Department of Energy
Pacific Northwest Site Office
P.O. Box 350, K8-50
Richland, Washington 99352

05-MGR-0032

DEC 2 2 2004

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

Dear Dr. Peters:

CONTRACT NO. DE-AC05-76RL01830 – FISCAL YEAR (FY) 2004 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 2004 Year End Evaluation Report of Battelle's management and operation of PNNL. DOE's overall rating of Battelle's performance for FY 2004 is Outstanding. This rating is based on the Critical Outcome matrices identified within the FY 2004 Performance Evaluation and Measurement Plan, for Quality of Science and Technology, Relevance to DOE Missions and National Needs, Success in Constructing and Operating Research Facilities & Equipment, and Effectiveness and Efficiency of Research Program Management. Notwithstanding the outstanding performance within the outcome measures, a number of recurring issues from past performance evaluations, as well as some contract requirement violations were noted during the evaluation period.

DOE continues to be pleased with Battelle's overall performance and our review indicated that Battelle generally met or exceeded expectations throughout FY 2004. Although some areas of concern were identified, these were primarily offset by the identified strengths throughout the organization. The Pacific Northwest Site Office (PNSO) evaluation of each of the Critical Outcomes generally agreed with Battelle's FY 2004 Annual Self-Evaluation Report. Following is a summary of each of the Critical Outcomes:

- The performance evaluations provided by the primary DOE-HQ program offices, and other key customers, which equated to 50 percent of the Quality of Science and Technology Critical Outcome, once again touted the high quality, externally recognized, scientific research and development programs managed by Battelle. Each of the HQ offices (Office of Science, Office of Defense Nuclear Nonproliferation, Office of Intelligence, Office of Counterintelligence, Department of Homeland Security, Office of Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Assistant Secretary for Fossil Energy, and Office of Environmental Management) rated overall performance as Outstanding.

The joint PNSO and HQ review of the Biomolecular Networks, Computational Sciences, and Homeland Security initiatives indicated that Battelle continues to make outstanding progress in each of these areas. Also an overview of the overall peer review process within the Laboratory indicated that the process generally works well, while identifying some needs for strengthening and updating documentation for the peer review processes. The overall rating for this outcome was Outstanding.

- The Relevance to DOE Missions and National Needs Critical Outcome also earned an overall rating of Outstanding. This outcome measured the overall effectiveness and performance of the Contractor in producing intellectual understanding and solutions that impacted DOE and National initiatives and were adopted by other researchers and industry. Each of the HQ offices (Office of Science, Office of Defense Nuclear Nonproliferation, Office of Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Assistant Secretary for Fossil Energy, Department of Homeland Security, Office of Environmental Management, Office of Intelligence, Office of Counterintelligence, and Office of Electric Transmission and Distribution) rated overall performance as Outstanding.

- The Success in Constructing and Operating Research Facilities & Equipment Outcome measured the Contractor's overall performance necessary for the creation of leading-edge facilities and equipment to ensure 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 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. The Office of Science rated the overall effectiveness/performance in successfully operating the EMSL and ARM user facilities during FY 2004 as Outstanding. Battelle also met or exceeded all the measures within the ESH&Q and Safeguards and Security indicators earning outstanding ratings in each. Although Battelle met or exceeded the target levels for each performance measure within the ESH&Q indicator, safety remains a major concern. Planned improvements in line accountability, the self-assessment and lessons learned processes, along with new initiatives can help reduce the number and severity of near misses and other incidents only if appropriately implemented. This area must receive continuous senior management (to include corporate) attention during FY 2005.

- Overall performance for the Effectiveness and Efficiency of Research Program Management was rated as Outstanding. The overall effectiveness/performance of research programs as evaluated by the HQ program offices and other key customers was rated Outstanding overall. Six of the eight offices evaluating this area rated the Contractor's performance as Outstanding, while the other two (Office of Energy Efficiency and Renewable Energy and Office of Environmental Management) provided overall ratings of Excellent. Other areas evaluated indicated that project deliverables continue to be provided to customer's on schedule and on budget. In addition, overhead costs were reduced by effectively managing FTE's; however; this effort had a counter effect of accumulating a $16M favorable indirect

cost variance at year-end. This accumulation is not representative of effective and efficient management and should be provided appropriate management attention during FY 2005 to insure processes are put in place to eliminate this issue in the future.

Although the critical outcomes summarized above are the primary means for determining the performance rating and amount of performance-based fee earned, other means such as operational awareness (daily oversight) activities, PNSO reviews, and other outside agency reviews (OIG, GAO, DCAA, etc.) conducted throughout the year were utilized as appropriate to ensure minimum contract requirements were met throughout the performance evaluation period. Our operational awareness and other review activities conducted throughout the year identified a number of areas of noteworthy performance and areas for improvement which are provided within the Other Notables section (section III) of the report. Areas of noteworthy performance included Battelle's proactive response to the Secretary's direction to stand-down all operational activities associated with Classified Removable Electronic Media, and completing all required action in short order. Also a number of operations-related awards were received during FY 2004 to include the Training Magazine's 2004 Training Top 100 Award; the International Facility Management Association's Outstanding Achievement in Facility Management Award; the White House Closing the Circle Award for Environmental Management System (EMS); and acceptance into the EPA Performance Track program to name a few.

A number of reviews and observations through FY 2004 identified several concerns of which three were also noted during FY 2003. These include: 1) continuing self-assessment system issues underscored in an FY 2004 OA-50 audit finding and a FY 2004 PAAA non-compliance enforcement letter; 2) procedure content and use issues continue in which a lack of effective emphasis on how procedures are updated, understood, and adhered to by staff; and 3) continuing problems regarding hazard recognition at the Laboratory are contributing to many events or personal injury near misses. PNSO also identified a number of instances where costs were incurred prior to DOE approval of the work authorization, and although not identified as an issue during FY 2003, this same type of incident lead to a major issue in FY 2002 resulting in a fee reduction. Another concern centered on Contract requirement violations regarding inappropriate influence over subcontract awards, double-reimbursement for travel, and performance of work for organizations outside Battelle/PNNL was noted.

As a result of the above recurring and other concerns, PNSO has invoked the provisions set forth within the Performance Evaluation and Fee Agreement (paragraph entitled "Adjustment to the Adjectival Rating and Performance-Based Fee Determination") and reduced the Contractor's otherwise earned fee by $100,000. Aggressive actions are needed by both Battelle Laboratory and Corporate management to correct these issues during FY 2005. Failure to achieve timely corrective actions may result in further reduction of fee determinations and will potentially reduce future overall evaluation ratings, to include mission related science and technology ratings that would also impact the attainment of stretch goal fee. PNSO expects the Contractor to take special note of the information provided within the Other Notable section of the report and initiate appropriate action to insure continuous improvement for the noted areas of concern. A request for a formal response reflecting the measurement basis Battelle intends to use in

demonstrating performance improvement has been requested as part of our response to the FY 2004 corporate assurance letter.

Battelle's positive efforts and performance in managing and operating the Laboratory generally offsets the issues identified above and we recognize that you are taking actions to correct these issues. We look forward to working with you throughout FY 2005 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 Outstanding (3.84 value points) and in accordance with the fee determination section of Appendix E of the contract, Battelle earned $7,800,000.00 in performance-based fee for FY 2004; however, due to the reduction of $100,000 based on the issues identified above, the overall fee earned is $7,700,000.00. To date, Battelle has withdrawn $7,410,000.00 of fee from their DOE letter of credit bank account. Battelle is hereby authorized to draw down the remaining $290,000.00 in fee payment for FY 2004.

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

Sincerely,

Paul W. Kruger
Manager

MGR:TLD

Enclosure:
FY 2004 Year End Evaluation
for Battelle

cc w/encl:
W. J. Madia, BMI
R. L. Orbach, SC-1
A. A. Patrinos, SC-70

Pacific Northwest Site Office

FY 2004

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

December 2004

Table of Contents

I. OVERALL SUMMARY/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 2004 centered on the measures found within the Quality of Science and Technology, Relevance to DOE Missions and National Needs, Success In Constructing And Operating Research Facilities & Equipment, and Effectiveness and Efficiency of Research Program Management Critical Outcomes. Although the Contractor's self-evaluation of the Critical Outcomes and the associated objectives and indicators was the primary means for determining the Contractor's performance, other means such as operational awareness (daily oversight) activities, Pacific Northwest Site Office (PNSO) reviews, and other outside agency reviews (OIG, GAO, DCAA, etc.) conducted throughout the year were utilized as appropriate to ensure the Contractor continued to meet minimum contract requirements throughout the performance evaluation period. In addition, a two-week field review was conducted from November 1 through November 12, 2004, during which time review teams followed up on (verified and/or validated) activities and issues associated with the outcomes and other areas of the Contractor's Directorate/Division self-assessments.

The performance evaluation rating for FY 2004 was calculated utilizing the following methodology. The adjectival rating earned for each performance indicator was assigned the appropriate value points. The Objective rating was then computed by multiplying the value points by the weight of each performance indicator within an Objective. These were then added together to develop an overall score for each Objective. The score for each Objective within an Outcome was then computed in the same manner to arrive at a score for each Outcome. 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 compared to an adjectival rating scale, see Table B below, to determine the overall Contractor adjectival rating for FY 2004. An adjectival rating may be identified at any level of the performance evaluation process (Outcome, Objective, or Indicator); however, 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).

Battelle's performance generally met or exceeded PNSO expectations throughout FY 2004; however, PNSO identified several recurring performance concerns. These concerns included the absence of a fully deployed and efficient self-assessment system; procedure content and use; hazard recognition; numerous instances of inadequate closure documentation and inconsistent implementation in Action Tracking Management; and instances where costs were incurred prior to DOE approval of the work authorizations. Also noted were Contract requirement violations regarding inappropriate influence over subcontract awards, double-reimbursement for travel, and performance of work for organizations outside Battelle. These reoccurring issues reflect poorly on the Contractor's basic procedural controls, the ability to implement them, and institute improvements. As a result of these reoccurring issues as well as the Contract violations, the PNSO has invoked the provisions set forth within the Performance Evaluation and Fee Agreement (paragraph entitled "Adjustment to the Adjectival Rating and Performance-Based Fee Determination") and reduced the Contractor's otherwise earned fee by $100,000.00. It should be noted here that although we recognize the Contractor has taken, and plans to take, several actions to correct many of the issues, failure to achieve timely corrective actions may result in further fee reduction determinations and will likely further reduce future overall evaluation ratings. Further details surrounding these issues are identified within Section III, "Other Notables," of this report. Based on this evaluation, the overall performance score was determined to be 3.84 value points, which corresponds to an adjectival rating of **Outstanding**. The ratings for each of the Outcomes, as well as the overall rating are indicated within tables A and B below.

Critical Outcome	Value Points	Adjectival Rating	Weight	Weighted Score	Total Score
Quality of Science and Technology	3.87	Outstanding	30%	1.16	
Relevance to DOE Missions and National Needs	3.8	Outstanding	30%	1.14	
Success In Constructing And Operating Research Facilities & Equipment	3.73	Outstanding	20%	0.75	
Effectiveness and Efficiency of Research Program Management	3.93	Outstanding	20%	0.79	
				Total Score	3.84

Table A. FY 2004 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 2004 Contractor Adjectival Rating Scale

Section III, Other Notables, of this report provides information regarding other PNSO reviews/evaluations conducted as part of the FY 2004 performance review process and/or observations noted during the evaluation period. It should be noted that this section is provided for information purposes only and although some strengths and weaknesses were noted, only those identified weakness, mentioned above, impacted the otherwise earned fee. Even though the other reviews do not affect the evaluation rating or fee, the PNSO expects the Contractor to take special note of all the information provided within this section, initiate the appropriate actions to insure continuous improvement in all aspects of the management and operations of the Laboratory, and provide a formal response reflecting the commitment to address the area of concern.

II. CRITICAL OUTCOMES, OBJECTIVES & PERFORMANCE INDICATORS

1.0 QUALITY OF SCIENCE AND TECHNOLOGY (30%)

Battelle produces high-quality, original, and creative results that advance science and technology and have sustained scientific progress and impact, which are recognized by the scientific and technical communities.

The Quality of Science and Technology critical outcome measured the overall effectiveness and performance of the Contractor in delivering science and technology results which contribute to and enhance the nation's technology base and is recognized by others within the scientific community. The DOE HQ and DHS evaluations indicated the Contractor continues to meet and/or exceed expectations regarding the overall quality of science and technology programs conducted at the Laboratory. Furthermore the Contractor continued to make outstanding progress within each of the Laboratory initiatives measured during FY 2004 and an overview of the overall peer review process within the Laboratory indicated that the process generally works well, while identifying some needs for strengthening and updating documentation for the peer review processes. It was noted that Battelle initially struggled meeting the intent of the efficient capture of inventions generated at the Laboratory measure. However, the Contractor demonstrated great resolve and creativity to meet the goal, by instituting multi-faceted teams comprised of researchers, program and commercialization staff, and others to brainstorm additional commercial uses of new and existing technologies.

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** (3.88 value points) for this critical outcome. Table 1.1 and 1.3 shows how the outcome objective ratings were determined as well as the overall outcome rating.

1.1 Produce original, creative scientific and technological results

The Contractor made outstanding progress within the Biomolecular Systems, Computational Sciences and Engineering, and Homeland Security Initiatives during FY 2004 meeting or exceeding all measures. Battelle's performance in reviewing the overall peer review process within the Laboratory to identify areas for improvement and initiating actions to remove gaps was excellent. This performance along with the increase in subject invention reports generated at the Laboratory with respect to the fiscal year direct charge FTEs provided for an overall rating of **Outstanding** for this Objective with 3.91 value points awarded.

1.1.1 Progress against Biomolecular Systems Initiative expected outcomes

The Contractor continued to make outstanding progress within the Biomolecular Systems Initiative during FY 2004 as indicated by the successful completion of each of the measures identified for this indicator. The specific measures included Outreach and Scientific Leadership, Building Systems Biology Capabilities, Strengthening Strategic Partnerships, success in Scientific and Technical Outcomes, and Peer Review. The PNSO, along with SC HQ staff validated the successful completion of each measure and is in agreement with the Contractor's self-evaluation that 19 of the possible 19 points were earned, equating to a rating of **Outstanding** (4.0 value points) for this indicator.

1.1.2 Progress against Computational Sciences and Engineering Initiative expected outcomes

The Computational Science & Engineering Initiative included specific measures for climate modeling, data middleware, molecular nanoscience, discrete analysis, materials engineering, bioinformatics, computer science, environmental science, SGI Altix Supercomputer, papers & presentations, the SC2003 exhibit, and peer review. The Contractor fully completed all measures to earn 13 points out of 13 points possible for an **Outstanding** rating (4.0 value points).

1.1.3 Progress against Homeland Security Initiative expected outcomes

The PNSO and Office of Homeland Security (DHS) agreed with the status of the Homeland Security Initiative (HSI) measures as provided within Battelle's FY 2004 Annual Self-Evaluation Report. Successful completion of the measures was verified by reviewing reports and documentation related to each, as well as, participation in particular demonstrations. For example, in the development, demonstration and documentation of two new detection and measurement methodologies for chemical, radiological, or biological threat materials based on the approaches developed by HSI, these bench-scale systems were demonstrated at the Annual Review held in July 2004. Also showcased in this review were the Analysis and Information Discovery segments in demonstrating and documenting the efficacy of combining Laboratory developed technologies to detect indications of terrorist threats in complex data streams. Additionally, HSI-funded publication and peer-reviewed journals or participation/presentations at conferences were documented and completed. Similarly, the Science and Technology Road Map was developed and presented during the mid-year review. Overall performance in this area is rated as **Outstanding** (4.0 value points).

1.1.4 Demonstrate efficient capture of inventions generated at the Laboratory

This indicator measured the increase in subject invention reports generated at the Laboratory with respect to the fiscal year direct charge FTEs. The Contractor struggled through the first three quarters of the evaluation period in meeting the intent of this measure. To assist in meeting the target of 72 subject inventions per 1000 direct charge FTE's set for this indicator (a

5.6% increase over FY 2003) the Contractor instituted internal teams comprised of researchers, program and commercialization staff, and others to brainstorme additional commercial uses of new and existing technologies. The outcome of those teams was indicated in a marked increase during the fourth quarter moving the overall total of subject inventions per 1000 direct charge FTEs to 84, an increase of 16.7% for FY 2003, earning an **Outstanding** rating.

1.1.5 Demonstrate the support and use of strong technical peer review processes to maintain the quality of R&D programs and processes.

This indicator was developed to demonstrate the Contractor's support and use of peer review processes to ensure the quality of R&D programs, projects and initiatives. Three primary measures were utilized to evaluate this indicator which included 1) Self Assessment; 2) Updates to the Standards Based Management System (SBMS) Updates and development of an Implementation Plan to describe specific actions to be taken to remove gaps between current practices and the desired end state; and 3) maintenance of a FY 2004 Review Schedule. The Contractor scored 7 points out of 10 possible to earn an **Excellent** rating, with 3.4 value points awarded. The Self Assessment measure was provided 2 points out of 5 possible to provide partial credit, with reductions in score for content and timeliness issues. The original deliverable submitted to the PNSO on March 31, 2004, did not adequately meet the indicator. An opportunity was provided to submit a revised deliverable which was submitted to PNSO on May 10, 2004. This version primarily established demographics of peer reviews at the Laboratory, but did not adequately assess the quality of reviews. The assessment survey tool provided limited objective information, providing primarily subjective information. The remaining measures (SBMS Updates/Peer Review Program Implementation Plan, and FY2004 Peer Review Schedule) were fully completed to earn 5 points out of 5 points possible for these measures.

1.2 Receive recognition of results that enhance the Laboratory's and DOE's reputation for delivering science-based solutions

The contractor exceeded expectations for both indicators within this Objective earning an overall **Outstanding** rating.

1.2.1 Maximize the impact of the Laboratory's peer-reviewed and other publications

This indicator measured the Contractor's progress in maximizing the impact of peer-reviewed and other publications and included specific measures for the chartering of a Publication Advisory Committee within the Laboratory, a Retrospective Publication Review for FY 2003, Current-Year Publication Reporting and Review, and the development of a Year-End Report with recommendations for optimizing the peer reviewed publication culture. The Contractor earned 12 points out of 12 possible for a rating of **Outstanding**. In accomplishing the measures the Contractor exhibited notable performance and exceeded PNSO expectations with impressive results. The Contractor's publication metrics were specifically praised by the SC Director, and the Office of Biological and Environmental Research (OBER).

1.2.2 Determine science and technology impact through awards and recognition

The PNSO concurs with the Contractor's assessment of performance against this indicator which showed that the Laboratory continues to further its science and technology reputation through the attainment of awards and recognitions. This indicator was measured based on the overall sum of the weighted scores (based on the S&T reputation of the award/recognition) of awards and recognitions received. The Contractor and its staff were recognized through the appointment to a number of prestigious academies, and were provided a number of professional society, government, and industry awards. Through these appointments and awards Battelle achieved 140 points within the evaluation period, equating to an overall rating of **Outstanding**.

