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06- PD 0070

JAN 25 2006

Dr. L. K. Peters, Director
Pacific Northwest National Laboratory
Richland, Washington 99354

Dear ~~Dr.~~ Peters: *Len*

CONTRACT NO. DE-AC05-76RL01830 – FISCAL YEAR (FY) 2005 YEAR END
EVALUATION OF BATTELLE FOR THE MANAGEMENT AND OPERATION OF THE
PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL)

Enclosed is the U.S. Department of Energy (DOE) FY 2005 Year End Evaluation Report of Battelle's management and operation of PNNL. The DOE's overall rating of Battelle's performance for FY 2005 is Excellent. This rating is based on the Objectives found within the Quality of Science and Technology, Programmatic Accomplishments that Advance DOE Missions And National Needs, Constructing And Operating Research Facilities & Equipment, and Effectiveness and Efficiency of Research Program Management Support Critical Outcomes.

DOE's review indicated that Battelle's performance generally met or exceeded expectations in most areas throughout FY 2005; however, a number of issues and concerns were identified as well. Battelle has implemented substantive corrective actions and improvement initiatives to address these issues/concerns. A concentrated management effort will be required to ensure corrective actions and improvement initiatives are effectively carried out and that a measurement basis for demonstrating the effectiveness of improvements is developed. DOE's evaluation of each of the Critical Outcomes with a few exceptions agreed with Battelle's FY 2005 Annual Self-Evaluation Report. Following is a summary of each of the Critical Outcomes:

- Overall the Contractor met the Department's expectations for the Quality of Science and Technology and was rated as Outstanding for this Critical Outcome. Battelle exceeded expectations in awards and recognition received by Laboratory staff, invention disclosure reports, and patent applications, and the focused effort to improve the peer-reviewed publication impact and Laboratory publication culture was significant. The Contractor's performance in creating, enhancing, and sustaining new scientific and technological knowledge and capabilities through Laboratory Directed Research and Development initiatives was outstanding and overall the initiatives met or exceeded the technical goals set.
- The Programmatic Accomplishments That Advance DOE Missions And National Needs Critical Outcome was rated as Outstanding. With the exception of the Office of Science (SC) and Office of Assistant Secretary for Environmental Management (EM), each of the HQ offices and other customers (Office of Defense Nuclear Nonproliferation, Office of Energy

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Efficiency and Renewable Energy, Office of Fossil Energy, Office of Intelligence, Office of Counterintelligence, and the U.S. Department of Homeland Security) rated performance as Outstanding. SC rated performance as Excellent, while EM rated performance as Good.

The EM rating of Good primarily stemmed from the major issues raised during the discovery process of litigation of the Hanford Site Solid Waste-Environmental Impact Statement, when errors in the data, as well as deficiencies in quality assurance related to data management, were identified. These issues had a large impact on the EM program at Hanford.

The Excellent rating by SC was primarily due to the Environmental Molecular Science Laboratory (EMSL) reviews conducted during FY 2005. DOE conducted parallel reviews of EMSL by a Biological and Environmental Research Advisory Committee panel and by an SC Office of Project Assessment panel. The Scientific components of those reviews provided uniformly positive (and laudatory) feedback. However, there were significant criticisms of the operational aspects of EMSL, including management resources, financial reporting inadequacies, and insufficient oversight procedures resulting in EMSL being placed on the SC Watch List.

- The Success in Constructing and Operating Research Facilities & Equipment Critical Outcome was rated Excellent. Overall the operations of EMSL was found to be excellent, although, as stated above, significant concerns regarding management resources, financial reporting inadequacies, and insufficient oversight procedures will require close management attention during FY 2006. The Contractor maintained a high priority on the acquisition of space for future Laboratory Programs throughout the evaluation period. Unfortunately, progress was not fully achieved as planned. Even though CD-1, which involves approval of the acquisition strategy and alternatives, did not occur during the evaluation period, Battelle could have done a better job in preparing for the aggressive schedule to design and construct a nuclear laboratory within the Physical Sciences Facility as well as developing contingency planning should the preferred alternatives not be approved.

Battelle's safety performance at the Laboratory has continued to improve and is on track for reaching the SC goal of being in the top 10th percentile for injury and illness rates by FY 2007. Battelle was the only SC multi-program laboratory to meet SC's FY 2005 injury and illness rate goals and the review noted that a strong integrated safety management system exists at PNNL. However, this does not diminish the significance associated with the serious injury that occurred during the reporting period. The Contractor continued to utilize the integrated safeguards and security management framework in an outstanding manner, systematically integrating controls into management and work practices at all levels to ensure missions are accomplished in a safe and secure manner.

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- Overall performance within the Effectiveness and Efficiency of Research Program Management and Support Critical Outcome was rated as Excellent. Battelle accomplished many actions during the evaluation period to address deficiencies and weakness in the adequacy of PNNL management controls. These actions resulted in significant revisions to systems, processes, and tools intended to enable more comprehensive, disciplined, and systematic performance management; however, DOE's evaluation concluded there are numerous gaps in demonstrating the effectiveness, efficiency, and continual improvement of the standards based management system and processes. In particular, numerous issues within the business and financial systems were both externally and internally identified. DOE's review also noted that the Battelle Corporate Assurance Process appears to be gaining value; however, Battelle needs to ensure that both informal and formal communications on the assurance process is timely, candid, and complete.

As noted above and within the enclosed report, the Department identified a number of performance issues and concerns throughout the performance period which had a significant impact on the overall performance of the Laboratory. Each of these issues and concerns were factors in the overall evaluation rating and fee determination. However, the Type B Accident, in accordance with the policies described in Acquisition Regulation, Conditional Payment of Fee, Profit, and Other Incentives interim final rule published in 68 Fed. Reg. 68771, Dec. 10, 2003, equated to a second degree performance failure and the Department's overall assessment of the accident indicated a reduction of fee was warranted. This was based primarily on the fact that the DOE Accident Investigation Board concluded the accident was preventable and the seriousness of the injury requiring hospitalization, surgery, and the individual's inability to return to work. However, mitigating factors such as Battelle's timely response to the event, the receipt of a number of external registrations and certifications, and overall performance in integrated safety management indicated the reduction should be below the applicable range set for a second degree performance failure (11-25 percent). Therefore, based on DOE's overall assessment of the Type B Accident, to include mitigating factors, a reduction of 5 percent has been applied to the otherwise earned fee.

Overall Battelle's performance throughout the FY 2005 has been positive. We recognize the corrective actions and other efforts that have, and continue to be, implemented to correct the deficiencies noted above and overall improve the systems utilized to manage the Laboratory to include the Safety Process Improvement Plan, the Business Process Improvement Plan, and the EMSL Corrective Action Plan. Continual management attention and focus is needed to achieve these plans and improve performance in these areas. These corrective actions are necessary to improve Battelle systems and posture Battelle for reaching exemplary performance in the future. Over and above the corrective actions noted above, I am requesting you provide me a plan by February 17, 2006, for rebuilding relationships with EM and addressing the specific issues which led to the low EM rating.

Dr. L. K. Peters
06-PD-0070

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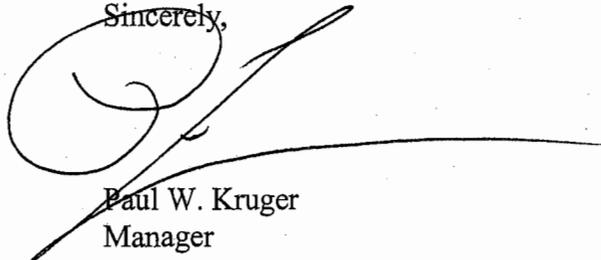
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I further expect that you will disposition other issues/concerns identified within the evaluation report as appropriate to ensure continuous improvement. We look forward to working with you throughout FY 2006 to improve not only these areas but to continue to enhance the value of the Laboratory to the missions of the DOE and the Nation.

Based on the overall rating of Excellent (3.3 value points), and in accordance with the performance-based earned section of Appendix E of the Contract, Battelle earned 92 percent of the total available fee (\$7,800,000.00) for FY 2005; however, due to the reduction of an additional 5 percent based on the Type B Accident, an overall 87 percent of the total available fee was earned for FY 2005 (\$6,786,000.00). To date, Battelle has withdrawn \$5,850,000.00 of fee from their DOE Letter of Credit bank account. Battelle is hereby authorized to draw down the remaining \$936,000.00 in fee payment for FY 2005.

If you have any questions, please contact me, or your staff may contact, Terry L. Davis of my staff on (509) 372-4612.

Sincerely,

A handwritten signature in black ink, appearing to be 'Paul W. Kruger', written over a horizontal line. The signature is stylized with a large loop at the beginning.

Paul W. Kruger
Manager

PD:TLD

Enclosure:
FY 2005 Year End Evaluation
for Battelle

cc w/encl:
J. M. Labarge, SC-31.3, HQ
W. J. Madia, Battelle
R. L. Orbach, SC-1, HQ



Pacific Northwest Site Office

FY 2005

**Performance Evaluation of
Battelle Memorial Institute
for the
Management and Operations of the
Pacific Northwest National Laboratory**

January 2006



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I. OVERALL SUMMARY RATING/FEE

Performance-Based Score and Adjectival Rating:

The basis for the evaluation of Battelle Memorial Institute's (the Contractor) management and operations of the Pacific Northwest National Laboratory (the Laboratory) during FY 2005 centered on the Objectives found within the Quality of Science and Technology, Programmatic Accomplishments That Advance DOE Missions And National Needs, Constructing And Operating Research Facilities & Equipment, and Effectiveness and Efficiency of Research Program Management Support Critical Outcomes. Each Critical Outcome was composed of two or more weighted Objectives and most Objectives had a set of performance indicators, which assisted in determining the Contractor's overall performance in meeting that Objective. Each of the performance indicators identified significant activities, requirements, and/or milestones important to the success of the corresponding Objective. The following describes the methodology utilized in determining the Contractor performance rating.

Each Objective within an Outcome was assigned an adjectival rating and appropriate earned value points by the evaluating office. Each evaluation measured the degree of effectiveness and performance of the Contractor in meeting the Objective and was based on the Contractor's success in meeting the set of performance indicators identified for each Objective as well as other performance information available to the evaluating office to include, but not limited to, the Contractor's self-evaluation report, operational awareness (daily oversight) activities; "For Cause" reviews (if any); and other outside agency reviews (OIG, GAO, DCAA, etc.). The Outcome rating was then computed by multiplying the value points by the weight of each Objective within an Outcome. These values were then added together to develop an overall score for each Outcome. Utilizing Table A, the scores for each of the Outcomes were then multiplied by the weight assigned and these were summed to provide an overall score for the Contractor. The total Contractor score was then compared to the adjectival rating scale found in Table B to determine the overall Contractor adjectival rating for FY 2005. The raw score (rounded to the nearest hundredth) from each calculation was carried through to the next stage of the calculation process. The raw score was rounded to the nearest tenth of a point for purposes of identifying the Contractor's overall adjectival rating as indicated in Table B. A standard rounding convention of x.44 and less rounds down to the nearest tenth (here, x.4), while x.45 and greater rounds up to the nearest tenth (here, x.5) was utilized throughout the process.

Overall the Department continues to be pleased with Battelle's performance in managing and operating the Laboratory; however, a number of issues and concerns identified throughout the evaluation period has somewhat eroded the Department's overall confidence in Battelle's ability to maintain such performance. A concentrated senior management effort will be required to ensure corrective actions and improvement initiatives are effectively carried out and that a measurement basis for demonstrating the effectiveness of improvements is developed. Based on the evaluation of Battelle's performance against the Outcomes and Objectives contained within the FY 2005 Performance Evaluation and Measurement Plan (PEMP) an overall rating of **Excellent** with an overall score of **3.3** is awarded. The ratings for each of the Outcomes, as well as the overall rating are indicated within Tables A and B with the specific performance evaluations (ratings/scores) for each of the Critical Outcomes and their corresponding Objectives provided within Section II of this report.



Critical Outcome	Value Points	Adjectival Rating	Weight	Weighted Score	Total Score
1.0 Quality of Science and Technology	3.70	Outstanding	20%	0.74	
2.0 Programmatic Accomplishments That Advance DOE Missions And National Needs	3.49	Outstanding	35%	1.22	
3.0 Constructing And Operating Research Facilities And Equipment	3.19	Excellent	35%	1.11	
4.0 Effectiveness And Efficiency Of Research Program Management And Support	2.50	Excellent	10%	0.25	
Total Score					3.32

Table A. FY 2005 Contractor Evaluation Score Calculation

Total Score	4.0 - 3.5	3.4 - 2.5	2.4 - 1.5	1.4 - 0.5	<0.5
Final Rating	Outstanding	Excellent	Good	Marginal	Unsatisfactory

Table B. FY 2005 Contractor Adjectival Rating Scale

Performance-Based Fee Earned:

The total performance-based fee earned was determined based on the final Contractor weighted score for FY 2005 as indicated within Table A above and then compared to Table C below.

Overall Weighted Score from Table A.	Performance Rating	Percent of Fee Earned of \$7,800,000.00
4.0	Outstanding	100%
3.9		100%
3.8		100%
3.7		98%
3.6		96%
3.5		94%
3.4	Excellent	93%
3.3		92%
3.2		91%
3.1		90%
3.0		85%
2.9		83%
2.8		81%
2.7		79%
2.6		77%
2.5		75%
2.4	Good	50%
2.3		50%
2.2		50%
2.1		30%
2.0		30%
1.9		25%
1.8 to 1.5		0%
1.4 to 0.5	Marginal	0%
0.4 to 0.0	Unsatisfactory	0%

Table C. Performance-Based Fee Earned Scale



Performance Fee and Rating Adjustment Factor:

The Performance Fee and Rating Adjustment Factor as defined within the FY 2005 Performance Evaluation and Measurement Plan (PEMP) is the methodology to be utilized by the Contracting Officer in determining the need for and amount of reductions in otherwise earned fee or rating based upon the lack of performance and/or specific events that occur during the evaluation period. Also as called for within the FY 2005 PEMP the reduction of otherwise earned fee is determined by the severity of the performance failure(s) and any applicable mitigating factors (i.e., the degrees and mitigating factors set forth by the policies described in Acquisition Regulation; Conditional Payment of Fee, Profit, and Other Incentives interim final rule published in 68 Fed. Reg. 68771, Dec. 10, 2003).

As noted within the performance assessments provided within Section II below, the Department identified a number of performance issues and concerns throughout the performance period which had a significant impact on the Laboratories performance and more importantly weakened the Department's overall confidence in Battelle's ability to efficiently and effectively manage and operate the Laboratory in these areas. The issues included the Type B accident; the Hanford Site Solid Waste-Environmental Impact Statement data quality issue; the deficiencies and non-compliances within the financial and business management systems; and the significant concerns related to management, operation and oversight of the Environmental Molecular Sciences Laboratory (EMSL). It should be noted that in making the final determination of the amount of fee adjustment, the DOE took into consideration that each of the identified performance issues and concerns were factors in the overall evaluation rating and fee determination based on the outcomes and objectives described within Section II below and were therefore factors in what would have been otherwise earned fee had the performance issues/concerns not occurred. Based on these factors the only performance issue taken into consideration as part of the fee adjustment was the Type B accident, which equated to a second degree performance failure. The overall assessment of the incident indicated a reduction of fee was warranted especially in light of the fact that the DOE Accident Investigation Board concluded the accident was preventable and the seriousness of the injury requiring hospitalization surgery and the individuals inability to return to work. However, mitigating factors such as Battelle's timely response to the event, the overall excellent status of safety performance, and the receipt of a number of external registrations and certifications indicated the reduction should be below the applicable range set for a second degree performance failure. Based on DOE's overall assessment of the Type B accident, mitigating factors, and the Contractor's overall performance in integrated safety management, a reduction of 5 percent is to be applied to the otherwise earned fee (see Table D below). No reduction of the otherwise earned rating was deemed necessary.

Performance Adjustment Determination	
Percent Fee Earned from Table C.	92%
Percentage of Performance Adjustment	- 5%
Final Percentage of Fee Earned	87%
Final Performance Rating Awarded	Excellent

Table D. Performance Adjustment Factor Calculation

Based on the performance adjustment determination the Contractor is awarded \$6,786,000.00 in performance based fee for FY 2005.



II. CRITICAL OUTCOMES, OBJECTIVES & PERFORMANCE INDICATORS

1.0 QUALITY OF SCIENCE AND TECHNOLOGY (20%)

Battelle produces high-quality, original, and creative results that advance science and technology; have sustained scientific progress and impact; receives appropriate external recognition; and contribute to U.S. leadership in international scientific and engineering communities.

The weight of this Outcome is 20%.

The Quality of Science and Technology Critical Outcome measured the overall effectiveness and performance of the Contractor in delivering science and technology results which contributed to and enhanced the nation's technology base; and was recognized by others within the scientific community.

As noted below, overall the Contractor met the Department's expectations for the quality and impact of science and technology outcomes in delivering science-based solutions through external recognition and review. Battelle exceeded expectations in awards and recognition received by Laboratory staff (157), invention disclosure reports (264) and patent applications (75). The focused effort to improve the peer-reviewed publication impact and Laboratory publication culture was significant; however, the Laboratory continues to rank below the top 1% by ISI in the biological and computational sciences indicating that attention is still needed in this area. The DOE determined the Contractor's performance in creating, enhancing, and sustaining new scientific and technological knowledge and capabilities through LDRD initiatives (Objective 1.2) primarily by evaluating each of the identified initiatives' progress against their plans (or goals as with the *Laboratory Fellows Research* projects) and by considering the feedback from formal advisory committee reviews where they were available. Overall the initiatives met or exceeded the technical goals set and performed at an outstanding level.

A major issue regarding the quality of science and technology was raised during the discovery process of litigation of the Hanford Site Solid Waste-Environmental Impact Statement (HSW-EIS), the Contractor found some errors in the data, as well as deficiencies in quality assurance related to data management. This issue has raised serious questions about the quality assurance and control processes applied by the Contractor and undermined public confidence of Hanford clean-up, DOE's overall credibility, and reflect poorly on the Laboratory.

Overall the evaluation indicated that the Contractor continues to meet and/or exceed expectations regarding the overall scientific and technological programs, affording the Contractor an overall rating of **Outstanding** (3.70 value points) for this critical outcome. This however does not diminish seriousness of the quality assurance issues identified during the reporting period and the continued need for senior management attention in this area.

1.1 Validate the Quality and Impact of Science and Technology Outcomes in Delivering Science-Based Solutions Through External Recognition and Review

The Contractor fully met the requirements of the key indicators identified within the FY 2005 PEMP for this objective and exceeded expectations in awards and recognition received by Laboratory staff (157), invention disclosure reports (264) and patent applications (75). The focused effort to improve the peer-reviewed publication impact and Laboratory publication culture is significant. The Contractor is to be commended for the concerted effort to understand the publication culture of the Laboratory and to improve it. While the publication data results are impressive in the early stages of the improvement strategy, it is also apparent that there are several points of risk evident that deserve attention. The efforts of the Laboratory Director and the Publication Advisory Committee to inculcate Laboratory science and engineering staff with the importance of the relationship of producing abundant high impact publications to the Laboratory's perceived performance and reputation have been impressive. However, the DOE is concerned that the Laboratory does not rank highly as defined by Essential Science Indicators in two key strategic scientific research areas for the Laboratory: the biological and computational sciences. The Contractor should consider deploying a



focused effort to improve publication performance in the biological and computational sciences. Additionally, the Contractor should also consider placing additional emphasis on its goal of achieving a 1:1 ratio of the total number of peer-reviewed publications to the total number scientific staff. The performance in FY 2005 fell short of the projected increase needed to reach a 1:1 ratio in five years.

Although not specifically called out as a key indicator for FY 2005 the issues surrounding the quality of the data supporting the Hanford Site Solid Waste-Environmental Impact Statement (HSW-EIS) raised serious questions about the quality assurance and control processes applied by the Contractor to ensure the conduct and delivery of quality products. During the discovery process of EIS litigation, the Contractor found some errors in the data, as well as deficiencies in quality assurance related to data management. Deficiencies were noted in the quality assurance program itself as well as information provided in the HSW EIS. Although the HSW-EIS data deficiencies occurred in prior years work the issue was discovered and self reported by Contractor staff during FY 2005. These deficiencies have undermined public confidence of Hanford clean-up, DOE's overall credibility, and reflect poorly on the Laboratory. They have also negatively impacted EM's long-standing plans of making Hanford available for disposal of low level waste and mixed low level waste from other DOE generators and for processing and certification of transuranic waste from other DOE generators, as well as causing a significant cost impact to the EM clean-up project both at Hanford and across the EM complex.

Battelle demonstrated the support and use of strong technical peer review processes to maintain the quality of R&D programs during FY 2005 by completing the Review Implementation Plan. The contractor revised the submitted FY 2005 Peer Review Implementation Plan to include a new task that codifies the establishment and maintenance of a Laboratory Peer Review Schedule and the establishment of a process to collect and disseminate selected peer review reports.

Based on the overall performance this Objective is rated as **Outstanding** with 3.60 value points awarded.

1.2 Create, Enhance, and Sustain New Scientific and Technological Knowledge and Capabilities

The DOE evaluators determined the Contractor's performance in creating, enhancing, and sustaining new scientific and technological knowledge and capabilities through LDRD initiatives primarily by evaluating progress of each of the initiatives' identified below against their plans (or goals as with the *Laboratory Fellows Research* projects) and by considering the feedback from formal advisory committee reviews where they were available. Overall the initiatives met or exceeded the technical goals set and performed at an outstanding level earning an overall rating of **Outstanding** with 3.77 value points awarded.

