and the efforts to make the COV members comfortable and their time productive. The opportunity to provide input into, and suggestions for, the management of these nationally important programs is greatly appreciated, and the COV hopes that this report will help all four programs achieve their full potentials.

## APPENDIX A



Department of Energy  
Office of Science  
Washington, DC 20585

April 21, 2004

Office of the Director

Dr. Keith O. Hodgson  
Director, Stanford Synchrotron Radiation Laboratory  
Department of Chemistry  
Stanford University  
Stanford, California 94305

Dear Dr. Hodgson:

By this letter, I am charging the Biological and Environmental Research Advisory Committee (BERAC) to assemble a Committee of Visitors (COV) to assess some of the research program management processes in the Environmental Remediation Sciences Division (ERSD) in BER. The panel should provide an assessment of the processes used to solicit, review, and recommend proposal funding actions. It should also assess the processes used to manage ongoing research programs in the ERSD, especially the decision-making processes. I would like the panel to consider and provide evaluation of the following two major elements.

For both the DOE laboratory projects and university grants, assess the efficacy, fairness, and quality of the processes used to: (a) solicit, review, recommend, and document proposal funding actions, and (b) monitor active projects and programs for progress and outcomes. For example, is the proposal review process rigorous and fair, are funding decisions adequately documented and justified, does the solicitation process for proposals provide sufficient and useful guidance to prospective applicants, and is the progress and outcomes of multi-year projects adequately monitored and evaluated to justify decisions about continued funding?

2. Assess the efficacy and quality of processes used to manage ongoing programs. For example, does the process (a) consider the depth and balance in a research portfolio, (b) solicit and encourage some exploratory, high-risk research, (b) link the research to mission needs of DOE, (b) enable the support of coherent suites of projects that are integrated and collectively of added scientific value to programs, (c) ensure a reasonable and appropriate turnover of funded investigators to enable and foster the support of new projects and scientists by programs, and (d) result in a portfolio of elements and programs that have national and international scientific standing?



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The panel may examine any files of both DOE laboratory projects and university projects. It may also examine any documents related to ERSD program implementation. The panel is asked to review the aforementioned processes used by all ERSD programs and elements. The COV panel will be provided with background material on the processes prior to its first meeting.

A primary requirement is that the COV should have significant expertise across all covered areas, and that this expertise should not rely upon one person alone. A second requirement is that a significant fraction of the committee receives no direct research support from the Department of Energy. A guideline is that approximately 25 percent of the members, including the Committee Chair, receive no support from DOE. It is also important to have representation on the COV from individuals with experience in managing research programs, either at DOE or NSF. There should be an attempt to balance between university principal investigators and national laboratory investigators. A final overlay should also consider a number of other balance factors, including institution, geographic region, etc. In the end, the COV should constitute an exceptional group of internationally recognized researchers, with broad research expertise in the program areas in BER's ERSD, as well as a deep familiarity with DOE programs.

The COV should take place early this fall at the BER/DOE Germantown location at 19901 Germantown Road, Germantown, Maryland. A presentation on the status and progress of the COV to BERAC is requested at its November 3-4, 2004, meeting. Following acceptance of the full BERAC committee, the COV report with findings and recommendations is to be presented to me, as the Director of the Office of Science.

If you have any questions regarding this charge, please contact Teresa Fryberger, 301-903-4902, or by email at [teresa.fryberger@science.doe.gov](mailto:teresa.fryberger@science.doe.gov).

Sincerely,



Raymond L. Orbach  
Director

cc: Ari Patrinos  
Teresa Fryberger  
David Thomassen

## APPENDIX B

**COMMITTEE OF VISITORS (COV)**  
for  
**ENVIRONMENTAL REMEDIATION SCIENCES DIVISION**  
of  
**DEPARTMENT OF ENERGY**

**October 5, 6, and 7, 2004**

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<sup>1</sup>SREL subcommittee

<sup>2</sup>EMSP subcommittee

<sup>3</sup>NABIR subcommittee

<sup>4</sup>EMSL subcommittee

**APPENDIX C**

**DOE BER ERSD COV  
AGENDA**

PLEASE NOTE: THE DOE GERMANTOWN FACILITY IS A SECURE FACILITY. IF YOU PLAN TO DRIVE THERE AS AN INDIVIDUAL, RATHER THAN IN THE VANS THAT WILL BE ARRANGED FOR US, PLEASE ALLOW TIME TO HAVE YOUR CAR THOROUGHLY SEARCHED EACH TIME YOU DRIVE ONTO THE GROUNDS.

**Tuesday, October 5**

7:30	Meet in lobby of Marriott Hotel (Gaithersburg) Depart in vans for DOE Germantown Undergo security (badging) and screening procedures	
8:30	Welcome and introductions Signing of COI forms	Mike Kuperberg
8:45	Overview and Charge to Committee	Ari Patrinos
9:00	ERSD history, goals, and perspectives Overview of funding/review process in BER/ERSD, Future plans	Mike Kuperberg
9:45	Discussion of procedures for the COV	Michelle Broido
10:00	Breakout sessions  15-30 minutes: Paul Bayer, Arthur Katz, Dan Drell to brief NABIR group Roland Hirsch to brief EMSP group Todd Anderson, Drew Tait, Paul Bayer to brief EMSL group Mike Kuperberg to brief SREL group	Review Groups and Relevant Staff
12:00	Lunch (provided)	
1:00	Breakout sessions	
4:15	Executive session	COV
4:45	Meeting with BER staff	COV and relevant staff
?	Return to hotel	

**Wednesday, October 6**

7:30	Meet in lobby of Marriott Hotel (Gaithersburg) Depart in vans for DOE Germantown Undergo security (badging) and screening procedures	
8:30	Meeting with BER staff	COV and relevant staff
8:45	Breakout sessions	COV
12:00	Lunch (provided)	
1:00	(A) EMSL team in executive session to draft report (B) SREL team in executive session to draft report NABIR and EMSP teams in breakout sessions	
4:15	Executive session	COV
4:45	Report to BER leadership (SREL and EMSL)	COV and BER leadership
?	Return to hotel	

**Thursday, October 7**

7:30	Meet in lobby of Marriott Hotel (Gaithersburg) Depart in vans for DOE Germantown Undergo security (badging) and screening procedures	
8:30	Meeting with BER staff	COV and relevant staff
8:45	(A) NABIR team in executive session to draft report  (B) EMSP team in executive session to draft report	
11:00	Executive session	COV
11:30	Report to BER leadership (EMSP and NABIR)	COV and BER leadership
12:00	Adjourn	