1.3 Customer evaluation of quality of science and technology

This objective measured the overall effectiveness/ performance of the quality of science and technology as viewed by the DOE HQ Office of Science's (SC), other cognizant HQ Program Offices, and major customers. The overall rating for this Objective is **Outstanding** with a numerical score of 3.79 value points. Each of the Program Offices provided overall Outstanding ratings. The following summarizes the HQ evaluations received. The full evaluation reports provided by each Program Office are appended to this report. The overall rating from each of the HQ offices was weighted primarily based on business volume. The overall performance rating for this Objective was determined by multiplying the overall rating (value points) assigned by each of the program offices identified below by the weightings identified for each and then summing them (see Table 1.2). When no specific value points were assigned by the HQ reviewing office the appropriate value points were assigned in accordance with the adjectival rating definitions and value points identified in Figure I-1 of the FY 2004 Performance Evaluation and Measurement Plan (page J-E-2).

Office of Science (SC)

The SC overall evaluation of the effectiveness and performance of the quality of science and technology was rated as **Outstanding**, with 3.7 value points awarded. This is up slightly from the FY 2003 evaluation (3.6 value points awarded). Of particular note was the increase in quality ratings from both the Office of Biological and Environmental Research (BER) and the Office of Basic Energy Sciences (BES). However, these noted increases in the quality of S&T were somewhat offset by the score of 3.6 awarded by the Office of Advance Scientific Computing research (ASCR), who cited the loss of several talented performers (see Appendix I). Other SC offices ratings in this area were unchanged from FY 2003.

Office of Defense Nuclear Nonproliferation (DNN)

The DNN overall evaluation of the effectiveness and performance of the quality of science and technology was rated as **Outstanding**, with 4.0 value points awarded. The quality of technical support continues to be superb. The Contractor's work with the Office of Nonproliferation Research and Engineering has included successful research, testing of sensors, development of prototypes, and technology transfer (see Appendix II).

Office of Intelligence (IN)

The overall IN evaluation of the effectiveness and performance of the quality of science and technology was rated as **Outstanding** with 4.0 value points awarded (see Appendix VII). The Contractor consistently provided the highest quality scientific and technical expertise to IN and the contribution in the area of nuclear research support is enduring.

Office of Counterintelligence (CN)

The effectiveness and performance of the quality of science and technology for CN was once again rated as **Outstanding**, citing a number of accomplishments which supported the goals of the CN programs (see Appendix VIII).

Department of Homeland Security (DHS)

The DHS overall evaluation of Battelle's effectiveness and performance in regards to the quality of science and technology programs provided was rated as **Outstanding** (4.0 value points). Of particular note was the work completed for the US Customs and Border Protection Office and the ability of the Contractor to develop a technical approach very suitable for implementation in the Customs inspection environment (see Appendix V).

Assistant Secretary for Energy Efficiency and Renewable Energy (EERE)

The EERE evaluation noted a number of significant achievements in regards to the quality of science and technology programs which was rated as **Outstanding** (3.45 value points). Examples included the Contractor's development of innovative advanced lightweight materials and manufacturing technologies for automotive and heavy truck applications; support in a number of DOE code change proposals; and excellent progress in developing micro-channel flow technology for application in chemical separations (see Appendix III).

Assistant Secretary for Fossil Energy (FE)

An overall rating for the quality of science and technology programs of **Outstanding** (3.8 value points) was awarded by FE (see Appendix IV). In an interview with the PNSO Programs Division Director the FE Deputy Secretary for Technology Development praised the Contractor's support and implementation of the Solid Oxide Energy Conversion Alliance (SECA) and FutureGen programs.

Department of Environmental Management (EM)

Battelle's performance in the quality of programs within the Environmental Management area was rated as **Outstanding** (3.47 value points) with feedback from both the Richland Operations Office and the Office of River Protection (see Appendix VI). There were many activities completed in the area of facility transition out of the currently occupied 300 Area facilities. The schedule was very aggressive and Battelle did a good job of keeping on top of the items; however, Battelle should have paid closer attention to the potential for unexpected contaminants throughout the process. Areas that were considered in this evaluation were in the areas of Groundwater Remediation and closure assessment, Public Safety and Resource Protection, and the support to the Solid Waste EIS and to the Richland Life Cycle Model. The Battelle support to the Office of River Protection was outstanding in the areas evaluated including the support to the Waste Treatment Plant.

ELEMENT	Adjectival Rating	Value Points	Indicator Weight	Total Points	Objective Weight	Total Points
1.0 Quality of Science and Technology						
1.1 Produce original, creative scientific and technological results						
1.1.1 Progress against Biomolecular Networks Initiative expected outcomes	Outstanding	4.0	30%	1.20		
1.1.2 Progress against Computational Sciences and Engineering Initiative expected outcomes	Outstanding	4.0	20%	0.80		
1.1.3 Progress against Homeland Security Initiative expected outcomes	Outstanding	4.0	20%	0.80		
1.1.4 Demonstrate efficient capture of inventions generated at the Laboratory	Outstanding	4.0	15%	0.60		
1.1.5 Demonstrate the support and use of strong technical review processes to ensure the quality of R&D programs and processes	Excellent	3.4	15%	0.51		
			Objective 1.1 Total	3.91	30%	1.17
1.2 Receive recognition of results that enhance the Laboratory's and DOE's reputation for delivering science-based solutions						
1.2.1 Maximize the impact of the Laboratory's peer-reviewed and other publications	Outstanding	4.0	50%	2.0		
1.2.2 Determine science and technology impact through awards and recognition	Outstanding	4.0	50%	2.0		
			Objective 1.2 Total	4.0	20%	0.80
1.3 Customer evaluation of quality of science and technology (From Table 1.2)	Outstanding	3.79	100%	3.79		
			Objective 1.3 Total	3.79	50%	1.90
					Critical Outcome 1.0 Total	3.87

Table 1.1 - Quality of Science and Technology Critical Outcome Overall Score Calculation

HQ Program Office/Customers	Adjectival Rating	Value Points	Weight	Weighted Score	Overall Weighted Score
Office of Science	Outstanding	3.7	30%	1.11	
Office of Defense Nuclear Nonproliferation	Outstanding	4.0	20%	0.80	
Office of Intelligence	Outstanding	4.0	5%	0.20	
Office of Counterintelligence	Outstanding	4.0	5%	0.20	
Department of Homeland Security	Outstanding	4.0	10%	0.40	
Office of Energy Efficiency and Renewable Energy	Outstanding	3.45	10%	0.35	
Office of Fossil Energy	Outstanding	3.8	10%	0.38	
Office of Environmental Management	Outstanding	3.47	10%	0.35	
				Overall Program Office Total	3.79

Table 1.2. Outcome 1.0, Quality of Science and Technology Evaluation Score Calculation for Program Offices/Customers

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 1.3 - Quality of Science and Technology Critical Outcome Final Rating

2.0 RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS (30%)

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 Relevance to DOE Missions and National Needs Critical Outcome measured the overall effectiveness and performance of the Contractor in producing intellectual understanding and solutions that impacted DOE and National initiatives and were adopted by other researchers and industry. The overall rating for this Outcome is **Outstanding** with a numerical score of 3.80 value points. Each of the Program Offices provided overall Outstanding ratings. The following summarizes the HQ evaluations received. The full evaluation reports provided by each Program Office are appended to this report. The overall rating from each of the HQ offices was weighted primarily based on business volume. The overall performance rating for this outcome was determined by multiplying the overall rating (value points) assigned by each of the program offices identified below by the weightings identified for each and then summing them (see Table 2.1). When no specific value points were assigned by the HQ reviewing office the appropriate value points were assigned in accordance with the adjectival rating definitions and value points identified in Figure I-1 of the FY 2004 Performance Evaluation and Measurement Plan (page J-E-2).

2.1 The Office of Science (SC) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by SC. While the Contractor met all the measures identified within this objective and an overall rating of **Outstanding** (3.6 value points) was awarded by SC, it should be noted that this overall rating is down from the 3.7 rating provided by SC in FY 2003. This is due primarily by the decline in BER's and ASCR's ratings in this area (see Appendix I).

2.2 The Office of Defense Nuclear Nonproliferation (DNN) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by DNN. Battelle met or exceeded each of the FY 2004 measures identified for DNN activities and continued to be successful at forecasting and addressing their challenging needs, earning an Outstanding rating with 4.0 value points awarded (see Appendix II).

2.3 The Office of Energy Efficiency and Renewable Energy (EERE) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by EERE and was rated as **Outstanding** (3.78 value points). Battelle successfully completed all the indicators identified within the FY 2004 PEMP and a number of significant accomplishments were noted by EERE (see Appendix III). These accomplishments included excellent work in sensor development and micro-flow technology; and completing an analytical study that identified the top 12 candidate chemical intermediates that should be pursued by the biomass program.

2.4 The Office of Fossil Energy (FE) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by FE and was rated as **Outstanding** (3.8 value points) (see Appendix IV). The Contractor successfully conducted the start-up and stop testing of the SECA coal gasifier demonstration and completed the modeling of an expanded module size Solid Oxide Fuel Cell (SOFC) and the performance of clustered cells in support of the clustering SECA solid oxide fuel cells for the development of large size fuel cell distribution energy units.

2.5 The Department of Homeland Security (DHS) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by DHS. Battelle's support in the development of the Execution Plan for the FY 2004 Radiological/Nuclear Countermeasures Portfolio and the TVTA Portfolio was outstanding leading to an overall rating of **Outstanding** by DHS for this objective (see Appendix V).

2.6 The Office of Environmental Management (EM) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by EM. Battelle's performance in this area was rated as **Outstanding** (3.48 value points) with feedback from both the Richland Operations Office and the Office of River Protection (see Appendix VI). The Contractor also met both the measure regarding the completion and documentation of the conceptual model for the 300 Area uranium groundwater plume and the completion of all simulations supporting the 2005 Composite Analysis of Hanford waste disposal sites.

2.7 The Office of Intelligence (IN) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by IN and was rated as **Outstanding** (4.0 value points) (see Appendix VII). IN noted the unique nuclear expertise as critical to their office.

2.8 The Office of Counterintelligence (CN) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by CN. The effectiveness and performance in relevance to CN missions was rated as **Outstanding**, citing a number of accomplishments which supported the goals of the CN programs (see Appendix VIII).

2.9 The Office of Electric Transmission and Distribution (OETD) evaluation of relevance to DOE missions and national needs.

This objective measured the overall effectiveness/performance in relevance to DOE missions and national needs as viewed by OETD and was rated as **Outstanding** (4.0 value points) (see Appendix IX). The Contractor provided outstanding technical knowledge and leadership to OETD to increase the security, reliability, and efficiency of the energy infrastructure. The GridWise Board was selected, approved and the first GridWise Architecture Board meeting was held July 13 – 15, 2004.

ELEMENT	Adjectival Rating	Value Points	Objective Weight	Total Points	Total Points
2.0 Relevance to DOE Mission and National Needs					
2.1 The Office of Science (SC) evaluation of relevance to DOE missions and national needs.	Outstanding	3.6	30%	1.08	
2.2 The Office of Defense Nuclear Nonproliferation (DNN) evaluation of relevance to DOE missions and national needs.	Outstanding	4.0	20%	0.80	
2.3 The Office of Energy Efficiency and Renewable Energy (EERE) evaluation of relevance to DOE missions and national needs.	Outstanding	3.78	10%	0.38	
2.4 The Office of Fossil Energy (FE) evaluation of relevance to DOE missions and national needs.	Outstanding	3.8	8%	0.31	
2.5 The Department of Homeland Security (DHS) evaluation of relevance to DOE missions and national needs.	Outstanding	4.0	10%	0.40	
2.6 The Office of Environmental Management (EM) evaluation of relevance to DOE missions and national needs.	Outstanding	3.48	10%	0.35	
2.7 The Office of Intelligence (IN) evaluation of relevance to DOE missions and national needs.	Outstanding	4.0	5%	0.20	
2.8 The Office of Counterintelligence (CN) evaluation of relevance to DOE missions and national needs.	Outstanding	4.0	5%	0.20	
2.9 The Office of Electric Transmission and Distribution (OETD) evaluation of relevance to DOE missions and national needs.	Outstanding	4.0	2%	.08	
				Critical Outcome 2.0 Total	3.80

Table 2.1 - Relevance to DOE Missions and National Needs 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 - Relevance to DOE Mission and National Needs Critical Outcome Final Rating

3.0 SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES & EQUIPMENT (20%)

Battelle provides strategic planning for Laboratory facilities and equipment that support current and future science and technology missions, provides effective and efficient access to user facilities, and ensures effective, efficient, safe, and secure operations.

The Success in Constructing and Operating Research Facilities & Equipment Critical Outcome measured the Contractor's overall performance necessary for the creation of leading-edge facilities and equipment to ensure 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 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. The Contractor achieved Outstanding ratings in seven of the nine areas measured within this Outcome, with the other two areas being rated as Excellent. In particular, the Contractor performed exceptionally in two areas; 1) increasing the total consideration from the deployment of intellectual assets; and 2) ensuring all radioactive materials within the Radiochemical Processing Laboratory have identified owners and 100 % of materials were properly disposed of for completed projects. Also of note was SC's rating of outstanding for the overall effectiveness/performance in successfully operating the EMSL and ARM user facilities and the continued aggressive pursuit of improvements to the Cyber Security program. Although Battelle met or exceeded the target levels for each performance measure within the ESH&Q indicator, safety remains a major concern. Planned improvements in line accountability, the self-assessment, and lessons learned processes, along with new initiatives can help reduce the number and severity of near misses and other incidents only if appropriately implemented. This area must receive continuous senior management (to include corporate) attention during FY 2005.

Based on the overall results of the objectives and their corresponding indicators discussed below this Outcome was rated as **Outstanding**, with 3.74 value points earned.

3.1 Ensure capabilities are available to support current and future Laboratory programs

Battelle's performance in providing facility infrastructure to support current and future Laboratory programs and increasing the total consideration to the Laboratory from the deployment of intellectual assets, as measured below, was rated **Outstanding** earning 3.6 value points for this objective.

3.1.1 Provide facility infrastructure to support current and future Laboratory programs through the continued transition out of 300 area facilities and obtain support for the acquisition of new facilities

The Contractor successfully completed nine of the twelve milestones identified as part of this indicator earning an **Outstanding** rating with 3.5 value points awarded. Accomplishment of the nine milestones assisted in positioning the Laboratory for the future and with the transition out of the 300 Area facilities. Although three milestones were not fully completed during the evaluation period it should be noted that progress made has assisted in the overall movement towards the creation of a PNNL Site separate from Hanford and moving toward restructuring third party facility leases. These activities should continue to receive appropriate Contractor management attention throughout FY 2005 to ensure the effective and efficient closure of these milestones.

3.1.2 Increase the total consideration to the Laboratory from the deployment of intellectual assets.

This indicator measured the Contractor's success in increasing the total consideration (returns) from the development of intellectual assets (IA) that include the total of license revenue and non-cash returns from licensing of DOE-delivered intellectual property (IP), as well as new research and development project sales where IP is optioned, licensed or otherwise used. For a

second year in a row the Contractor's performance was **Outstanding**, with the total consideration to the Laboratory from the deployment of IA being $25M, which was significantly higher than the target of $12 M, set based on historical trending.

3.2 Manage all facilities to maximize research value and assure safe, secure, and environmentally sound operations

The Contractor's performance throughout the evaluation period met or exceeded expectations in most areas evaluated indicating that Battelle overall continues to provide excellent management of facilities to assure safe, secure, and environmentally sound operations, while maximizing the research value of facilities. Based on PNSO's evaluation of the following indicators this objective is awarded 3.86 value points resulting in an overall rating of **Outstanding**. The PNSO evaluation also indicated that the Contractor continues to provide excellent management of radioactive materials within the Radiochemical Processing Laboratory. The integrated safeguards and security activities continue to effectively protect Laboratory assets and a number of improvements in the Cyber Security arena were noted. While the ESH&Q measures continue to indicate an outstanding Integrated Safety Management program, the PNSO continues to be concerned regarding the frequency and type of safety related incidents. Contractor senior management, to include corporate management, must continue to place emphasis on this issue and ensure the complete and effective implementation of corrective actions/programs put in place during FY 2004.

3.2.1 Provide ESH&Q management systems that sustain and enhance excellence in Laboratory operations

As during FY 2003 the Contractor's performance against established ESH&Q performance measures is rated as **Outstanding** (4.0 value points), meeting or exceeding the target levels for each performance measure. Details of the eight performance measures established for FY 2004 are provided below. While the lagging indicators continue to indicate positive performance, the frequency and type of events that continued to occur throughout FY 2004 continue to be a major concern. It is anticipated that improvements in line accountability, the self-assessment and lessons learned processes, along with new initiatives will help in reducing the number and severity of near misses and other incidents. However, this can only be accomplished through the aggressive implementation of the improvements and new initiatives set forth during FY 2004 and must continue to receive appropriate senior management attention.

Performance Measures	Targets	Actual Performance
1) Demonstrate excellence in the Safety and Health program – *Total Recordable Case Rate*	$\leq$ 1.41 cases per 200,000 work hours	1.13
2) Demonstrate excellence in the Safety and Health program - *Days away, restricted and or transferred (DART) case rate*	$\leq$ 0.65 cases per 200,000 work hours	0.64
3) Annual Safety and Health evaluation. Deliver an annual self assessment that evaluates the following performance criteria: management leadership; employee involvement; hazard prevention and control; worksite analysis; and safety and health training.	Overall numerical rating of 9-12 (Based on a scale of 1-12)	9.5
4) Conformance of the Environmental Management System to ISO 14001 standard	ISO 14001 registration retained through FY2004	ISO 14001 registration retained
5) Reportable Occurrences of Release to the Environment	$\leq$ 2 events	0

Performance Measures	Targets	Actual Performance
6) Low Level Radioactive Waste Generation (P2). Reduce amount of waste generated by Lab.	≤ 187 Cubic Meters/yr	180 Cubic Meters/yr
7) Hazardous Waste Generation (P2). Reduce amount of waste generated by Lab.	≤ 9.0 MT/yr	8.37MT/yr
8) Spread of Radioactive Contamination	≤ 3 events	1event

3.2.2 Sustain and enhance the effectiveness of Integrated Safeguards and Security

Assessment of the performance indicator and measures developed to demonstrate improvements in the Integrated Safeguards and Security Management (ISSM) Program processes and functions for FY 2004 has resulted in an **Outstanding** rating (3.9 value points). The Contractor continued to aggressively pursue improvements to the Cyber Security program to include system access controls by foreign nationals and system configuration management. Internal security incidents rates continued to remain below established levels for the Laboratory as well as those occurring at like organizations across the DOE complex. The Safeguards and Security program also provided excellent support for the Research Campus of the Future (RCF) project, developing a tool to supply security risk mitigation strategies and measures for facility planning and construction activities. The documented security measures represent "best practices" in the design, layout and construction of general industry and commercial sites relative to security threat mitigation and prevention techniques. The measures in this document are being employed on a graded basis in the future design and construction of the RCF.

3.2.3 Enhance network reliability, availability, and security

This indicator was rated based on a composite of two metrics which measured the availability of electronic mail services to Laboratory staff and the percentage of all virus instances that are successfully handled before infection can take place. The Contractor exceeded both metrics ensuring the maximum availability of electronic mail service which is a critical communication and collaboration tool for the Laboratory and earning a rating of **Outstanding**. Details of the two performance measures established for FY 2004 are provided below.