Biomolecular Systems Initiative

The Contractor met all technical goals of this Initiative. The Advisory Review Committee believes that the Laboratory met its scientific goals; however, it was identified that there is an important need to bring in more external resources. Also, the committee supports the Bio-Detection Thrust Area. The Contractor has since removed this thrust area from this Initiative. The Contractor's approach to systems biology has set it apart both nationally and internationally.

Homeland Security Initiative

The Contractor has performed at an outstanding level creating major advancements in the fusion, analysis, and visualization of massive information sources and in robust, low-cost systems for collecting, concentrating and sensing chemical, nuclear, and biological weapons to improve homeland security. The Contractor has demonstrated this outstanding leadership in the Homeland Security Initiative scientific capabilities and results by showing the application of initiative-developed methods to early threat detection, protection, forensics and attribution. Outcomes of all projects were successfully integrated and demonstrated in a mock counterterrorism exercise held in July as part of the annual Advisory Committee review.



Computation Science Initiative

The Computational Science Initiative is building on the Laboratory's strengths in applied math, statistics, information analytics, bioinformatics, computational chemistry, high performance computing, information analytics, and data management to build transformational capabilities in the areas of multiscale mathematics, fundamental algorithms and data-intensive architectures. There was a significant effort in restructuring the initiative based on the advisory committee's recommendations which has helped focus the activities. The Computational Science Initiative (CSI) produced a number of new ideas during the evaluation period to include:

- The Multiscale Modeling Framework (MMF) demonstrated improvements over the current Global Climate Model for simulations of the period 1998 to 2001, showing a better representation of tropical convective cloud systems, especially in terms of vertical placement. MMF also provides a better simulation of long wave (OLR) energetics. The MMF research results are adding new understanding to the coupling of convection and planetary-scale dynamical motions.
- "Concurrent Single-Program-Multiple-Data (SPMD) Tasking in Global Arrays (GA) and its Application to Electronic Structure Calculations on Systems with Thousands of Processors", developed a processor group capability that enabled enhanced versions of BLAST, Conjugate Gradient and Molecular Dynamics applications to set record performance levels.
- "Computational Complexities Associated with High-Performance Computing Architectures" studied a set of kernels from typical data-intensive applications. A hypothesis emerged that data-intensive problems scale better when they are time constrained and not memory constrained whereas numerically-intensive problems are the opposite.

There were also a number of enhanced or new capabilities:

- "A Signature Approach to Homology Detection and Annotation" fits the Initiative's strategy of improving algorithms to advance the Laboratory's ability and reputation in the area of data-intensive computing. The approach, a technique called Support Vector Machines (SVM) employs statistical learning theory to classify proteins into families, thus identifying homologous relationships. The result is a method that is both faster and more sensitive than traditional dynamic programming methods such as PSI-BLAST.
- "Next Generation Chemistry-Aerosol-Meteorology Model for Addressing Climate Change and Air Quality Interactions" developed improved aerosol-chemistry-cloud-radiation feedback mechanisms modules have been implemented into the Weather Research and Forecasting (WRF) community codes, enabling atmospheric trace gas and particulate evolution to be simulated over urban to regional spatial scales.
- "Reconfigurable Computing" explored the limits of using Field Programmable Gate Arrays (FPGA's) to solve an energy grid problem (state estimation), which had a simulated speedup of several orders of magnitude over the conventional approach.

Nanoscience and Technology Initiative

The Nanoscience Initiative (NSI) completed all its programs in FY 2005 and all goals were met. The Initiative consisted of a 5 year agreement with the University of Washington (UW) to generate collaborative efforts between the Laboratory and UW. Almost all LDRD investments for NSI were transitioned to larger external programs. UW has served as a springboard for promoting Pacific Northwest regional collaborations in nanoscience. This initiative will continue in the future as the Northwest Nanoscience and Nanotechnology Initiative and the regional Oregon Nanoscience and Microtechnology Institute.

Laboratory Fellows Research

The Laboratory Fellows Research continued to be an important and productive initiative during FY 2005 with 17 early career Science and Engineering staff supported 3 post-doctoral fellows and 4 students. Nine research projects produced 8 peer-reviewed publications, 6 peer-reviewed publications that were in press as of the end of the evaluation period, 22 seminars and presentations at international conferences, including 2 seminars in the Lab Fellows Seminar Series, one patent issued; 4 patent applications filed, 3 invention reports submitted, and one early-career staff member supported by this



initiative was recognized with an invitation from the National Academy of Engineering to participate in their 11th Annual Symposium on Frontiers of Engineering.

Hydrogen Initiative

In FY 2005, the hydrogen science and technology roadmap and investment plan were completed. These planning documents establish the technical direction and market focus areas for the initiative. The roadmap and investment plan were reviewed during midyear and in August by the Hydrogen Science and Technology Advisory Committee. The advisory committee approved the business and technical directions, and provided recommendations pertaining to the individual projects which were incorporated into the FY 2005 plan. The Laboratory was selected to support the management and integration of the FutureGen Industry Alliance and the Directorate Review Committee (DRC) was very positive in their assessment of the initiative. The DRC recommended the Laboratory continue with their planned agenda, seek to help DOE set priorities, continue to focus on gas separation science and seek out collaborative efforts with industry.

Catalysis Initiative

This Initiative focused on 3 goals: Institute for Interfacial Catalysis; Hiring and Developing Science and Technology (S&T) Staff; and Knitting the Laboratory's "Story" (Strategy) Together. The first 2 goals were met during FY 2005. In fact, the scientific goal performance was outstanding. The missing piece is a viable technical approach to achieve the strategy for the Initiative. The Advisory Review Committee recommended that the Contractor focus on specific problems first and then addresses the Laboratory capabilities/solutions which address those problems versus the other way around.

Materials Discovery Radiation Detection Initiative

The Materials Discovery for Radiation Detection Initiative began in FY 2005. Its purpose is to accelerate the discovery and development of radiation detection materials through a strengthened understanding of radiation detection, property performance, relationships, and materials informatics. An S&T Roadmap and initiative plan were developed in January 2005 and reviewed by an advisory committee which met in February. The advisory group was in general agreement with the path of the initiative and recommended starting the proposed LDRD projects. The group found a good balance in the LDRD projects and participation of the Laboratory directorates. The S&T Roadmap and investment plan was refined and reviewed again by the advisory committee in August 2005. The committee concluded that the LDRD projects were well integrated and well formulated for this stage of the Initiative.

Environmental Biomarkers Initiative

The strategic intent of the Environmental Biomarkers initiative is to lead the transformation of environmental assessment and management into a predictive, systems-based science through the discovery and implementation of environmental biomarkers. During FY 2005, the initiative plan, including an S&T roadmap was completed the initiative also started a number of important and successful LDRD projects. In addition to the LDRD projects, the initiative leadership actively pursued strategic hires, and although an initiative lead was identified later than optimal, a good selection was made. The Environmental Biomarker Laboratory was also completed and made operational during FY 2005. This initiative has made progress towards the creation of new ideas with regard to environmental biomarkers that are or could be significant in the future, but the more significant advances have been in the area of creating new capabilities or enhancing the existing ones towards the application of biomarkers. There were two advisory committee meetings held during the evaluation period and the committee was positive towards the progress made.

Biobased Products & Fuels Initiative

The bio-based products and fuels initiative was completed in FY 2005. The Initiative created strong scientific and technical capabilities which are now being funded directly by DOE, created a strategic presence at DOE Office of the Biomass Program (OBP), and was instrumental in promoting the Bio-products Science and Engineering Laboratory (BSEL), a proposed collaborative Laboratory and Washington State University (WSU) facility to be located on the WSU Tri-Cities campus. The DRC



was supportive of the Contractor’s focus in this program and believes the Laboratory could potentially have great success with its fungus-based process technology.

Pathogen Biology Initiative

The Pathogen Biology Initiative (PBI) is relatively new starting in April of 2005. The PBI Advisory committee review in August 2005 indicated that the initiative roadmap provided a rational framework for design and execution of the outlined research program; however, the Initiative lacked integration. The expected outcomes of the PBI are to develop capabilities which will provide a specialized set of tools and expertise for understanding molecular interactions between pathogens and the infected host cells. Accomplishments by the PBI during the first 6 months included implementation and refinement of the initiative strategy to build a research program in alignment with the National Institute of Allergy and Infectious Disease (NIAID) areas of emphasis, Biology of the Microbe; and Therapeutics, Diagnostics, and Research Resources, and the initiation of work on three LDRD projects that represent an integrated approach to understanding the role of bacterial type III secretion systems in virulence. Also significant progress was made toward recruiting a senior investigator to build and lead the technical group in Microbial Pathogenesis and the Contractor identified and pursued a collaborative opportunity with Texas A&M University, DHS Center of Excellence for Bio-Weapons research.

ELEMENT	Adjectival Rating	Value Points	Objective Weight	Total Points	Total Points
1.0 Quality of Science and Technology					
1.1 Validate the Quality and Impact of Science and Technology Outcomes in Delivering Science-Based Solutions Through External Recognition and Review	Outstanding	3.60	40%	1.44	
1.2 Create, Enhance, and Sustain New Scientific and Technological Knowledge and Capabilities	Outstanding	3.77	60%	2.26	
Critical Outcome 1.0 Total					3.70

Table 1.1 – 1.0 Critical Outcome Performance Rating Development

Total Score	4.0 - 3.5	3.4 - 2.5	2.4 - 1.5	1.4 - 0.5	<0.5
Final Rating	Outstanding	Excellent	Good	Marginal	Unsatisfactory

Table 1.2 – 1.0 Critical Outcome Final Rating



2.0 PROGRAMMATIC ACCOMPLISHMENTS THAT ADVANCE DOE MISSIONS AND NATIONAL NEEDS

Battelle's research and development results advance DOE missions and other national programs, have broad and significant value, and contribute to U.S. leadership in international scientific and technical communities.

The Programmatic Accomplishments That Advance DOE Missions And National Needs Critical Outcome measured the overall effectiveness and performance of the Contractor in producing programmatic outcomes that advance DOE or other major customer missions and added to scientific and technological knowledge. The overall rating for this Outcome is **Outstanding** with a numerical score of 3.49 value points. Program Office evaluations ranged from Good to Outstanding and are summarized below. The full evaluation reports provided by each Program Office are appended to this report. The overall rating from each of the Program Offices was weighted primarily based on budget authority. The overall performance rating for this outcome was determined by multiplying the program office overall rating (value points) identified below by their respective weighting and then summing the results (see Table 2.1).

2.1 Produce Science and Technology Accomplishments that Advance Office of Science (SC) Program Objectives and Goals.

The SC overall evaluation of the science and technology accomplishments that advance the Office of Science Program Objectives and Goals was rated as **Excellent**, with a score of 3.42 awarded (see Appendix 1). This rating was based on a weighted average of performance evaluations provided by the SC offices of Advanced Scientific Computing Research (ASCR), Biological and Environmental Research (BER), Basic Energy Sciences (BES), Fusion Energy Sciences (FES), and Workforce Development for Teachers and Scientists (WDTs). The less than outstanding rating was primarily affected by the Environmental Molecular Science Laboratory (EMSL) review.

Within ASCR, the Global Array programming model and the underlying Aggregate Remote Memory Copy Interface (ARMCI) run-time system library are key research activities at the Laboratory and researchers continued to improve the performance and expand the scope of this software. Recent examples include Multi-Component-Multi-Data (MCMD) was shown to be an effective tool for improving scalability of real scientific applications on large processor counts and under the DOE PModels project (ARMCI run-time system) utilization of new algorithms in the implementation of All-to-All-Gather collective communication yielded 89% performance improvement on the Quadrics cluster and 65% performance improvement on the Infiniband cluster.

Within BER Programs, the Laboratory is conducting several key research activities in the areas of Climate Change Research, Life Sciences and Environmental Remediation. The regional climate modeling efforts are state-of-the-art and the Atmospheric Radiation Measurement (ARM) program published several important findings in peer reviewed journals. The modeling of carbon sequestration is well integrated with Carbon Sequestration in Terrestrial Ecosystems (CSiTE) Consortium projects however, the scope of microbiology experimental analysis was found to be overly ambitious, and the research team needs to set priorities, and focus on doable scientific tasks that are clearly relevant to CSiTE goals. The Contractor continued to conduct high quality Genomes to Life (GTL) research and their contributions continued to grow as significant and scientifically substantive contributions across many areas of the GTL program were made. The Contractor consistently performs high quality science in support of the Environmental Remediation Science Division. This was demonstrated by the number of high quality publications resulting from these efforts. In May 2005, DOE instigated parallel reviews of EMSL by a BER Advisory Committee (BERAC) panel and by an SC Office of Project Assessment panel. The Scientific components of those reviews provided uniformly positive (and laudatory) feedback. However, there were significant criticisms of the operational aspects of EMSL, including management resources, financial reporting inadequacies, and insufficient oversight procedures. Since those reviews, the contractor has worked diligently and cooperatively with DOE to understand these criticisms and to develop and implement solutions. While DOE was disappointed in



those aspects of the review that were negative, the positive findings of scientific output and the efforts by the contractor to implement solutions to the identified issues are encouraging.

BES conducted several peer reviews during FY 2005 one of which was within the Materials and Engineering Physics program. This program was found to be of very high quality and innovative. The Contractor appropriately responded to concerns about the novelty of a subtask within the Chemistry and Physics of Ceramics Surfaces Program and overall coherence of the Molecular Organized Nanostructured Materials program. The Condensed Phase Chemical Physics: Chemical Kinetics and Dynamics at Interfaces Program within the Chemical Physics Program was found to be an outstanding research effort. Extensive synergies exist among the individual subtask efforts as well as excellent collaboration with the scientists supported by the companion Molecular Theory and Modeling program, which also continues its strong performance.

Within the Office of Fusion Energy Science, the quality of the Contractor's work on fusion materials research continued to be outstanding. The Contractor made important contributions to the domestic and international efforts on modeling of irradiation damage and helium effects, on issues of ceramic composites, on body-centered cubic metals and on face-centered cubic metals. The Contractor's original and creative scientific output has advanced the science of fusion materials and has shown sustained progress and impact in the field.

The WDTS indicated that the Contractor runs a model Science Education Program (SEP) and has dedicated itself to program and process improvement both of which are most evident by the overall quality of the internship and fellowship research products. The SEP office has focused time and talent on operating as a well integrated team and the results demonstrate a significant increase in productivity where student outputs are of superior quality and the research experience is a rich, productive experience

2.2 Produce Science and Technology Accomplishments that Advance Office of Defense Nuclear Nonproliferation (DNN) Program Objectives and Goals.

The DNN overall evaluation of the science and technology accomplishments that advance the Office of Defense Nuclear Nonproliferation Program Objectives and Goals was rated as **Outstanding**, with 3.76 value points awarded (see Appendix 2).

The Laboratory's work plays a very important role in many DNN activities and programs and the Contractor continues to be successful at forecasting and addressing their changing needs. Some examples of significant FY 2005 accomplishments include two updates of the Infrared Spectral Library, continued progress on the Advanced Large Area Plastic Scintillator (ALPS) program, and a field test of the Deployable Analysis System (DAS). The Contractor's support to NA-20 exceeded expectations with regard to the UF6 detection experiment, efforts underway in planning for verification dismantlement activities of foreign nuclear weapons programs, and policy support for NPT and FMCT issues. The Contractor continues to do an outstanding job of managing the Nonproliferation Graduate Program (NGP) Program as evident by the extraordinary young people that are provided through this program every year.

2.3 Produce Science and Technology Accomplishments that Advance Energy Cluster (EC) Program Objectives and Goals.

The Office of Energy Efficiency and Renewable Energy (EERE) indicated that the Laboratory continues to partner with industry leaders to develop and advance technology within the mission of the Biomass Program. Over the past period the Contractor initiated a Fungal Genomics Research Program with an industry led board of directors, whom will ultimately cost share the development of core technologies that will benefit the program as a whole. A building industry peer review of the Contractor's work showed that the general consensus in the building industry is that the Contractor activities contribute greatly to increased energy efficiency in buildings. Regarding the FreedomCAR and Vehicle Technologies Program the Contractor completed long-term R&D efforts with Visteon and



PPG on lightweight glazing (glass), some of the outcomes which have been implemented commercially by the industrial partners. EERE also noted that the Contractor made significant progress in developing sensor technology as part of the Industrial Technologies Program and had excellent progress in developing micro-channel flow technology for applications in chemical separations. Also the new six-degrees-of-freedom sensor fish device was successfully deployed to test the biological performance and engineering efficiency of the Wanapum advanced turbine. Areas identified by EERE warranting management attention include the Building Technologies Program, where a clear link does not exist between energy efficiency, and the substance and content of the Light Right project. Also in the Industrial Technologies Program, the Contractor can improve the ultimate effectiveness of their R&D by addressing early on the engineering and financial needs and constraints, and quantitative benefits and metrics, associated with the eventual application of the technology being developed.

The Office of Fossil Energy (FE) indicated that the Contractor's performance contributed substantially to the DOE's sequestration and zero-emission fossil energy program through the application of subsurface science and fuel cell capabilities and the creation of industrial/university partnerships. In FY 2005, the Laboratory: 1) Helped launch the Center for Zero Emission Research and technology (ZERT) Center; 2) Developed regional partnerships for fossil energy research; 3) Facilitated the formation of an industrial alliance that will design, build, and operate the FutureGen facility; 4) Developed a model that can predict fuel cell subsystem performance; and 5) Helped launch the High Temperature Electrochemistry Center (HiTEC) satellite center (University of Florida).

The overall evaluation of the Science and Technology accomplishments that advanced the Energy Cluster Program Objectives and Goals was rated as **Outstanding** (3.74 value points). (see Appendix 3, & 4).

2.4 Produce Science and Technology Accomplishments that Advance Department of Homeland Security (DHS) Program Objectives and Goals.

The DHS overall evaluation of Battelle's effectiveness and performance in producing Science and Technology accomplishments that advance the Department of Homeland Security Program Objectives and Goals was rated as **Outstanding**, 3.93 value points assigned (see Appendix 5).

The Contractor offers unique capabilities and world-class expertise in the following areas: Information analytics (especially with the National Visual Analytics Laboratory), in support of the Threat Awareness Portfolio; ultra-trace analyses, in support of forensics and attribution; and standards certification and testing, in support of development efforts by the Standards portfolio, particularly in National Institute of Standards and Technology (NIST)-traceable and low-counting regimes for radiological and nuclear standards. The professional competence of Contractor lead investigators has been first-rate as evidenced by the positive reviews received by the Urban Dispersion Program and the superlative efforts by the Contractor on the Countermeasure Test Bed (CMBT) in the New York-New Jersey area. Overall, the Contractor has demonstrated, as a laboratory partner within the DHS integrated complex, 1) excellence in the technical conduct of its projects and programs; 2) effective interactions with DHS at multiple levels (e.g., program managers and senior management); 3) teamwork; and 4) innovation and leadership in helping DHS achieve a far-reaching agenda. To expand upon this last point, the Contractor has provided DHS in FY 2005 with not just solid technical work products and the competence that underlies them, but also constructive criticism and new ideas based on an appreciation of the vision of where S&T could (and should) be in the future, and how to reach such an end state.

2.5 Produce Science and Technology Accomplishments that Advance Office of Environmental Management (EM) Program Objectives and Goals.

Battelle's support to EM Program Objectives for DOE-Richland was provided for the Hanford Groundwater Program, the Public Safety and Resource Protection Program (PSRPP), and the K Basins Closure Project. While the great majority of this work met or exceeded expectations, the errors and



deficiencies in data management for the Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (HSW EIS) were very significant in terms of impact and resulted in a reduction in rating from previous performance periods.

On average the technical support provided to EM's Office of River Protection (ORP) and its contractors was good. ORP found Battelle's support to be of good quality and reasonable timeliness with about 40% of the technical support rated excellent to outstanding. The support to Hanford and WTP seismic reanalysis was particularly noteworthy due to the degree of complexity. The marginal or unsatisfactory performance by the Contractor was in four areas, assessment of the Archimedes Filter, changes in the technetium best estimates for Bulk Vitrification, deficiencies affecting the radiation dosimetry program, and technical support to the Tank Closure Environmental Impact Statement.

The overall evaluation of the science and technology accomplishments that advance the Office of Environmental Management Program Objectives and Goals was rated as **Good**, with 1.5 value points awarded (see Appendix 6 & 7).

2.6 Produce Science and Technology Accomplishments that Advance Office of Intelligence (IN) and Office of Counterintelligence (CN) Program Objectives and Goals.

The IN and CN evaluation of the Science and Technology accomplishments that advanced the Office of Intelligence and Office of Counterintelligence Program Objectives and Goals was rated as **Outstanding** with 4.0 value points assigned. (see Appendix 8 & 9).

The Office of Intelligence provided the Contractor an overall FY 2005 rating of Outstanding. Specifically, IN awarded a score of 4.0 for the Quality of Technical Support, Relevance to the IN Mission, and Management Effectiveness, stating that the Contractor especially stands out for its business acumen, professionalism, and ability to execute projects and analysis on time and on budget. The Office of Counterintelligence (CI) also rated the Contractor's performance for FY 2005 as Outstanding, indicating that the Contractor CI management and staff support the Department's national CI Program at the highest level of professionalism. The Information and Special Technologies Program (ISTP) at the Laboratory is by far one of the best models in the DOE Complex. The ISTP completed an internal four-year research project focused on developing new analytical techniques for CI Cyber analysis. The resulting "confluence" database concept is capable of serving as the foundation for the next generation of ISTP integration into analysis and investigations as it is developed for production use.



