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**DOE Office of Science**



**FY 2008**

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

February 2009



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**I. OVERALL SUMMARY RATING/FEE**

Performance-Based Score and Adjectival Rating:

The basis for the evaluation of Battelle Memorial Institute’s (the Contractor) management and operations of the Pacific Northwest National Laboratory (the Laboratory) during FY 2008 centered on the Objectives found within the following Performance Goals:

- Provide for Efficient and Effective Mission Accomplishment (Quality, Productivity, Leadership, & Timeliness of Research and Development)
- Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Facilities
- Provide Effective and Efficient Science and Technology Research Project/Program Management
- Provide Sound and Competent Leadership and Stewardship of the Laboratory
- Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection
- Deliver Efficient, Effective and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)
- Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs
- Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems

Each Performance Goal was composed of two or more weighted Objectives and most Objectives had a set of performance measures or targets, which assisted in determining the Contractor’s overall performance in meeting that Objective. Each of the performance measures/targets identified significant activities, requirements, and/or milestones important to the success of the corresponding Objective.

Each Objective within a Goal is assigned a numerical score and graded. Each evaluation measured the degree of effectiveness and performance of the Contractor in meeting the Objective and is based on the Contractor’s success in meeting the set of Performance Measures/Targets identified for each Objective. Other performance information was also used to evaluate performance such as operational awareness (daily oversight) activities; “For Cause” reviews outside agency reviews (OIG, GAO, DCAA, etc.), the Contractor’s Self Evaluation Report, and the annual two-week review. If no performance measures/targets were present the description of the general expectations for the success of the Objective was utilized as the baseline for the determination of the effectiveness and performance of the Contractor in meeting the Objective(s) the corresponding Objective and in determining the score assigned.

The Goal score is then computed by multiplying the numerical score by the weight of each Objective within a Goal. These values are then added together to develop an overall score for each Goal. A set of tables is provided at the end of each Performance Goal section of this document to assist in the calculation of Objective scores to the Goal score. The raw score (rounded to the nearest hundredth) from each calculation is carried through to the next stage of the calculation process. The raw score for Science and Technology and Management and Operations will be rounded to the nearest tenth of a point for purposes of identifying the overall letter grade as indicated in Table B and for utilization in determining fee as discussed below.

Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0

**Table A. FY 2008 Contractor Letter Grade Scale**



Table B summarizes the PNSO evaluation of the contractor’s performance against the Goals and objectives contained in the FY 2008 Performance Evaluation and Measurement Plan (PEMP). Specific information regarding the Contractor’s performance in meeting each of the Goals and their corresponding Objectives is provided within Section II of this report.

S&T Performance Goal	Numerical Score	Letter Grade	Weight	Weighted Score	Total Score
1.0 Mission Accomplishment	4.0	A	58%	2.34	
2.0 Design, Fabrication, Construction and Operations of Facilities	3.8	A	6%	0.22	
3.0 Science and Technology Research Project/Program Management	4.0	A	36%	1.46	
<b>Total Score</b>					<b>4.0</b>
M&O Performance Goal	Numerical Score	Letter Grade	Weight	Weighted Score	Total Score
4.0 Leadership and Stewardship of the Laboratory	3.1	B+	20%	0.63	
5.0 Integrated Safety, Health, and Environmental Protection	3.2	B+	20%	0.63	
6.0 Business Systems	3.1	B+	20%	0.63	
7.0 Operating, Maintaining, and Renewing Facility and Infrastructure Portfolio	3.4	B+	20%	0.67	
8.0 Integrated Safeguards and Security Management and Emergency Management Systems	2.8	B	20%	0.56	
<b>Total Score</b>					<b>3.1</b>

**Table B. FY 2008 Contractor Evaluation Score Calculation**

**Performance-Based Fee Earned:**

Utilizing Table B, above, the scores for each of the Science and Technology (S&T) Goals and Management and Operations (M&O) Goals were multiplied by the weight assigned and these were summed to provide an overall score for each. The percentage of the available performance-based fee that was earned by the Contractor was determined based on the overall weighted score for the S&T Goals and then compared to Table C. The overall numerical score of the M&O Goals from Table B was utilized to determine the final fee multiplier (See Table C), which determined the overall amount of performance-based fee earned for FY 2008 as calculated within Table D. Based on the overall performance within the S&T and M&O Goals, the Contractor is awarded **97%** of the available \$8.6M performance-based fee, which equates to an earned fee amount of **\$8,342,000.00** for FY 2008.