Performance Measure	Target Goal	Actual Performance
Availability of e-mail services to Laboratory staff	>99.9%	99.96%
Measure the percentage of all virus instances that are successfully handled before infection can take place	>95%	99.99%

3.2.4 Complete FY 2004 removal of non-programmatic inventory material from the Radiochemical Processing Laboratory (RPL).

This indicator measured the effectiveness of Contractor management in removing non-programmatic inventory material from the RPL through the successful completion of key milestones identified for FY 2004 (see listing of milestones below). The Contractor was successful in completing 16 of the 17 milestones identified resulting in a rating of **Excellent** with 3.4 value points being awarded. The milestone 7C – Disposal of 7 drums of Ra-226 sources was not completed during the evaluation period. The results of the removal and disposal of the legacy materials represent a significant reduction in the total content of radioactive materials in the RPL.

Milestones identified for completion during FY 2004:
RPL Inventory Removal Task WBS 4.2.3.20.2.2

1. 7A – Disposal of SST and DST Waste
2. 7B – Repackaging and Verification of Orphan Waste Containers
3. 7C – Disposal of 7 drums of Ra-226 sources
4. 7D – Disposal of lead bricks previously used for shielding
5. 7F – Verification, packaging and disposal of 6 empty Type B containers
6. 7G – Analysis and Disposal of 65 gallons vacuum pump oil
7. 7H – Sample, repackage and dispose of 55 gallons contaminated cerium nitrate
8. 7I – Sample, repackage and dispose of 10, 55 gallon drums of mineral oil
9. 7J – Disposal of lead shielded stainless steel 3200 pound shipping cask (bone yard cask)
10. 7K – Sample, repackage and dispose of an empty stainless steel cask filled with paraffin
11. 7L – Analyze, package and dispose of 55 gallons of normal paraffin hydrocarbon
12. 7O – Contaminated equipment disposal
13. 7P – Disposal of old lead shielding brick
14. 11A – Establish shielded repository for radioactive samples
15. 7R – Recover liquid transfer hood/liquid transfer system
16. 9 – SAL waste cleanout complete

Legacy Waste Removal Task WBS 4.2.3.20.3.2

1. Content Verification and Disposal of 3 Bowling Ball Casks Complete

3.2.5 Demonstrate ownership of current Radiochemical Processing Laboratory (RPL) Radioactive Materials

This indicator measured the critical program for ensuring radioactive materials used in the RPL have defined owners as well as a funded disposal pathway. During the evaluation period the Contractor ensured 100% of the radioactive materials listed within the Radioactive Materials Tracking (RMT) inventory have an identified owner and that 100% of materials were properly disposed of for completed projects. This performance resulted in an **Outstanding** rating for FY 2004 (4.0 Value Points). The Department is very pleased with the Contractors success in this area and anticipates further successes in this arena during FY 2005, to include the removal of a significant amount of orphan radioactive inventory through the Inventory Removal Project.

3.2.6 Establish the Laboratory Assurance Process

This indicator measured the Contractor's progress in completing key steps associated with the annual "Assurance Letter," as required by the contract with Battelle for the management and operations of the Laboratory. The Contractor developed and internally approved an Assurance Process Description ("Battelle Assurance Process for Management and Operation of the U.S. department of Energy's Pacific Northwest National Laboratory") by March 2004 and issued the process description to PNSO in April 2004. Although the PNSO review of the description found that it lays out a comprehensive description of how Battelle will meet its contractual requirements for an assurance letter, it also noted that the document needed to describe, in greater detail, the "Battelle core processes" mentioned within the description and/or how this process would be developed, defined, and implemented. The PNSO therefore provided "conditional acceptance" of the assurance process pending full and successful implementation. In that the Contractor met two of the three milestones identified for this indicator a rating of **Excellent** (3.4 value points) is awarded. Although the overall process architecture was not completed and fully implemented in time to gain full advantage of the process for FY 2004, the PNSO is pleased with the direction taken by Battelle and looks forward to its full implementation during FY 2005.

3.3 Customer evaluation of success in constructing and operating research facilities & equipment.

This objective measured the overall effectiveness/performance in successfully constructing and operating research facilities & equipment as viewed by the DOE HQ Office of Science (SC). Overall this objective was rated as **Outstanding** by SC with 3.7 value points awarded (see Appendix I). The Contractor met each of the measures identified for the EMSL user facility, successfully completing all requirements of the measures. One of the two measures focused on the Atmospheric Radiation Measurement (ARM) facilities was not fully met however. Initial testing of apparatus to be installed inside the ARM Mobile Facility was not completed by the end of the fourth quarter FY 2004 as required by the measure. This was due to the delay in installation of a shelter within the fenced area of the designated Annex, delaying the initial testing until October 2004.

ELEMENT	Adjectival Rating	Value Points	Indicator Weight	Total Points	Objective Weight	Total Points
3.0 Success In Constructing And Operating Research Facilities & Equipment						
3.1 Ensure capabilities are available to support current and future Laboratory programs						
3.1.1 Provide facility infrastructure to support current and future Laboratory programs. Continue transition out of 300 area facilities & obtain support for the acquisition of new facilities.	Outstanding	3.5	80%	2.80		
3.1.2 Increase the total consideration to the Laboratory from the deployment of intellectual assets.	Outstanding	4.0	20%	0.80		
			Objective 3.1 Total	3.60	25%	0.90
3.2 Manage all facilities to maximize research value and assure safe, secure, and environmentally sound operations						
3.2.1 Provide ESH&Q management systems that sustain and enhance excellence in Laboratory operations	Outstanding	4.0	25%	1.0		
3.2.2 Sustain and enhance the effectiveness of Integrated Safeguards and Security	Outstanding	3.9	20%	0.78		
3.2.3 Assure network reliability, availability, and security	Outstanding	4.0	15%	0.60		
3.2.4 Complete FY 2004 Radiochemical Processing Laboratory (RPL) inventory removal from RPL	Excellent	3.4	20%	0.68		
3.2.5 Demonstrate ownership of current Radiochemical Processing Laboratory (RPL) Radioactive Materials	Outstanding	4.0	20%	0.80		
3.2.6 Establish the Laboratory Assurance Process			0%	0		
			Objective 3.2 Total	3.86	35%	1.35
3.3 Customer evaluation of success in constructing and operating research facilities & equipment	Outstanding	3.7	100%	3.7		
			Objective 3.3 Total	3.7	40%	1.48
					Critical Outcome 3.0 Total	3.73

Table 3.1 - Value of Research Facilities 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 - Value of Research Facilities Critical Outcome Final Rating

4.0 EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT (20%)

Battelle provides effective customer relationship management and program management; manages capabilities and creates supporting partnerships; and provides outstanding expert-delivery, research processes, which improve research productivity, increase integration across research programs, and deliver strong project execution and management of risk.

The Effectiveness and Efficiency of Research Program Management Critical Outcome measured the Contractor's overall program leadership in creating strong partnerships required to deliver assigned programs, and strengthening the linkage between fundamental and applied sciences. It also measured the Contractor's effectiveness in enhancing research work processes and providing strong program and project controls to improve scientific productivity. The Contractor performance indicated that they continue to provide quality project deliverables to customer's on schedule and on budget. In addition, the Contractor successfully reduced overhead costs by effectively managing FTE's; however, this effort had a counter effect of accumulating a large amount of unliquidated overhead dollars at year-end. This accumulation is not representative of effective and efficient management of federal dollars and must gain appropriate management attention during FY 2005 to insure processes are put in place to eliminate this issue in the future. Continued accumulation of these types of funds without appropriate and timely redistribution and questionable "year-end" buying actions reflects poorly on the Laboratory and must be corrected.

Based on the overall results of the objectives and their corresponding indicators discussed below this Outcome was rated as **Outstanding**, with 3.93 value points earned.

4.1 Enhance research work processes to improve scientific productivity

Based on the success of the single indicator for this objective the overall objective is rated as **Outstanding** with 4.0 value points awarded.

4.1.1 Increase direct FTEs as a percent of the total Laboratory FTEs

Based on the Contractor's success in increasing the total direct FTE's by 66 over the previous fiscal year and maintaining the indirect FTE's at the same level of FY 2003 this indicator is rated as **Outstanding** (4.0 Value Points). Success in this measure drives down the overhead costs allowing a greater percentage of funding toward program efforts. Although the savings of overhead dollars for program use is to be applauded, the Contractor needs to increase efforts in analyzing and providing timely distribution of indirect cost variances. At the end of August 2004, the Contractor had accumulated a sizeable $16M favorable indirect cost variance which had to be distributed during September 2004.

4.2 Demonstrate strong program and project performance

Based on the success of the single indicator for this objective the overall objective is rated as **Outstanding** with 4.0 value points awarded.

4.2.1 Deliver quality project deliverables on time and on budget.

This indicator measured the Contractor's ability to deliver project deliverables within schedule and budget. A sampling of five major projects, representative of the Laboratory overall, were tracked throughout the evaluation period with respect to both cost and schedule performance. All five projects performed very well indicating the Contractor's project management system is working well. Based on this performance, achieving a schedule/cost performance indices (SPI/CPI) average of 1.18 (target level was 0.95), this indicator was rated as **Outstanding** with 4.0 value points awarded

4.3 Customer evaluation of effectiveness and efficiency of research program management.

This objective measured the overall effectiveness/ performance of research program management as viewed by the DOE HQ Office of Science's (SC), other cognizant HQ Program Offices, and major customers. The overall rating for this Objective is **Outstanding** with a numerical score of 3.83 value points. Six Program Offices provided overall Outstanding ratings and two Offices, Office of Energy Efficiency and Renewable Energy, and Office of Assistant Secretary for Environmental Management, provided an overall Excellent rating. The following summarizes the HQ evaluations received. The full evaluation reports provided by each Program Office are appended to this report. The overall rating from each of the HQ offices was weighted primarily based on business volume. The overall performance rating for this Objective was determined by multiplying the overall rating (value points) assigned by each of the program offices identified below by the weightings identified for each and then summing them (see Table 4.2). When no specific value points were assigned by the HQ reviewing office the appropriate value points were assigned in accordance with the adjectival rating definitions and value points identified in Figure I-1 of the FY 2004 Performance Evaluation and Measurement Plan (page J-E-2).

Office of Science (SC)

The overall SC evaluation of the effectiveness/performance of research program management was rated as **Outstanding** with 3.7 value points awarded (see Appendix I). The Contractor completed all measures identified for SC program management within this objective. Furthermore, SC noted the Contractor's outstanding coordination of the Schewenella Federation and high throughput proteomics research within their submittal. They also mentioned that the program management and coordination of the Materials and Engineering Physics program have been outstanding and the intellectual and managerial leadership of the Molecular Theory and Modeling program was highly praised in the BES peer review. The ASCR program noted that Battelle has had some significant personnel changes, losing several talented performers; however, others have been added to accomplish the ASCR scientific program goals.

Office of Defense Nuclear Nonproliferation (DNN)

The Contractor provided critical management support to a number of program areas under the new Office of Global Treat Reduction, and provided lead program management support to the International Radiological treat Reduction Program, contributing to key strategic planning efforts. The Contractor also provided outstanding support in the area of International Safeguards organizing and managing indoor release tests of UF6 requiring coordination with multiple government agencies. Battelle's overall management of DNN programs was rated as **Outstanding** with 4.0 value points awarded (see Appendix II).

Office of Intelligence (IN)

The overall IN evaluation of the effectiveness/performance of research program management was rated as **Outstanding** with 4.0 value points awarded (see Appendix VII). The Contractor continued to exhibit outstanding professional business standards of conduct in the execution of its work and relations with IN. The attention to detail in project execution resulted in timely completion of projects with a minimum of revision required.

Office of Counterintelligence (CN)

The overall CN evaluation of the effectiveness/performance of research program management was rated as **Outstanding** noting that Contractor CI Program management and staff were consistently courteous, timely, and thoroughly responsive to all requests (see Appendix VIII).

Department of Homeland Security (DHS)

The DHS noted that the Contractor consistently responded to all urgent requests for support on an as needed basis and were extremely reliable in performing all technical program tasks on time. The Contractor is a valued strategic partner to the DHS Office of Research and Development earning a rating of **Outstanding** (4.0 value points) (see Appendix V).

Assistant Secretary for Energy Efficiency and Renewable Energy (EERE)

The EERE rated the effectiveness and efficiency of program management as **Excellent** (3.25 value points) calling out the Contractor's overall abilities to manage milestones and keep the program offices informed of project progress, as well as, a number of publications, presentations and patent applications within EERE program areas (see Appendix III). An area in need of improvement identified was the need to drive down uncosted balances within all EERE programs.

Assistant Secretary for Fossil Energy (FE)

The overall FE evaluation of the effectiveness/performance of research program management was rated as **Outstanding** with 3.8 value points awarded (see Appendix IV).

Department of Environmental Management (EM)

The overall evaluation of the effectiveness/performance of research program management was rated as **Excellent** (3.23 value points) noting that Contractor interactions among project managers and subproject managers were professional, with issues readily raised, freely discussed, and response actions were well thought out. One noted opportunity for improvement related to year end schedule variance and although some of the many contributors to the variance were outside the project manager's control, better understanding of the contributors may benefit future work planning (see Appendix VI).

ELEMENT	Adjectival Rating	Value Points	Indicator Weight	Total Points	Objective Weight	Total Points
4.0 Effectiveness And Efficiency Of Research Program Management						
4.1 Enhance research work processes to improve scientific productivity						
4.1.1 Increase direct FTEs as a percent of the total Laboratory FTEs	Outstanding	4.0	100%	4.0		
			Objective 4.2 Total	4.0	20%	0.80
4.2 Demonstrate strong program and project execution						
4.2.1 Deliver quality project deliverables on time and on budget	Outstanding	4.0	100%	4.0		
			Objective 4.3 Total	4.0	40%	1.60
4.3 Customer evaluation of effectiveness and efficiency of research program management (From Table 4.2)	Outstanding	3.83	100%	3.83		
			Objective 4.4 Total	3.83	40%	1.53
					Critical Outcome 4.0 Total	3.93

Table 4.1 - Research Management and Program Leadership Critical Outcome Performance Rating Development

HQ Program Office/Customers	Adjectival Rating	Value Points	Weight	Weighted Score	Overall Weighted Score
Office of Science	Outstanding	4.0	30%	1.20	
Office of Defense Nuclear Nonproliferation	Outstanding	4.0	20%	0.80	
Office of Intelligence	Outstanding	4.0	5%	0.20	
Office of Counterintelligence	Outstanding	4.0	5%	0.20	
Department of Homeland Security	Outstanding	4.0	10%	0.40	
Office of Energy Efficiency and Renewable Energy	Excellent	3.25	10%	0.33	
Office of Fossil Energy	Outstanding	3.8	10%	0.38	
Office of Environmental Management	Excellent	3.23	10%	0.32	
				Overall Program Office Total	3.83

Table 4.2. Outcome 4.0, Research Management and Program Leadership Evaluation Score Calculation for Program Offices/Customers

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 4.3 - Research Management and Program Leadership Critical Outcome Final Rating

III. OTHER NOTABLES

This section of the report provides information regarding other PNSO or external reviews/evaluations conducted as part of the FY 2004 performance review process. Our operational awareness and other review activities conducted throughout the year identified the following areas of noteworthy performance and areas for improvement. The PNSO expects the Contractor to take note of the information provided below and to take appropriate actions to ensure continuous improvement in all aspects of the management and operations of the Laboratory.

1. Areas of Noteworthy Performance

During the evaluation process, PNSO noted the following key examples of noteworthy performance.

- Awards and External Recognition: In addition to the Science and Technology related awards and recognition discussed in section 1.2.2 of the PEMP evaluation report, the Contractor should be commended for the notable operations-related awards and certifications received in FY 2004. These included: Training Magazine's 2004 Training Top 100 Award; the International Facility Management Association's Outstanding Achievement in Facility Management Award; Environmental Protection Magazine's Facility of the Year Award for RPL; membership in the EPA Performance Track program; recommendation for re-certification to Voluntary Protection Program (VPP) Star Status; and, the White House Closing the Circle Award for Environmental Management System (EMS).

- Communications: The Contractor performed considerable planning and outreach to have a successful Micro Nano Breakthrough Conference 2004 in Portland, Oregon in July 2004. Prior to the conference, the Laboratory Director personally worked to facilitate the partnership and to communicate the activities through Portland-area media outlets. Also, leading into this conference, the Contractor developed a quality interactive web page for easy and instant information resources for the media, which contributed heavily to the success of media coverage. More than 250 developers, industrialists, university representatives, venture capitalists and media attended the conference and officials signed an Implementation Agreement for the Microproducts Breakthrough Institute. The agreement provides guidelines and tools for the Laboratory and Oregon State University to grow their collaborative microtechnology-based research enterprise in Oregon.

- Safeguards & Security: The Contractor was very proactive in responding to the Secretary's direction to stand-down all operational activities associated with Classified Removable Electronic Media (CREM) that occurred on July 23, 2004. In short order, the Contractor conducted a full inventory of CREM holdings with no discrepancies, improved handling processes and procedures based on the Secretary's protocols, and finally requested and received start-up authorization on August 11, 2004. Additionally, On September 15 and 16 the Office of Independent Oversight and Performance Assurance (OA) conducted a Post Restart CREM Validation Review at the Laboratory to determine if the protocols required for resumption of CREM operations were effective and consistently applied. No discrepancies were noted of the Contractor's CREM inventory during the review, and the OA team was complimentary of the Contractor's overall CREM processes.

- Unscoped Work Response: During FY 2004 there were many instances where unanticipated work (e.g., reviews of safety and security processes related to incidents at other DOE sites) arose and required immediate attention by the Contractor. In almost every case, the Contractor was very proactive in responding to requests for action resulting in successful interactions with DOE Headquarters and other external organizations. These activities were accomplished while maintaining positive accomplishments for regular system operations.

- Allottee Transition: The Contractor is to be commended for their proactive efforts in facilitating a successful allottee transition from the Richland Operations Office to the Oak Ridge Operations Office. The accounting/financial staff established and maintained a positive working relationship with the Oak Ridge Financial Service Center (ORFSC) throughout this process, which streamlined

this activity. Especially notable were PNNL staff efforts in initiating activities to familiarize ORFSC staff with the PNNL accounting system and policies, as well as maintaining two separate property books for the Hanford and non-Hanford property records.

- STARS Implementation: The Contractor is to be commended for their proactive efforts and progress in activities supporting the implementation of DOE's new accounting system by providing timely data submissions that were consistent with DOE guidance.

2. Areas for Improvement

During the evaluation period PNSO noted the following key examples of areas in need of improvement:

- Contract Requirement Violations: As a result of an Inspector General (IG), Case I01RL002, Administrative Report to Management, dated July 14, 2004, the IG investigated an allegation of bribery (Due to the sensitivity of the report, specifics will not be included). The investigation did not prove or disprove the allegation, but did identify questionable conduct by a Laboratory scientist, which expanded the investigation. The questionable conduct included:

  - Inappropriate influence over subcontract awards;
  - Inappropriate double-reimbursement for travel expenses; and
  - Performance of work for organizations outside Battelle/PNNL without a "Request for Permission to Pursue/Continue Outside Activity" form approved and on file.