ELEMENT	Adjectival Rating	Value Points	Objective Weight	Total Points	Total Points
2.0 Programmatic Accomplishments That Advance DOE Missions And National Needs					
2.1 Produce S&T Accomplishments that Advance Office of Science (SC) Program Objectives and Goals.	Excellent	3.42	30%	1.03	
2.2 Produce S&T Accomplishments that Advance Office of Defense Nuclear Nonproliferation (DNN) Program Objectives and Goals.	Outstanding	3.76	20%	0.75	
2.3 Produce S&T Accomplishments that Advance Energy Cluster (EC) Program Objectives and Goals.	Outstanding	3.74	10%	0.37	
2.4 Produce S&T Accomplishments that Advance Department of Homeland Security (DHS) Program Objectives and Goals.	Outstanding	3.93	15%	0.59	
2.5 Produce S&T Accomplishments that Advance Office of Environmental Management (EM) Program Objectives and Goals.	Good	1.50	10%	0.15	
2.6 Produce S&T Accomplishments that Advance Office of Intelligence (IN) and Office of Counterintelligence (CN) Program Objectives and Goals.	Outstanding	4.00	15%	0.60	
Critical Outcome 2.0 Total					3.49

Table 2.1 – 2.0 Critical Outcome Performance Rating Development

Total Score	4.0 - 3.5	3.4 - 2.5	2.4 - 1.5	1.4 - 0.5	<0.5
Final Rating	Outstanding	Excellent	Good	Marginal	Unsatisfactory

Table 2.2 – 2.0 Critical Outcome Final Rating



3.0 CONSTRUCTING AND OPERATING RESEARCH FACILITIES & EQUIPMENT

Battelle provides effective and efficient strategic planning for, operations of, and access to user and other Laboratory facilities, and is responsive to the user community.

The weight of this Outcome is 35%.

The Success in Constructing and Operating Research Facilities & Equipment Critical Outcome measured the overall effectiveness and performance of the Contractor in delivering leading-edge facilities and equipment to ensure the required capabilities are present to meet today's and tomorrow's complex challenges. It also measured the Contractor's innovative operational and programmatic means for external scientists to add substantial value to their research by their utilization of the Environmental Molecular Sciences Laboratory (EMSL) and other research facilities and their implementation of seamless management systems that protect Laboratory staff and DOE assets, while ensuring R&D resources are available for use to the maximum extent possible.

Based on the overall results of the objectives, their corresponding indicators, and other data available to the evaluating office(s) as discussed below this Outcome is rated as **Excellent**, with 3.07 value points awarded. Although this Outcome is rated as Excellent overall there were several deficiencies noted during the evaluation period which raised significant concerns regarding Battelle's management and operations of some key aspects of the Laboratory.

3.1 Operate Research User Facilities and Equipment to Effectively Meet User Needs

Based on the overall Contractor's performance in operating research user facilities and equipment to effectively meet user needs, as evidenced through the performance of the key indicators identified within the FY 2005 PEMP and the SC reviews conducted during the evaluation period, this Objective was rated as **Excellent**, 2.80 value points awarded. Indicators of the Contractor's performance in meeting this objective are provided below.

The Environmental Molecular Sciences Laboratory (EMSL), a national user facility for the environmental and molecular sciences, supports diverse user and programmatic research and has been largely successful in building a quality user base with a steadily increasing scientific impact demonstrated through publications in impactful journals with a significant presence in the Impact Factor Score (IFS) listed Top 5 and Top 10 journals. In May 2005 the Department conducted two reviews of EMSL, one by a BER Advisory Committee (BERAC) panel and the second by an SC Office of Project Assessment (i.e., Lehman Review) panel. The BERAC panel review found that the scientific impact of EMSL was consistently positive and supported the need for EMSL as a national resource. The BERAC panel also made several recommendations to strengthen the user program within EMSL (i.e., development of a shared mission statement, completion of the EMSL strategic plan, improving integration among scientific facilities in EMSL, and establishing a consistent peer-review process across all facilities). These recommendations are being addressed in conjunction with the response to the Lehman Review findings. The Lehman Review identified a number of significant concerns related to management, operation and oversight of EMSL resulting in EMSL being placed on the SC Watch List. The Contractor has worked closely with DOE to understand the review findings and to develop and implement solutions via a project management approach through the EMSL Action Plan with the results being reported monthly at SC Watch List briefings with SC senior management. The Laboratory Director and the EMSL Director have made good progress against the Action Plan to address the recommendations.

The Contractor's performance in strengthening EMSL leadership during FY 2005 was not fully met and the issues identified as a result of the 'Technical, Cost, Schedule, and Management Review' (Lehman Review) noted above cast serious concerns regarding the overall management of EMSL. Expectations for naming level 2 and above management positions were partially met during FY 2005 with the naming of a permanent EMSL Director and Operations Manager; however, the Associate



Director for Scientific Resources and Senior Associate Director for Business Operations were still acting positions at the end of the evaluation period. A department expectation to establish and name a Wiley Fellow was also partially met with the creation of a Wiley Fellow position; however, a Wiley Fellow was not named. A third expectation for strengthening EMSL leadership was met with a permanent Chief Scientist for Scientific Programs being named.

Although the hosting of distinguished users of which two were Nobel laureates was noteworthy, other expectation for increasing EMSL scientific reputation were not completed by the end of the evaluation period. Work was started on focusing instruments towards EMSL science themes, revising and aligning EMSL strategic plan along scientific signatures, and establishing external peer review of user proposals but this work was not complete due to delays related to follow on activities from the Lehman review.

Battelle completed modification preparations for expanding the Molecular Science Computing Facility (MSCF) and the started construction activities to provide 4,000 square feet to the EMSL facility meeting Department expectations in this area. The Contractor also met all expectations for the installation of two new chillers and one new cooling tower adding 400 tons of chilling capacity for HPCS3; however a third enhancement to EMSL infrastructure to enhance science by modifying the library to accommodate additional scientific users/staff was only partially met. An additional enhancement to the EMSL infrastructure was realized with the completion of the machine shop project adding approximately 600 square feet of new space.

3.2 Sustain Excellence in Operating, Maintaining, and Renewing the Facility Portfolio to Meet Laboratory Needs

Based on the overall Contractor's performance in sustaining excellence in operating, maintaining, and renewing the facility portfolio to meet Laboratory needs, as evidenced through the performance of the key indicators identified within the FY 2005 PEMP and other data afforded the evaluation office, this Objective was rated as **Outstanding**, with 3.60 value points awarded. Battelle's performance consistently met, with one exception, and in some cases exceeded expectations set for this objective and although there have been significant challenges throughout the year the Contractor was able to adequately address them. Additionally some significant improvements were noted over the evaluation period. The EMSL Asset Utilization Index (AUI) met expectations for FY 2005 indicating the effective use of space by the Contractor, with all operational space being fully utilized. The Contractor also initiated a number of targeted improvements to understand the use of space and capabilities throughout the Laboratory and to improve efficiency of space utilization wherever possible as well as address space needs necessary to meet the S&T requirements of the future. These initiatives included the development of an overall space management strategy by a "Space Management Task Team;" establishing a baseline for laboratory and office space utilization using consultants as well as government and private industry benchmarks; and implementation of low-cost space options to better use existing 300 Area facilities to allow adjacency to key laboratory facilities during the transition period. Other notable accomplishments included the establishment of a Laboratory Utilization Project to reclaim underutilized laboratory space by removing/relocating excess equipment, and the establishment of office building "Scrubs" to consolidate/better utilize office space.

Battelle continues to make efficient and effective maintenance investments in EMSL to optimize the lifecycle of the facility. Maintenance expenditures as a percent of Replacement Plant Value (RPV) for FY 2005 were planned at 2.48 percent and the actual at 3.19 percent exceeded that target. All planned maintenance was completed, and all previously deferred maintenance was addressed which brought the Asset Condition Index (ACI) to 1.0, again exceeding expectations. Maintaining EMSL ACI in this range assures future mission readiness and demonstrates exceptional stewardship of this national asset.

In providing effective execution of the goals within the Energy Management Plan, which was updated in August 2005 to include the minimum requirements of DOE 430.2A, Battelle's reduction in energy use exceeded 4 percent, which significantly surpassed the annual reduction goal of 1.5% established within the plan. The Water Efficiency Plan was also updated during FY 2005 and two water efficiency



practices were completed by July 2005. The Laboratory's percentage utilization of environmentally preferred (green) power was 15.5 percent significantly exceeding the 7.5 percent goal and has made the Laboratory one of the federal government's leaders in the use of green power. Two off-grid generation analyzes were completed and published in FY 2005, again exceeding expectations.

While Battelle executed the Transition Agreement with the River Corridor Closure Contract (RCCC) contractor, Department expectations were not met as to key risk areas of the transition (i.e., identification and negotiation of the activities required to allow the Laboratory to continue to operate in a safe and efficient manner through FY 2009). Also DOE intervention was required to resolve issues related to two facilities transferred to the RCCC contractor. DOE provide a number of significant comments on the document and non-concurred on it as originally presented.

3.3 Acquire the Facilities and Infrastructure in support of Future Laboratory Programs

As evidenced by the performance data below Battelle has been rated as **Excellent** (2.80 value points) in acquiring the facilities and infrastructure in support of future Laboratory programs.

PNNL maintained a high priority on the acquisition of space for future Laboratory Programs throughout the evaluation period. Unfortunately, progress was not fully achieved as planned.

The conceptual design and all documentation needed to support the Department's CD-1 decision for the Capability Replacement Laboratory (CRL) was completed during this time. The Department was not able to make the CD-1 decision during FY 2005. The significant issues that arose during the CDR review and preparation for the CD-1 ESAAB included the business case for alternative financed facilities in the acquisition strategy, integration with the Hanford Site cleanup schedule, and the quality of Preliminary Hazard Analysis (PHA). The PHA concerns were associated with the assumptions and approach used for determining the projected facility chemical and radiological inventory; resulting in questionable material management approaches, uncertainty in the initial facility hazard categorization and site boundary material release limit concerns.

The proposal to restructure the leases for 5 office buildings within the Richland campus did not progress significantly throughout this reporting period. PNNL did successfully work with the State of Washington to obtain funding support for the BioProducts Sciences and Engineering Laboratory. However, PNNL approached the DOE for additional assurances towards the end of the fiscal year which were not part of the original proposal.

In addition, state funding was secured to provide infrastructure support for the CRL. State funding was also obtained to begin the deployment of an optical network path between Seattle and Spokane. This significantly improves the connectivity of the lab with its collaborators.

PNNL made good progress in the development of a model which can forecast space needs based upon ranges of business projections. As this model becomes more fine tuned it should prove to be valuable for laboratory planning.

PNNL worked throughout the year to develop the Laboratory's comprehensive strategic plan which was delivered in the form of a business plan and work plan by September 30, 2005. Although the Ten Year Site Plan (TYSP) was completed in the spring the contractor put a significant amount of effort into integrating and aligning the TYSP with the strategy.

3.4 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection

Based on the overall positive safety performance, continuing system improvements that were made in FY 2005, and the proactive and comprehensive response to a number of injuries that occur in FY 2005, including the serious injury accident requiring a Type B investigation, performance of the Contractor's



integrated safety, health, and environmental protection system is rated as **Excellent** with 3.30 value points awarded.

Battelle's safety performance at the Laboratory has continued to improve and is on track for reaching the SC goal of being in the top 10th percentile for injury and illness rates by FY 2007. Battelle met the SC total recordable and lost workday case rates for FY 2005 and is currently performing at 1 recordable case for every 200,000 hours worked and 1 lost work case for every 540,000 hours worked. Achievement of these rates is exemplary given the highly diverse nature of work at the Laboratory and the large number of annual projects (i.e., over 2000). While the rates are positive and reflective of a strong ISM program, a number of injuries did occur in FY 2005, including a serious injury accident requiring a Type B investigation. Battelle's response to these events has been proactive and comprehensive, including looking at implications that are beyond the immediate events.

The overall positive safety results achieved by Battelle's management are reflective of their pursuit of excellence in safety management at the Laboratory. Battelle has continued to seek out external reviews and certifications (e.g., VPP STAR status, ISO 14001 certification, and EPA Performance Track) and continues to search for best practices in government and industry that can be applied at the Laboratory to improve performance (e.g., DuPont STOP processes, DuPont management leadership training, and Human Performance Training). Some examples of Battelle's performance in these areas included the fact that there were no significant environmental releases during FY 2005 and the completion of the required annual report for the EPA Performance Track Program in March 2005. EPA verified the implementation during a visit on September 28, 2005 and EPA Region 10 stated 'PNNL has an outstanding combination of operational line performance, enabling systems, unique processes and personal support services' in their report following their visit. An internal audit of ISO 14001 was conducted in May 2005, with no major findings. Battelle also was awarded the SC Best in Class Pollution Prevention (P2) Award in 2005 and First Place in the City of Richland Green Business Award.

Battelle has achieved ongoing improvement of the integrated safety management (ISM) system at the Laboratory through timely completion of the Type B Corrective Action Plan (CAP) commitments, completion of the OA-40 Safety Management Evaluation (12/03) CAP, and continued emphasis on their Safety Performance Improvement Plan. A key area of focus in FY 2005 was on the development of a robust and rigorous ISM measurement process that reflects laboratory performance against the ISM Core Functions and Guiding Principles. While good progress has been made in development of this process, continued emphasis on development of additional metrics, maturation of the existing metrics, and comprehensive analysis of performance data is necessary in order to achieve effective and credible system measurement.

Some areas of concern identified by DOE in FY 2005 included work planning concerns with safety controls at remote work locations and the lock and tag process. In addition, DOE is concerned with the series of energetic system events that has occurred at the Lab since 2001. Ten events were reviewed involving pressurized systems or otherwise energetic constituents that have occurred since that time, and it is not clear that Battelle has adequately addressed the management of these types of hazards.

While the general safety performance at PNNL has been positive, it does not diminish the significance associated with the serious injury that occurred in October 8, 2004, when a PNNL employee fell from a utility vehicle and fractured their right leg above the ankle. The employee was hospitalized for 8 days and required surgery to implant metal plates for support and to aid healing of the spiral (torsion) fracture. The injured employee has not returned to work (or restricted duty) due to continued swelling of the affected limb. The injured employee's ability to return to work is unclear. The DOE Type B Accident Investigation Board concluded this accident was preventable. PNNL had placed a new utility vehicle in service without the proper safety equipment installed, resulting in the accident. The Battelle responses to the Board's conclusions appear to be adequate to prevent recurrence of this accident.



3.5 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM)

As evidenced by the performance data below Battelle has been rated as **Outstanding** (3.50 value points) in sustaining and enhancing the effectiveness of integrated safeguards and security management (ISSM). The Laboratory continues to utilize the ISSM framework to systematically integrate controls into management and work practices at all levels so that missions are accomplished in a safe and secure manner. The incident rate for FY 2005 remained below the target established of 3 per month at a rate of 1.3 incidents per month (12 month rolling average).

PNNL has been proactive in the timely completion of all required SAS training and maintaining high SAS awareness through an effective communication strategy. All of the Periodic DOE Surveys performed during the year to determine the adequacy and effectiveness of the Contractor's SAS program at protecting PNNL assets resulted in overall "satisfactory" ratings (highest available). The final corrective actions for the 2003 DOE Office of Independent Oversight and Performance Assurance Cyber Security Inspection of the Laboratory were completed during FY 2005.

While Battelle has been effective in implementing SAS controls, the progress in identification and implementation of the changes necessary to eliminate reliance on Hanford Site resources has been nominal. Some preliminary actions have been accomplished to strengthen definition of the anticipated PNNL Site SAS requirements; however, integrated laboratory level action plans and effective project management processes have not been sufficiently developed to assure effective risk mitigation and transition success.

ELEMENT	Adjectival Rating	Value Points	Objective Weight	Total Points	Total Points
3.0 Constructing And Operating Research Facilities & Equipment					
3.1 Operate Research User Facilities and Equipment to Effectively Meet User Needs	Excellent	2.80	25%	0.70	
3.2 Sustain Excellence in Operating, Maintaining, and Renewing the Facility Portfolio to Meet Laboratory Needs	Outstanding	3.60	15%	0.54	
3.3 Acquire the Facilities and Infrastructure in support of Future Laboratory Programs	Excellent	2.80	15%	0.42	
3.4 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection	Excellent	3.30	25%	0.83	
3.5 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security (ISSM)	Outstanding	3.50	20%	0.70	
Critical Outcome 3.0 Total					3.19

Table 3.1 – 3.0 Critical Outcome Performance Rating Development

Total Score	4.0 - 3.5	3.4 - 2.5	2.4 - 1.5	1.4 - 0.5	<0.5
Final Rating	Outstanding	Excellent	Good	Marginal	Unsatisfactory

Table 3.2 – 3.0 Critical Outcome Final Rating



4.0 EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT AND SUPPORT

Battelle provides effective program leadership; strategic planning and development of initiatives; provides outstanding expert-delivery and research processes, which improve research productivity; creates supporting partnerships/collaborations; recruits and retains a quality scientific workforce; and sustains efficient and effective business systems.

The weight of this Outcome is 10%.

The Effectiveness and Efficiency of Research Program Management Critical Outcome measured the Contractor's overall leadership in executing strong partnerships required to deliver assigned programs, and strengthening the linkage between fundamental and applied sciences. Dimensions of program management and support covered included: 1) creating & managing strong education programs in line with DOE goals for the furtherance of science, mathematics, and technology education; 2) strengthening the linkage between fundamental and applied sciences; 3) provision of efficient and effective business systems that were responsive to the needs of mission elements; and 4) effectiveness in enhancing research work processes, and providing strong program/project controls to improve scientific productivity. Based on the overall Contractor's performance in providing effective and efficient research program management and support, as evidenced through the performance of the corresponding Objective, this Outcome was assigned 2.50 value points, equating to a rating of **Excellent**.

4.1 Demonstrate Effective Management Through Established Processes and Systems

Battelle accomplished many actions during the past year to address deficiencies and weakness in the adequacy of PNNL management controls. The actions resulted in significant revisions to systems, processes, and tools intended to enable more comprehensive, disciplined and systematic performance management. Some of the actions resulted in identification and definition of additional areas requiring improvement to assure contract expectations are satisfied. While the actions taken are very encouraging, the impact and ability to evaluate the results and/or outcome is still indeterminate.

In evaluating this objective DOE concluded there are numerous gaps in demonstrating the effectiveness, efficiency and continual improvement of the management system and processes. Although extensive effort has gone into putting systems and processes in place, the existing system definition for the core processes is insufficient and integration across the core, enabling and supporting processes is weak. Both external and internal reviews have revealed inconsistencies in following the requirements of the described system and continual improvement cannot be demonstrated with lack of run time for the changes that have been put in place.

There is little evidence to support that the Laboratory manages through the use of clearly defined core processes. While the core business processes have been formalized in program descriptions and initial mapping of existing performance measures was accomplished, the measures do not reflect process performance, outcome effectiveness and efficiency, or integration adequacy between the 3 core processes. How well the Lab is performing against the core processes is yet to be demonstrated.

DOE recognizes that the Laboratory has gone through extensive changes over this past fiscal year to comprehensively understand the management system adequacy. Battelle implemented revised planning and assessment requirements for PNNL management systems owners to determine the degree to which each is developed and deployed, including an overall system "maturity" component. As a result of the changes it is apparent that the performance data streams and data analysis capabilities are becoming functional and useful for performance monitoring. However, there is inconsistency in performance by Laboratory Directorates and management system owners in fully implementing the new requirements. Additionally there was a strong indication that some management activities were not being conducted in accordance with SBMS expectations; e.g., Financial Management System reviews, EMSL review and off-site safety review.



The Laboratory is beginning to demonstrate improvement in issue identification and corrective action management. The expectations have been strengthened and the tools have enhanced the analysis capabilities. However, in many areas weakness persists in the establishment of success criteria with objective performance targets and risk identification with performance limits. The Battelle corporate assurance process appears to be gaining value, but it was disturbing that Battelle did not provide a formal response to the DOE request for more information on the measurement basis being used to demonstrate performance improvement for the key areas identified needing improvement in the FY 2004 submittal.

As evidenced by the performance data above Battelle has been rated as **Excellent** (2.50 value points) in demonstrating effective management through established processes and systems.

ELEMENT	Adjectival Rating	Value Points	Objective Weight	Total Points	Total Points
4.0 Effectiveness And Efficiency Of Research Program Management and Support					
4.1 Demonstrate Effective Management Through Established Processes and Systems	Excellent	2.50	100%	2.50	
Critical Outcome 4.0 Total					2.50

Table 4.1 – 4.0 Critical Outcome Performance Rating Development

Total Score	4.0 - 3.5	3.4 - 2.5	2.4 - 1.5	1.4 - 0.5	<0.5
Final Rating	Outstanding	Excellent	Good	Marginal	Unsatisfactory

Table 4.2 - Research Management and Program Leadership Critical Outcome Final Rating



APPENDIX 1

DOE Office of Science Evaluation

Office of Science
Pacific Northwest National Laboratory
 FY 2005 Ratings for each Performance Measure

	Performance Measure 1: Quality of S&T 20%	Equivalent Grade	Performance Measure 2: Programmatic Accomplishments 35%	Equivalent Grade	Performance Measure 3: Research Facilities 35%	Equivalent Grade	Performance Measure 4: Research Management 10%	Equivalent Grade	Overall Program Rating	Equivalent Grade	
ASCR	3.8	O	3.9	O	n/a	-	3.9	O	3.87	O	
BER	3.52	O	3.52	O	3.18	E	3.47	O	3.40	E	
BES	3.6	O	3.7	O	n/a	-	3.5	O	3.64	O	
FES	3.7	O	3.4	E	n/a	-	3.7	O	3.54	O	
HEP	n/a	-	n/a	-	n/a	-	n/a	-	n/a	-	
NP	n/a	-	n/a	-	n/a	-	n/a	-	n/a	-	
WDTS	3.8	O	3.8	O	n/a	-	3.7	O	3.78	O	
Overall SC Weighted Scores	3.55	O	3.56	O	3.18	E	3.49	O			3.42 = E

Ratings:

O = Outstanding: 3.5 to 4.0
 E = Excellent: 2.5 to 3.4
 G = Good: 1.5 to 2.4
 M = Marginal: 0.5 to 1.4
 U = Unsatisfactory 0 to 0.4

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: Pacific Northwest National Laboratory

B&R(s)_____ KJ

SC PROGRAM – ASCR

EVALUATOR & Phone Number: Michael Strayer, 3-7486 (based on evaluations performed by F. Johnson and G. Johnson)

DATE: 11/19/2005

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)					
	3.8				

1. QUALITY OF RESEARCH. Reviewers will evaluate the overall quality of the research performed. Depending on the nature of the program, reviewers will consider the following:

SCIENCE: Success in producing original, creative scientific output that advances fundamental science and opens important new areas of inquiry; success in achieving sustained progress and impact on the field; and recognition from the scientific community, including awards, peer-reviewed publications, citations, and invited talks.