Overall Weighted Score from Table A.	Percent S&T Fee Earned	M&O Fee Multiplier
4.3	100%	100%
4.2		
4.1		
4.0	97%	100%
3.9		
3.8		
3.7	94%	100%
3.6		



Overall Weighted Score from Table A.	Percent S&T Fee Earned	M&O Fee Multiplier
3.5		
3.4	91%	100%
3.3		
3.2		
3.1		
3.0		
2.9	88%	95%
2.8		
2.7		
2.6	85%	90%
2.5		
2.4		
2.3	75%	85%
2.2		
2.1		
2.0		
1.9	50%	75%
1.8		
1.7		
1.6	0%	60%
1.5		
1.4		
1.3		
1.2		
1.1		
1.0 to 0.8		
0.7 to 0.0		

Table C. - Performance-Based Fee Earned Scale

Overall Fee Determination	
Percent S&T Fee Earned from Table C.	97
M&O Fee Multiplier from Table C.	100 X
Overall Earned Performance-Based Fee	<b>97%</b>

Table D. – Final Percentage of Performance-Based Fee Earned Determination



## **1.0 Provide for Efficient and Effective Mission Accomplishment (Quality, Productivity, Leadership, & Timeliness of Research and Development)**

This Goal measures the overall effectiveness and performance of the Contractor in delivering science and technology results which contribute to and enhance the DOE's mission of protecting our national and economic security by providing world-class scientific research capacity and advancing scientific knowledge by supporting world-class, peer-reviewed scientific results, which are recognized by others.

The Contractor met and in most cases exceeded expectations as evidenced by the HQ Program Offices evaluations providing the Contractor an overall score of **4.03**. This corresponds to a letter grade of **A**. Specific scores and evaluation data for the Performance Objectives indicated below are provided within the individual evaluations provided by each HQ Program Office or other customers (see appendices to this report). A short summary of Program Office evaluations are provided below:

- **BER** – PNNL conducts significant, high impact research across the BER portfolio including leading research on the behavior of contaminants in the subsurface environment, climate-relevant formulations of atmospheric cloud and aerosol processes for community climate models, proteomics for DOE's energy and environmental missions, and low dose radiation research. PNNL research in each of these areas has a significant impact on their respective fields and in some cases, subsurface science and proteomics, PNNL scientists are world leaders in their respective fields.
- **BES** – Materials sciences research programs have demonstrated sustained leadership in the physics and chemistry of ceramic surfaces and in defects and defect processes. Chemical sciences (catalysis and experimental and theoretical condensed phase chemical physics) and geosciences research programs continue to demonstrate outstanding scientific progress and significant impact, with an appropriate level of productivity and effective delivery of S&T results.
- **ASCR** – PNNL researchers are delivering excellent work in a few critical areas. However, the PNNL program is very narrow and is focused on one or two good PIs with a strong niche in subsurface science and related multi-scale mathematics. PNNL should dedicate more researchers to these areas.
- **FES** - PNNL has done an excellent job both in the conduct of research as well as interacting with the rest of the US fusion materials community in doing joint activities. Their technical expertise in their areas of research is well recognized both domestically and internationally.
- **WDTS** - The science education office at PNNL has dedicated itself to program and process improvement both of which are most evident by the overall quality of the internship/educator research products. The education staff is well managed, creative and has good working relationship with the research divisions. The PNNL program utilizes WDTS participant surveys, research mentor evaluation, quality of deliverables, and self-evaluation to annually improve the quality and management of the program.
- **NNSA** –PNNL has performed admirable work. NA believes that the PNNL is well positioned for future high-quality research and has all the requisite skills and capabilities to be a driving force in the research community. In FY08, PNNL addressed hard problems and moved research forward on numerous Nonproliferation Research and Development projects for NA-22. PNNL provided excellent support to the Second Line of Defense Program (NA-25). NA-24 is pleased with the lab's work on Nuclear Non compliance Verification and with efforts in the Democratic People's Republic of Korea.
- **DHS** – PNNL and its research and development staff continue to provide leading edge technology for DHS customers. They have excelled in working with new customers to whom S&T provides technology support. PNNL's work to transition technologies to the marketplace, makes the DHS investment even more accessible and beneficial to the end users.
- **EM** – PNNL provided essential data and analysis to understand and predict the behavior of contaminants in the Hanford Site vadose zone. PNNL significantly advanced the understanding of the vadose zone and geochemistry



of uranium as documented in foundational reports and journal publications. PNNL also provided new integrated approaches to treat groundwater and the vadose zone through in situ remediation methods. PNNL leveraged investments by the DOE's Office of Science (SC) and EM to test and evaluate groundwater remediation options along the Columbia River, and invested Laboratory Directed Research and Development (LDRD) funds in developing novel approaches for vadose zone remediation and next-generation computational models. This work is designed to protect the Columbia River, a major waterway in the Pacific Northwest.