  After reviewing the IG report, Battelle's response to the IG report, and the previous and current contract requirements, it was agreed that the response from PNSO to the IG report would be as follows:

  - Battelle's policies, and therefore Battelle, were not, and are not, in compliance with current contract clauses and DEAR requirements.
  - Contractual action is warranted against Battelle. The action shall take the form of an "other notable", which will be taken into consideration in the determination of Battelle's FY 2004 performance rating and the resultant fee earned.

- Self-Assessment: Continuing self-assessment system issues noted in many of the reviews at the Laboratory in FY 2004 have reinforced those noted in the FY 2003 PEFA letter to the Contractor. These issues were also underscored in an FY 2004 OA-50 audit finding and an FY 2004 PAAA non-compliance decision. Battelle continues to struggle with systematically implementing the improvements necessary for effective performance measurement and risk management supported by self-assessment. Correcting this condition has received much attention from the Contractor during FY 2004. The assessment elements of the Laboratory's Integrated Planning and Assessment Management System (IPAMS) were re-engineered and a "get well plan" for the integrated self assessment process was implemented and the initial Laboratory rollup of self assessment data piloted in FY 2004. However, since many of the components have not yet been fully integrated or implemented throughout the organization, PNSO and Contractor management have not been able to validate the quality of the system and cannot rely on self-assessment information fully to manage the Laboratory. The absence of a fully deployed and efficient risk management and performance management system supported by an effective self-assessment system at the Laboratory continues to place both the Laboratory and the DOE at risk. Until this system is fully implemented, the Contractor's corporate assurance process cannot supply the appropriate assurances required for DOE to achieve oversight changes envisioned by the new contract. Continued attention and focus on this important system will be necessary to ensure that the system is fully implemented by the end of FY 2005.

- Procedure Content and Use: PNSO has again identified procedure content and use as an issue in FY 2004. Although numerous activity-based assessments have been performed, there continues to

be a lack of effective emphasis on how procedures are updated, understood, and adhered to by staff. (The term procedure is used broadly to include internal work permits and IOPS work practices.) The PNSO recognizes that the Operations Forum understands this issue and is developing a more comprehensive assessment and with mitigating strategies; however, the PNSO remains concerned about this area due to the numerous instances of problems during FY 2004 (e.g., continuing instances of noncompliance with radiological procedure requirements and work practices, unacceptable level of detail in planned work packages, inadequate procedural requirements for PPE, and procedures not being followed regarding PPE).

- Hazard Recognition: Independent analysis completed in FY 2004 continued to identify hazard recognition as a problem at the Laboratory that is contributing to many events or near misses. Experienced staff making last minute changes without involving appropriate subject matter expert reviews appears to be a common issue in hazard recognition events. Critiques performed on numerous events in FY 2004 identified failures by experienced staff, Cognizant Space Managers, and Subject Matter Experts to properly identify hazards. In addition, there were numerous cases where the hazards were not properly identified in IOPS, proper mitigation or PPE was not employed, and oversight was inadequate. While an acceptable safety reporting culture appears to continue at the Laboratory and incident rates are declining, the frequency and type of events that are continuing to occur cause concern regarding the adequacy of hazard recognition. Improvements in line accountability, the self-assessment process, and the lessons learned processes, along with new initiatives will be critical in the upcoming year in order to improve hazard recognition and minimize near misses and incidents.

- Corrective Action Management: PNSO recognizes that improvements have been made to the Corrective Action Management subject area in FY04, specifically related to standardization of definitions and criteria and update of the Action Tracking System (ATS) to support Laboratory assessment requirements; however, the PNSO and Contractor have continued to identify numerous instances of inadequate closure documentation and inconsistent implementation in the ATS system. Examples are as follows:
  - An OA-50 inspection dated December 2003 identified numerous issues related to corrective action management and specifically stated that, “In many cases, evaluations, corrective actions, causal analysis, recurrence controls, closure evidence files, and references were not well established or documented as required by the SBMS documents.
  - A PNSO Facility Representative Surveillance completed in January 2003 on Quality Problem Report completeness showed 5 of 5 reviewed that did not meet the requirements specified in SBMS.
  - A recent PNSO verification of OA-50 corrective actions revealed that closure documentation in ATS was inadequate for many of the corrective actions.
  - The Laboratory's Independent Oversight organization conducted a recent assessment of PAAA related conditions and actions in the ATS. The assessment included determining if all PAAA related closed actions had sufficient documentation to demonstrate closure. Of the **90 PAAA related actions that had been closed, 34%, were closed with inadequate documentation.**
  - Contractor assessment of work packages at Sequim in 2003 led to corrective actions to improve content. A September 2004 follow-up review noted improvement, but persistent content issues. One week later a subcontractor cut through an electrical conduit. Adequate inspection of a blind penetration had not been performed. The preliminary root cause discussed was inadequate work planning (the topic identified in self assessment but not yet corrected).

- Data Accuracy: During FY 2004 there were many instances where the Contractor submittals of financial reports did not meet PNSO expectations. Identified below are some examples of inadequate submittals:

  - FY 2004 Management Representation Letter - Upon review of the Management Representation Letter provided to PNSO in September 2004, the PNSO determined that the Contractor submittal did not adequately provide the requested documented basis for most of the

management assertions. Subsequently, this required PNSO staff to perform an extensive review at the activity-level for many of the assertions in order to establish a documented basis for PNSO representations to HQs. Improvements in the Contractor process will be necessary in FY 2005 to rectify this area of concern, including a quarterly report that documents the basis for each assertion identified in the FY 2004 request.

- FY 2003 Financial Statement Account Analysis Narratives - Upon review of the financial statement narratives provided to PNSO in November 2003, the PNSO determined that the Contractor's narratives did not always represent the activity in the accounts; therefore, this required PNSO to perform a review at the activity-level to document the actual account activity in some of the accounts before forwarding to HQs. The Contractor needs to emphasize the importance in adequately describing the account activity in the financial statement narratives.

- FY2003 Conference submittal to DOE-HQs - Upon review of all FY 2004 proposed conference sponsorship/cosponsorship's provided to PNSO in January 2004, the PNSO determined that the Contractor's submittal was inadequate, since the justifications for the proposed sponsored/cosponsored conferences did not tie to the specific program missions/requirements. Subsequently, this required PNSO staff to re-write the justifications to incorporate this information in the justifications before submittal of the proposed sponsored/cosponsored conferences to HQs. The Contractor needs to emphasize the importance in adequately justifying the proposed sponsored/cosponsored conferences and providing timely notification to PNSO to alleviate delays of approval of the conferences.

- Work Authorization: During FY 2004 there were some instances where costs were incurred prior to DOE approval of the work authorizations. PNSO is concerned that the Contractor does not have adequate controls in place to ensure that costs are not incurred prior to DOE approval and providing DOE timely notification of funding issues prior to incurring costs. In anticipation of the upcoming funds control review by the Oak Ridge Operations Office in FY 2005, the Contractor needs to review their funds control processes to ensure they have adequate controls in place to prevent incurring costs prior to DOE approval and providing DOE timely notification of funding issues to alleviate the concern.

Appendix I

Office of Science Evaluation

Department of Energy
Office of Science
Washington, DC 20585

November 10, 2004

Office of the Director

Mr. Paul W. Kruger, Manager
Pacific Northwest Site Office
U.S. Department of Energy
P.O. Box 350 - K-850
Richland, WA 99352

Dear Mr. Kruger:

For fiscal year 2004, the overall performance of the Pacific Northwest National Laboratory (PNNL) on Office of Science (SC) science and technology programs is rated as Outstanding. This rating relates to a scale that includes Unsatisfactory, Marginal, Good, Excellent, and Outstanding. It is a weighted average of performance evaluations provided by SC program offices, with the budget for PNNL from each office as the weighting factor. This summary rating combines overall performance evaluations by the SC offices of Basic Energy Sciences (BES), Biological and Environmental Research (BER), Advanced Scientific Computational Research (ASCR), Fusion Energy Sciences (FES) and Workforce Development (WD).

I am pleased to note that for BER sponsored research, PNNL is currently among the leaders in large-scale microbial research through its outstanding coordination of the Schewenella Federation and high throughput proteomics research using mass spectrometry. PNNL also seems to be making good progress in its goal to develop and implement a solid plan to address its life science grand challenge. For BES sponsored research, the program management and coordination of the Materials and Engineering Physics program have been outstanding, and the intellectual and managerial leadership of the Molecular Theory and Modeling Program was highly praised in the BES peer review. The ASCR program notes that PNNL has had some serious personnel changes, losing several talented performers. However, others have been added to accomplish the ASCR scientific program goals.

Enclosure 1 summarizes the overall SC weighted-average ratings by each goal. Enclosure 2 provides the individual SC program ratings of the Laboratory's performance for each of the performance goals. Full narrative evaluations from each program area will be e-mailed separately.

Sincerely,

Raymond L. Orbach
Director

Enclosures

Enclosure 1:

OFFICE OF SCIENCE
PACIFIC NORTHWEST NATIONAL LABORATORY EVALUATION
FY 2004SC WEIGHTED AVERAGE RATINGS BY GOAL:

Overall Consolidated Rating: Outstanding
Weighted Average Score: 3.7

Goal: 1 Quality of Science & Technology

Consolidated Rating: Outstanding
Weighted Average Score: 3.7

Goal: 2 Relevance to DOE Missions and National Needs

Consolidated Rating: Outstanding
Weighted Average Score: 3.6

Goal: 3 Success in Constructing and Operating Research Facilities

Consolidated Rating: Outstanding
Weighted Average Score: 3.7

Goal: 4 Effectiveness and Efficiency of Research Program Management

Consolidated Rating: Outstanding
Weighted Average Score: 3.7

Enclosure 2

PACIFIC NORTHWEST NATIONAL LABORATORY
FY 2004 RATINGS OF EACH GOAL BY EACH OSC PROGRAM
G = Good; E = Excellent; O = Outstanding

	Goal 1: Quality	Goal 2: Relevance	Goal 3: Facilities	Goal 4: Program Mgt.		Overall Program Rating	Overall OSC Weighted Average
BES	3.8 – O	3.6 – O	N/A	3.7 – O		3.7 – O	
BER	3.7 – O	3.6 – O	3.7 – O	3.7 – O		3.7 – O	
ASCR	3.6 – O	3.6 – O	N/A	3.5 – O		3.6 – O	
WD	3.8 – O	3.8 – O	N/A	3.8 – O		3.8 – O	
FES	3.8 - O	3.4 - E	N/A	3.7 - O		3.6 - O	
OVERALL	**3.7 – O**	**3.6 – O**	**3.7 – O**	**3.7 – O**			**3.7 - O**

SCORING RANGES for PACIFIC NORTHWEST NATIONAL LABORATORY:

Outstanding	3.50 - 4.0
Excellent	2.50 - 3.49
Good	1.50 - 2.49
Marginal	0.50 - 1.49
Unsatisfactory	0.0 - 0.49

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: OFES

B&R(s): AT602010

FY2004 Funding: $1360K

EVALUATOR & Phone Number: Gene Nardella, 301-903-4956

DATE: October 7, 2004

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:

COMMENTS: 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. Jones has provided strong and skillful leadership of the US community effort and is recognized internationally as a leader in the field. In recognition of his technical contributions over the years, Dr. Jones became a Fellow this year in the National Association of Corrosion Engineers. Dr. Kurtz has provided strong leadership in a several areas of fusion materials research domestically and internationally, having taken leadership of the vanadium alloy research task under a US-Japan collaboration. In addition, Dr. Kurtz 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 much 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.

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: OFES
B&R(s): AT602010
FY2004 Funding: $1360K

EVALUATOR & Phone Number: Gene Nardella, 301-903-4956
DATE: October 7, 2004

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)		3.4			

2. RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS.

COMMENTS: 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 OFES. PNNL continues to focus its efforts on the most important tasks of this program, especially 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.

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: OFES
B&R(s): AT602010
FY2004 Funding: $1360K

EVALUATOR & Phone Number: Gene Nardella, 301-903-4956
DATE: October 7, 2004

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: Not applicable (N/A)

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: OFES
B&R(s): AT602010
FY2004 Funding: $1360K

EVALUATOR & Phone Number: Gene Nardella, 301-903-4956
DATE: October 7, 2004

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)	3.7				

4. EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT.

COMMENTS: 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.

Overall Evaluation:

The OFES-funded work at PNNL, which is focused almost exclusively in fusion materials research, continued to make outstanding progress on major tasks in the Fusion Materials Sciences Program. PNNL has demonstrated strong and effective leadership in key international collaborations on fusion materials research and remains at the forefront of research on composite materials for fusion. PNNL also continues to make important contributions to domestic and international research on vanadium alloy and ferritic steels, with a growing influence on approaches to modeling of irradiation damage and helium effects in materials for fusion environments. In addition, this year, within existing funding, they have supported the plasma

chamber community in their design and research on an ITER test blanket. The overall quality of PNNL work on fusion materials continues to be outstanding.

Office of Basic Energy Sciences
FY 2004 Science and Technology Performance Evaluation for
Pacific Northwest National Laboratory (PNNL)

1. Quality of Science and Technology: (3.8) Outstanding

- The Materials and Engineering Physics program at PNNL was subjected to written (mail) peer review during the first quarter of FY 2002, and will be subject to an on-site peer review in FY 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.* Under the last area, an innovative magnetic resonance approach to characterizing nano-porosity in a variety of materials has been developed. By using a technique of percolating inert gas through the structure and then determining both the "sticking coefficient" of the gas and the time it takes for the gas to move away from the pore structure, the new magnetic resonance imaging (MRI) method can now evaluate both the pore size distribution and the nature of the pore connectivity with nanometer scale resolution. This allows the analysis of highly porous structures that are present in many living systems and those now created artificially in the laboratory such as filters to sequester pollutants, catalysts for chemical reactions, highly efficient insulators, and high strength to weight ratio materials for structural applications. By understanding the relationship between processing parameters and porosity, advances in porous materials can be made.

The Chemical Sciences, Geosciences, and Biosciences Division supports programs at PNNL in Chemical Physics, Molecular Processes, and Geosciences.

- The Molecular Theory and Modeling program within the Chemical Physics effort at PNNL was peer reviewed in March 2004. The reviews of two current subtasks, *Simulation of Complex Molecular Systems via Systematically Improvable Models* and *Physical and Chemical Transformations in Complex Molecular Environments*, and one new subtask, *Nucleation, Growth and Self Assembly*, were uniformly outstanding. The overall program was assessed as highly productive, synergistic, and gaining wide recognition in the scientific community. Dr. Sotiris Xantheas was recognized as a world leader in the field of accurate quantum chemical calculations applied to small clusters, particularly water clusters, and the interaction of ions with such clusters. The complementary experimental program in Chemical Physics, *Chemical Kinetics and Dynamics at Interfaces*, continues to its strong performance.

- Molecular Processes activities at PNNL include a significant emphasis on catalysis science, high-resolution and high-sensitivity laser analysis of rare isotopes, and aspects of separations science involving supercritical fluids. Recent research on nanoscale understanding of photocatalytic water splitting is yielding promising results. These programs continue to evolve in a productive manner and will be subject to peer review in FY 2005.

- The Geosciences program is highly focused on improving chemical physics approaches to geochemical systems of interest use the resources of other chemical physics activities at PNNL and the Environmental Molecular Sciences Laboratory (EMSL). The theoretical developments have been supported by several highly innovative experimental and analytical projects.

2. Relevance to DOE Missions and National Needs: (3.6) Outstanding

BES research carried out at PNNL in materials sciences, chemical sciences, and geosciences strongly supports the scientific mission needs of DOE and the Nation. There is close coupling between the Materials and Engineering Physics program with technology programs at PNNL such as those funded by the Department's offices of Energy Efficiency and Renewable Energy, Fusion Energy Sciences, and Environmental Management, as well as a program funded by the Electric Power Research Institute in FY 2004. The Geosciences program at PNNL is actively collaborating with other laboratories and university investigators both in basic science and in the applied programs supported by the offices of Biological and Environmental Research and Environmental Management.

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

4. The Effectiveness and Efficiency of Research Program Management: (3.7) Outstanding

- The program management and coordination efforts of Dr. Gregory J. Exarhos for the Materials and Engineering Physics program have been outstanding.

- Dr. Bruce Garrett's intellectual and managerial leadership of the Molecular Theory and Modeling Program was highly praised in the BES peer review.

5. Overall Evaluation: (3.7) Outstanding

OFFICE OF ADVANCED SCIENTIFIC COMPUTING RESEARCH
PERFORMANCE APPRAISAL – PNNL

ASCR OVERALL EVALUATION:

LABORATORY: PNNL SC PROGRAM: ASCR/MICS
B&R(s) KJ FY2004 Funding: $3.955M
EVALUATOR & Phone Number C. Edward Oliver
DATE: 10/12/04

EVALUATION FACTORS RATINGS*

(Insert Numerical Score in Appropriate Box)

O	E	G	M	U
3.6				

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 research program has had some serious personnel changes, losing several talented performers; but others seem to be added to accomplish the scientific goals.

O	E	G	M	U
3.6				

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:

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

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:

Our programs are rather targeted to combustion and computational biology; and this work is very relevant to the Department's and the Nation's mission needs.

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:

Basically not applicable.

3.5				

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

*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

intellectual property and technical know-how associated with research discoveries; and the degree to which customer and stakeholder expectations are consistently met.

COMMENTS:

Strong, intelligent program management of our sponsored work is a hallmark of our activities at the Laboratory.

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

INDIVIDUAL PROGRAM MANAGERS' COMMENTS

LABORATORY: PNNL SC PROGRAM: National Collaboratories
B&R(s) KJ010200 FY2004 Funding: $1M
EVALUATOR & Phone Number Mary Anne Scott
DATE: 10/12/04

EVALUATION FACTORS RATINGS*

(Insert Numerical Score in Appropriate Box)

O	E	G	M	U
3.5				

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 laboratory is involved in two National Collaboratory projects—the Collaboratory for Multi-Scale Chemical Sciences (CMCS) and the Scientific Annontation Middleware (SAM) project. Their work is excellent and their contribution to the enabling tools for collaboratories is outstanding. They are well recognized in the field of collaborative technologies with personnel called upon to serve in an advisory capacity for projects in this area supported by other agencies. The software developed under these projects is also used by other organizations.

The pilot Collaboratory for Multi-Scale Chemical Sciences (CMCS) brings together leaders in scientific research and technological development across multiple DOE laboratories, other government laboratories and academic institutions (SNL, PNNL, ANL, LANL, LLNL, NIST, MIT, UCB) with PNNL playing a key role in technical leadership for the project. Focusing on combustion research, the goal of the CMCS is to demonstrate that an integrated multi-scale approach to scientific and engineering research is not only possible but can produce significant benefits in harnessing research to address real-world issues. Advanced collaboration and metadata-based data management technologies are being used in developing a powerful informatics based approach to synthesizing multi-scale information in a systems based context for the

*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

research. The toolkit being developed is open source software which is addressing several emerging issues in knowledge management—namely, provenance tracking and lightweight federation of data and application resources into cross-scale information flows. As such the SAM project is working very closely on these issues. The CMCS portal is currently being used by a number of high-profile pilot groups and is making an outstanding contribution in the area of community maintained chemical reference information.