TECHNOLOGY: Whether there is a solid technical base for the work; the intrinsic technical innovativeness of the research; the importance of contributions made to the scientific and engineering knowledge base underpinning the technology program; and recognition from the technical community.

COMMENTS:

The Global Array programming model and the underlying ARMC! run-time system library are key research activities at PNNL. Researchers at PNNL continue to improve the performance and expand the scope of this software. Recent examples include:

Multi-Component-Multi-Data (MCMD) is a novel direction in the Common Component Architecture (CCA) project. MCMD was shown to be an effective for improving scalability of real scientific applications on large processor counts. When combined with Global Arrays (GA), a computational scheme that supports three different levels of parallelism was implemented in context of NWChem computational chemistry package. In particular, a factor of 10 wall clock reduction was observed in the numerical Hessian calculation. This approach thanks to its ability to express variable parallel computational granularity is expected to be critical for running complex scientific applications on future massively parallel systems.

*Ratings: O=Outstanding: 3.5 to 4.0; E=Excellent; 2.5 to 3.49; G=Good; 1.5 to 2.49; M=Marginal; 0.5 to 1.49; U=Unsatisfactory 0.0 to 0.49

Under the DOE PModels project (ARMCI run-time system) we have been pursuing optimized collective communication algorithms. We developed a radically new approach to implementing collective operations by relying on the network concurrency and one-sided communication. This approach exploits the network concurrency much more aggressively than the prior known algorithms. Utilization of these algorithms in the implementation of All-to-All-Gather collective communication yielded 89% performance improvement on the Quadrics cluster and 65% performance improvement on the Infiniband cluster.

Outstanding research efforts in applied mathematics, computational biology and GTL.

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)					
	3.9				

2. RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS. Reviewers will consider whether the research fits within and advances the missions of DOE; contributions to U.S. leadership in the international scientific and technical communities; contributions to the goals and objectives of the strategic plans of DOE and other national programs; and the extent of productive interaction with other science and technology programs. Depending on the nature of the program, reviewers will consider the following:

SCIENCE: The program's track record of success in making scientific discoveries of technological importance to DOE missions and U.S. industry; the degree of industrial interest in follow-on development of current research results; and the effective use of national research facilities that serve the needs of a wide variety of scientific users from industry, academia, and government laboratories.

TECHNOLOGY: The value of successfully developing pre-commercial technology, to DOE, other federal agencies, and the national economy; the extent to which expected benefits justify the program's risks and costs; and, where appropriate, the degree of industrial interest, participation, and support.

COMMENTS:

The Global Array programming model was developed expressly for the NWChem application. NWChem is a computational chemistry package that is designed to run on high-performance parallel supercomputers as well as conventional workstation clusters. It aims to be scalable both in its ability to treat large problems efficiently, and in its usage of available parallel computing resources. NWChem was developed by the Molecular

*Ratings: O=Outstanding ; E=Excellent; G=Good; M=Marginal; U=Unsatisfactory
 3.5 to 4.0 2.4 to 3.49 1.5 to 2.49 0.5 to 1.49 0.0 to 0.49

Sciences Software group of the PNNL Environmental Molecular Sciences Laboratory. It is very widely used around the world and is an essential application at PNNL.

Research efforts in multiscale mathematics, computational biology and GTL are extremely relevant to DOE missions and national needs.

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: Pacific Northwest National Laboratory

B&R(s)_____ KJ

SC PROGRAM – ASCR

EVALUATOR & Phone Number: Michael Strayer, 3-7486 (based on evaluation performed by F. Jonson)

DATE: 11/4/2005

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)					

3. SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES.

Reviewers will consider whether the construction and commissioning of new facilities is on time and within budget; whether facility performance specifications and objectives are achieved; the reliability and safety of operations; adherence to planned schedules; and the cost effectiveness of maintenance and facility improvements.

Reviewers of user facilities will also consider whether the user access program is effective, efficient, and user-friendly; the quality of the proposal evaluation process; the strength and diversity of user participation; the productivity of the research supported, both in science and technology; and the level of satisfaction among user groups.

COMMENTS: N/A

*Ratings: O=Outstanding ; E=Excellent; G=Good; M=Marginal; U=Unsatisfactory
3.5 to 4.0 2.4 to 3.49 1.5 to 2.49 0.5 to 1.49 0.0 to 0.49

EVALUATION FACTORS

RATINGS*

O E G M U

(Insert Numerical Score in Appropriate Box)

3.9				
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4. EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT.

Reviewers will consider the quality of research plans; whether technical risks are adequately considered; whether use of personnel, facilities and equipment is optimized; success in meeting budget projections and milestones; the effectiveness of decision making in managing and redirecting projects; success in identifying and in avoiding or overcoming technical problems; the effectiveness with which technical results are communicated to maximize the value of the research results and to gain appropriate recognition for DOE and the Laboratory; effectiveness in developing, managing and transferring to industry intellectual property and technical know-how associated with research discoveries; and the degree to which customer and stakeholder expectations are consistently met.

COMMENTS:

PNNL research management does an excellent job of interacting with Computer Science program management. They keep us well informed about both progress and issues. It is a very productive relationship.

The effectiveness and efficiency of PNNL's applied mathematics, computational biology and GTL research program management has been outstanding.

*Ratings: O=Outstanding ; E=Excellent; G=Good; M=Marginal; U=Unsatisfactory
 3.5 to 4.0 2.4 to 3.49 1.5 to 2.49 0.5 to 1.49 0.0 to 0.49

Life Science Appraisal for PNNL – FY 2005

Thomassen

November 1, 2005

KP11

Total FY 2005 Funding ~\$12.3M

Quality of Science and Technology – Score = 3.7

87% of PNNL's Life Sciences research program for BER is Genomics: GTL research with the remaining research being Low Dose Radiation program research. PNNL scientists continue to conduct high quality GTL research. Their contributions to GTL continue to grow as they make significant and scientifically substantive contributions across many areas of the GTL program. Their research addresses fundamental research and technology development needs from proteomics, to fundamental microbiology, to research underpinning the science and technology needs of planned GTL facilities. This research addresses needs in systems biology and DOE mission relevance especially (but not exclusively) as it relates to the development of biology-based solutions for environmental remediation. Many of PNNL's GTL scientists are scientific leaders in the field including the GTL Program's Chief Scientist. PNNL's GTL research has consistently received high marks when undergoing merit review. PNNL Low Dose Program scientists have also been quite successful in obtaining merit-based funding and their research contributes to a range of Low Dose Program goals and needs.

Programmatic Accomplishments that Advance DOE Missions and National Needs – Score = 3.7

As noted above, PNNL's GTL research addresses a broad range of fundamental GTL research and technology development needs from proteomics, to fundamental microbiology, to research underpinning the science and technology needs of planned GTL facilities. This research addresses needs in systems biology and DOE mission relevance especially (but not exclusively) as it relates to the development of biology-based solutions for environmental remediation.

Research Facilities – Not applicable for Life Sciences

Research Management - Score = 3.7

PNNL's GTL research continues to be a very well and effectively managed research program. PNNL management has shown a willingness and ability to take the steps necessary to reorganize and coordinate research GTL research projects as needed to make them scientifically productive and effective.

Lab: PNNL
Evaluators: Office of Biological and Environmental Research
Climate Change Research Division
Program: Climate Change Research
Date: 11/3/05
Route Symbol: SC 23.3
B&R Category: KP 12

Quality of Science: Overall Score 3.48, Excellent

Program Area: ARM

PNNL scientists have been very productive and have published several important findings in peer-reviewed journals, including a new parameterization treating the influence of organic aerosol surfactants on the nucleation of cloud droplets which has been incorporated in the NCAR Community Atmosphere Model to simulate the influence on natural and anthropogenic organics on cloud droplet number, cloud reflectivity, and climate. Score 3.4

Program Area: Carbon Sequestration

Modeling of carbon sequestration is well integrated with CSiTE Consortium projects. Scope of microbiology experimental analysis is overly ambitious, and research team needs to set priorities, and focus on doable scientific tasks that are clearly relevant to CSiTE goals. Rating 3.0

Program Area: Climate Change Prediction Program

The regional climate modeling efforts at PNNL are state-of-the-art and considered outstanding, Rating 3.7

The SciDAC climate modeling work is excellent, Rating 3.4

Program Area: Integrated Assessment Research

Rating 3.8 The Integrated Assessment Modeling work at PNNL is very highly regarded both by a wide variety of "downstream" users as well as by the scientists who contribute specialized results that are modeled by the Edmonds team.

Program Area: Emission Scenarios synthesis and assessment report

3.5 Although the work is just getting started, the quality of scientific assessment effort on emission scenarios appears to be excellent, based on a draft of the first chapter of the report.

Program Area: Atmospheric Science Program (ASP)

The ASP was only recently reconfigured and re-competed so the work at PNNL was only recently initiated. It is too early to evaluate the quality of science at PNNL that is sponsored by the recently reconfigured ASP.

Program Accomplishments: Overall Score 3.48. Excellent
ARM. Under the leadership of the ARM Technical Director, ARM developed two high quality data sets during two premier campaigns: an Intensive Operation Period at the North Slope of Alaska and the first deployment of the mobile facility at Pt. Reyes. The ARM Technical Director, in coordination with the ARM Operations Manager at ANL, coordinated the reprogramming of monies to effect the acquisition of measurement systems required to meet the user facility metrics. Score 3.6

Carbon Sequestration. Rating 3.0

SciDac. Rating 3.5

Integrated Assessment Research Rating 3.5

The Global Technology Strategy Project continued to analyze the role of technologies in mitigating climate change with strong analyses in carbon capture and disposal and biotechnologies, among many other topics. Their analysis supports the messages that new technologies will greatly decrease the cost of meeting potential emission targets and that there will likely need to be a variety of technological options rather than a “silver bullet”.

Rating 3.8 Dr. Clarke has done a remarkable job running the MERGE model and synthesizing results from three integrated assessment models to capture salient messages about the potential consequences of meeting four stabilization targets. He wrote a very thoughtful and comprehensive draft of the introductory chapter for the synthesis and assessment report.

Atmospheric Science Program:

No accomplishments have been reported to date from work at PNNL sponsored by the reconfigured program because the research was only recently initiated.

Research Facilities: Overall Score 3.6. Outstanding
ARM Facility: The review of the research facility operations rated the operations as outstanding. The Technical Director led the effort to meet high priority requests from the ARM Science Team for needed measurements, instruments, experiments, and value added products. Effectively worked with the ARM UAV program to address their budget shortfall; in this effort the Director ensured the conduct of the upcoming 2006 campaign in Darwin. Rating 3.6

Carbon Sequestration, N/A

SciDac, N/A

Atmospheric Science Program: N/A

Research Management: Overall Score 3.25, Excellent
ARM, Rating: 3.5 PNNL personnel are providing effective leadership in ARM science.

Carbon Sequestration, Rating 2.5

Integrated Assessment Research: Rating 3.5 The integrated assessment modeling work at PNNL is effectively managed and coordinated with other research to improve integrated assessment methods and models. Dr. Clarke continues to manage the synthesis and assessment report with intelligence, experience, and the diplomatic savvy to keep all three participating teams very happy despite tight deadlines and a difficult task.

Atmospheric Science Program: Too early to evaluate research management in this program.

FY 2005 Performance Appraisal
Pacific Northwest National Laboratory
by

OBER Environmental Remediation Sciences Division (SC 23.4)

Quality of Science and Technology (3.5)

PNNL consistently performs (and in the case of EMSL, facilitates) high quality science in support of ERSD's mission. This is evident in the number of high quality publications resulting from these efforts. PNNL staff are consistently awarded funding from ERSD through peer-reviewed proposals. These awards for research totaled more than \$10M in FY 2005. PNNL projects focus on investigating the myriad geochemical and microbiological processes that affect contaminant transport in the subsurface as well as characteristics of contained high-level wastes and potential new technologies for handling them. This impactful science is critical to the mission of ERSD and DOE as a whole.

Programmatic Accomplishments (3.5)

ERSD supports the SC objective to understand the complex behavior of contaminants in the subsurface. PNNL meets this objective by supplying laboratory-derived information on the geochemical behavior of contaminants in natural and synthetic media samples. PNNL translates laboratory-derived results on the fate of contaminants to field testable hypotheses. Investigations of microbial processes affecting contaminant transport are also a priority at PNNL and hypotheses on microbiological processes occurring in the subsurface have also been tested in the field by PNNL scientists. This program of subsurface contaminant fate and transport is relevant to ERSD, DOE and the nation. PNNL scientists also are actively working with staff at the Hanford site to integrate science into cleanup activities.

Research Facilities (3.0)

ERSD funds the operation of the Environmental Molecular Sciences Laboratory (EMSL) at PNNL. EMSL is a unique national resource with an international reputation for conducting high-end, molecular scale analytical research on environmental processes. In May 2005, ERSD instigated parallel reviews of EMSL by a BER Advisory Committee (BERAC) panel and by an SC Office of Project Assessment (i.e., Lehman Review) panel. The scientific components of those reviews provided uniformly positive (and laudatory) feedback. However, there were significant criticisms of the operational aspects of EMSL, including management resources, financial reporting inadequacies, and insufficient oversight procedures. Since those reviews, PNNL and EMSL have worked diligently and cooperatively with OBER and PNSO to understand these criticisms and to develop and implement solutions. While OBER was disappointed in those aspects of the review that were negative, we are encouraged by the positive findings of scientific output and the efforts by PNNL and EMSL to implement solutions to the negative findings.

Research Management (3.5)

PNNL manages its research portfolio admirably. PNNL encourages its researchers to submit high-quality, well-designed and written, mission relevant proposals. These efforts have paid dividends to PNNL in the form of better than average success rates. The laboratory is the largest recipient of research funds within the ERSD portfolio. This is a testament to the quality of research and to the management of investigative resources at PNNL. PNNL also has established a wide network of scientific collaboration including numerous university scientists as well as those from other national laboratories. Lines of responsibility are clear to ERSD Program Managers and PNNL managers make significant efforts to routinely inform and update ERSD staff.

Overall ERSD score for PNNL 3.3

This less than outstanding score is given in response to the negative findings from the recent EMSL review. The negative findings are balanced to a significant degree by the positive findings of the EMSL reviews and by the overall high quality of scientific research conducted overall by PNNL and EMSL.

Office of Basic Energy Sciences
FY 2005 Science and Technology Performance Evaluation for
Pacific Northwest National Laboratory (PNNL)

1. Quality of Science and Technology: Outstanding (3.6)

- The Materials and Engineering Physics program at PNNL was subjected to an on-site peer review on May 10-11, 2005. The three areas funded by Materials and Engineering Physics program in the Materials Sciences and Engineering Division are Defects and Defect Processes in Ceramics, Chemistry and Physics of Ceramic Surfaces, and Molecular Organized Nanostructural Materials. The review was generally favorable, and the reviewers found the program to be of very high quality and innovative. There were some concerns about the novelty of one subtask within the Chemistry and Physics of Ceramic Surfaces program and the overall coherence of the Molecular Organized Nanostructured Materials program. PNNL response was appropriate to the concerns and the action items called for by the BES guidance letter.
- The Condensed Phase Chemical Physics: Chemical Kinetics and Dynamics at Interfaces program within the Chemical Physics Program was peer reviewed in March 2005. The program was found to be an outstanding research effort. Several principal investigators are world leaders in their fields, and the group's collaboration with external scientists is extensive. The location of the laboratories within the EMSL provides enhanced expertise and facilities that benefit the research program. Extensive synergies exist among the individual subtask efforts as well as excellent collaboration with the scientists supported by the companion Molecular Theory and Modeling program, which also continues its strong performance.
- Several projects within the Separations and Analysis Program (Molecular Processes) were recently peer-reviewed. The high-resolution, ultra-sensitive atomic spectroscopy research of Dr. Bruce Bushaw was judged as nationally unique and world leading. Although mass spectroscopy research has recently transitioned to younger principal investigators, the quality and productivity was praised. Greater integration was urged in the separations research area. Mail reviews of geosciences projects were generally very supportive.

2. Relevance to DOE Missions and National Needs: Outstanding (3.7)

- BES research carried out at PNNL in Materials and Engineering Physics strongly supports the scientific mission needs of the Department and the Nation. There is close coupling between the Materials and Engineering Physics program with Department's technology programs at PNNL, including those of the Offices of Energy Efficiency and Renewable Energy, Fusion Energy Sciences, and Environmental Management.
- BES research carried out at PNNL in chemical sciences and geosciences strongly supports the scientific mission needs of the Department and the Nation. The experimental and theoretical programs in condensed phase chemical physics are successfully engaging

scientists involved in radiation research in Department mission relevant areas, including remediation of radiological wastes and nuclear energy. Analytical sciences and "green" separations research carried out at PNNL are closely linked to the Department's energy missions.

3. Success in Constructing and Operating Research Facilities: Not Applicable

4. The Effectiveness and Efficiency of Research Program Management: Outstanding (3.5)

Dr. Gregory J. Exarhos is performing very well in his role of coordinator for the Materials and Engineering Physics program at PNNL particularly with respect to his detailed attention to program reviews. He has been very responsive to BES comments and directions provided in the guidance letter.

PNNL management is to be congratulated for establishing and maintaining a mission-relevant, fundamental research program in condensed phase chemical physics that is of very high quality. They have also enhanced their international position in catalysis research by consolidating programs funded by multiple agencies and industry into a single institute.

Consolidated Program Office Evaluation of PNNL

for Fiscal Year 2005

Program Office: Office of Fusion Energy Sciences

Program Area	Value Points Assigned to Each Objective				Over Program Score	Overall Program Weighted Average
	Quality of Science & Technology	Programmatic Accomplishments	Research Facilities	Research Management		
Materials Research	3.7	3.4	NA	3.7	3.5	3.5
Overall Value Points Earned	3.7	3.4	NA	3.7	3.5	3.5

Narrative Explanations:

Quality of Science and Technology:

The quality of PNNL work on fusion materials research continues to be outstanding. PNNL has made important contributions to the domestic and international efforts on modeling of irradiation damage and helium effects, on issues of ceramic composites (focusing on silicon carbide fibers in a silicon carbide matrix), on body-centered cubic metals (focusing on vanadium alloys and ferritic steels), and on face-centered cubic metals (copper alloys, austenitic steels, and Ni-based alloys). In the area of silicon carbide composites research, PNNL continues to be the lead US lab and has made numerous contributions to addressing the critical feasibility issues in the use of these materials in a fusion environment. Dr. Kurtz, the principle investigator, has provided strong leadership in several areas of fusion materials research domestically and internationally, and has taken leadership of the vanadium alloy research task under a US-Japan collaboration. Dr. Kurtz also made important contributions to collaborative research on fusion materials under the IEA as well as providing his technical expertise on the US effort to design and build a test blanket for ITER. PNNL continues to be a strong leader in the miniaturization of irradiation specimens, which has yielded greatly increased productivity from irradiation testing of fusion materials. The PNNL research staff is very well respected in both the domestic and international communities and has produced numerous peer-reviewed publications in key areas of fusion materials research. PNNL's original and creative scientific output has advanced the science of fusion materials and has shown sustained progress and impact in the field. The PNNL staff is held in very high regard by the scientific community and has submitted a number of papers for the upcoming International Conference of Fusion Reactor Materials.

Programmatic Accomplishments that Advance DOE Missions and National Needs:

Since the structural materials of fusion chambers are a major factor in determining the feasibility, economics, and environmental impact of fusion energy, the Fusion Materials Sciences Program is a key element of the Office of Fusion Energy Sciences (OFES). PNNL continues to focus its efforts on the most important tasks of this program: material issues with the ITER device, the ITER test blanket program, US participation in international collaborations of a bilateral nature (mainly, with JAERI and MEXT in Japan) and of a multinational nature (mainly, with Europe, Japan, and the Russian Federation under the IEA Implementing Agreement on Fusion Materials). PNNL is highly responsive to DOE and to fusion community input in setting the direction of their work.

Constructing and Operating Research Facilities and Equipment:

Not applicable

Effectiveness and Efficiency of Research Program Management and Support:

PNNL leads the Fusion Materials Sciences Program effort on silicon carbide composite research and manages key elements of the two US-Japan collaborations on fusion materials. They continue to play an important role in the theory and modeling of materials behavior and

integration of the theory and modeling with the experimental programs. PNNL, on behalf of the fusion materials community, has also begun to support this year the fusion plasma chamber community as they have initiated an effort to design and build an ITER test blanket. They continue to perform in an outstanding manner in these roles. They also shared leadership with ORNL and others in the fusion materials community in developing plans for redirection that have put greater emphasis on the resolution of nearer term material issues that are necessary in order to support the potential US contributions to the ITER device.