- **EERE** - The PNNL thermal conversion team made excellent progress in converting biomass to gasoline and diesel biofuels using pyrolysis pathways. This work was done in partnership with NREL and Universal Oil Products, and is a leading technology for deployment of advanced biofuels technology.
- **IN** – PNNL accomplishments in FY2008 demonstrated continued proactive support, technology innovation, and mission critical results for program objectives related to counterintelligence, counter terrorism, and nuclear nonproliferation. PNNL technologies, approaches and instructional materials had an impact on DOE's Office of Intelligence and Counterintelligence (DOE/IN) operations at multiple sites.
- **FE**- The PNNL team's work on cross-cutting solid oxide fuel cell (SOFC), R&D issues including fuel cell cost reduction and coal-based fuel cell scale-up was effective and efficient.

**Objectives:**

- 1.1 Science and Technology Results Provide Meaningful Impact on the Field**
- 1.2 Provide Quality Leadership in Science and Technology**
- 1.3 Provide and sustain Science and Technology Outputs that Advance Program Objectives and Goals**
- 1.4 Provide for Effective Delivery of Science and Technology**

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
<b>Office of Advanced Scientific Computing Research</b>					
1.1 Impact	A-	3.5	40%	1.40	
1.2 Leadership	B+	3.4	30%	1.02	
1.3 Output	B+	3.2	15%	0.48	
1.4 Delivery	B+	3.4	15%	0.51	
<b>Total</b>					3.41
<b>Office of Basic Energy Sciences</b>					
1.1 Impact	A+	4.1	50%	2.05	
1.2 Leadership	A	4.0	20%	0.80	
1.3 Output	A	3.8	15%	0.57	
1.4 Delivery	A	3.8	15%	0.57	
<b>Total</b>					3.99
<b>Office of Biological and Environmental Research</b>					
1.1 Impact	A-	3.7	30%	1.11	
1.2 Leadership	A-	3.7	20%	0.74	
1.3 Output	A-	3.6	20%	0.72	
1.4 Delivery	A	3.8	30%	1.14	
<b>Total</b>					3.71
<b>Office of Fusion Energy Sciences</b>					
1.1 Impact	A	4.0	25%	1.00	
1.2 Leadership	A	4.0	25%	1.00	
1.3 Output	A-	3.7	25%	0.93	
1.4 Delivery	A-	3.7	25%	0.93	



					<b>Total</b>	3.85
<b>Office of Workforce Development</b>						
1.1 Impact	A-	3.5	25%	0.88		
1.2 Leadership	A-	3.5	30%	1.05		
1.3 Output	A-	3.5	30%	1.05		
1.4 Delivery	A-	3.5	15%	0.53		
					<b>Total</b>	3.50

**Table 1.1 - 1.0 SC Program Office Performance Goal Score Development**

<b>Science Program Office</b>	<b>Letter Grade</b>	<b>Numerical Score</b>	<b>BA Weight</b>	<b>Weighted Score</b>	<b>Overall Score</b>
<b>Office of Advanced Scientific Computing Research</b>	B+	3.41	11.2%	0.38	
<b>Office of Basic Energy Sciences</b>	A	3.99	28.6%	1.14	
<b>Office of Biological and Environmental Research</b>	A-	3.71	57.3%	2.13	
<b>Office of Fusion Energy Sciences</b>	A	3.85	1.8%	0.07	
<b>Office of Workforce Development</b>	A-	3.50	1.1%	0.04	
<b>Performance Goal 1 Total</b>					<b>3.76</b>