3.5				

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 field of combustion is critical to the DOE mission for clean and efficient energy, and the DOE has ongoing investments in research across the full range of relevant scales and disciplines. The CMCS will bring an integrated, informatics-based approach to combustion research that enhances and begins to automate the flow of information between sub-disciplines.

*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

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:

Not Applicable

3.5				

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:

Planning and managing multi-institutional projects is challenging. These projects involve planning across multiple organizations. The CMCS project is a collaboration of eight national laboratories and universities and involves chemical scientists working with computer scientists, SAM is a collaboration of two national laboratories. Management on the projects has done an outstanding job in getting all the activities well-planned, integrated across institutions and has established mechanisms for tracking. In addition, the laboratory has been instrumental in assuring coordination and integration across all the national collaboratory projects.

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: SAPP/ACRT
B&R(s) KJ010103 ($200K) KJ010200 ($1M)
FY2004 Funding: $1.2M
EVALUATOR & Phone Number Gary M Johnson
DATE: 11 October 2004

EVALUATION FACTORS RATINGS*

(Insert Numerical Score in Appropriate Box)

O	E	G	M	U
3.6				

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:

Outstanding research efforts in computational biology and GTL.

O	E	G	M	U
3.7				

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:

*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

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:

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

3.6				

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:

To the extent that I have observed it, PNNL has been extremely successful in constructing and operating research facilities.

3.5				

*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

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:

The effectiveness and efficiency of PNNL's 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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: WDT&S

B&R(s) KL01

FY2004 Funding: $730K

EVALUATOR & Phone Number Brian O'Donnell for P. Faletra

DATE: Oct. 14, 2004

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 quality of the science performed by the PIs and their undergraduate interns is of the highest quality and of an advanced level. This is validated by a number of outputs primarily the research abstracts and papers that are peer reviewed, scored, and published in the Journal of Undergraduate Research. The lab invests a great deal of attention and effort in matching the talents and research interests of the undergraduates' and the PI. This effort is key in assuring a high quality scientific output.

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM:_____
B&R(s)_____
FY2004 Funding:_____

EVALUATOR & Phone Number_____
DATE:_____

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

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: As directed by the Headquarters Program Office, PNNL has aligned its educational programs with the mission of SC and the Laboratory. The Science Education Program maximizes the use of the Laboratory's core scientific and technical abilities in enhancing the performance of science, technology, engineering and mathematics, by teachers and students. The interns are involved in research that occurs in the Research Centers and learn the operation and results generated by state-of-the-art user facilities.

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM:_____

B&R(s)_____

FY2004 Funding:_____

EVALUATOR & Phone Number_____

DATE:_____

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

NOT Applicable

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:

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM:_____
B&R(s)_____
FY2004 Funding:_____

EVALUATOR & Phone Number_____
DATE:_____

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

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: All workforce development programs are conducted in a manner that is efficient, cost effective and equitable to all participants. The resources provided by the program office are maximized to the benefit to individual participants and program in its entirety.

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: Medical Sciences
B&R(s) KP1401 and KP1402
FY2004 Funding: $650,000
EVALUATOR & Phone Number R.F. Hirsch 301-903-9009
DATE: 13 October 2004

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:

Research in Measurement Science (Medical Sciences Division) at PNNL is outstanding both in the quality of the fundamental science and in the national recognition received for the accomplishments of the scientists in this program.

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: Medical Sciences
B&R(s) KP1401 and KP1402
FY2004 Funding: $650,000
EVALUATOR & Phone Number R.F. Hirsch 301-903-9009
DATE: 13 October 2004

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)					
	3.5				

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 PNNL research in Measurement Science (Medical Sciences Division) is strongly supporting the DOE mission to develop applications of new instrumentation and technologies discovered at the DOE laboratories.

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: Medical Sciences
B&R(s) KP1401 and KP1402
FY2004 Funding: $650,000
EVALUATOR & Phone Number R.F. Hirsch 301-903-9009
DATE: 13 October 2004

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:
Not applicable

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: Medical Sciences
B&R(s) KP1401 and KP1402
FY2004 Funding: $650,000
EVALUATOR & Phone Number R.F. Hirsch 301-903-9009
DATE: 13 October 2004

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

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:

Not applicable

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: Climate Change Research
B&R(s) KP 120
FY2004 Funding: $18,462,000

EVALUATORS & Phone: Peter Lunn, Wanda Ferrell, Rick Petty, Anjuli Bamzai, John, Houghton, Roger Dahlman
Number:
DATE: 10/12/04

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)		3.3			

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 quality research at PNNL on the ARM program has been excellent. PNNL scientists funded by the program have published several important findings in peer-reviewed journals. Examples of some of their findings include using data from the Raman lidar system at the Southern Great Plains ARM site to improve understanding of ice processes in the upper troposphere, developing a new model parameterization for simulating the influence of organic aerosols on the nucleation of cloud droplets, and developing a new technique to provide a data set of cloud fraction for use in comparing model output and satellite retrievals.

The quality of research at PNNL in the Climate Change Prediction Program has also been excellent. PNNL has evaluated the influence of topography on the atmosphere to the land surface, offering the potential to significantly improve the simulation of surface runoff and

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

river discharge by the Community Climate System Model. PNNL has also made significant contributions to the modeling of regional climate over China, including modeling of water budgets, and to modeling the east Asian summer monsoon. A PNNL scientist also co-authored an important review article on regional climate modeling.

Progress by PNNL of inter-laboratory research in the CSiTE program has been good. A site review of CSiTE is required to evaluate overall scientific progress with the development and application of basic mechanisms for enhancing terrestrial carbon sequestration.

The PNNL group at the Joint Climate Change Institute continues to supply critical analysis and background to decision makers as well as to support assessments for a variety of other governmental and non-governmental climate change and energy technology activities. A unique aspect of the group is its ability to anticipate decision maker needs and already have done the homework to contribute to the debate. The group has provided a number of specific vital contributions including

- fundamental, paradigm-changing insights into climate policy, such as the famous Science paper analyzing emission scenarios that replaced the Intergovernmental Panel on Climate Change's scenarios of future emissions
- a conceptual framework for the Climate Change Technology Program that set in a large way by the Global Technology Strategy Project
- filling a critical role in the development of a Climate Change Science Program synthesis and assessment report on emission scenarios.

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: Climate Change Research
B&R(s) KP 120

FY2004 Funding: $18,462,000
EVALUATOR & Phone Number (see above)

*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

DATE: 10/12/04

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)		3.4			

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:

Research at PNNL in the ARM, climate modeling, Atmospheric Science, carbon sequestration, and integrated assessment is highly relevant to DOE's mission and to national needs. PNNL scientists made an extra effort in FY 2004 to help ensure their ASP research would be relevant to the reconfigured ASP program in FY 2005.
Research at PNNL on the CSiTE Program is highly relevant to DOE's CO2 and climate change research. The research examines the concept that enhanced terrestrial carbon sequestration can potentially slow the rate of atmospheric CO_2 increase, which is important information for decision support and energy policies.

*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

LABORATORY: PNNL

SC PROGRAM: Climate Change Research
B&R(s) KP 120
FY2004 Funding: $18,462,000

EVALUATOR & Phone Number: Wanda Ferrell, Peter Lunn
DATE: 10/12/04

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)	3.6				

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:

Early in FY 2004, a new individual at PNNL assumed the leadership role of the ARM Climate Research Facility's Technical Coordination Activity. The individual developed a complete multi-year integrated planning budget for the ARM facility, thereby enabling the development of a multi-laboratory cooperative multi-year plan for facility maintenance and operations. The realignment was done in collaboration with another DOE lab, demonstrating PNNL's success at building collaborative efforts. As a result of PNNL's work, all high priority requests from the ARM Science Team for needed measurements, instruments, experiments, and value-added products have been meet. In addition, a plan has been established to address recently identified needs for instrument replacements and updates, thus ensuring that the operations metrics for the ARM user facility will be met.

Although it is not a DOE facility, PNNL's operation of a Battelle-owned Gulfstream aircraft for use in the ASP has been exceptional. PNNL has gone above and beyond

*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

expectations in finding new ways to conduct flights in the most challenging airspace (based on FAA regulations) to meet scientific needs while maintaining safety margins. They have found ways to maximize flying hours in ways to help meet the needs of the ASP, without going over the budget provided by BER to operate the aircraft in ASP field campaigns.

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: Climate Change Research
B&R(s): KP 120

FY2004 Funding: $18,462,000
EVALUATOR & Phone Number : See above
DATE: 10/12/04

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)		3.2			

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's overall effectiveness and efficiency of managing climate change research supported by BER has been excellent. Inter-laboratory CSiTE management approaches are appropriate. A site review of CSiTE is required to evaluate overall approaches for selecting priority scientific questions, and for focusing critical resources on research on basic mechanisms that could lead to strategies and methods for enhancing terrestrial carbon sequestration. PNNL collaboration with others in their integrated assessment research has demonstrated effective and efficient management and coordination of the research, yielding significant added value to the integrated assessment program.

A deficiency of program management is that the ARM Chief Scientist has not met the PEMP requirement of completing the ARM Science Plan (Due date of May, 2004).

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: BER
B&R(s) 130101, 130102 & 130103
FY2004 Funding: 130101 - $3.5M, 130102 - $6.8M, 130103 - $39.0M

EVALUATOR & Phone Number Mike Kuperberg (3-4902),
Paul Bayer (3-5324),
Roland Hirsch (3-9009)

DATE: 10-14-04

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:

NABIR - PNNL and their scientists continue to be one of the leading SC labs in the biogeochemical sciences, as indicated by the "supplementary report" on peer-reviewed publication statistics, citation information and professional society and other awards to PNNL scientists. In part, the success of BER's Natural and Accelerated Bioremediation Research (NABIR) program is due to the outstanding biogeochemistry-related research being conducted by PNNL scientists. PNNL has also been successful in making the SGI Altix supercomputer a valuable resource for PNNL scientists.

EMSP - PNNL research in the Environmental Management Science Program (EMSP) is outstanding both in the quality of the individual research projects and in the wide ranging scope of the research, ranging from computational chemistry through field studies in the geosciences. Numerous publications from PNNL EMSP project appeared during the year. Many of the scientists

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

involved are considered national leaders in their disciplines. The laboratory was highly successful in obtaining renewal of projects in the High Level Radioactive Waste (HLW) area during FY 2004; six of the seven proposals submitted were funded after merit review and programmatic review. PNNL scientists also are outstanding in collaborating with scientists at other institutions, as evidenced by the renewal of five other EMSP HLW projects in which PNNL scientists are co-PIs.

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: BER
B&R(s) 130101, 130102 & 130103
FY2004 Funding: 130101 - $3.5M, 130102 - $6.8M, 130103 - $39.0M

EVALUATOR & Phone Number Mike Kuperberg (3-4902),
Paul Bayer (3-5324),
Roland Hirsch (3-9009)

DATE: 10-14-04

EVALUATION FACTORS	RATINGS*				
	O	E	G	M	U
(Insert Numerical Score in Appropriate Box)					
	3.6				

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:

EMSL - PNNL released version 4.6 of NWChem and version 3.2 of Ecce, both of which had added quite a few new features to the previous versions, but it is not clear whether PNNL met the performance goal of a "5% increase in the performance of the test algorithms" for NWChem.

NABIR – PNNL scientists continue to provide important advances to the NABIR program, which is structured to address DOE mission needs in the area of understanding biological interactions with key heavy metals and radionuclides in the context of environmental remediation. Research conducted primarily at PNNL, as well as a large number of inter-laboratory and laboratory-university collaborations involving PNNL have contributed to significant advances in our understanding of this area.

*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

EMSP - PNNL research in the Environmental Management Science Program (EMSP) is outstanding in its focus on the DOE environmental clean-up mission. The EMSP projects continue to be highly rated for relevance to the Hanford Site cleanup, but also address issues at other major cleanup sites. Foundations for key decisions in the Hanford cleanup are being developed through the PNNL EMSP research and important new technologies are being prepared for application in the cleanup. As an example, recent research into interaction of cesium ion with soils beneath the High Level Radioactive Waste tanks has shown that this element is unlikely to migrate significantly beyond the area in which the tanks are located, resulting in a decision that major subsurface treatment to prevent migration would not be needed. In addition, PNNL EMSP research scientists are coordinating interactions between the national EMSP community and managers and engineers carrying out the cleanup at the Hanford and other sites. This is helping ensure that results from all relevant EMSP projects are transferred to the sites promptly and effectively.

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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: BER

B&R(s) 130101, 130102 & 130103

FY2004 Funding: 130101 - $3.5M, 130102 - $6.8M, 130103 - $39.0M

EVALUATOR & Phone Number Mike Kuperberg (3-4902), Paul Bayer (3-5324), Roland Hirsch (3-9009)

DATE: 10-14-04

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

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:

PNNL has met the EMSL-related measures in this Subject Area. EMSL has deployed a total of four Collaborative Access Teams (CATS), as specified in the first indicator, and has deployed both the EMSL User System (EUS) and the EMSL Research System (ERS) across the appropriate EMSL instrumentation. For the second indicator, EMSL developed a Strategic Plan and provided it to PNSO and EMSL's Science Advisory Council, and they published the EMSL Operations Manual, as specified. Based on third quarter statistics concerning the usage of the 9.4 and 11.4 Tesla mass specs and the 800 and 900 MHz NMR's: 1) the 11.4 T mass spec will meet the "target levels," 2) the 800 MHz NMR will meet the target levels, and 3) the 900 MHz NMR will meet the target levels. Replacement of the 9.4 T mass spec with a new 12 T mass spec is in process and proceeding appropriately.

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL

SC PROGRAM: BER
B&R(s) 130101, 130102 & 130103
FY2004 Funding: 130101 - $3.5M, 130102 - $6.8M, 130103 - $39.0M

EVALUATOR & Phone Number Mike Kuperberg (3-4902),
Paul Bayer (3-5324),
Roland Hirsch (3-9009)

DATE: 10-14-04

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

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:

The research program management at PNNL with regard to ERSD is extremely effective. The lines of communication are clear and open. The relationships among ERSD and PNNL FSD are effective. Accomplishments, challenges and changes are communicated routinely. This management team is viewed positively by ERSD.

*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

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: BER

B&R(s) KP11

FY2004 Funding:

EVALUATOR & Phone Number David Thomassen (301-903-98170)

DATE: October 13, 2004

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:

PNNL life sciences research continues to maintain the high quality improvements that were achieved in recent years. The majority of funding (>80%) is for Genomics:GTL related research. PNNL is currently among the leaders in large-scale microbial research through its outstanding coordination of the Shewenella Federation and in high throughput proteomics research using mass spectrometry. PNNL is also conducting leading edge low dose radiation biology research, continuing to play a larger role in that program. PNNL also seems to be making good progress to develop and implement a solid plan to address it life sciences grand challenge.

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

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

LABORATORY: PNNL SC PROGRAM: BER

B&R(s) KP11

FY2004 Funding:

EVALUATOR & Phone Number David Thomassen (301-903-98170)

DATE: October 13, 2004

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

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:

PNNL's life sciences research continues to be directed at high priority DOE needs – (1) understanding microbes so well that we can use them to develop biotechnology solutions for clean energy, environmental cleanup, and carbon sequestration and (2) understanding the molecular mechanisms underpinning biological responses to low doses of ionizing radiation to improve the scientific basis for the development of radiation protection standards.

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: BER

B&R(s) KP11

FY2004 Funding:

EVALUATOR & Phone Number David Thomassen (301-903-98170)

DATE: October 13, 2004

*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. **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:

Not applicable, though as PNNL continues to develop their high throughput proteomics capabilities they should think about strategies for converting aspects of this research project into a user-type resource.

OFFICE OF SCIENCE EVALUATION FORM FOR PROGRAMMATIC APPRAISALS

LABORATORY: PNNL SC PROGRAM: BER
B&R(s) KP11
FY2004 Funding:
EVALUATOR & Phone Number David Thomassen (301-903-98170)
DATE: October 13, 2004

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

*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

3.8				

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's research management continues to improve and sustain the quality and productivity of their life sciences research. Scientific leadership at PNNL and new management practices have resulted in research programs that are now of the highest quality and that are also highly productive.

*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

Appendix II

Office of Defense Nuclear Nonproliferation Evaluation

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

December 10, 2004

MEMORANDUM FOR: Paul W. Kruger, Associate Manager
For Science and Technology

FROM: Kenneth E. Baker
Principal Assistant Deputy Administrator
For Defense Nuclear Nonproliferation

SUBJECT: FY04 Year-End Performance Evaluation of Battelle for the Management and Operation of the Pacific Northwest National Laboratory (PNNL)

Per your request, I am providing our evaluation of the fiscal year 2004 performance of Battelle related to its work in the area of Defense Nuclear Nonproliferation. We evaluated program performance against three criteria: quality of technical support, relevance to the Office of Defense Nuclear Nonproliferation (NA-20) mission, and management effectiveness.

This feedback is based on a review of Battelle's FY 2004 Self Assessment, input from the Office of Science Pacific Northwest Site Office (PNSO) on Battelle's performance on specific 2004 critical outcomes, my personal experience with Battelle, and on discussions held between Steve Black (NA-20), Debbie Trader (PNSO) and Mike Kluse (PNNL), on September 16, 2004.

We rate Battelle's overall performance for the Office of Defense Nuclear Nonproliferation as Outstanding for FY 2004. 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. NA-20 often seeks out PNNL for advice, ideas, and clarification of issues.

Quality of Technical Support – Outstanding

The quality of technical support from PNNL continues to be superb. The laboratory's work with the Office of Nonproliferation Research and Engineering has included successful research, testing of sensors, development of prototypes, and technology transfer. Some examples of significant FY 2004 work include shipment of the latest version of the Infrared Spectral Library, extensive experiments on Frequency-Modulated, Differential Absorption Lidar (FM-DIAL) sensitivity, and the completion of an advanced prototype for detection of highly enriched uranium. PNNL was able to meet all of the Critical Outcomes in the PNSO FY 2004 Performance Evaluation And Measurement Plan related to NA-20 work this year at an outstanding level.

Relevance to the Office of Defense Nuclear Nonproliferation Mission – Outstanding

PNNL's work is consistently relevant to our mission. PNNL plays a 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 relevant to the issues we face; we seek it out and we value it very highly.

Management Effectiveness – Outstanding

PNNL has outstanding leadership and management skills. PNNL has been a principal contributor to the Global Threat Reduction Initiative, and has provided critical program integration, technical, and management support to a number of program areas under the new Office of Global Threat Reduction. PNNL has also provided lead program management support to the International Radiological Threat Reduction Program and contributed to key strategic planning efforts. In the area of International Safeguards, PNNL was able to organize and manage indoor release tests of UF6 requiring coordination with multiple government agencies, multiple DOE offices, other national laboratories, and State of Washington officials. PNNL has also done an outstanding job of managing the Nonproliferation Graduate Program (NGP) Intern Program. We trust and rely on Mike Kluse and his outstanding staff to help us accomplish vital national security goals, and are looking forward to another successful year.