November 8, 2005

Subject: Office of Science (SC) Year-end Performance Evaluation of Battelle for the Management and Operation of the Pacific Northwest National Laboratory (PNNL) Fiscal Year (FY) 2005

From: Workforce Development for Teachers and Scientists (WDTS)
Peter Faletra – FY05 funding approx \$757K

The Science Education programs (SEP) at Pacific Northwest National Laboratory (PNNL) runs: undergraduate research internships, laboratory research professional development form K – 12 science teachers, and faculty sabbatical programs for SC's Workforce Development. PNNL runs a model program and continues to seek improvement. SEP has dedicated itself to program and process improvement both of which are most evident by the overall quality of the internship and fellowship research products. SEP constantly seek opportunities throughout the lab and with headquarters where they can work in tandem to create multiple science education benefits and raise the visibility and need for science education.

SEP is outstanding in their development and assessment of policies, procedures, and outcomes and then maximizes the results to create efficiencies. The ED program office has focused time and talent on operating as a well integrated team and the results demonstrate a significant increase in productivity where student outputs are of superior quality and the research experience is a rich, productive experience.

Outstanding.



APPENDIX 2

DOE Defense Nuclear Nonproliferation Evaluation



Department of Energy
National Nuclear Security Administration
Washington, DC 20585

November 18, 2005

Mr. Paul W. Kruger
Manager
Pacific Northwest Site Office

Dear Mr. Kruger,

Per your request, I am forwarding to you our evaluation of the FY05 performance of Battelle's support to our work in the area of Defense Nuclear Nonproliferation. We evaluated program performance using a variety of criteria (tasks, activities, requirements, accomplishments, and milestones) as the primary measures of the Contractor's success in meeting the objective of producing scientific and technological accomplishments that advance our nonproliferation efforts.

This feedback is based on a review of Battelle's FY05 Self Assessment, input from the Office of Science Pacific Northwest Site Office (PNSO) on Battelle's performance on specific 2005 Critical Outcomes, our personal experiences with Battelle, and on discussions held between Steven Black (NA-20), Debbie Trader (PNSO), Mike Kluse, and Gordon Dudder (PNNL) throughout the FY05 performance year.

Overall, we rate Battelle's performance for the Office of Defense Nuclear Nonproliferation as "Outstanding" for FY05. PNNL conducts the highest quality work we've seen, and I have full confidence and trust in Battelle's leadership and in the work they perform. We often seek out PNNL for advice, ideas, and clarification of complex issues.

Quality of Technical Support – Outstanding

The quality of technical support from PNNL, as it was last year, was superb again this year. The laboratory's work with the Office of Nonproliferation Research and Development has included successful research, testing of sensors, development of prototypes, and technology transfer. Some examples of significant FY05 work includes two updates of the Infrared Spectral Library, continued progress on the Advanced Large Area Plastic Scintillator (ALPS) program, and a field test of the Deployable Analysis System (DAS). PNNL met all Critical Outcomes in the PNSO FY05 Performance Evaluation and Measurement Plan related to NA-20 work at an outstanding level.

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Relevance to the Office of Defense Nuclear Nonproliferation Mission – Outstanding

PNNL's work is consistently relevant to our mission. PNNL plays a very important role in NA-21, NA-22, NA-23, NA-24, NA-25, and NA-26 activities and continues to be successful at forecasting and addressing our changing needs. PNNL's input is always relevant to the issues we are facing, and we value it very highly.

Management Effectiveness – Outstanding

PNNL demonstrates outstanding leadership and management skills, and has provided critical program integration, technical, and management support to a number of program areas within the Office of Defense Nuclear Nonproliferation. PNNL's contribution to the USG briefing on Iran's efforts to conceal its nuclear fuel cycle and the weak economic rationale for that fuel cycle has been critical to U.S. diplomatic efforts at the IAEA Board of Governors. In this regard, Tom Wood and Matt Milazzo deserve special recognition for their hard work and flexibility.

In addition, with respect to nuclear safeguards, John Murphy's work continues to be outstanding. He has proven time and again to be an important part of the U.S. Government's efforts to strengthen international nuclear safeguards in general, and he has been instrumental this year in helping us develop the civil/military separation required in India's nuclear program -- his expertise in international nuclear safeguards is irreplaceable.

We are also very impressed with the work of Carol Kessler, and the Pacific Northwest Center for Global Security (PNWCGS). In one case, PNWCGS performed a full turnaround on a tight deadline for India-related work over the course of one weekend, and the Center's insight and information was invaluable to DOE's participation in USG interagency deliberations.

The support provided to NA-20 programs typically exceeded expectations, especially with regard to the UF⁶ detection experiment, efforts underway in planning for verification and dismantlement activities of foreign nuclear weapons programs, and policy support for NPT and FMCT issues. Several individuals deserve explicit mention, including Khris Olsen, Ted Bowyer, and Karyn Durbin.

PNNL continues to do an outstanding job of managing the Nonproliferation Graduate Program (NGP) Program. If the Laboratory did nothing else for NA-20 but run the NGP, it would still cover itself with glory because of the extraordinary young people it sends us every year through this effort.

In addition to truly outstanding corporate support from across the Lab, several PNNL individuals were specifically recognized by the program offices for their exceptional performance in support of headquarters activities.

NA-21: Kyle Wright, Martie Larson, and Fred Crane.

NA-22: Katie Knobbs

NA-24: Tom Wood, Steve Mladineo, Matt Milazzo, Khris Olsen, Ted Bowyer, Karyn Durbin, John Murphy, Mark Kingsley, Carrie Mathews, and Carol Kessler.

NA-25: Ted Aichele, Carrie Mathews, Jim Jarrett, Brad Steele, Eric Hirschi, Paul Ferraris, Cary Crawford, and Ken Byers.

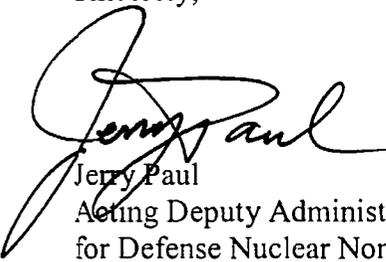
We trust and rely on Mike Kluse, Gordon Dudder and their truly outstanding staff to help us accomplish vital national security goals, and we are looking forward to another successful year in FY06.

Overall Narrative Score: Outstanding

Overall Numeric Score: 94

If you have any questions, please contact me at (202) 586-0645.

Sincerely,



Jerry Paul
Acting Deputy Administrator
for Defense Nuclear Nonproliferation

cc: Robert McLeod, PNSO



APPENDIX 3

DOE Office of Energy Efficiency and Renewable Energy's Evaluation



Department of Energy
Washington, DC 20585

Appendix 3

NOV 10 2005

Mr. Keith A. Klein
Manager
Richland Operations Office
U.S. Department of Energy
PO Box 550
Richland, WA 99352

SUBJECT: Office of Energy Efficiency and Renewable Energy's Performance
Evaluation of Battelle Memorial Institute as the Management and
Operating Contractor of the Pacific Northwest National Laboratory –
Contract No. DE-AC06-76RL01830

The Office of Energy Efficiency and Renewable Energy (EERE) completed its evaluation of the Battelle Memorial Institute's performance at the Pacific Northwest National Laboratory (PNNL) for the performance period beginning October 1, 2004 and ending September 30, 2005. We enclose the Evaluation Report for your review.

EERE arrived at an overall score of "Outstanding" for three Performance Measures, namely, "Quality of Science and Technology," "Relevance to DOE Missions and National Needs," and "Effectiveness and Efficiency of Research Program Management." One Performance Measure, "Success in Constructing and Operating Research Facilities" was Not Rated.

If you have any questions concerning this evaluation, please do not hesitate to contact us or Marvin Gorelick by e-mail at marvin.gorelick@ee.doe.gov or by phone at (202) 586 9436.

Sincerely,

Richard Moor
Deputy Assistant Secretary
Technology Development

Joseph Malinovsky
Acting Deputy Assistant Secretary
Business Administration

Enclosure

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NOV 18 2005

DOE-RL/RLCC



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U.S. Department of Energy

Office of Energy Efficiency and Renewable Energy

Performance Evaluation Report of the Battelle Memorial Institute

For the Period

October 1, 2004 - September 30, 2005

For

Management and Operations of Science and Technology
For Energy Efficiency and Renewable Energy

At the Pacific Northwest National Laboratory

Contract No. DE-AC06-76RL01830

October 06, 2005

EXECUTIVE SUMMARY

The Office of Energy Efficiency and Renewable Energy (EERE) prepared this evaluation as its input to the U.S. Department of Energy's (DOE) award-fee evaluation of Battelle Memorial Institute's performance for the management and operation of science and technology at the Pacific Northwest National Laboratory (PNNL). It assesses PNNL's performance of work for programs in EERE from October 1, 2004 to September 30, 2005.

Each reporting EERE Program evaluated PNNL's performance using four performance measures. The "Total" rating represents a weighted average score computed using each Program's "FY 2005 Obligations at PNNL as of 8/31/2005" as the weighting factor. Six of the eleven EERE Programs, namely the Biomass Program, Building Technologies Program, FreedomCAR and Vehicle Technologies Program, Hydrogen, Fuel Cells and Infrastructure Technologies Program, Industrial Technologies Program, and the Wind and Hydropower Technologies Program submitted evaluations.

For PNNL, EERE arrived at an overall score of "Outstanding" for three Performance Measures, namely "Quality of Science and Technology," "Relevance to DOE Missions and National Needs," and "Effectiveness and Efficiency of Research Program Management." One Performance Measure, "Success in Constructing and Operating Research Facilities" was Not Rated. The table shows the scores awarded by reporting Program.

PROGRAM	FY 2005 OBLIGATIONS AT PNNL AS OF 8/31/2005 (THOUSANDS)	QUALITY OF SCIENCE AND TECHNOLOGY	RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS	EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT	SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES
BIOMASS PROGRAM	4,367	Outstanding	Outstanding	Excellent	Not Rated
BUILDING TECHNOLOGIES PROGRAM	5,638	Outstanding	Outstanding	Outstanding	Not Rated
FREEDOMCAR AND VEHICLE TECHNOLOGIES PROGRAM	5,911	Outstanding	Outstanding	Outstanding	Not Rated
HYDROGEN, FUEL CELLS AND INFRASTRUCTURE TECHNOLOGIES PROGRAM	3,814	Excellent	Excellent	Excellent	Not Rated
INDUSTRIAL TECHNOLOGIES PROGRAM	1,920	Excellent	Excellent	Excellent	Not Rated
WIND AND HYDROPOWER TECHNOLOGIES PROGRAM	1,195	Outstanding	Outstanding	Outstanding	Not Rated
TOTAL	22,846	OUTSTANDING	OUTSTANDING	OUTSTANDING	NOT RATED

INTRODUCTION

This evaluation has been prepared as part of the U.S. Department of Energy's (DOE) contractual obligation to assess Battelle Memorial Institute's performance for the management and operation of science and technology at the Pacific Northwest National Laboratory (PNNL). Specifically, it assesses PNNL's support of DOE's Office of Energy Efficiency and Renewable Energy (EERE) Program Offices and its ability to assist these Program Offices in maintaining the overall EERE mission: to strengthen America's energy security, environmental quality and economic vitality through public-private partnerships.

This evaluation report, covering the period from October 1, 2004 through September 30, 2005, is comprised of four sections. The first section one highlights the given performance measures and factors provided to each DOE/EERE technical Program Office. The next section addresses the process followed to assign an adjectival rating by the evaluating Office. The third section presents the overall outcomes and scores resultant from the evaluation. The final section synthesizes key achievements and areas of concern.

PERFORMANCE MEASURES AND FACTORS

EERE used four "Performance Measures" for evaluating the success of science and technology at PNNL. Under each performance measure, the evaluators received "factors" to consider when evaluating laboratory performance under the factor, as follows:

Performance Measure 1: Quality of Science and Technology

Factors:

- Laboratory successes in achieving sustained progress and impact on the field.
- Laboratory contributions to the scientific and engineering community's knowledge base underpinning the technology program.
- Recognition received by the laboratory from the scientific and technical communities.

Performance Measure 2: Relevance to DOE Missions and National Needs

Factors:

- Contributions to the annual priorities, the long-term outcome goals and the intermediate objectives of EERE and its programs.
- Whether the research fits within and advances the missions of EERE, DOE and National programs.
- The value of successfully developing pre-commercial technology to EERE and DOE, other Federal agencies and the national economy.

Performance Measure 3: Effectiveness and Efficiency of Research Program Management

Factors:

- Excellence in managing EERE R&D Programs.
- Excellence in planning EERE R&D Programs.
- The effectiveness with which technical results are published, disseminated, and transferred to maximize the value of the research and development results and to gain appropriate recognition for DOE, EERE and the laboratory.

Performance Measure 4: Success in Constructing and Operating Research Facilities

Factors:

- Whether the construction and commissioning of new facilities proceeds on time and within budget.
- The cost effectiveness of operating, maintaining and improving facilities.

EVALUATION PROCESSES: ADJECTIVAL RATINGS AND AVERAGING

EERE Programs assigned an adjectival rating to each performance measure. Each adjectival rating translated into a numeric score, using the evaluator's Input Rating Scale, namely: 4 = Outstanding; 3 = Excellent; 2 = Good; 1 = Marginal; and 0 = Unsatisfactory. The description, aligned with each adjectival rating, is presented in the following table:

Adjectival Rating	Numeric Score	Description
Outstanding	4	Significantly, exceeds the standards of performance, achieves noteworthy results and accomplishes very difficult tasks in a timely manner.
Excellent	3	Exceeds expectations and standards of performance, accomplishes difficult tasks in a timely manner, and minor deficiencies are more than offset by better performance in other areas.
Good	2	Meets expectations and standards of performance, actions are carried out in an efficient and timely manner; deficiencies do not affect overall performance.
Marginal	1	Below the standards of performance, deficiencies cause serious delays and re-scheduling, schedules are adversely affected.
Unsatisfactory	0	Well below standards of performance, deficiencies cause serious delays and re-scheduling, corrective action requires high-level management attention.

After collecting the scores, EERE weighted them against specific program obligations for FY 2005 at PNNL as reported in the DOE Management Analysis Reporting System (MARS) report as of August 31, 2005.

Program	FY 2005 Obligations at PNNL as of 8/31/2005 (Thousands)
Biomass Program	4,367
Building Technologies Program	5,638
FreedomCAR and Vehicle Technologies Program	5,911
Hydrogen, Fuel Cells and Infrastructure Technologies Program	3,814
Industrial Technologies Program	1,920
Wind and Hydropower Technologies Program	1,195
TOTAL	22,846

EERE then computed a weighted average score for each performance measure, for example:

a	b	c	d	e
Program	Adjectival Rating	Numerical Score	FY 2005 Obligations	Weighted Score (column c x column d)
A	Excellent	3.0	\$2,802,053	\$8,406,159
B	Outstanding	4.0	\$16,294,010	\$65,176,040
C	Outstanding	4.0	\$422,000	\$1,688,000
D	Outstanding	4.0	\$6,281,757	\$25,127,028
E	Excellent	3.0	\$1,202,000	\$3,606,000
Sum			\$27,001,820	\$104,003,227
Weighted Office Rating (Sum of column e/Sum of column d)				3.85

EERE then converted the weighted average scores back to an adjectival rating as presented below:

Points	EERE Overall Contractor Rating Scale (Adjectival Rating)
>3.5	Outstanding
>2.6 - 3.5	Excellent
>1.6 - 2.6	Good
<1.6	Marginal

OUTCOME BY PERFORMANCE MEASURE AND OVERALL SCORES

For PNNL, EERE arrived at an overall score of "Outstanding" for three Performance Measures, namely "Quality of Science and Technology," "Relevance to DOE Missions and National Needs," and "Effectiveness and Efficiency of Research Program Management." One Performance Measure, "Success in Constructing and Operating Research Facilities" was Not Rated. The table shows the scores awarded by reporting Program.

The following tables highlight the adjectival ratings issued by each of the Program Offices; further data is provided that translates the adjectival rating into a numeric score. Please note that each table presents this aforementioned data per Performance Measure.

PERFORMANCE MEASURE OUTCOMES BY ADJECTIVAL RATING					
PROGRAM	FY 2005 OBLIGATIONS AT PNNL AS OF 8/31/2005 (THOUSANDS)	QUALITY OF SCIENCE AND TECHNOLOGY	RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS	EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT	SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES
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INDUSTRIAL TECHNOLOGIES PROGRAM	1,920	Excellent	Excellent	Excellent	Not Rated
WIND AND HYDROPOWER TECHNOLOGIES PROGRAM	1,195	Outstanding	Outstanding	Outstanding	Not Rated
TOTAL	22,846	OUTSTANDING	OUTSTANDING	OUTSTANDING	NOT RATED

PERFORMANCE MEASURE OUTCOMES BY NUMERICAL SCORE					
PROGRAM	FY 2005 OBLIGATIONS AT PNNL AS OF 8/31/2005 (THOUSANDS)	QUALITY OF SCIENCE AND TECHNOLOGY	RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS	EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT	SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES
BIOMASS PROGRAM	4,367	4	4	3	Not rated
BUILDING TECHNOLOGIES PROGRAM	5,638	4	4	4	Not rated
FREEDOMCAR AND VEHICLE TECHNOLOGIES PROGRAM	5,911	4	4	4	Not rated
HYDROGEN, FUEL CELLS AND INFRASTRUCTURE TECHNOLOGIES PROGRAM	3,814	3	3	3	Not rated
INDUSTRIAL TECHNOLOGIES PROGRAM	1,920	3	3	3	Not rated
WIND AND HYDROPOWER TECHNOLOGIES PROGRAM	1,195	4	4	4	Not rated
TOTAL	22,846	3.75	3.78	3.56	Not rated

SELECTED EXAMPLES OF ACHIEVEMENTS AND DEFICIENCIES

EERE, in the order of each PNNL Performance Measure, has highlighted selected major achievements recognized throughout FY 2005; it also addresses certain areas, within the PNNL R&D environment warranting management attention

PERFORMANCE MEASURE I: QUALITY OF SCIENCE AND TECHNOLOGY

EERE rates PNNL as "Outstanding" for Quality of Science and Technology.

SIGNIFICANT ACHIEVEMENTS:

Biomass Program

PNNL continues to partner with industry leaders to develop and advance technology within the mission of the Biomass Program. PNNL has successfully partnered with 5 out of 6 of the highest rated projects from the FY 05 Products Solicitation. Industrial partners in this effort include Dow, Abengoa, and GE. Their existing partnership with Cargill to develop 3-hydroxypropionic acid into a useful chemical intermediate for use in the product of acrylamide continues to advance. In addition, PNNL's partnership with ADM to develop conversion technologies for high value chemicals and oils from corn fiber and other under valued streams continues to progress. Over the past period PNNL initiated a Fungal Genomics Research Program with an industry led board of directors, whom will ultimately cost share the development of core technologies that will benefit the program as a whole.

Building Technologies Program

A building industry peer review of PNNL's work showed that the general consensus in the building industry is that PNNL activities contribute greatly to increased energy efficiency in buildings.

PNNL successfully collaborated and gave technical support to industry groups to create the *Advanced Energy Design Guide for Small Office Buildings* achieving 30% energy savings over ANSI/ASHRAE/IESNA standard 90.1-1999.

FreedomCAR and Vehicle Technologies Program

Completed long-term R&D efforts with Visteon and PPG on lightweight glazing (glass), some of outcomes which have been implemented commercially by the industrial partners.

Industrial Technologies Program

Significant progress in developing sensor technology related to multiphase flow. Excellent progress in developing micro-channel flow technology for applications in chemical separations.

Wind and Hydropower Technologies Program

The new six-degrees-of-freedom sensor fish device was successfully deployed to test the biological performance and engineering efficiency of the Wanapum advanced turbine. Sensor fish application was extended to evaluate spillway passage routes at two lower Snake River dams. A peer-reviewed article on the use of computational fluid dynamics (CFD) to aid salmon passage in the lower Columbia River was published in an industry trade journal.

NOTABLE ACHIEVEMENTS:

Biomass Program

PNNL has completed extended catalyst lifetime runs of over 500 hours on two separate catalysts furthering their work on Polyols development. They have also completed the upgrading of pyrolysis oils, produced from lignin, working toward the goal of evaluating biocrude products.

Building Technologies Program

PNNL leads the residential building industry to improve energy efficiency and use improved building technologies by researching and proposing building code changes and developing software tools that builders use to comply with codes.

PNNL quickly conducts their technical analysis under tough schedules, in particular with their work on the DOE Federal residential code rulemaking.

PNNL has effectively used advanced analytical and statistical tools and techniques to extract trends from noisy data of the Light Right ergonomic lighting consortium project. A recent ACEEE paper shows the energy conservation advantages of task ambient lighting.

PNNL's development of wireless power metering has received praise from independent stakeholders.

PNNL displayed innovation in coaxing improvements from products performance tested in its residential lighting projects (recessed cans and reflector compact fluorescent lamps.)

PNNL is widely regarded as authoritative in the areas of technology introduction where it is active.

FreedomCAR and Vehicle Technologies Program

PNNL developed a unique mechanical testing method to systematically characterize plane strain formability of aluminum and high-strength steel tailor welded blanks. This development will enable more reliable deployment of this weight saving technology using more advanced and lightweight materials.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

Hydrogen Storage

On-board storage for hydrogen-powered vehicles is a major technical challenge for the program. PNNL has confirmed that ammonia boranes can store hydrogen to the target capacity on a purely material basis, thus showing promise for further developing this class of materials for a storage system. PNNL has investigated the mechanism of hydrogen release, and significantly enhanced the kinetics of hydrogen release (estimated at a factor of 100) through morphological control of the material.