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

cc: Debbie Trader, PNSO
Robert McLeod, PNSO

Appendix III

Office of Energy Efficiency and Renewable Energy Evaluation

Department of Energy
Washington, DC 20585

November 29, 2004

Keith A. Klein
Manager
U.S. Department of Energy
Richland Operations Office
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, 2003, and ending September 30, 2004. We enclose the Performance Evaluation Report for your review.

The evaluation notes that PNNL received a rating of "Outstanding" for two Performance Measures, namely "Relevance to DOE Missions and National Needs" and "Success in Constructing and Operating Research Facilities." EERE rated the other two Performance Measures, namely "Quality of Science and Technology" and "Effectiveness and Efficiency of Research Program Management" as "Excellent."

PNNL made important strides in reducing the level of uncosteds to manageable levels in the Freedom CAR and Vehicle Technologies Program. However, the following concerns need to be addressed:

- The necessity to drive down uncosteds in all programs.
- Continue to foster strong industrial relationships, both in CRADAs and as guides to core research and development.
- Meeting the programmatic goals of the program (ABC milestones) is a number one priority.
- Continue to develop relationship within the NBC and foster collaborative efforts with the member laboratories.

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 Moorer
Deputy Assistant Secretary
Technology Development

John Sullivan
Deputy Assistant Secretary
Business Administration

Enclosure

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, 2003 - September 30, 2004

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

November 8, 2004

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, 2003 to September 30, 2004.

Each reporting EERE Program evaluated PNNL's performance using four performance measures. The ATotal@ rating represents a weighted average score computed using each Program's AFY 2004 Obligations at PNNL as of 8/31/2004" as the weighting factor. Eight of the eleven EERE Programs, namely the Biomass Program, Building Technologies Program, Federal Energy Management Program, FreedomCAR and Vehicle Technologies Program, Hydrogen, Fuel Cells and Infrastructure Technologies Program, Industrial Technologies Program, Weatherization and Intergovernmental Program and the Wind and Hydropower Technologies Program submitted evaluations.

For PNNL, EERE arrived at an overall score of "Outstanding" for two Performance Measures, namely "Relevance to DOE Missions and National Needs" and "Success In Constructing and Operating Research Facilities". EERE rated the other two Performance Measures, namely "Quality of Science and Technology" and "Effectiveness and Efficiency of Research Program Management" as "Excellent." The table shows the scores awarded by reporting Program.

PROGRAM	FY 2004 OBLIGATIONS AT PNNL AS OF 8/31/2004 (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	4,241	Outstanding	Outstanding	Excellent	Not Rated
BUILDING TECHNOLOGIES PROGRAM	4,907	Excellent	Outstanding	Excellent	Not Rated
FEDERAL ENERGY MANAGEMENT PROGRAM	2,569	Excellent	Excellent	Excellent	Not Rated
FREEDOMCAR AND VEHICLE TECHNOLOGIES PROGRAM	7,158	Outstanding	Outstanding	Outstanding	Outstanding
HYDROGEN, FUEL CELLS AND INFRASTRUCTURE TECHNOLOGIES PROGRAM	2,978	Excellent	Excellent	Excellent	Not Rated
INDUSTRIAL TECHNOLOGIES PROGRAM	1,524	Excellent	Excellent	Excellent	Not Rated
WEATHERIZATION AND INTERGOVERNMENTAL PROGRAM	3,647	Excellent	Outstanding	Excellent	Not Rated
WIND AND HYDROPOWER TECHNOLOGIES PROGRAM	1,175	Outstanding	Outstanding	Excellent	Not Rated
TOTAL	**$28,199**	**Excellent**	**Outstanding**	**Excellent**	**Outstanding**

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, 2003 through September 30, 2004, 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 APerformance Measures@ for evaluating the success of science and technology at PNNL. Under each performance measure, the evaluators received Afactors@ 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 2004 at PNNL as reported in the DOE Management Analysis Reporting System (MARS) report as of August 31, 2004.

Program	FY 2004 Obligations at PNNL as of 8/31/2004 (Thousands)
Biomass Program	4,241
Building Technologies Program	4,907
Federal Energy Management Program	2,569
FreedomCAR and Vehicle Technologies Program	7,158
Hydrogen, Fuel Cells and Infrastructure Technologies Program	2,978
Industrial Technologies Program	1,524
Weatherization and Intergovernmental Program	3,647
Wind and Hydropower Technologies Program	1,175
TOTAL	$28,199

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

a	b	c	d	e
Program	Adjectival Rating	Numerical Score	FY 2004 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

EERE rated Battelle Memorial Institute's performance for Fiscal Year 2004 as "Outstanding" for two Performance Measures, namely, "Relevance to DOE Missions and National Needs" and "Success In Constructing And Operating Research Facilities". EERE rated "Quality of Science and Technology," and "Effectiveness and Efficiency of Research Program Management" as "Excellent." 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 2004 OBLIGATIONS AT PNNL AS OF 8/31/2004 (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	4,241	Outstanding	Outstanding	Excellent	Not Rated
BUILDING TECHNOLOGIES PROGRAM	4,907	Excellent	Outstanding	Excellent	Not Rated
FEDERAL ENERGY MANAGEMENT PROGRAM	2,569	Excellent	Excellent	Excellent	Not Rated
FREEDOMCAR AND VEHICLE TECHNOLOGIES PROGRAM	7,158	Outstanding	Outstanding	Outstanding	Outstanding
HYDROGEN, FUEL CELLS AND INFRASTRUCTURE TECHNOLOGIES PROGRAM	2,978	Excellent	Excellent	Excellent	Not Rated
INDUSTRIAL TECHNOLOGIES PROGRAM	1,524	Excellent	Excellent	Excellent	Not Rated
WEATHERIZATION AND INTERGOVERNMENTAL PROGRAM	3,647	Excellent	Outstanding	Excellent	Not Rated
WIND AND HYDROPOWER TECHNOLOGIES PROGRAM	1,175	Outstanding	Outstanding	Excellent	Not Rated
TOTAL	**$28,199**	**Excellent**	**Outstanding**	**Excellent**	**Outstanding**

Performance Measure Outcomes by Numerical Score					
Program	FY 2004 Obligations at PNNL as of 8/31/2004 (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	4,241	4	4	3	Not Rated
Building Technologies Program	4,907	3	4	3	Not Rated
Federal Energy Management Program	2,569	3	3	3	Not Rated
FreedomCAR and Vehicle Technologies Program	7,158	4	4	4	4
Hydrogen, Fuel Cells and Infrastructure Technologies Program	2,978	3	3	3	Not Rated
Industrial Technologies Program	1,524	3	3	3	Not Rated
Weatherization and Intergovernmental Program	3,647	3	4	3	Not Rated
Wind and Hydropower Technologies Program	1,175	4	4	3	Not Rated
TOTAL	**$28,199**	**3.45**	**3.78**	**3.25**	**4.00**

Selected Examples of Achievements and Deficiencies

EERE, in the order of each PNNL Performance Measure, has highlighted selected major achievements recognized throughout FY 2004; it also addresses certain areas, within the PNNL R&D environment warranting management attention

PERFORMANCE MEASURE 1: QUALITY OF SCIENCE AND TECHNOLOGY

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

SIGNIFICANT ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- During the past year, General Motors publicly announced the commercialization of Quick Plastic Forming, an adaptation of superplastic forming technology that PNNL and EERE helped initiate with GM during the 1990s. In fiscal year 2004, PNNL continued developing innovative advanced lightweight materials and manufacturing technologies for automotive and heavy truck applications. Accomplishments in this area include:
  - The successful conclusion of a multi-year project on joining of dissimilar metals with USCAR partners Ford, DaimlerChrysler and General Motors. This project developed modeling and prediction tools for lightweight welded and riveted structures and provided the USCAR partners with a web-based predictive tool and property database.
  - In conjunction with heavy truck manufacture PACCAR, PNNL developed and has prototyped an advanced hybrid-material truck door system that reduces the weight of a Class 8 truck door system by over 35 percent, while reducing tooling and assembly cost
  - In collaboration with DaimlerChrysler, Magna International and Alcoa, a new aluminum-intensive frame design was developed in fiscal year 2004 that reduces the weight of the 2005 Dodge Durango frame by 40 percent or approximately 200 lbs. The "Next Generation Frame" design incorporates advanced materials and manufacturing technologies, and meets all DaimlerChrysler crash and safety performance goals.
  - Advanced, low-cost metal matrix composite (MMC) materials and processing technologies were demonstrated for a lightweight automotive brake system in conjunction with USCAR and Visteon. The new MMC brake rotor is the first MMC design to pass all of Visteons' critical dynamometer tests, qualifying it for use in front brake applications.

- PNNL has consistently maintained a record of innovation and discovery. In prior years the lab has won and been nominated for FLC and R&D 100 awards in the area of diesel aftertreatment. In fiscal year 2004, PNNL led projects and continued developing advanced after-treatment technologies to reduce diesel emissions, an essential step toward the adoption of highly efficient diesel engines for trucks, trains and passenger cars. Accomplishments in this area include:
  - The successful conclusion of a multi-year non-thermal plasma catalysis technology project with Caterpillar. This project demonstrated that reformer-assisted catalysis is a viable approach and elucidated the important role of partial oxidation in improving reductant effectiveness.
  - Extending a cooperative program with Caterpillar to develop new materials for sulfur traps. This continuation was a direct result of the outstanding progress from the previous year's effort, which produced a new class of materials that surpassed all initial project targets for sulfur capacity.
  - Being recognized by an OFCVT award for playing an instrumental role in forming collaborative efforts with Oak Ridge National Laboratory in several areas of diesel emissions aftertreatment.

- Initiating a significant new research program supervised by and industry consortium to develop fundamental understandings of the reaction mechanisms of NO_x adsorber catalysis.
- Initiating a large new research program with Caterpillar to develop aftertreatment systems for future advanced combustion diesel engines. The specific objective being the low temperature oxidation of hydrocarbons and carbon monoxide.

Biomass Program

- PNNL consistently partners with industry leaders to develop and advance technology within the mission of the Biomass Program. The PNNL partnership with Cargill and Codexis pairs a leading agricultural industry (Cargill) with a leading in advance DNA evolution technology with the researchers within the national lab to develop 3-hydroxypropionic acid into a useful chemical intermediate for use in the product of acrylamide. The resulting work has yielded two patents for Battelle in the past quarter. In addition, PNNL is partnered with ADM to develop conversion technologies for high value chemicals and oils from corn fiber, which is a currently underutilized feedstock. The past quarter has lead to a "Go" decision by the industrial partner to pursue scale-up of the technology developed by the multidisciplinary team. If scale up proves successful, this project stands a good chance of being the first commercial production of a high value chemical from corn fiber.

Building Technologies Program

- PNNL successfully supported the DOE code change proposal that completely revamped the 2004 Supplement to the 2003 IECC. This revision of the IECC was the most comprehensive in the history of DOE code-related activities and was done with a broad based coalition of building industry and code affiliated organizations.

- PNNL successfully supported the DOE code change proposal to change the primary energy efficiency requirement of the National Fire Protection Association standard for the building code on Manufactured Housing. With their technical analysis of construction techniques, materials, and economics, PNNL staff demonstrated expertise to builders, building component suppliers and code officials to gain trust that was necessary for their agreement to the change.

- The commercial buildings code group initially developed the new DOE proposed climate maps, which formed the basis for the climate map for the residential code change proposal and the revision of the Building America climate zones. This activity streamlined the determination of energy efficiency requirements across the same climate zones. Further, PNNL significantly and successfully collaborated towards the formation and development of the Advanced Energy Design Guide, which supports beyond code scenarios, activities and requirements for commercial building types.

- PNNL successfully completed the Lighting for Tomorrow design competition to advance design and production of lighting fixtures for compact fluorescent lamps. The laboratory established partnerships with the American Lighting Association and Consortium for Energy Efficiency critical to this activity. Though developed to introduce new, energy efficient to the U.S., the competition drew international attention. Also, PNNL concluded a solicitation for pin-based recessed can

lighting and adapted the process for technology introduction to address the problematic thermodynamics of insulated recessed can lighting with the manufacturing community and developed complementary approaches with states such as California. PNNL also concluded the technology procurement for unitary roof-top air conditioners with a demonstration project at Fort Gordon, Georgia; results of the demonstration are now being analyzed

Weatherization and Intergovernmental Program

- Added a Building Energy Codes Resource Center with multidisciplinary building technology energy codes information to the www.energycodes.gov web site, which is a major source of communication and information exchange on building energy codes.

- Added an On-line permitting feature to the REScheck and COMcheck web-based software tools, which streamlines the regulatory process by enabling submission of compliance reports on-line to building departments.

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 Technologies Program

- A new six-degrees-of-freedom sensor fish device was designed and tested with broad application to biological performance and engineering efficiency of advanced turbines. Two technology assessments were completed for release to industry: 1) technologies for evaluating fish passage through turbines, and 2) turbine imaging technology assessment.

NOTABLE ACHIEVEMENTS:

Biomass Program

- PNNL has secured two CRADA Partners willing to cost share the further development of an economically viable, aqueous phase catalytic process for the conversion of sorbitol (derived via hydrogenation of glucose) to produce polyols. The major polyols of interest are ethylene glycol, propylene glycol, and glycerol with a specific target of propylene glycol. Glycerol recycle to maximize propylene glycol yield is also an objective, which has been noted by these new industrial partners.

Industrial Technologies Program

- 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.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

- PNNL's 2 kWe microchannel steam reforming subsystem achieved a cold start in 12 seconds operating on benchmark gasoline. The projected startup time for a complete 50 kWe fuel processor is 60 seconds, consistent with the 2005 FreedomCAR target for cold start for an on-board fuel processor. The power density of the steam reformer is > 2300 We/L exceeding the 2010 FreedomCAR target for an on-board reformer. PNNL developed a highly effective absorber to remove odorants and hydrogen sulfide from natural gas. Residual sulfur levels were reduced to less than 150 parts per billion when operated at a gas hourly space velocity of 75,000. PNNL constructed and tested a high temperature microchannel recuperator and gas mixer for ANL's Fast-start fuel processor project.

- PNNL developed a reduced order model with spatial and temporal resolution for SOFC stacks that allows assessment of the state of the stack including electrochemical, flow, thermal, and structural aspects to provide control feedback for safe and efficient operation. PNNL also developed a dynamic model of an SOFC APU system for large trucks and control systems to utilize the SOFC efficiently for typical large truck hotel loads.

- PNNL is collaborating with the University of Illinois, Chicago regarding the development of the dynamic model and controls, Georgia Tech on vibration and shock modeling, PACCAR on measurement of real-life electrical loads and base excitation of the fuel cells, Delphi on testing of stacks, and GE on testing of controls.

- PNNL has initiated research for distributed reforming of bio-based renewable liquid fuels for hydrogen production based on liquid phase reforming of sugar alcohols and vapor phase reforming of ethanol. The work on this effort represented outstanding science and technical approach despite a very limited budget. The scientists demonstrated state of the art knowledge in these areas, utilized advanced combinatorial approaches and equipment, and made significant progress on the key issue of catalyst development

Federal Energy Management Program

- Commercialized Whole Building Diagnostics software tool.

- Updated O&M Best Practices Guide, used by more than 300 trainees.

- Consistently recognized as experts in ASHRAE

Wind and Hydropower Technologies Program

- Staff was invited to present eight technical papers at regional, national, and international conferences during FY2004. A paper that specified fish injury thresholds for high-shear environments was published in a peer-reviewed publication. Two papers were submitted to journals that summarize results of studies on mechanisms of injury and pressure data from dam spillways, respectively.

PNNL staff participated in a peer-review of the Hydro Program in March 2004.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES: None

PERFORMANCE MEASURE 2: RELEVANCE TO DOE MISSIONS AND NATIONAL NEEDS

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

SIGNIFICANT ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- PNNL is spearheading much of the metals and composites processing work that is key to achieving the FreedomCAR and 21CTP weight reduction goals for cars and trucks. The lab has acquired the skill mix and laboratory equipment to pursue developments, which if successful, will result in dramatic improvements in vehicle efficiency. The lab has also cultivated strong collaborations with the aluminum, trucking, and supplier industries, positioning its pre-competitive developments to make a rapid transition into commercial success.

- PNNL consistently meets or exceeds its annual performance goals. A significant example of this performance measure was illustrated in the thermoelectric project. The goal was to develop with Hi-Z a process for sputter depositing Si/SiGe and B4C/B9C large-area multilayered films by end of FY04. The process to deposit Si/SiGe and B4C/B9C multilayer films onto single crystal silicon substrates was successfully developed and demonstrated at PNNL over areas as large as 0.5m2. The high thermoelectric power factor of these multilayer films was equivalent to a thermoelectric figure of merit greater than 2, which is necessary for high efficiency thermoelectric conversion - for either waste heat recovery and power generation or cooling.

Biomass Program

- PNNL has provided excellent support in the development of the long term goals and mission of the Biomass Program. For the past 11 months, Todd Werpy has been detailed to the Program and has developed a multiyear technical plan (MYTP) for the products portion of the program. He brought with him his expertise in working with the industry most likely to be involved with biomass to products technologies. Using his resources at PNNL and a good working relationship with the National Renewable Energy Lab, Dr. Werpy completed an analytical study that identified the top 12 candidate chemical intermediates that should be pursued by the program. This study forms the basis for further identifying the technology pathways that hold the greatest potential. This data was used to develop the programmatic milestones and technical accomplishments needed to achieve success resulting in a roadmap for the MYTP. In addition, this work enabled the development of the 2004

products solicitation, which will result in funding of $5-10M worth of research toward achieving the goals of the program.

Building Technologies Program

- The PNNL market introduction program exhibited an outstanding ability to introduce advanced energy-efficient technologies on multiple fronts, evidenced by the Lighting for Tomorrow design competition and pin-based can recessed lighting solicitation.

Weatherization and Intergovernmental Program

- Completed outreach activities enabling budget goals to be met for state adoption of upgraded energy codes and training of architects, engineers and code officials in the upgrade State energy codes.

- Completed a report advising the International Finance Corporation on the creation of a $100 million energy-efficiency financial intervention fund for private sector investments in China. It is anticipated that IFC will proceed with this investment.

- Provided excellent technical analysis and research to support and advance the goals of Inventions and Innovation within the EERE mission. Activities have included energy savings calculations, determining completeness of technical results, market use and market data. PNNL served as reviewers for Inventions and Innovation pre-proposals under extraordinary and restrictive time limits, accomplished the review on time, and completed all activities.

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. Significant work was reported during the portfolio review meeting on friction stir welding (FSW) process simulation, microscopy, mechanical testing of welds, and environmental performance of welds, all of which contribute to advancement of the science required to develop the relatively new and advanced FSW technology.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

- The PNNL effort maps directly to EERE priorities, goals and objectives, and to the Office of Hydrogen, Fuel Cells and Infrastructure Technologies Multi-Year Program Plan. The effort has been reviewed and redirected, as needed each year to match the highest priority needs of the EERE, DOE and National programs that are consistent with the PNNL knowledge base, staff and experimental capabilities. GE and Caterpillar have expressed interest in the high level controller work and in the extension of the APU model to EPS, respectively.