Working with Millennium Cell and Rohm & Haas, PNNL has discovered that it may be feasible to regenerate sodium borohydride through new chemical routes. These new routes may allow lower energy consumption in the production of hydrogen fuels.

The spent fuel form needs to be designed so that it can be efficiently regenerated. To better enable design and control of ammonia borane storage materials, PNNL has characterized the molecular structure through NMR as well as the thermochemistry of spent fuels in collaboration with Los Alamos National Laboratory, the University of Pennsylvania, the University of Alabama, and the University of Washington. PNNL has also discovered several new routes to regeneration of B-N based hydrogen storage systems.

PNNL has used computational chemistry methods to begin establishing the thermodynamic limitations of sodium borohydride, ammonia borane, and formic acid derived hydrogen fuels. Energetics have been used to postulate new routes to fuel recycle.

PNNL research on hydrogen storage has received recognition by way of invited presentations at the American Chemical Society National Meeting, Stanford University's Global Climate Change and Technology Symposium, a Colloquium at the Argonne National Laboratory, and a Poster Award at the Fuel Cell Seminar.

Forecourt Hydrogen Production

Utilizing microchannel steam reformer technology originally developed for on-board reforming of gasoline, PNNL developed a compact natural gas steam reformer on a 5 kg hydrogen/day scale that is expected to meet DOE 2010 targets for thermal efficiency.

Hydrogen Production from Biomass

Using a proprietary catalyst formulation developed from combinatorial screening studies, PNNL has achieved hydrogen productivity from aqueous phase reforming of sorbitol that exceeds the DOE 2005 targets. PNNL received recognition through an invited presentation on hydrogen production at the American Chemical Society National Meeting.

PNNL has developed a unique combination of catalyst and support material for low temperature steam reforming of ethanol that provides unusually high selectivity toward hydrogen in short-term laboratory tests.

Hydrogen Analysis

In recognition of the lab's development of a hydrogen cost model as part of the Hydrogen Analysis (H2A) effort, PNNL was named a co-recipient of a 2005 DOE Hydrogen Program R&D Award in recognition of outstanding contributions by the H2A analysis team.

Industrial Technologies Program

PNNL is very good at identifying new opportunities for energy efficiency research and in initiating innovative research in these areas. Excellent collaborations with other DOE labs and industry, which have benefited other lab programs and missions. Results of research have been presented in the open literature and at meetings.

Wind and Hydropower Technologies Program

Three staff members received a Technology Merit Award from the Environmental Business Journal for development of an underwater acoustic system. This system was applied to fish passage issues at two hydropower projects in 2005. PNNL staff presented 2 technical papers at national and international conferences during FY2005. A paper that summarized the studies on mechanisms of injury during exposure to turbulent shear flow was published in a scientific journal.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES: None

PERFORMANCE MEASURE 2: RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS

EERE rates PNNL as "Outstanding" for Relevance to DOE Missions and National Needs.

SIGNIFICANT ACHIEVEMENTS:

Biomass Program

PNNL has provided excellent support in the development of the long term goals and mission of the Biomass Program. Todd Werpy continues to be a valuable resource in helping the program to define and understand key issues in the development of a biorefinery industry. He has also played an important role in the Program's transition to a pathway approach, enabling broader industry participation in the program and a more focused deployment plan. PNNL as also a major contributor to the products portion of the Program's multiyear program plan (MYPP). PNNL completed a study on the potential of lignin in product development in collaboration with NREL. PNNL leads the efforts on the program's analytical team for the integration of products into a biofuels based biorefinery resulting in the milestone report "Complete Integrated Biorefinery Analysis for Agricultural Residues with Polyols Products".

Building Technologies Program

PNNL support activities met the Building Technologies joule milestone of 1-2 percent improvement in residential and commercial building energy codes relative to the FY 2004 baseline.

PNNL is currently conducting the ground work for new tasks. The significance of these tasks form the basis of a "global analysis" that will help DOE identify and determine the difference between the technical, construction practice, energy requirements and economics associated with HERS, Building America, Energy Star Homes, FEDRES, State Energy Requirements and voluntary residential energy codes. This work, PNNL's white paper on energy and economic analysis of code change proposals, and other support help DOE management understand code issues and set program goals.

PNNL has demonstrated the ability to respond to changing technical and market situations to achieve the best possible results from product performance in situations it does not control, but can encourage and stimulate. Notable examples appear in the lab's work in residential lighting products.

FreedomCAR and Vehicle Technologies Program

Developed DuPont collaborative involvement in the low-cost titanium powder feedstock project resulting in the delivery of low-cost $TiCl_4$ feedstocks for powder production.

Industrial Technologies Program

The excellent work in sensor development and micro-flow technology will have a significant impact of all EERE programs that involve low-temperature chemical processing.

Wind and Hydropower Technologies Program

PNNL initiated a cooperative 2-year study, co-funded by DOE EERE and Bonneville Power Administration to evaluate how hydro operations could be altered to provide more habitat for Endangered fall Chinook salmon in the lower Snake River. PNNL participated in the U.S. Army Corps of Engineers Turbine Survival Program.

NOTABLE ACHIEVEMENTS:

Biomass Program

PNNL provided the necessary expertise in product markets in several key industrial stakeholder meetings including Eastman Specialty Chemicals, Dow, and Cargill. PNNL researchers have presented four papers at the prestigious American Catalyst Society Conference in Philadelphia, bringing biomass issues to the attention of an important audience. PNNL's work on product development and their relationship with industry has enabled the Program to attract a diverse pool of industry partners.

Building Technologies Program

PNNL contributed value-added analyses and technical support for BTP's GPRA benefits estimation during FY2005. Additionally, significant improvement in overall BTP multi-year planning process and outputs were directly attributable to technical planning work conducted by PNNL staff. Direct contributions to individual elements of the BTP MYP in the areas of Commercial Buildings Integration, Space Conditioning and Refrigeration, Appliance and Emerging Technologies R&D significantly improved the planning and multi-year plans for these technology areas. Support for cross-cut planning processes in the areas of Controls and Sensors and Software Design Tools was initiated, and although completion is not scheduled until the first quarter of FY 2006, progress has been excellent.

PNNL provides well organized and structured approaches to the introduction of emerging building technologies.

PNNL has successfully worked with partners (American Lighting Association and Consortium for Energy Efficiency – industry and utility/consumer groups) to integrate technical/energy performance objectives into the second round of the successful “Lighting for Tomorrow” design competition.

Wireless controls and sensors research is drawing interest from building developers. PNNL successfully partnered with potential producers and users on the project research.

FreedomCAR and Vehicle Technologies Program

Submission of FY 2006 ALM Annual Operating Plan (AOP) containing work, including several new projects, well aligned with the ALM and its Big Three partners in FreedomCAR.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

Fuel Processing

- Fuel processor technology developed by PNNL for HFCIT's on-board fuel processing efforts is finding new applications in the military. PNNL's microchannel reactor and heat exchanger technology, developed with support from EERE-HFCIT, was successfully integrated with a PEM fuel cell in an auxiliary power unit built for the Bradley Fighting Vehicle, in collaboration with Battelle Memorial Institute, United Defense Limited Partnership and the U.S. Army National Automotive Center.

Fuel Cells

- PNNL has developed computational modeling tools for fuel cell-based power units that provide industry participants with a predictive assessment of system electrical performance and mechanical durability against DOE technical targets.

Hydrogen Analysis

- PNNL developed a prototype version of the "Hydrogen and Fuel Cells Analysis Resource Center" that will provide the DOE Hydrogen Program with consistent and reliable data and assumptions for use in conducting analyses of economic, market and technical issues associated with a hydrogen economy.

Industrial Technologies Program

PNNL is contributing to ITP priorities through long-range research in the areas of waste heat recovery and functionally gradient materials. PNNL continues to exhibit leadership in forming R&D partnerships with industry to address DOE- EERE needs

Wind and Hydropower Technologies Program

PNNL partnered with NOAA Fisheries to develop a new acoustic tag technology that was applied to hydro projects operated by the U.S. Army Corps of Engineers. PNNL continued to deploy the DOE-developed advanced sensor fish device for private utilities and federal agencies (e.g., Grant County Public Utility District-Wanapum Dam; U.S. Bureau of Reclamation-Grand Coulee Dam; U.S. Army Corps of Engineers-The Dalles, Ice Harbor Dams) to facilitate safe passage of fish. A study to determine the effects of pressure spikes during turbine passage of radio-tagged fish was developed for the US Army Corps of Engineers. This study involved the protocol previously developed for EERE and tested the hypothesis that tagged fish survive at different rates than un-tagged fish.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES:

Building Technologies Program

A clear link does not exist between energy efficiency and the substance and content of the Light Right project. Communications from PNNL about the Light Right project to DOE management are weak and infrequent.

Industrial Technologies Program

PNNL can improve the ultimate effectiveness of their R&D by addressing early on the engineering and financial needs and constraints, and quantitative benefits and metrics, associated with the eventual application of the technology being developed.

PERFORMANCE MEASURE 3: EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT

EERE rates PNNL as “Outstanding” for Effectiveness and Efficiency of Research Program Management.

SIGNIFICANT ACHIEVEMENTS:

Biomass Program

The projects conducted at PNNL have consistently met milestones on time and within budget. The technical managers have been excellent at measuring success and making acceptable recommendations to HQ Program Management about both successes and failures. PNNL staff members have been highly involved in the working of the National Bioenergy Center, through MYTP development and project selections. PNNL is also engaged in the IEA Bioenergy pyrolysis task and has been invited to present their expertise to the group. In that venue they have done an exemplary job of understanding and disseminating research focal points and achievements of the global community.

Building Technologies Program

In FY05, PNNL technology introduction staff effectively responded to two unanticipated needs for the Buildings Technology Introduction Program:

1. Preparation of a technology commercialization plan for solid state lighting addressing the interests of industry, technical organizations, public benefit organizations, and consumers. The

plan includes a variety of approaches to be employed in the Federal role for new technology, and has been reviewed and endorsed by the key Next Generation of Lighting Industry Association.

- 2 Development and immediate implementation of a refocused partnership development plan which targets next stage development and promotion of R&D projects currently within the spectrum of Building Technologies activities, including space conditioning, lighting, building envelope and fenestration, design tools, residential systems integration and commercial systems integration.

PNNL produced a resource reallocation plan for the Building Technologies Introduction Program to address the changing needs resulting from the dynamic environment of evolving institutional, technical and market conditions. The preparation of these plans positioned the Department to act expeditiously in response to the enactment of the Energy Bill.

FreedomCAR and Vehicle Technologies Program

Completed strategic development activities resulting in initiation of the Predictive Modeling for Polymeric Composites project that brings together PNNL, ORNL, the ACC, the American Plastics Council and universities (jointly with NSF) in collaboration to develop predictive process models for thermoplastic composites. Increased presence and funding in the ALM (a concern in the FY 2004 evaluation) and reduced potential carryover into FY 2006 (presently projected to achieve the 25 percent target) by working diligently to develop and initiate several new projects.

Industrial Technologies Program

Excellent management of ITP related programs, timely dissemination of results, and commitment to enhancing the reputation of ITP and EERE.

Wind and Hydropower Technologies Program

All project milestones relating to technical products were met. Two major technical reports relating to characterization of fish response in the laboratory and turbine imaging technology were published.

NOTABLE ACHIEVEMENTS:

Biomass Program

All projects in ongoing work are directly related to the multiyear technical plan and achieving programmatic goals. Staff members have been actively publishing and presenting accomplishments to their peers.

Building Technologies Program

PNNL maintains low uncosted balances. PNNL adequately awards and monitors subcontract work. For most work, PNNL keeps the EERE program managers informed of project progress as needed.

PNNL's research into wireless controls and sensors has been of high quality. Especially notable is the good coordination with multiple partners.

PNNL has an excellent record in producing or obtaining facilities for laboratory performance testing of residential lighting products for the Building Technologies Technology Introduction Program.

FreedomCAR and Vehicle Technologies Program

Identified new collaborative activities with MeadWestvaco for development of low-cost lignin feedstocks to support the DOE LCCF program. Completed assessment of likely costs of magnesium sheet which will greatly help in ongoing planning for future ALM support of R&D in the area of magnesium.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

Hydrogen Storage

PNNL collaborated with Los Alamos National Laboratory, seven universities, and three companies to initiate the DOE Center of Excellence for Chemical Hydrogen Storage which will develop chemical carriers of hydrogen to meet DOE's long range targets for gravimetric and volumetric hydrogen storage capacity.

Hydrogen Safety

PNNL organized and managed the interactions of the DOE Hydrogen Safety Review Panel, in its primary mission of maximizing safety of the DOE Hydrogen Program. Notable contributions of the panel include: development of Safety Guidelines that have since been incorporated into all DOE hydrogen procurements; safety plan reviews; review of 175 safety questionnaires submitted as a part of the annual DOE merit review process; site review visits to nearly 10 DOE funded hydrogen project sites; and, investigation of a hydrogen storage materials incident that occurred at a university site under DOE contract.

Hydrogen Safety and Education

PNNL began development of hydrogen safety training curricula which will form an essential component of the nation's anticipated transition to a hydrogen economy. The first two draft pilot courses of Emergency Responder training were conducted at the HAMMER site in Richland, Washington.

Industrial Technologies Program

PNNL is very helpful in communication and cooperation with funding office, and in contributing to ITP program planning efforts through studies and analyses.

Wind and Hydropower Technologies Program

PNNL developed a program close-out plan that ensured DOE received adequate value for its program investments. Submitted a journal article that summarized how surface flow outlets have been developed to facility safe passage of downstream migrant juvenile salmon in the United States and western Europe.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES:

Biomass Program

A DOE procurement ruling caused PNNL to withdraw from collaboration in bio oil production and upgrading because it was deemed to be unfair competition with industry.

PERFORMANCE MEASURE 4: SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES

EERE rates PNNL as "Not Rated" for Success in Constructing And Operating Research Facilities

SIGNIFICANT ACHIEVEMENTS: None

NOTABLE ACHIEVEMENTS: None

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES: None

GUIDANCE FOR THE NEXT PERFORMANCE PERIOD:

PERFORMANCE EXPECTATIONS FOR THE NATIONAL LABORATORY FOR THE NEXT PERFORMANCE PERIOD

Biomass Program

Continue to foster strong industrial relationships, both in CRADAs and as guides to core research and development. Secure cost share from partners to ensure the continuation and expansion of the Fungal

Genomics efforts.

Strong emphasis on all parts of the Biomass Program to conduct activities that are mission oriented as described in the new MYTP. Meeting the programmatic goals of the program (ABC milestones) is a number one priority.

Building Technologies Program

PNNL management of the Light Right project should provide monthly reports to DOE.

BT is raising its expectations for robustness of its planning processes and outputs over the next several years. PNNL has shown the capability to assist BTP management in developing effective means, and supporting processes with value-added analyses, to achieve its expectations.

FreedomCAR and Vehicle Technologies Program

Successfully conclude current projects as planned and provide overall coordination and leadership of the new predictive modeling project collaboration with ORNL, APC, ACC and NSF

Hydrogen, Fuel Cells and Infrastructure Technologies Program

Carry out outstanding R&D efforts aimed at achieving DOE fuel cell technical targets. Continue to explore innovative solutions to problems that arise. Continue to publish and disseminate results to the maximum extent possible.

Industrial Technologies Program

PNNL should continue to improve in managing and tracking uncosted balances. Continue good cooperation and communication with DOE-EERE HQ. More timely reporting deliverables in some program areas would be helpful to avoid delays in programmatic planning and initiatives

INPUT ON CONCERNS FOR LABORATORY MANAGEMENT:

Biomass Program

Continue to develop relationship within the NBC and foster collaborative efforts with the member laboratories.

FreedomCAR and Vehicle Technologies Program

Continue trying to increase lab's visibility with the Big Three automakers in order to become more 'mainstream' like ORNL in the lightweighting materials efforts.



APPENDIX 4

DOE Office of Fossil Energy Evaluation



Department of Energy
Washington, DC 20585

MEMORANDUM

TO: Paul W. Kruger, Manager
Pacific Northwest Site Office

FROM: Mark R. Maddox
Principal Deputy Assistant Secretary, Office of Fossil Energy

SUBJECT: Headquarters Year-End Performance Evaluation for the Management and Operation of the Pacific Northwest National Laboratory (PNNL) for Fiscal Year (FY) 2005.

This is in response to your request of November 2, 2005, for a HQ year-end performance evaluation for the management and operation of the Pacific Northwest National Laboratory (PNNL) for FY 2005. You requested the evaluation via hard copy or electronically by November 4, 2005, and provided for our use a table with adjectival and numerical ratings.

On behalf of the Department, I want to thank and commend you for your tireless service and outstanding accomplishments, particularly in the areas of subsurface science and fuel cells R&D.

PNNL has contributed substantially to the DOE's sequestration and zero-emission fossil energy program through the application of subsurface science and fuel cell capabilities and the creation of industrial/university partnerships. In FY 2005, PNNL:

- Helped launch the Center for Zero Emission Research and technology (ZERT) Center, which has begun conducting research that focuses primarily on geologic sequestration of greenhouse gases.
- Won roles in three sequestration pilot projects with regional partners. Regional partnerships are vital in extending our capabilities in fossil energy research, particularly in the multidisciplinary areas required by carbon sequestration. A sequestration pilot project in basalts will be conducted as part of the Big Sky Regional Partnership. A sequestration pilot project in sedimentary formations along with a terrestrial sequestration pilot project will be conducted as part of the Midwest Regional Carbon Partnership.
- PNNL staff and Battelle facilitated the formation of an industrial alliance that will design, build, and operate the FutureGen facility, which will use the latest technology to develop emission-free coal burning plants.



- Led a Solid State Energy Conversion Alliance (SECA) Core Technology Workshop targeting both the fuel cell industry and researchers. During the SECA Core Technology Workshop, new technology was transferred to industry and industry feedback on future technology development needs was received.
- Developed a model that can predict fuel cell subsystem performance under a variety of operating conditions and provided training to the SECA industrial teams on user interface of the model. This model will help the SECA team design fuel cells for proper performance and life and will speed up the fuel cell development process.
- Helped launch the High Temperature Electrochemistry Center (HiTEC) satellite center (University of Florida). HiTEC addresses technical barriers that are impeding progress of FutureGen, as well as adapting energy conversion devices developed by Fossil Energy to applications needed by other federal agencies.

Having significantly exceed average standards of performance, achieved noteworthy results, and accomplished very difficult tasks in a timely manner, I believe that PNNL's performance for FY 2005, falls within the Outstanding range of 3.5-4.0 on a 4.0 scale.

In conclusion, it is my pleasure on behalf of DOE to recognize the continued achievements and innovations of PNNL, and we look forward to another successful year of outstanding accomplishments.



APPENDIX 5

Department of Homeland Security Evaluation

U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
Security**

October 25, 2005

Mr. Paul Kruger
U.S. Department of Energy
Pacific Northwest Site Office
Post Office Box 350, K8-50
Richland, Washington 99352

**Re: YEAR-END PERFORMANCE EVALUATION OF BATELLE FOR THE
MANAGEMENT AND OPERATION OF THE PACIFIC NORTHWEST NATIONAL
LABORATORY (PNNL) FOR FISCAL YEAR (FY) 2005**

Dear Mr. Paul Kruger:

Please find enclosed the Department of Homeland Security's (DHS's) year-end evaluation of Battelle's performance on management and operation of PNNL for the period of October 2004-September 2005 (FY 2005) for programs and activities under DHS's cognizance. Enclosure 1 shows quantitative DHS ratings for each of the two DHS-related objectives from Program Managers of selected projects. The other enclosure is a narrative describing PNNL's performance in fulfillment of our expectations.

If you have any questions regarding DHS's input or would like any assistance, please contact Dr. Caroline Purdy at (202) 254-5859 or email at Caroline.purdy@hq.dhs.gov.

Sincerely,

A handwritten signature in black ink that reads "Caroline B. Purdy".