Wind and Hydropower Technologies Program

- All project milestones relating to technical products were met. In addition, we achieved a 20%

reduction in un-costed project funds, when compared with FY2004, to exceed headquarter guidance in this area. Completed a cooperative 2 year study, co-funded by DOE EE/RE, Bonneville Power Administration and Idaho Power Company, to address how hydro project operations might be modified to manipulate intra-gravel temperatures of juvenile salmon.

NOTABLE ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- During the first quarter of fiscal year 2004, PNNL participated in USCAR/USAMP offsite reviews of selected FreedomCAR projects. The reviews included the Low-Cost Aluminum MMC, Joining of Dissimilar Metals, Electromagnetic Forming of Aluminum Sheet, and Thread Forming Fasteners in Net-Cast Holes. The offsite presentations are used to inform USCAR member company staff of emerging technologies and to provide a critical review of the USCAR directed projects. Presentation of project results and planned research were favorably received and provided OEM staff with a comprehensive view of new and emerging materials and manufacturing technologies.

- On May 18th, 19th, and 20th 2004, PNNL delivered review presentations on all six projects in the Advanced Combustion Engine program to DOE OFCVT. These presentations were given at an industry review meeting held at ANL. The feedback from the reviews was immediately and diligently implemented into the programs.

Biomass Program

- Advances in fungal genomics, funded by LDRD funding, has lead to the decision of the Biomass Program to develop this core capability. PNNL successful engaged industry to guide this core research and has developed a cost share scenario for further funding of core research. This is unique to the program as most cost share comes only in the later stages of technology development, when there is potential for commercialization. This effort will lead to strong pre-commercial relationship with industry and further the overall goals of the program.

Federal Energy Management Program

- Key member of Air Force Renewable Purchasing Strategy Development Team, which received Presidential Award for being the largest green power purchaser in the world.

Industrial Technologies Program

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

Hydrogen, Fuel Cells and Infrastructure Technologies Program

- The PNNL steam reforming system, consisting of a steam reforming reactor, water gas shift reactor, preferential oxidation reactor, sulfur management stage, heat exchangers, and vaporizers, meets or exceeds interim FreedomCAR technical targets for cold start, power density, specific power, transient response, turndown, and efficiency for an on-board fuel processor. After a thorough review of the overall national effort to develop an on-board fuel processor, the Office of Hydrogen, Fuel Cells and Infrastructure Technologies decided to discontinue R&D efforts.

Wind and Hydropower Technologies Program

- Developed a strategic plan to address common research goals of DOE and the U.S. Army Corps of Engineers. Successfully deployed the DOE-developed advanced sensor fish device at spillway, bypass, and hydroturbine sites for private and public utilities to evaluate severe hydraulic conditions and to facilitate safe passage of fish.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES: None

PERFORMANCE MEASURE 3: EFFECTIVENESS AND EFFICIENCY OF RESEARCH PROGRAM MANAGEMENT

EERE rates PNNL as AExcellent@ for "Effectiveness and Efficiency of Research Program Management."

SIGNIFICANT ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- PNNL has acted prudently in the management of its programs and has committed to meeting carryover funding targets through focused project management and reallocation of funds to new project areas. In addition to participating in the planning and direction of the automotive FreedomCAR program, PNNL continues to contribute to the 21 Century Truck Materials roadmap.

- PNNL has acted prudently in all aspects of financial management of its programs and has committed to ensuring the appropriate competencies of its personnel. This was evidenced in fiscal year 2004 by a strategic senior hire in the program area with extensive experience in program and project management and whose prior experiences were in the petroleum and diesel engine industries. In fiscal year 2004, PNNL's was instrumental in DOE's effort to implement the 21st Century Truck Initiative. PNNL led the development of technical needs and roadmap. PNNL staff consistently contributed to the OFCVT mission by participation in the Combustion and Emissions Control

Technical Roadmap for Light-Duty Powertrains, co-organizing the Invitational Workshop on Advanced Combustion and Fuels, the OFCVT annual offsite workshop, and the Diesel Engine Emission Reduction Workshop. In addition, PNNL is a continuing contributor to the multi-laboratory after-treatment program, the annual ACE Review, FreedomCAR Material program and the 21 Century Truck Materials roadmap.

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.

Building Technologies Program

- The PNNL program for market introduction of energy efficient technologies in buildings has exhibited successful development of partnerships, follow-through in soliciting, testing and demonstrating new technologies, and great adaptability to emerging circumstances in the introduction of new technologies to the marketplace.

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 Technologies Program

- Completed and delivered the Comparison of Blade—Strike Modeling Results with Empirical Data report documenting the relationship between blade strike and injury/mortality of juvenile salmon as a function of turbine operations, blade geometry, and fish distance from the turbine hub. Published two other major technical reports that described advanced technology for evaluating fish passage and the theoretical basis for the new six-degree-of-freedom sensor fish design.

NOTABLE ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- PNNL staff published extensively in numerous peer reviewed journals, trade journals, and conference proceedings. PNNL provided annual and semi-annual technical reports on all active projects, and provided timely input and updates on major project milestones. Extensive efforts were initiated in fiscal years 2004 and 2004 to establish useful and productive collaborations with researchers at ORNL. These collaborative efforts include the development of proposals for the predictive modeling of polymer composites (PNNL/ORNL/APC), a joint effort in friction stir

welding and processing of heavy vehicle materials, development of chassis attachment methods for heavy vehicle frames, survey of low-cost tooling needs for the U.S. heavy vehicle manufacturing companies, and a joint proposal for friction stir spot welding of advanced high strength steels for automotive applications. Through these collaborative efforts, it is believed that PNNL (and ORNL) bring to OFCVT high-value research capabilities that exceed what the laboratories can bring individually.

- PNNL staff published extensively in numerous peer reviewed journals, trade journals, and conference proceedings. PNNL implemented a monthly reporting system to the office, which presented project financial status, project technical updates and highlights in a consistent and standardized format. PNNL received the 2004 Advanced Combustion Engine R&D Special Recognition award for technical excellence and admirable collegiality in inter-laboratory collaborative research.

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. Two patents have been issued for work conducted this year.

Building Technologies Program

- PNNL maintains low uncosted balances.

- With regard to the task for the manufactured housing code, PNNL did a good job in achieving the objective within the budgeted cost and schedule. PNNL adequately awarded and monitored subcontract work. PNNL kept the EERE program manager informed of project progress as needed.

Federal Energy Management Program

- Provided technical content for Technology Bulletins.

- Provided technical content for FEMP's Annual Conference.

Industrial Technologies Program

- PNNL is very helpful in communication and cooperation with the funding office and in contributing to ITPP planning efforts through studies and analyses.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

- Based on guidance from the DOE technology development manager, PNNL established research and development activities and identified clear priorities, performance measures and key milestones. PNNL conducted its research activities according to the Annual Operating Plan. The work is

reviewed internally with both line and product line management. The project team meets weekly to discuss progress and assess status against established goals. PNNL met all milestones on time, initiated, and awarded a subcontract with the University of Illinois at Chicago within 1 month. PNNL submitted monthly progress reports to the DOE program manager and presented its technical progress and results at the annual review meeting for the DOE Fuel Cells for Transportation/Fuels for Fuel Cells Program, which was held in May 2004. In FY04, PNNL received $500K and spent $455K by the end of August 2004. The laboratory is acting prudently to maintain low uncosted balances.

- The following patent applications have been filed:

  - TeGrotenhuis WE, Brooks KP, Fischer CM, King DL, and Whyatt GA. Patent Application 60/599,718 "Gas Shift Reactor for Reformate Cleanup." Filed 8/5/2004.

  - Whyatt GA, Brooks KP, Fischer CM, King DL, TeGrotenhuis WE, and Wegeng RS. Patent Application 60/546,107 "Onboard Microchannel Steam Reformation." Filed 2/18/2004.

  - TeGrotenhuis WE, Stenkamp VS, and Whyatt GA. Patent Application 09/588,871 "Microsystem Capillary Separations." Filed 12/23/2004.

- The following publications and presentations have been published/given:

  - Ward TeGrotenhuis, KP Brooks, JM Davis, CM Fischer, D. King, LR Pederson, VS Stenkamp, RS Wegeng, and GA Whyatt, "Progress in Developing A Microchannel-Based Fuel Processor for Automotive PEM Fuel Cell Power Systems, IMRET 7, 7th International Conference on Microreaction Technology, September 7-10, 2004.

  - DL King, KP Brooks, CM Fischer, LR Pederson, GC Rawlings,VS Stenkamp, WE TeGrotenhuis, RS Wegeng, and GA Whyatt, "Fuel Reformation: Catalyst Requirements in Microchannel Architectures," Microreaction Technology and Process Intensification ACS National Meeting, September 8, 2004.

  - KP Brooks, JM Davis, CM Fischer, DL King, LR Pederson, GC Rawlings, VS Stenkamp, WE TeGrotenhuis, RS Wegeng, and GA Whyatt. "Fuel Reformation: Microchannel Reactor Design," Microreaction Technology and Process Intensification ACS National Meeting, September 8, 2004.

  - WE TeGrotenhuis, KP Brooks, RA Dagle, JM Davis, J Holladay, MJ Kapadia, DL King, LR Pederson, BQ Roberts, VS Stenkamp, RS Wegeng, "Microchannel Reformate Cleanup: Water-Gas Shift and Preferential Oxidation," Micro-Nano Breakthrough Conference, July 28-29,2004.

  - GA Whyatt, CM Fischer, and JM Davis, "Development of a Rapid Start On-Board Automotive Steam Reformer. In AIChE Spring National Meeting, April 25-29, 2004, New Orleans, LA.

  - M.A. Khaleel and J.R. Selman, "Chapter 11 – Cell, Stack and System Modeling" in High

Temperature Solid Oxide Fuel Cells – Fundamentals, Design and Applications (ISBN 1085617-387-9), pp 293-331

- M.A. Khaleel, et al., 2004, "A Finite Element Analysis Modeling Tool for Solid Oxide Fuel Cell Development," Journal of Power Source, Vol.130, pp 136-148.

- M. A. Khaleel, D.R. Rector, Z. Lin and K. Recknagle, 2004, "Multiscale Electrochemistry Modeling of Solid Oxide Fuel Cells" International Journal of Multiscale Computational Engineering, in press.

- PNNL was invited to write a book chapter on modeling of SOFC and submitting an invited paper in the special issue on Multiscale Transport Phenomena of the International Journal of Multiscale Computational Engineering.

Weatherization and Intergovernmental Program

- Instrumental in planning, organizing, and facilitating the 2004 National Workshop on State Building Energy Codes which provided a critical venue for groups involved in advocacy, adoption, implementation, enforcement, and use of building energy codes to learn about a wide variety of energy codes related topics and to network with peers from across the country.

- Has successfully targeted and reduced uncosted balances.

- Closely monitors performance and consistently provides timely recommendations and supporting rational for alternative actions when required.

- Consistently provided excellent research on Inventions and Innovation to determine total market in terms of energy use, number of units in service, potential number of units, and other technical/market specification input for use in GPRA and PART analysis.

- Provided timely and complete information on all Inventions and Innovation awardees including historical and current energy savings, contacts, job formation, sales, and geographical distribution of results.

Wind and Hydropower Technologies Program

- Organized a national symposium focusing on new developments in hydropower turbines for enhancing environmental performance.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES:

Building Technologies Program

- Results of the ambient power study were not received in time to make decisions about continued ambient work in '05. Marketing partners and plans for the wireless sensors and controls work are lacking.

PERFORMANCE MEASURE 4: SUCCESS IN CONSTRUCTING AND OPERATING RESEARCH FACILITIES

EERE rates PNNL as AOutstanding@ for "Success in Constructing and Operating Research Facilities."

SIGNIFICANT ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- During fiscal year, 2004 PNNL significantly upgraded the laboratories capabilities in materials development, processing, and manufacturing technologies through the laboratory-funded development of the Process Development Laboratory (PDLW). This included moving and relocation of valuable research equipment from the DOE/PNNL 300 Area laboratories (which are scheduled for decommissioning) to a modern highbay facility in the North Richland Complex. In addition, PNNL purchased new equipment including two induction heating power supplies to maintain advanced casting and thermal processing capabilities. Remaining 300 Area laboratory capabilities (326 Building) have been thoroughly modernized over the past 3 years, and additional research equipment and instrumentation is being purchased for the laboratories using PNNL funding.

- PNNL has upgraded the capabilities of the Exhaust Chemistry & Aerosol Research Laboratory (formerly known as the Emissions Characterization and Aerosol Laboratory) in support the DOE/OFCVT Engine and Emission-control Technologies Program. This facility has advanced gas phase and particulate characterization capabilities coupled to diesel engine dynomometers (one chassis dyno with a VW Jetta TDI and an engine dyno with a Cummins 5.9 ltr ISB). This unique facility allows for the realistic testing of diesel aftertreatment and particulate filtration systems and allows PNNL to validate micro and bench scale results under "real world" conditions. In fiscal year 2004, a new automotive FTIR system was acquired through internal laboratory investments as well as a unique particulate filtration analysis system.

NOTABLE ACHIEVEMENTS:

FreedomCAR and Vehicle Technologies Program

- During the third quarter of fiscal year 2004, PNNL initiated funding (LDRD) of research to establish capabilities in the area of natural fiber reinforced composites and bio-derived polymers. This investment includes development of specialized laboratory capabilities for applying chemical and thermal surface treatments to natural fibers and methods for evaluating moisture absorption and fiber/polymer interface behavior.

- PNNL has successfully commissioned a new catalyst flow reactor system within the Environmental Molecular Science Laboratory specifically designed to support development of advanced catalysis systems for diesel engines.

SIGNIFICANT DEFICIENCIES: None

NOTABLE DEFICIENCIES: None

GUIDANCE FOR THE NEXT PERFORMANCE PERIOD

PERFORMANCE EXPECTATIONS FOR THE NATIONAL LABORATORY FOR THE NEXT PERFORMANCE PERIOD:

FreedomCAR and Vehicle Technologies Program

- Continue to make progress in reducing uncosted balances.

- Maintain the high performance standards.

Biomass Program

- Continue to foster strong industrial relationships, both in CRADAs and as guides to core research and development.

- 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.

Industrial Technologies Program

- Continue outstanding progress in all ITP related activities. PNNL should continue to improve in managing and tracking uncosted balances.

Hydrogen, Fuel Cells and Infrastructure Technologies Program

- Annual National Laboratory Review: One or more technical presentations will be made at the annual review meeting for the DOE Fuel Cells for Transportation/Fuels for Fuel Cells Program, to be held in May 2005.

- Monthly Reports: Monthly spending reports will be provided by the 15th of each month to the DOE Fuel Cell Program Manager.

- Annual Progress Report: A written progress report will be provided for input to the DOE Fuel Cells for Transportation/Fuels for Fuel Cells Program Annual Progress Report, due in June 2005.

- Annual Operating Plan: The Annual Operating Plan for FY06 will be provided in draft form for review by the DOE Fuel Cells for Transportation/Fuels for Fuel Cells Program Manager in July 2005.

- Complete a modeling study to readjust microchannel steam reforming flow sheets for efficient reformation of natural gas, to include membrane separation.

- Demonstrate natural gas reformation near conditions of temperature, pressure, flow rates and steam to carbon ratio identified in modeling studies to lead to optimum efficiency.

- Integrate a metal-based hydrogen membrane separator with a microchannel steam reformer and sulfur absorber at approximately a 5 kg hydrogen/day scale.

- Complete a 1000-hour durability test for a microchannel natural gas steam reformer, sulfur absorber, and membrane separator.

INPUT ON CONCERNS FOR LABORATORY MANAGEMENT:

Biomass Program

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

Appendix IV

Office of Fossil Energy Evaluation

From: Freeman, William [WILLIAM.FREEMAN@HQ.DOE.GOV]
Sent: Monday, October 18, 2004 8:21 AM
To: Kruger, Paul
Cc: Williams, Kim; Rudins, George; Der, Victor
Subject: Consolidated Program Office Evaluation of PNNL

Dear Mr. Kruger:

Attached is the Fossil Energy year-end performance evaluation of Battelle for the management and operation of the Pacific Northwest National Laboratory for Fiscal Year 2004.

If you have any questions regarding this evaluation please contact me on (301) 903-2657.

Bill Freeman

Consolidated Program Office Evaluation of PNNL

For Fiscal Year 2004

Program Office: Fossil Energy

Program Area	Value Points Assigned to Each Objective				Overall Program Score	Overall Program Weighted Average
	Research Quality	Relevance to Mission	Research Facilities	Research Management		
SECA Program Support ($5,962,000/45.5%)	3.8	3.8	3.8	3.8	3.8	1.729
HiTEC ($3,147,000/24%)	3.8	3.8	3.8	3.8	3.8	.912
ZERT ($2,970,000/22.6%)	3.8	3.8	3.8	3.8	3.8	.859
Sequestration Research $590,000/4.5%)	3.8	3.8	3.8	3.8	3.8	.171
RCP Regional Carbon Partnerships ($450,000/3.4%)	3.8	3.8	3.8	3.8	3.8	.129
Overall Value Points Earned						3.800

$13,119,000

Appendix V

Department of Homeland Security Evaluation

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

OCT 25 2004

Homeland Security

Paul W. Kruger, Manager
Department of Energy
Pacific Northwest Site Office
P.O. Box 350, K8-50
Richland, WA 99352

Dear Mr. Kruger:

I am very grateful for the opportunity to provide you an assessment of the performance of PNNL on the tasks and assignments performed by PNNL for DHS Science and Technology Directorate (S&T). This is the first opportunity in which DHS has been requested to provide, as a partner with DOE, input on performance measures tied to a contract between DOE and one of the national laboratories.

Three of the elements below have been evaluated by S&T's Office of Research and Development (ORD). Without exception, PNNL has performed outstanding. A fourth element was evaluated by the DHS Customs and Border Protection office that is responsible for the oversight of the Radiological Portal Monitoring Project and is attached for your review.

The FY2004 DHS performance metrics and associated DHS evaluation follows:

1.1.3: Customer Evaluation of Quality of Science and Technology - Homeland Security Initiative

1) Separations and Smart Materials = 4 points
2) Analysis and Information Discovery = 4 points
3) Outreach and stature-building = 2 points
4) Science and Technology Road Map = 1 point

Total: 11 points (Outstanding)

2.5: DHS Evaluation of Relevance to DOE Missions and National Needs - Support in development of the Execution Plan for the FY2004 Radiological/Nuclear Countermeasures Portfolio and the TVTA Portfolio

Rated: Outstanding

4.2.1: Deliver Quality Project deliverables on time and budget (Radiation Portal Monitoring Project – CBP)

Rating by CBP: Outstanding

4.3: Customer Evaluation of Effectiveness and Efficiency of Research Program Management

Rated: Outstanding

As we discussed in our meeting on September 16 in my office, PNNL has been an outstanding contractor to S&T. They have consistently responded to all urgent requests for support on an as needed basis and have been extremely reliable in performing all technical program tasks on time and on schedule. They are a valued strategic partner to S&T.