Dr. Caroline Purdy
Director
Office of National Laboratories
Office of Research and Development
Science and Technology Directorate

Enclosures

cc: Lance Mamiya
Dave Biancosino

RECEIVED

NOV 08 2005

DOE-PNSO-CC

Sum of FY05 Sales							Score on 1.2b, "Create, Enhance, and Sustain New S&T Knowledge and Capabilities" (B _n)		Score on 2.4, "Produce S&T Accomplishments that Advance DHS Program Objectives and Goals" (C _n)	
PL	Project #	Project Title	CLIENT TECH REP	EPR CONT CLNT NAME	EPR FUND CLNT NAME	Total	[Scale of 0 to 4]		[Scale of 0 to 4]	
03 - ISE	45553	Threat Vulnerability Integration System	Sandy Landsberg	Department of Homeland Security	Department of Homeland Security	\$ 4,800,000				
	47075	National Visualization and Analytics Center	Joe Kielman	Department of Homeland Security	Department of Homeland Security	\$ 6,659,652				
	47624	Biodefense Knowledge Center System Pilot	Sandy Landsberg	Department of Homeland Security	Department of Homeland Security	\$ 2,450,000				
	48525	Motivation & Intent	Sandy Landsberg	Department of Homeland Security	Department of Homeland Security	\$ 1,160,000				
03 - ISE Total						\$ 15,069,652				
13 - ESHS	45970	Standards Development for DHS	Dr. Bert Coursey	DHS Office of Standards	DHS Office of Standards	\$ 1,140,344				
	47486	DHS EP&R Standards Development	Pam Greenlaw	Department of Homeland Security	Department of Homeland Security	\$ 450,000				
13 - ESHS Total						\$ 1,590,344				
44 - PIET	50064	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 1,778,600				
	50065	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 910,000				
	50066	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 2,634,673				
	50067	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 545,255				
	50068	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 450,000				
	50069	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 741,234				
	45660	Radiation Portal Monitor Support	Chris Milowic	Department of Homeland Security	Department of Homeland Security	\$ 92,923,000	4		4	
	45674	Urban Field Studies	Kimothy Smith	Office of Research & Development	Office of Research & Development	\$ 410,000				
	46448	BEADS: Universal Sample Preparation Sys for	Dr. Beth George	Department of Homeland Security	Department of Homeland Security	\$ 400,000				
	46619	DHS Support - Morgan	Kirk Evans	Department of Homeland Security	Department of Homeland Security	\$ 349,766				
	46672	Proteomics of Yersina Pestis	Dawn Myscofski	Department of Homeland Security	Department of Homeland Security	\$ 525,000	3		3.2	
	46702	Fog Technology for Decontamination	Dawn Myscofski	Department of Homeland Security	Department of Homeland Security	\$ 275,000	3		2.8	
	46718	DHS S&T Standardized Policies & Procedures	Victor Tambone	Department of Homeland Security	US Army	\$ 1,389,475				
	46720	DHS Support - Bowyer	Vayl Oxford	Department of Homeland Security	Department of Homeland Security	\$ 361,464				
	46997	Nuclear Assessment Program	Greg Haugan	Department of Homeland Security	Department of Energy	\$ 250,000				
	46905	Discrete Modeling and Simulation of CIP	Dr. John Hoyt	DHS	DHS	\$ 400,000				
	46926	DHS Radiological and Nuclear Countermeasu	Tom Kiess	Dept. of Homeland Security	Dept. of Homeland Security	\$ 3,430,046	3.4		3.4	
	47184	PANYNJ Systems Analysis	Huban Gowadia	Department of Homeland Security	Department of Homeland Security	\$ 2,767,470				
	47393	NYC Urban Dispersion Program	Kimothy Smith	Environmental Measurements Lab	Environmental Measurements Lab	\$ 723,000				
	47443	Protein Pipeline: Reagents and Assays for Str	Dawn Myscofski	Department of Homeland Security	Department of Homeland Security	\$ 528,750	3.4		3.4	
	47609	Organic Sigs of Biological Agents	Dawn Myscofski	Department of Homeland Security	Department of Homeland Security	\$ 400,000	3.4		3.4	
47714	DHS Support - Clarke	Caroline Purdy	Department of Homeland Security	Department of Homeland Security	\$ 229,734					
47753	Botulinum Toxin Detection System	Dr. Carol Linden	Department of Homeland Security	Department of Homeland Security	\$ 1,000,000	3.4		3.4		
47984	Concrete Wall Surveillance	Paul Mahon	Department of Homeland Security	Department of Homeland Security	\$ 500,000					
48107	Enhanced Bioaerosol Detection System	Dr. Carol Linden	Department of Homeland Security	Department of Homeland Security	\$ 2,500,950	3.4		3.4		
48489	Bioforensics Sample Management	Jim Burans	Department of Homeland Security	Department of Homeland Security	\$ 262,500					
48707	BWIC System Pilot	Dawn Myscofski	Department of Homeland Security	Department of Homeland Security	\$ 200,000	3		3.3		
49230	Rapid Response for Contingency Operations	Robert Hooks	Department of Homeland Security	Department of Homeland Security	\$ 3,780,119					
49411	PNNL Post 2009 Capability Tools & Assessme	Scott Randels	Department of Homeland Security	Department of Homeland Security	\$ 2,000,000	3.4		3.4		
44 - PIET Total						\$ 123,680,839				
48 - EES	48640	BWIC Meteorological Integration Task	Dr. Carol Linden	Department of Homeland Security	Department of Homeland Security	\$ 278,750	3.4		3.5	
	49539	Feasibility of the Operations Use of Weather R	Ms. Teresa Lustig	(blank)	Department of Homeland Security	\$ 350,000				
48 - EES Total						\$ 628,750				
(blank)	(blank)	(blank)	(blank)	(blank)	(blank)		Mean Weighted Rating		Mean Weighted Rating	
(blank) Total							$\Sigma(A_n \cdot B_n) / \Sigma A_n$		$\Sigma(A_n \cdot C_n) / \Sigma A_n$	
Grand Total						\$ 140,969,585	3.93		3.93	

ΣA_n (\$M) \$ 104.06

DHS Input to PNNL FY 2005 Performance Review

I. INTRODUCTION, BACKGROUND, AND CONTEXT

The Department of Homeland Security (DHS) has the mission to lead the unified national effort to secure America. The focus of the Department is to prevent and deter terrorist attacks and protect against and respond to threats and hazards to the Nation. The President's National Strategy for Homeland Security makes clear that science and technology are key to winning this new kind of war, and that the vast science and technology expertise the Nation already possesses must be harnessed and brought together for this mission.

Within the Department of Homeland Security, the Directorate of Science & Technology (S&T) envisions implementing innovative programs that deliver scientific and technological capabilities to homeland security that answer both immediate and long-term needs and make us a safer and more secure nation through close working relationships with the front-line personnel of DHS and related state, local and tribal entities.

Core capabilities and ORD Strategy for Managing a Complex of Laboratories

The Office of Research and Development has invested in many national laboratories and academic institutes in addition to the DHS owned R&D laboratories to address the scope of research, development, testing and evaluation (RDT&E) objectives that ORD is responsible for addressing. It has been the intent since the formation of ORD to create an integrated complex of laboratories that can meet the needs of S&T and DHS.

The current S&T Integrated Complex is comprised of 10 national laboratories, 5 DHS laboratories, and 4 University Centers of Excellence, each with their specific recognized technical expertise and located throughout the continental US. One interpretation of the "complex" of laboratories is that since each of these laboratories receives funding to meet one or more ORD technical objectives and/or programs tasked to them, the lab is therefore an entity within the complex. Receiving funding from ORD isn't the only requirement for gaining recognition as one of the ORD complex of laboratories however. Beyond receiving funding, there is an expectation that the laboratories that comprise the ORD integrated complex will form partnerships and collaborative programs to enhance the individual laboratories capabilities. When one institution may be in need of additional expertise to fulfill their technical objectives, that institution is expected to reach out to another institution/s in the complex to form an R&D partnership. When the national laboratories are executing ORD programs, in most cases there are teams of multiple laboratories, each addressing sub-objectives to accomplish the overall objectives. Each laboratory has core competencies that can be used to accomplish the overall objective and ensure the highest quality outcomes for the team. Using teams of experts allows each lab to focus on what they do best, or tackle the objectives they are most suited to achieve.

An example of these teaming arrangements comes from the forensics program tasked to ORD. PNNL has received funding to focus on the nuclear attribution and forensics objectives, while SRNL is expected to address the research objectives for classical forensics advances for samples with radiological contamination, and the ECBC laboratory addresses the advances in chemical forensic techniques. Each lab contributes to the overall scope of forensics program objectives.

Ensuring that the integrated complex is comprised of the best institutions in the nation that are already recognized for their expertise is viewed as the stewardship role that ORD has been assigned. Whenever possible, ORD leverages their programs through use or access to national federal scientific assets already established rather than creating new laboratories. It is a strategy embraced by S&T.

ORD is striving to become recognized nationwide for this integrated complex of researchers addressing homeland security goals. It is hoped that other agencies and organizations in addition to DHS will reach out to the integrated complex as a whole to solve technical challenges, since the complex has the full range of capabilities to draw upon. While some of the laboratories can address broad technical programs with in-house scientists, in general drawing from scientists throughout the complex generally can produce better results. For example, to create a risk assessment strategy plan for preparing for an avian flu pandemic, the expertise from the integrated complex was assembled, rather than individual laboratories for individual tasks. The combined expertise from the complex ensures a greater potential for success as opposed to relying on a single institutions experts.

DHS therefore expects a high level of performance from its laboratory partners – for example, they should be technically competent as well as collaborative in their problem-solving approaches. The rest of this narrative describes how PNNL meets these expectations in several ways in order to help DHS fulfill its mission.

II. DIRECT MISSION SUPPORT

PNNL contributes significantly to the work of two major DHS Directorates – Customs and Border Protection (CBP), and Science and Technology (S&T). PNNL contributes to a lesser degree to other DHS directorates, such as IA/IP and EP&R.

CBP: To help accomplish the CBP mission, PNNL has been proactive in establishing working relationships and testing platforms in concert with local border crossing stations, an arrangement that to date has been effective. Some of this work is discussed in a recent (Sept-Oct 2005) article in *American Scientist* (the magazine of Sigma Xi, a scientific honor society) by Richard T. Kouzes of PNNL, as an outside indication of the level of visibility and stature of the importance of the DHS mission and of the outstanding PNNL efforts in fulfillment of it.

S&T: Within S&T, PNNL plays a lead role in offering the following critical capabilities:

1. information analytics (especially with the National Visual Analytics Laboratory), in support of the Threat Awareness Portfolio;
2. ultra-trace analyses. in support of forensics and attribution; and
3. standards certification and testing. in support of development efforts by the Standards portfolio, particularly in NIST-traceable and low-counting regimes for radiological and nuclear standards.

PNNL offers unique capabilities and world-class expertise in these three areas.

In addition, PNNL offers to DHS niche technical support in other portfolios. such as biological countermeasures. For example. PNNL has programs in biological detection and assay development (useful to S&T's bioforensics and biological threat characterization programs). PNNL leads the Enhanced BioAerosol Detection System multi-lab program. The lab is also developing a food sensor with the ability to detect toxins or pathogens within a complex food matrix. In these efforts, PNNL PIs have reached out to HSARPA and SED program managers to ensure that the capabilities being developed with ORD funding are leveraged across S&T. ORD commends those PIs on their professionalism, technical capabilities, and performance.

One measure of how important these activities are to DHS is to track funding. The amount of DHS work contracted to PNNL is substantial (\$32M in FY03. \$68M in FY04 and over \$100M in FY05). with an upward trend.

III. TECHNICAL REVIEWS – excellence in specific projects and programs

In our view, the professional competence of PNNL lead investigators has been first-rate. We cite two examples below.

In the June 2005 program review of the Office of Research and Development (ORD). Principal Investigator Jerry Allwine of PNNL provided an overview of the Urban Dispersion Program. which includes partners at several other laboratories (e.g., LLNL. BNL, LBNL, ANL, LANL, EML, EPA, NOAA, NRL, and university partners at Harvard, SUNY-StonyBrook, San Jose State, and Stevens Institute of Technology). He obtained very positive review comments from the diverse body of reviewers present. His team's August field test in Manhattan drew international attention and favorable press coverage from the Associated Press, Reuters, the BBC, and the journal Nature.

The Systems and Engineering Development Office (SED) of S&T has been managing the CounterMeasure Test Bed (CMTB) in the New York-New Jersey area as a platform for field testing of a variety of detectors and systems, in operational environments. The PNNL efforts there have been superlative, as the accompanying two documents show.

In both of these examples, teamwork (to include exercising intellectual leadership with colleagues and counterparts at different institutions. as well as possessing the right

organizational and interpersonal skill sets to draw upon the talents of all for the good of the project) has been a key attribute and characteristic trait of these PNNL participants. Teamwork has also been a hallmark of the biological countermeasures projects mentioned above that have multiple laboratory partners. This is precisely the type of interaction that ORD fosters and expects from the integrated complex of laboratories.

IV. MANAGEMENT EFFECTIVENESS

Of all national lab FFRDC partners, PNNL is perhaps the best at its effectiveness in displaying an interest in implementing a robust S&T arm of DHS, and to that end, in conducting some forward thinking (and actions) of interest to S&T management. As an example, in the wake of Hurricane Katrina, PNNL conceived of the approach of casting the DHS complex capabilities in terms of FEMA's Emergency Support Functions (ESFs), as a way to enhance communication with a FEMA customer. As another example, PNNL has been a local champion in the northwest for standing up a regional DHS function there, in anticipation of a DHS Regionalization approach nation-wide.

Financial tools: The contracting and tracking of program funds to PNNL has been a business process that has worked well throughout FY05. In late FY05, PNNL took the initiative to develop a "rapid response" service at no cost to DHS, which would expedite fiscal transfers to all national laboratories in order to commit funds quickly to emerging priority technical tasks during times of pressing national need.

Another aspect of PNNL's willingness to help S&T management has been to offer contractor staff support to Headquarters (HQ) office operations, as needed. For example, when one S&T-ORD staff member was tasked to support another office for an extended period of time, PNNL was able on short notice to offer a qualified and competent replacement to assist in the HQ workload.

V. RELEVANCE

PNNL is one of the first national laboratories that immediately recognized the importance of homeland security technical challenges after the 9/11 attack. This was evident when the laboratory quickly established an LDRD initiative called Homeland Security Initiative with significant internal funding. The projects created with PNNL internal funding directly addressed the high priority objectives of the department. They have not only supported technology development, but illustrated how these technologies are integrated and how they are used to enhance the operational personnel response capability. In order to disseminate the knowledge about the technologies and their use for operators, PNNL produced and provided to DHS staff a CD which illustrates how the intelligence gathering activities are linked to the deployment of the new technologies and how the combination enhances the nations capability to identify and track potential threats. This CD is expected to be used to provide insights for the operators S&T works with, for S&T collaborators on technology development and for students in the Scholars and Fellows program.

VI. SUMMARY

Our view is that PNNL has demonstrated, as a laboratory partner within the DHS integrated complex.

- (1) excellence in the technical conduct of its projects and programs;
- (2) effective interactions with DHS at multiple levels (e.g., program managers and senior management);
- (3) teamwork; and
- (4) innovation and leadership in helping DHS achieve a far-reaching agenda.

To expand upon this last point, PNNL has provided DHS in FY 2005 with not just solid technical work products and the competence that underlies them, but also constructive criticism and new ideas based on an appreciation of the vision of where S&T could (and should) be in the future, and how to reach such an end state.



APPENDIX 6

DOE Richland Operations Office Evaluation

United States Government

Department of Energy
Richland Operations Office

memorandum

DATE: DEC 14 2005

REPLY TO
ATTN OF: AMCP:RAH/06-AMCP-0079

SUBJECT: DOE RICHLAND OPERATIONS OFFICE (RL) INPUT TO PACIFIC NORTHWEST
NATIONAL LABORATORY (PNNL) PERFORMANCE EVALUATION FOR
FISCAL YEAR 2005

TO: Paul W. Kruger, Manager
Pacific Northwest Site Office

Enclosed is the overall RL performance evaluation on PNNL support to our Environmental Management Programs. While a majority of this work met or exceeded expectations, the errors and deficiencies in data management for the Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (HSW EIS) were very significant in terms of impact and resulted in a reduction in rating from previous periods.

If you have any questions, please contact me, or your staff may contact Rich Holten, Deputy Assistant Manager for the Central Plateau, on (509) 376-3963.



Keith A. Klein
Manager

Enclosure

RL INPUT TO PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL) PERFORMANCE EVALUATION FOR FY 2005

December 12, 2005

2.5 Produce Science and Technology Accomplishments that Advance Office of Environmental Management (EM) Program Objectives and Goals

PNNL support to EM Program Objectives was provided for the Hanford Groundwater Program, the Public Safety and Resource Protection Program (PSRPP), and the K Basins Closure Project. While the great majority of this work met or exceeded expectations, the errors and deficiencies in data management for the Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (HSW EIS) were very significant in terms of impact and resulted in a reduction in rating from previous periods.

For the most part, PNNL support to the Hanford Groundwater Program and Composite Analysis was responsive and met or exceeded objectives. Examples of positive performance include the groundwater monitoring program, science and technology support to the groundwater program, the 300 FF-5 Focused Feasibility Study, support to the end states document preparation, and the surface surveillance program support to the groundwater program. However, deficiencies in quality assurance related to data management were identified as a result of responding to litigation on the Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (HSW EIS). Deficiencies were noted in the quality assurance program itself as well as information provided in the HSW EIS. These HSW EIS deficiencies occurred in prior years work. The deficiency problem was discovered and self reported by PNNL staff during Fiscal Year 2005. These deficiencies have undermined public confidence of Hanford clean-up and DOE's overall credibility. These deficiencies have negatively impacted EM's long-standing plans of making Hanford available for disposal of low level waste and mixed low level waste from other DOE generators and for processing and certification of transuranic waste from other DOE generators. These deficiencies have also caused a significant cost impact to the EM clean-up project both at Hanford and across the EM complex. The PNNL quality assurance procedures have been audited and corrective actions taken.

Work conducted for RL by the Public Safety and Resource Protection Program (PSRPP) during Fiscal Year 2005 continued to meet or exceed expectations. The various Projects under the Program met or exceeded their goals and deliverables for Fiscal Year 2005. The Hanford Site Environmental Report for Calendar Year 2004 reflects the quality of the program deliverables and remains the example for the rest of the DOE Complex. National Environmental Policy Act ecological and cultural reviews were provided in a cost efficient and timely manner thereby facilitating ongoing operations. In addition, at the request of RL, the PSRPP took on and were

critical to the success of, special projects such as down river sediment sampling in cooperation with the Washington State Department of Health, assistance to the Natural Resource Damage Assessment process such as hosting two ecological workshops, support to ongoing RL Ecological Risk Assessments, meteorological support for tank farm operations, and providing invaluable information to other RL contractors concerning the fate and transport of environmental contaminants and the Site's natural resources. The ability of PSRPP to meet its critical DOE deliverables while assisting other evolving RL activities, demonstrates that the program is dynamic, flexible and the scientists within the program are a critical resource. The PSRPP remains instrumental in RL's ability to demonstrate compliance with applicable environmental regulations and an understanding of the complex interactions associated with the fate and transport of contaminants in the environment and the potential public and environmental impacts associated with them. The PSRPP, due to a projected 28% budget cut, was proactive in Fiscal Year 2005 and demonstrated a high level of performance by developing a new approach to doing work in FY06 under the reduced funding.

PNNL also supported the RL review of the K Basins risk analysis. The staff supporting RL provided insightful comments on the analysis and performed complex independent calculations which greatly assisted RL's evaluation of the K Basin Closure Project risk analysis.

The overall RL assessment is that the negative impacts from the HSW EIS deficiencies far outweighed otherwise positive performance in other areas. Our overall recommended adjectival rating is Marginal and a score of 1.0 is recommended.



APPENDIX 7

DOE Office of River Protection Evaluation

RL-675 (03/99)

United States Government

Department of Energy
Office of River Protection**memorandum**

DATE: **DEC 06 2005**

REPLY TO
ATTN OF: ORP:RCB 05-ORP-069

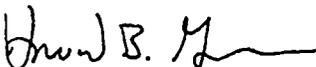
SUBJECT: YEAR-END PERFORMANCE EVALUATION OF BATTELLE FOR THE
MANAGEMENT AND OPERATION OF THE PACIFIC NORTHWEST NATIONAL
LABORATORY (PNNL) FOR FISCAL YEAR (FY) 2005

TO: Paul W. Kruger, Manager
Pacific Northwest Site Office

Reference: PNSO memorandum from P.W. Kruger to R. J. Schepens, ORP, "Year-End Performance Evaluation of Battelle for the Management and Operation of the Pacific Northwest National Laboratory (PNNL) for Fiscal Year (FY) 2005," 06-PD-0024, October 26, 2005.

The attachment provides the U.S. Department of Energy, Office of River Protection's (ORP) evaluation of PNNL performance for technical services provided to ORP during FY 2005.

If you have any questions, you may contact me, or your staff may contact Shirley J. Olinger, Deputy Manager for ORP, (509) 372-3062.


for Roy J. Schepens, Manager
Office of River Protection

Attachment

cc w/attach:
D. L. Biancosino, PNSO

RECEIVED
DEC 09 2006
DOE-PNSO-CC

**Pacific Northwest National Laboratory (PNNL)
Fiscal Year (FY) 2005 Performance Evaluation
Regarding Support Provided to
the U.S. Department of Energy (DOE)
Office of River Protection (ORP)**

In FY 2005 PNNL technical staff supported the following projects and activities for ORP and its contractors: 1) Seismic reanalysis of the Hanford and Waste Treatment Plant (WTP) sites; 2) Interagency Management Integration Team (IAMIT) Workgroup; 3) ORP Configuration Management Group (CMG); 4) ORP Vadose Zone Project; 5) Tank Closure Program; 6) Demonstration Bulk Vitrification System (DBVS) Project; 7) Tank Closure Environmental Impact Statement (TC-EIS); 8) Tank Waste Information Network System (TWINS) operation and maintenance; 9) Tank Integrity support; Tank Corrosion Program Support; 10) Tank Vapor Program support; and 11) Documented Safety Analysis support.

On average the PNNL technical support provided to ORP and its contractors was good 2.0. For the most part, ORP found PNNL support to be of good quality and reasonable timeliness. ORP considered about 40% of the technical support excellent to outstanding. The support provided for the Hanford and WTP site seismic reanalysis was particularly noteworthy due to the degree of complexity of the task.

During this rating period ORP considered four areas of PNNL technical support as marginal or unsatisfactory due to problems with the work product that appeared to result from inadequate quality processes. These areas were as follows: 1) Assessment of the Archimedes Filter for use on Hanford tank waste; 2) changes in the technetium best estimates associated with the Bulk vitrification packages; 3) deficiencies affecting the CH2M HILL Hanford Group, Inc. radiation dosimetry program; and 4) technical support provided to the TC-EIS groundwater effort. Because these issues were not isolated to one area, we concluded this problem may be systemic. These types of quality-related issues suggest PNNL processes for assuring the delivery of high quality work products should be critically evaluated, including management oversight and interdisciplinary reviews of work products, and strengthened.

The enclosures provide specific input for each area of technical support provided to ORP (Enclosure 1) and ORP Contractors (Enclosure 2) by PNNL staff.

Enclosures: 2

Areas of PNNL Technical Support to ORP

- Reanalysis of the WTP Site-specific Seismic Response Model
 - PNNL (Dr. Alan Rohay and Dr. Steve Reidel) led a team of seven experienced seismologists, geophysicists, and geologists in the reanalysis of the WTP site-specific seismic response model.
 - The reanalysis was published in February, 2005 as PNNL-15089, *"Site Specific Seismic Site Response Model for the Waste Treatment Plant, Hanford, Washington."*

Evaluation: Outstanding. This work was not a trivial, transparent, and unambiguous process, particularly with respect to the unique geology of the Hanford region and the WTP site, according to Dr. Ivan Wong, a renowned seismologist retained by the US Army Corps of Engineers, and DOE to review this report. This report significantly updated and changed the previous work done for the Hanford site by Geomatrix, Inc. in 1996. Dr. Wong concluded the work "effectively combined state-of-practice with state-of-the-art approaches," and was done "in a thorough and professional manner."

- IAMIT Workgroup process and Tri-Party Agency Senior Executive Committee
 - Supported the acting ORP Deputy Manager(s) in leading and supporting this function by providing an "issue management" function.
 - PNNL supported development of new strategy for grouping waste sites and reaching remedial decisions for Central Plateau waste sites.

Evaluation: Good. Assigned tasks were carried out in an acceptable manner.

- Configuration Management Group (CMG)
 - Provided technical support to ensure that Hanford Site risk assessments were conducted in a consistent and credible manner by assuring consistency in assumptions and approaches.
 - Developed a master table of key assumptions and associated technical basis for providing direction to Hanford contractors for risk assessment approaches under configuration control.
 - Provided interface to multiple projects at Hanford, to RL/ORP senior management and to EM HQ management.
 - Performed "issue management" function. Issue management involves setting priorities for issues for the CMG to work and tracking their completion.

Evaluation: Good. Assigned tasks were carried out in an acceptable manner. This has been an extremely challenging role given the legal and political environment of the past year.

- Vadose Zone and Closure Program
 - Completed *Vadose Zone Transport Field Study (Final Report)* that summarized four field experiments. This study was used in the SST Performance Assessment (SST PA) as part of the Benchmarking-Field Validation efforts for the 2-D STOMP simulations to address fine-scale heterogeneity and moisture-dependent anisotropy processes.
 - Supported Vadose Zone Project T-TX/TY Facility Investigative Report (FIR) through Science and Technology. The following key efforts were direct support of CH2M Hill work as part of the M45-55/60 TPA Corrective Action deliverable for T-TX/TY FIR. Conclusions from these studies were incorporated in the technical basis/assumptions underpinning the SST Performance Assessment.

Evaluation: Excellent. Performance was above average and the assignment technically challenging.

- Demonstration Bulk Vitrification System (DBVS)
 - PNNL staff provided technical expertise to the Project in the areas noted below.

- Performance Modeling of the DBVS Waste Form

Staff developed glass dissolution parameters for BV S-109 baseline glass formulations. Measured the Tc and Re levels in the quantitative engineering scale tests and established best estimates for use in the PA calculations. Evaluated methods to reduce Tc concentrations in the BV refractory materials and established a conceptual model for mechanism of Tc transport. Completed source term release model runs in support of the 2005 Integrated Disposal Facility Performance Assessment (PA) and documented results. Staff developed a method to measure iodine in glass to help establish an iodine glass retention factor for DBVS.

Evaluation: Marginal. In the areas of safety, quality, cost, and schedule for a first time Engineering Scale test using actual tank waste performance was excellent. For one key test parameter, mass balance of Tc, performance was fair.

- **Simulant Development**

Staff developed approaches to take WTP waste stream variability data and generate a workable set of waste simulants that could be used in both crucible scale and engineering scale tests to evaluate the ability of BV to handle the full range of wastes expected while treating all Hanford tanks.

Evaluation: Good

- **Determination of Equivalent Treatment (DET)**

Staff facilitated workshops with ORP, CH2M HILL, EPA, and Ecology in the development of criteria and a testing plan for a determination of equivalent treatment (DET) for the bulk vitrification technology as compared to the Best Demonstrated Available Technology RCRA Treatment Standard of HLWIT.

Evaluation: Excellent

- **Waste Form Qualification Activities**

Staff worked with Ecology and CH2M HILL to generate and publish a waste form qualification (WFQ) compliance strategy. This strategy describes how the BV waste form requirements are essentially equivalent to WTP requirements and describes the strategy that the BV project will use to meet each of these requirements. PNNL staff also supported the DBVS DQO and supplied the WFQ review of all AMEC test plans and test reports.

Evaluation: Excellent

- **Tank Closure Environment Impact Statement Support (TC-EIS)**

- Staff supported the TC-EIS by providing data and data analysis.

Evaluation: Marginal. In general, the data and analysis provided by the Staff, more frequently than not, was well below average in quality, technical content and timeliness.

The staff had detailed technical knowledge in the areas of assigned work; however, work product reflected only intellectual knowledge. In many interactions, the Staff focused on what they believed should be delivered rather than the task order they were provided. As an example, when infiltration rates, boundary conditions, quality assurance and quality control requirements, and configuration management requirements were specified, the

Staff disregarded these specifications and provided a work product void of those requirements.

When ORP identified issues with a work product, the Staff was slow to respond. When ORP staff requested documentation and analysis, the Staff was often unable to produce them. For example, ORP technical staff identified the analysis and supporting data for the flow field task order of the TC-EIS was substandard in technical quality. Specifically, there were issues relating to uncertainty in geologic structures and boundary condition input. After substantial rework, the Staff eventually retracted the Easterly flow field analysis. In addition, when attempting to use a former version of the flow field deliverable, the Staff indicated that that deliverable also had technical issues and should not be used.

Staff commitment to deadlines was not reliable. Occasion the Staff changed work product due dates for reasons that were not based on technical or project management issues. In two specific cases due dates were provided informally to DOE senior management during detailed task discussion associated with the flow field work task with management; however, the commitment dates were changed substantially when the same task was provide in writing, with no rationale for the reason for the commitment change.

- WTP and Archimedes Filter Technology
 - PNNL staff produced a technical report for the Archimedes Project Group that addressed using Archimedes Filter technology in conjunction with or in place of aspect of the WTP. The report discusses large cost savings over the life of the facilities.

Evaluation: Unsatisfactory. ORP staff identified a number of concerns as to the accuracy, feasibility, and credibility of the assumptions and conclusions used to arrive at cost savings projection. We called into question PNNL internal control processes and procedures that should prevent the issuance of such a flawed report.

Areas of Technical Support Provided to ORP Contractors

- Operates and Maintains TWINS (Tank Waste Information Network System):
 - TWINS is the archival database for accessing tank characterization data and tank waste inventory information via the Hanford Intranet. TWINS provides a nationwide community of users that includes regulatory, the Department of Energy, contractors staff with current, accurate tank characterization information. PNNL operates and maintains TWINS, including maintenance of computer hardware, software and documentation.

Evaluation: Excellent. Staff developed several 'tools' to improve the automation of the monthly tank summary report, which has allowed CH2M HILL to not have to backfill a recent retirement and to speed up the issuance of the reports, making them closer to real time. Staff provided CH2M HILL software modifications that enabled a semi-automation of compatibility analyses, using TWINS data. These efforts resulted in a cost savings.

- Tank Integrity (includes Seismic, Thermal, etc. loads)
 - PNNL staff provides documents required to support a DST integrity report (TPA Milestone M-48-14). They update the Analysis of Record (AOR); led the analysis of the static conditions in the tanks; and developed a dynamic model of the tanks to model the tank's seismic response. Staff also has supported the effort to raise the liquid level in the AP tank farm. As part of this work, they have coordinated all structural analyses.

Evaluation: Excellent. Staff technical support was characterized by responsiveness, high quality work product and effective cost control. PNNL recognized early on the importance of the recent work at the WTP and had that information incorporated into the seismic analysis.

- Tank Corrosion Analysis Support
 - Staff through the Chemistry Optimization Panel provided valuable insight to CH2M HILL on providing a defensible basis for existing chemistry controls and the development of new basis. Staff was instrumental in support of defining the corrosion testing program for 241-AN-107. Staff provided a statistical analysis of the UT measurements to estimates the 95 percent confidence level for the maximum wall thinning. Staff provided an analysis of the fracture mechanics in the DST, which has allowed CH2M HILL to define the largest defect that could cause the failure of a DST.

Evaluation: Excellent. Staff technical support was characterized by responsiveness, high quality work product and effective cost control.

- Tank Vapor Program Support
 - PNNL adjusted work load and schedule to provide technical support to this program in the analysis of vapor chemical data.

Evaluation: Excellent. Staff responsiveness has been outstanding.

- Radiation dosimetry support to CH2M HILL
 - PNNL staff provides radiation dosimetry services and instrument calibration services to CH2M HILL.

Evaluation: Marginal. CH2M HILL identified 2 issues associated with the PNNL radiation dosimetry program. PNNL was found to not adequately follow quality assurance plans for software configuration management associated with radiation exposure reporting and corrective action management processes, and did not have a formal notification protocol between CH2M HILL and PNNL for reporting conditions adverse to quality affecting dosimetry records, reports or processes.



APPENDIX 8

DOE Office of Intelligence Evaluation



Department of Energy

Washington, DC 20585

NOV 1 0 2005

MEMORANDUM FOR PAUL W. KRUGER
MANAGER
PACIFIC NORTHWEST SITE OFFICE

FROM: LARRY GRESHAM *Larry Gresham*
ACTING DIRECTOR
OFFICE OF INTELLIGENCE

SUBJECT: Year-end performance evaluation of Battelle for the management and operation of the Pacific Northwest National Laboratory (PNNL) for fiscal year (FY) 2005

Overall FY 2005 Rating: 4.0

Quality of Technical Support: Rating 4.0

The Pacific Northwest National Laboratory continues to provide the Office of Intelligence, and the Intelligence Community, with critical expertise in both analytical and S&T arenas. The scope of this work is broad, covering essential aspects of foreign nuclear programs. This work provides the Department of Energy and the nation with advance warning of foreign nuclear threats to the homeland and vital national interests. PNNL is the foremost DOE facility for nuclear forensic work. It provides essential science and analytic expertise on a spectrum of nuclear fuel cycle issues. Moreover, the Laboratory is a national leader in developing and applying data fusion technologies with application to imagery interpretation, tracking and preventing terrorism, and extracting more valuable information from available data resources. Finally, PNNL remains a leader in providing unique technical solutions to critical Intelligence Community needs that have led to significant breakthroughs in intelligence collection, analysis, and application to the nations toughest national security problems.

Relevance to the IN Mission: Rating 4.0

PNNL's relevance to the IN mission remains high. Both in supporting specific work of the Office of Intelligence and the Applied Technology Program and through responding to Intelligence Community needs for creative analysis and technology solutions, PNNL provides critical and essential support to the national security mission. In particular, the growing threat of nuclear terrorism has increased the call for expertise resident at the Pacific Northwest National Laboratory. The Laboratory's capabilities in materials analysis, ability to develop terrorism response technologies, and growing skills in information fusion all contribute to the strong contribution made by PNNL. With the terrorist and nuclear threats unlikely to abate soon, the call on PNNL expertise and the relevance of the Laboratory to national security is sure to grow.

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Management Effectiveness: Rating 4.0

It is perhaps in the area of management and business effectiveness that the Pacific Northwest Laboratory excels the most. PNNL stands out for its business acumen, professionalism, and ability to execute projects and analysis on time and on budget. The Laboratory does an excellent job of managing intelligence activities. It exhibits a better than average record of maintaining and improving security in the Field Intelligence Element (FIE). FIE managers maintain good rapport with the Office of Intelligence. They accurately state their needs and problems. They always work cooperatively and professionally to achieve corporate goals. The quality of PNNL security is demonstrated in the fact the Ms. Barbara Cobb of the PNNL FIE is on an extended detail to the Office of Intelligence in Washington, DC to assist with improving organization cyber security. On balance, PNNL stands above most other Laboratories in their ability to consistently operate at high standards of business and professional conduct.



APPENDIX 9

DOE Office of Counterintelligence Evaluation



Department of Energy

Washington, DC 20585

November 30, 2005

MEMORANDUM FOR PAUL W. KRUGER, MANAGER
PACIFIC NORTHWEST SITE
OFFICE RICHLAND, WASHINGTON

FROM: JOHN E. SWIFT, III, ACTING DIRECTOR
OFFICE OF COUNTERINTELLIGENCE

SUBJECT: Performance Evaluation of the Pacific Northwest National Laboratory
for Fiscal Year 2005; Counterintelligence Program

In your memorandum dated September 20, 2005, you requested a written year-end rating of Battelle's performance during Fiscal Year (FY) 2005 regarding the science and technological excellence of certain Pacific Northwest National Laboratory (PNNL) programs and activities as they relate to: (1) the quality of technical support; (2) relevance to the Counterintelligence (CI) mission; and (3) management effectiveness. Using the adjective ratings you identified in that letter, the Office of Counterintelligence (OCI) can again rate, without reservation, Battelle's overall CI Program performance at PNNL as **outstanding**.

This evaluation is again based on information available from a wide variety of sources that include: the quarterly reports submitted by PNNL during FY 2005; an on-site review I conducted myself during the last week of September 2005; several face-to-face meetings that former OCI Director Steve Dillard, myself and others in our organization have had with PNNL management in Washington, DC, regarding CI Program activities; self-assessments prepared by PNNL's Senior Counterintelligence Officer (SCIO) that are included in PNNL's Quarterly Reports to my office; PNNL's response to surveys and special "taskings" requested from OCI; and regular feedback from OCI Program Directors, Intelligence Community and Law Enforcement contacts, and other individuals interacting with PNNL staff assigned to CI Program matters on almost a daily basis.

It has always been the rule that PNNL executive management and their very capable staff assigned to CI activities diligently support the Department of Energy's (DOE's) national CI Program at the highest level of professionalism. PNNL CI activities for FY 2005 are clearly executed under an operational model that is comprehensive, balanced, functionally integrated, risk based, value added, and supportive to both their internal population and the changing needs of the Intelligence Community (IC). As I said to PNNL CI Program team at the conclusion of my on-site review on September 27, 2005, "they broke the code" in achieving full resource integration into every aspect of the program. OCI Program Directors, Desk Officers, and other managers who interact with PNNL employees on a regular basis have informed me that those assigned to PNNL CI work are consistently courteous, timely, and



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thoroughly responsive to all requests that are originated by my office. I can cite several examples that support an outstanding rating.

One significant investigative matter aggressively pursued by the PNNL CI Program, for example, directly led to two initiatives that are "national impact" in scope. That investigation, which was approached at the beginning as a potential espionage matter jointly with the Federal Bureau of Investigation (FBI), subsequently led to the identification of certain technology transfer risks created by government funding opportunities that affected the entire spectrum of our country's industrial complex. PNNL assumed a leadership role in addressing those concerns and developed, at the request of OCI's Operations and Investigations Program Director, a pilot response that resulted in improved notifications, the assembly of a local working group to review Laboratory projects, and the creation of a special awareness template that uses the resources of OCI's CI Training Academy. The discoveries made by PNNL in this regard, along with their pilot response effort, have also been the subject of special presentations delivered to the Department of Defense (DoD) Counterintelligence Field Activity (CIFA) and relevant DoD stakeholders by the assigned CI Officer. In summary, the achievements of the PNNL CI program is directly improving the Department of Energy's (DOE), as well as DOD's, capability to properly answer the important question of: "...do we really know who we are doing business with."

The second national impact initiative that arose from that same matter can be directly attributed to the persistence, aggressiveness, and thoroughness that PNNL CI Program displays in the execution of their investigative activities. Approximately six months after this investigation was originated, the PNNL team assumed the sole responsibility to address several unresolved CI issues that remained following the termination of the espionage segment. The PNNL CI investigation employed virtually every recommended technique authorized in the OCI Procedure Guide, to include two very complex and challenging interviews of the prime subject. Case summaries provided to OCI staff as the investigation progressed indicated that this matter could serve as the basis of an instructional workshop for case development. That workshop was developed by the DOE CI Training Academy during FY 2005 with significant participation from the PNNL CI organization staff involved in the underlying investigation. Two sessions of the workshop have already been presented, and the class feed-back, which included CI officers, analysts, managers, and technical experts from the DOE complex, clearly evidences the outstanding contributions that this training initiative will make toward OCI's effort to grow a professional CI workforce of excellence.

The Information and Special Technologies Program (ISTP) at PNNL is by far one of the best models in the DOE Complex. During FY 2005, PNNL's ISTP hosted site benchmarking visits for three other DOE facilities and Headquarters staff. Another noteworthy accomplishment included the PNNL ISTP's role as OCI's liaison for FBI Major Case #216, which was successfully resolved in FY 2005 after an arrest was made in Europe. The FBI Case Agent, positively recognized PNNL's efforts in that matter, particularly as they relate to

the introduction of certain sophisticated and "first time used" techniques. Also, PNNL's ISTP completed an internal four-year research project focused on developing new analytical techniques for CI Cyber analysis. The project was completed in September 2005, and briefed to me personally during my September visit to the Laboratory. The resulting "confluence" database concept is capable of serving as the foundation for the next generation of ISTP integration into analysis and investigations as it is developed for production use. Further, PNNL's ISTP Technical Expert (TE) participated in an insider threat project for CIFA during the first two quarters of FY 2005. As a result of that activity, an insider threat briefing was prepared and presented internally at PNNL as well as externally to the Western Regional Counterintelligence Working Group (WRCWG) and usable recommendations are being considered from that analysis effort. Lastly, PNNL's ISTP, because of its unique expertise recognized by the FBI as a result of PNNL's involvement in the AMERITHRAX case, was recently asked by the FBI to assist in an extremely sensitive counterterrorism (CT) investigation. The PNNL TE is also assigned an important role of technical liaison between OCI and the FBI Case Agent.

It has always been the defined goal of PNNL's Analytical Sub-Program to engage in activities that contribute to DOE's goal to protect sensitive information and technologies from exploitation by hostile foreign intelligence services and/or terrorist organizations. In this regard, PNNL has contributed significantly to OCI's annual Foreign Technology Threat Matrix (FTTM) and the National Counterintelligence Executive (NCIX) yearly assessment on economic espionage. CI analysis is integrated into all work scopes of the CI Program, to include individual investigations, foreign visit requests, and CI incident reviews. The CI Program's regular effort to review existing Laboratory projects through periodic updates of its Sensitive Technology List (STL) contributes in an important way to successful analysis integration. It is also noteworthy that, as a result of PNNL's presentation in May, 2005, to the OCI Counter Terrorism (CT) In-Service and related discussions with the OCI CT Office, PNNL's CT Threat Assessment is now being introduced at other sites for use as a model to prepare similar studies.

As in years past, PNNL continues to support its investigative, operational, cyber ISTP, and analytical efforts through liaison initiatives that are "goal oriented" and directed toward developing reliable relationships that will enhance all objectives defined in each major sub-program area. They have taken the FBI/DOE Agent in the Lab (AIL) Program to the "next level of excellence". Their achievements this FY include the AIL's physical co-location from the administrative side and the development of a joint tri-lab pilot initiative that serves as the "pointer dog" for investigations and analysis products from the substantive side. Additionally, in 2005 PNNL formulated an informal intelligence working group and information fusion capability with the Richland Police Department that the participants now recognize as a vital part of their mutual responsibility to address Laboratory threats of any nature -- CI, security, or criminal. During the last month of FY 2005, PNNL embarked an initiative to develop an information-sharing pilot project that will complement each of the liaison activities noted above. This information-sharing initiative involves direct collaboration between the PNNL CI Office and two other CI Offices.

PNNL CI Program elements have continued to document in their quarterly reports several special liaison outreach activities involving associate members of the IC other than the FBI. PNNL CI organization staff participate on a number of local, regional, and nation-wide committees, working groups, and forums to include the WRCWG (supra), the Northwest CI Coordinating Committee, the "chair" position in the American Society for Industrial Security International Information Asset Protection Council, the Richland Police Chief's Advisory Board, and the Benton County Criminal Justice Citizen's Advisory Committee. It cannot be overlooked that the CI Program staff's part-time and -- I must emphasize -- non-DOE funded roles in these civic and community outreach efforts enhance very significantly both DOE's and PNNL's professional reputation and notoriety.

PNNL continues to provide excellent support to the ISTP by its operation of the Operational Analysis Center (OAC), which conducts analysis of Internet traffic across the DOE complex. The OAC is a unique capability in its ability to integrate technical and traditional counterintelligence analysis to enhance understanding of the threats to and vulnerabilities of DOE. The OAC continues to receive national and international recognition for its support of multi-agency investigations (such as FBI Major Cases 216 and 226). The OAC responds to more than 100 requests for support from DOE sites, DoD, and other USG agencies per year, and continues to refine its capabilities to alert sites of suspicious activities that would otherwise go undetected. The products of these capabilities have been briefed to the Director, CN; the Secretary and Deputy Secretary, DOE; and U.S. Congress.

In addition to liaison initiatives by the CI Program noted above, the OAC program continues, as in FYs past, to be engaged in extensive liaison with multiple government agencies. In addition to providing analytical support in request to other agency requests and investigations (such as Major Case-216 noted above), OAC staff has been invited to give presentations and papers for outside groups and agencies, and is developing close collaborative relationships with the Intelligence Community to provide enhanced situational awareness across the national infrastructure.

Based on all the information available to me, to include my own interaction and observation of the CI activities at this Laboratory, I am again pleased to provide to PNNL, in particular Mike Kluse and his National Security Directorate, this outstanding rating for FY 2005.

Should you have any questions concerning this matter, please contact me at (202) 586-5901.