Sincerely,

Maureen I. McCarthy, PhD
Director, Office of Research and Development
Science and Technology Directorate
Department of Homeland Security

cc: Lance Mamiya
Dave Biancosino

FY 2004 Year End Performance Evaluation
Pacific Northwest National Laboratory (PNNL) and the
US Customs and Border Protection Radiation Portal Monitor Program

PNNL is the primary technical agent for the Customs and Border Protection (CBP) RPM Project (RPMP). In this role, they have successfully provided expert technical assistance and guidance at all field sites where site surveys or deployments have occurred, and have provided in-house technical experts / council at CBP and within DHS. PNNL was quick to understand and respect CBP's dual mission of law enforcement and facilitation of international commerce. Working within these parameters, they developed a technical approach very suitable for implementation in the Customs inspection environment. Many technical problems needed to be identified and solved in order to achieve success. The staff at PNNL continues to do an excellent job of identifying, resolving and implementing solutions to the various needs of the RPM project. PNNL routinely operates autonomously in this respect, pausing only to seek approval of solutions prior to implementation.

The degree of commitment and resolve of the staff at PNNL is excellent. Their efforts have led to industry-wide product improvements that support CBP's mission. Their approach to problem solving is innovative when necessary but keenly focused on the implementation of a scientific solution in a practical fashion. The staff on the RPM project clearly recognizes the need to use commercial solutions whenever available. Only when no such solution can be found do they resort to a development effort. While some might consider this a lack of innovation, to the contrary, in an operational environment it is essential that technology be available for repair or replacement quickly.

PNNL has many areas of technical expertise and a remarkable ability to quickly and successfully insert technological solutions into a long-established operational environment. As an example, the first RPM systems were deployed within three weeks of initiation of deployment activities at the busiest land border crossing on the northern border. Upon completion, they rapidly assembled a team to train and support the initial operation of this system. Ultimately, their responsiveness to our needs enabled the successful introduction of radiation measurement systems to front line Customs inspectors. Their staff has spent literally thousands of man-days at Customs facilities over the past 12 months and the commitment to CPB's mission is exemplary.

The RPM project has been a very fast-paced and dynamic project. Starting as only a consulting effort, the decision was made to have PNNL migrate their efforts from pure consulting to RPM deployment. In the end, PNNL has risen to the challenge of supporting CBP's effort to rapidly deploy RPM systems nationwide as dictated by a critical national security situation. They have simultaneously executed a project management and reporting structure suitable to manage a $500M project. For CBP, it would have been difficult, if not impossible, to find a contractor that could bring the broad degree of capability to bear against this problem while tolerating the financial uncertainty that existed at the beginning of the project. As the project matures, PNNL continues to perform admirably.

Overall Evaluation: **OUTSTANDING**

Appendix VI

Office of Environmental Management Evaluation

Consolidated Program Office Evaluation of PNNL for Fiscal Year 2004 by Outcome Scores

Program Office: EM - Richland Operations Office & Office of River Protection

The following table provides a rollup of the RL and ORP evaluation scores for each of the Outcomes measured.

Program Area	Value Points Assigned to Each Objective			
	Research Quality	Relevance to Mission	Research Facilities	Research Management
Richland Operations Office (RL)				
PNNL Facility Transition (Weight 34.59%)	3.2 (1.107)	3.6 (1.245)	N/A	3.8 (1.314)
Public Safety and Resource Protection (Weight 14.25%)	2.7 (0.385)	2.5 (0.356)	N/A	2.3 (0.328)
Groundwater Remediation and Closure Assessment (Weight 38.47%)	4.0 (1.539)	3.8 (1.462)	N/A	3.0 (1.154)
Solid Waste EIS (Weight 2.35%)	3.3 (0.078)	3.9 (0.092)	N/A	3.3 (0.078)
PNNL Support to RL (Life cycle model, and EM-50 support work) (Weight 7.73%)	3.5 (0.271)	3.0 (0.232)	N/A	3.5 (0.271)
Office of River Protection (ORP)				
WTP Technical and Scientific Support (Weight 0.97%)	3.6 (0.035)	3.6 (0.035)	N/A	3.6 (0.035)
WTP Seismic Support Weight (1.20%)	3.6 (0.043)	3.6 (0.043)	N/A	3.0 (0.036)
Technical/Policy Issue Resolution for Site Integration Weight (0.44%)	3.7 (0.016)	4.0 (0.018)	N/A	3.8 (0.017)
Overall Value Points Earned (rounded to nearest hundredth)	3.47	3.48	N/A	3.23

RL-F-1325.6 (02/98)

United States Government **Department of Energy**

Richland Operations Office

memorandum

DATE: NOV 18 2004

REPLY TO ATTN OF: OEC:EMB/05-OEC-0004

SUBJECT: YEAR-END PERFORMANCE EVALUATION OF BATTELLE FOR THE MANAGEMENT AND OPERATION OF THE PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL) FOR FISCAL YEAR 2004

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

In response to your memorandum of September 27, 2004, same subject, RL is pleased to provide our evaluation of PNNL support to RL programs and activities under Office of Environmental Management cognizance. The evaluation, including a brief written evaluation and a weighted numerical evaluation, is attached. An electronic version of this information has been provided to David Biancosino of your staff.

If you have any questions regarding this information, please contact me, or your staff may contact Al Hawkins, OEC, on 373-9936 or Elizabeth Bowers, of his staff, on 373-9276.

Keith A. Klein
Manager

Attachment

Attachment

YEAR-END PERFORMANCE EVALUATION OF BATTELLE FOR THE MANAGEMENT AND OPERATION OF THE PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL) FOR FISCAL YEAR (FY) 2004

Facility Transition

A notable achievement was the reduction in incurred dose using robotic machinery in the cleanout of the Shielded Analytical Laboratory hot cells. PNNL's use of this robot (secured as surplus from another site and modified by PNNL), and work planning according to ALARA principles, reduced exposure from an estimated 37,000 millirem to an actual 715 millirem.

PNNL management and staff awareness of DOE intentions and goals was outstanding. For example, in inventory removal PNNL was aggressive in shipping material out of the 325 building, working closely with their counterparts in other organizations and vendors to ensure the prompt disposition of material. In addition, in Facilities Pre-deactivation, PNNL worked effectively with the Richland Operations Office (RL) to ensure that actions taken respecting the future River Corridor Contract transition were executed smoothly.

PNNL management maintained a professional relationship with the customer and executed work scope with efficiency and innovation. In many cases, innovative approaches delivered work scope under cost and to a tight, and sometimes accelerated, schedule. Management and staff demonstrated initiative in working with organizations both onsite and offsite to plan and facilitate waste material disposition on schedule.

Interactions among the project manager and subproject managers were professional. Issues were readily raised and freely discussed, and response actions were well thought out. Project risk management was evident as demonstrated by several instances were alternative approaches were identified as obstacles were encountered.

RL observed two opportunities for improvement PNNL should consider. The first related to unexpected contaminants. Contaminants are not unusual for facilities of this type and greater characterization may be warranted. (RL notes management response actions were prompt and appropriate.) Efforts to obtain better characterization data for facilities may provide useful data for current facility operations and future facility disposition.

The second relates to year end schedule variance. There were many contributors to this variance, some outside project manager control. However, better understanding the contributors to this variance may benefit future work planning.

Public Safety and Resource Protection Program (PS&RPP)

Overall, PS&RPP did a credible job providing technical support to DOE during the last

year. Work was performed in a timely manner; deliverables were on time, and, with a few exceptions, quality was adequate. Safety was always first and there were few overall deficiencies.

The Hanford Site National Environmental Policy Act (NEPA) Characterization Report was prepared and issued for draft review on schedule, comment resolution was handled promptly and professionally, and the final report was published and issued on schedule. The result was a high quality update to the site NEPA Characterization. However, there were some cultural resource program documents prepared for the support of RL projects which needed a more thorough review before submittal to RL.

The PS&RPP did a good job conducting EM related work and sticking to the EM mission, as well as meeting critical time frames for deliverables (biological and cultural reviews and meteorological information) so that decommissioning projects were not delayed. The Hanford Site NEPA Characterization Report continues to be the standard site reference for all NEPA, SEPA, and CERCLA documentation prepared to support the EM mission at Hanford. The five Project Managers for the PS&RPP did a good job in managing the projects, with a few exceptions. The managers conducted themselves professionally at all times, were articulate in the areas they manage, and were responsive to DOE needs. The cultural resource program manager did a good job providing worker education to the Hanford Site employees regarding cultural awareness, but improvement is needed in submitting detailed weekly reports on the projects.

Groundwater Remediation and Closure Assessment

The research quality by the PNNL staff consistently exceeded performance standards. The research conducted in the areas of Uranium migration, Infiltration and Recharge, Cs and Sr migration, Carbon Tetrachloride behavior in the subsurface and other studies was recognized by the regulators and the stakeholders as credible. These efforts contributed significantly to reducing uncertainty in analysis of remediation alternatives, which ultimately reduces overall lifecycle costs.

PNNL worked closely with DOE, other contractors and the regulators to make sure that research and basic data collection was appropriate and relevant to the cleanup mission at Hanford. The management team was flexible in meeting the changing expectations and budget constraints of the projects.

Solid Waste Environmental Impact Statement (HSW EIS)

PNNL produced, duplicated, and distributed the Final HSW EIS to over 1200 parties and drafted the Record of Decision for RL. They also supported RL in resolving HQ and Department of Justice issues and concerns on the Final HSW EIS leading up to its approval in January 2004.

Life Cycle Model (LCM)

PNNL was responsive to RL's needs for LCM support during the fiscal year, providing forward looking advice. The staff managed within their budget, communicated the budget status well, and was flexible in approaching LCM work when RL restricted funding in mid fiscal year. They also worked with RL to increase model utility and end user acceptance. RL believes that the LCM has the potential to become a cornerstone of RL's baseline management system.

Consolidated Program Office Evaluation of PNNL for Fiscal Year 2004

Program Office: ___DOE-RL_____

Program Area	Value Points Assigned to Each Objective				Overall Program Score	Weight	Weighted Score	Overall Program Weighted Average
	Research Quality	Relevance to Mission	Research Facilities	Research Management				
PNNL Facility Transition (Pressentin)	3.2	3.6	N/A	3.8	3.6	34.59%	1.245	
Public Safety and Resource Protection (Ward)	2.7	2.5	N/A	2.3	2.5	14.25%	0.356	
Groundwater Remediation and Closure Assessment (Morse)	4.0	3.8	N/A	3.0	3.6	38.47%	1.38	
Solid Waste EIS (Collins)	3.3	3.9	N/A	3.3	3.5	2.35%	0.092	
PNNL Support to RL (Life cycle model, and EM-50 support work) (Frey)	3.5	3.0	N/A	3.5	3.3	7.73%	0.255	
ORP			N/A			2.61%		
Overall Value Points Earned			N/A					

RL-675 (03/99)

United States Government **Department of Energy**

Office of River Protection

memorandum

DATE: OCT 2 1 2004

REPLY TO ATTN OF: OPA:JLS 04-OPA-127

SUBJECT: THE OFFICE OF RIVER PROTECTION (ORP) YEAR-END PERORMANCE EVALUATION OF BATTELLE FOR THE MANAGEMENT AND OPERATION OF THE PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL) FOR FISCAL YEAR (FY) 2004

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

ORP received support from PNNL in three primary areas: 1) Waste Treatment and Immobilization Plant (WTP) technical and scientific support; 2) WTP seismic support; and 3) technical/policy issue resolution for site integration.

The overall rating from ORP is outstanding. Attachment 1 is the quantitative FY 2004 year end assessment and Attachment 2 is a brief description highlighting significant strengths and/or weaknesses for each primary area.

If you have any questions, please contact me, or your staff my contact, Jennifer Sands, of my staff, (509) 373-4300.

Roy J. Schepens
Manager

Attachments

Attachment 1

Office of River Protection
Pacific Northwest National Laboratory FY 2004 Year End Assessment

	Value Points Assigned for Each Objective			Overall Program Score	Weight	Weighted Score	Overall Program Weighted Average
Program Area	Research Quality	Relevance to Mission	Research Management				
WTP Technical and Scientific Support	3.6	3.6	3.6	10.8	0.37	3.95	1.32
WTP Seismic Support	3.6	3.6	3	10.2	0.47	4.77	1.59
Technical/Policy Issue Resolution for Site Integration	3.7	4	3.8	11.5	0.17	1.91	0.64
Total					**1.00**		**3.55**

Supporting Narrative

WTP Technical and Scientific Support

The technical and scientific support for the Waste Treatment and Immobilization Plant (WTP) support was outstanding. Pacific Northwest National Laboratory (PNNL) performed technical reviews of contract deliverables and assisted in Design Oversights in support of WTP Engineering Division. PNNL staff brought nationally recognized expertise and credibility to these reviews, providing high quality and cutting edge technical depth to the Office of River Protection (ORP) reviews. PNNL has excellent resources in key technical areas, tapping into recent developments around the U.S. Department of Energy complex and private sector businesses. PNNL was able to provide in depth reviews, while keeping ORP's strategic goals in the forefront, delivering both technically and strategically sound results.

Technical/Policy Issue Resolution for Site Integration

In resolving technical and policy issues related to site wide integration, PNNL's performance was outstanding. Products were thorough and focused on the relevant points for management; at the leading edge of issues relevant to the ORP mission; and, were managed such that materials were focused on the need across the site.

WTP Seismic Support

The support ORP received in the seismic area was excellent. PNNL has the technical depth and used the best expertise across the complex to support this effort. PNNL was a little slow getting organized and as such there were some issues with cost and timeliness. These issues have subsequently been resolved.

Appendix VII

Office of Intelligence Evaluation

Department of Energy
Washington, DC 20585

DEC 10 2004

MEMORANDUM FOR: PAUL W. KRUGER
MANAGER
PACIFIC NORTHWEST SITE OFFICE

FROM; JOHN A. RUSSACK
DIRECTOR
OFFICE OF INTELLIGENCE

SUBJECT: PNNL FY 2004 Performance Evaluation

Attached is the DOE Office of Intelligence annual evaluation of the Pacific Northwest Laboratory – and its field intelligence element, in particular – for 2004. As I have said in the past, I am very pleased with the outstanding support PNNL has provided and continues to provide to this office. It is a pleasure doing business with this laboratory.

Attachment: IN-1 FY2004 Adjectival Evaluation of PNNL Performance

cc: Bob McLeod
Pacific Northwest Site Office

FY 2004 ANNUAL PERFORMANCE EVALUATION
PACIFIC NORTHWEST NATIONAL LABORATORY

The following constitutes the Department of Energy Office of Intelligence input to the PNNL annual evaluation process.

1. Quality of Technical Support: the measure of the ability of PNNL to apply sound science and technical expertise in direct support of both analytical and R&D efforts for the work supported by IN at PNNL, including IWFO programs/projects.

Response: **Rating OUTSTANDING.** The Pacific Northwest National Laboratory consistently provides the highest quality scientific and technical expertise to the Office of Intelligence in direct support to programs of national significance. The contribution of PNNL to our office in the area of nuclear research of support is enduring.

2. Relevance to the Missions: the measure of the creativeness and impact of PNNL efforts for a) providing high-quality, quick response technical intelligence products supporting DOE/IN nonproliferation intelligence mission and related needs of other senior policy makers; and b) performing research and development for special technologies supporting the IC that provide the U.S. government with leading-edge technologies and a distinct advantage in execution of its missions.

Response: **Rating OUTSTANDING.** PNNL remains critical to the mission of the Office of Intelligence through its unique nuclear expertise. PNNL's expertise in the field of nuclear materials security, in particular, has made an invaluable contribution to one high priority mission over the past few years: namely, support to NNSA programs seeking to characterize and then protect against the threat of hostile use of nuclear materials against U.S. interests.

3. Management Effectiveness: the measure of PNNL's performance in a) organizing, leading, implementing and completing IN analytical and R&D projects; and b) providing management leadership on operation of the Field Intelligence Element (FIE) and associated Sensitive Compartmented Information Facility (SCIF) within cost and time constraints.

Response: **Rating OUTSTANDING.** PNNL continues to exhibit outstanding professional business standards of conduct in the execution of its work and relations with the Office of Intelligence. The attention to detail in project execution results in timely completion of projects with a minimum of revision required. PNNL management remains willing to deal swiftly and effectively with any issues that surface in our working relations. We have come to expect honest discussion of issues and cooperative resolution of problems.

Appendix VIII

Office of Counterintelligence Evaluation

For information on the Office of Counterintelligence Evaluation please contact Heather Houk, Contract Specialist, OR, at 865-241-1961.

Appendix IX

Office of Electric Transmission and Distribution Evaluation

Office of Electric Transmission and Distribution
Performance Evaluation of Pacific Northwest National Laboratory

Performance Year: 2004
Program Obligations for the Performance Year: $1537 K

Summary Adjectival Ratings

Objective	Adjectival Rating
1. Research Quality	Outstanding
2. Relevance to OETD Mission	Outstanding
3. Research Program Management	Outstanding
4. Research Facilities (if applicable)	NA

- **Objective 1: Research Quality**

Significant Achievements: PNNL provided the leadership for the Transmission Reliability program in the activity area of Real Time Grid Reliability Management. PNNL led the Eastern Interconnection Phasor Project (EIPP) to accelerate the deployment of a synchronized phasor measurement network in the Eastern United States. This effort benefited greatly from PNNL's outstanding expertise in the hardware, software, analysis, and communication tools associated with phasor technology. PNNL provided outstanding contributions to the engineering community in the evaluation of blackout data following the August 14, 2003 blackout. PNNL took the initiative to assemble and evaluate time-synchronized data from Eastern utilities, and also represented DOE in key support roles at the North American Electric Reliability Council (NERC) offices to collect and archive blackout data. In addition, PNNL has been a driving force in the GridWise Initiative by leading outreach efforts and facilitating the formation and activities of the GridWise Architecture Council. This Council hopes to establish the requirements for the underlying communications and information infrastructure for the next generation electric delivery system.

Adjectival Rating: Outstanding – 3.8

- **Objective 2: Relevance to OETD Mission**

Significant Achievements: The GridWise Initiative is one of two new initiatives within OETD and represents the future R&D direction for the Office. It supports the Industries Vision of the future electric system as described in the *Grid 2030 Vision* document. Additionally, the Real Time Grid Reliability Management activity and the EIPP project in particular are high priority efforts in

the Department of Energy. The acceleration of this work is recommended in the National Transmission Grid Study and the August 14, 2004 Blackout Study Final Report.

Adjectival Rating: Outstanding - 4.0

Objective 3: Research Program Management

Significant Achievements: PNNL has met or exceeded all milestone for both the GridWise Initiative and the EIPP, which is a key activity tracked by the DOE Office of the CFO. PNNL is providing outstanding leadership in coordinating the task teams that are implementing the project, has set up and maintained outstanding outreach and communications mechanisms to expand the project throughout the Eastern Interconnection, and by virtue of its support activities and knowledge of the Western Interconnection, is supporting the collaboration between the Eastern and Western Interconnections to extend the successes of the EIPP to enable a more reliable North American electric grid.

Adjectival Rating: Outstanding – 3.8

- **Objective 4: Research Facilities**

Not Applicable