**Table 1.2 - SC Program Office Overall Performance Goal Score Development**

<b>HQ Program Office</b>	<b>Letter Grade</b>	<b>Numerical Score</b>	<b>Objective Weight</b>	<b>Weighted Score</b>	<b>Overall Score</b>
<b>Energy Efficiency and Renewable Energy</b>					
1.1 Impact	A	3.9	30%	1.17	
1.2 Leadership	A	3.8	30%	1.14	
1.3 Output	A	3.8	20%	0.76	
1.4 Delivery	A	3.8	20%	0.76	
<b>Total</b>					<b>3.83</b>
<b>Office of Environmental Management</b>					
1.1 Impact	A+	4.2	50%	2.10	
1.2 Leadership	A	4.0	20%	0.80	
1.3 Output	A	3.9	0%	0.00	
1.4 Delivery	A	4.0	30%	1.20	
<b>Total</b>					<b>4.10</b>
<b>Office of Intelligence and Counterintelligence</b>					
1.1 Impact	A+	4.3	30%	1.29	
1.2 Leadership	A+	4.3	30%	1.29	
1.3 Output	A+	4.3	20%	0.86	
1.4 Delivery	A+	4.3	20%	0.86	
<b>Total</b>					<b>4.30</b>
<b>National Nuclear Security Administration</b>					
1.1 Impact	A	4.0	25%	1.00	
1.2 Leadership	A-	3.7	15%	0.56	
1.3 Output	A	4.0	30%	1.20	
1.4 Delivery	A+	4.1	30%	1.23	
<b>Total</b>					<b>3.99</b>
<b>Fossil Energy</b>					



1.1 Impact	A	4.0	30%	1.20	
1.2 Leadership	A	4.0	30%	1.20	
1.3 Output	A	4.0	20%	0.80	
1.4 Delivery	A	4.0	20%	0.80	
<b>Total</b>					4.00
<b>Department of Homeland Security</b>					
1.1 Impact	A+	4.2	40%	1.68	
1.2 Leadership	A+	4.1	30%	1.23	
1.3 Output		0.0	0%	0.00	
1.4 Delivery	A+	4.1	30%	1.23	
<b>Total</b>					4.14

**Table 1.3 - Other Program Office Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	BA Weight	Weighted Score	Overall Score
Office of Science	A	3.76	8.7%	0.33	
Energy Efficiency and Renewable Energy	A	3.83	4.8%	0.18	
Office of Environmental Management	A+	4.10	12.6%	0.52	
Office of Intelligence and Counterintelligence	A+	4.30	3.2%	0.14	
National Nuclear Security Administration	A	3.99	40.3%	1.61	
Fossil Energy	A	4.00	1.6%	0.07	
Department of Homeland Security	A+	4.14	28.8%	1.19	
<b>Performance Goal 1.0 Total</b>					4.03

**Table 1.4 - Overall Performance Goal Score Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 1.3 – 1.0 Goal Final Letter Grade**



## 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Facilities

The Contractor provides effective and efficient strategic planning; fabrication, construction and/or operations of Laboratory facilities; and is responsive to the user community.

This Goal measures the overall effectiveness and performance of the Contractor in planning for and delivering leading-edge specialty research and/or user facilities to ensure the required capabilities are present to meet today's and tomorrow's complex challenges. It also measures the Contractor's innovative operational and programmatic means for implementation of systems that ensures the availability, reliability, and efficiency of these facilities; and the appropriate balance between R&D and user support.

The Contractor met and in some cases exceeded expectations. The HQ Program Office evaluation gave the Contractor an overall score of **3.82**, which translates to a letter grade of an **A**. Specific scores and evaluation data for the Performance Objectives indicated below are provided within the SC evaluation (see Appendix 1). A short summary of Program Office evaluation is provided below:

- **BER** – EMSL and Battelle have made remarkable progress in improving the operation and management of EMSL over the last several years and EMSL is now operating as a best-in-class user facility. EMSL and Battelle management continue efforts to improve EMSL's technical capabilities, attract the highest quality users, support research that underpins DOE mission needs, and improve operations.

### Objectives:

- 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs**
- 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components**
- 2.3 Provide Efficient and Effective Operation of Facilities**
- 2.4 Effective Utilization of Facility(ies) to Grow and Support the Laboratory's Research Base**

Office of Biological and Environmental Research					
2.1 Effective Facility Designs	B+	3.2	0%	0.00	
2.2 Construction/Fabrication	A	3.9	15%	0.59	
2.3 Operation of Facilities	A	3.8	75%	2.85	
2.4 Support Research Base	A	3.8	10%	0.38	
Total					3.82

**Table 2.1 – 2.0 Program Office Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	BA Weight	Weighted Score	Overall Score
Office of Science	A	3.82	100.0%	3.82	
Performance Goal 2 Total					3.82

**Table 2.2 – Overall Performance Goal Score Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 2.3 – 2.0 Goal Final Letter Grade**



### 3.0 Provide Effective and Efficient Science and Technology Research Project/Program Management

The Contractor provides effective program vision and leadership; strategic planning and development of initiatives; recruits and retains a quality scientific workforce; and provides outstanding research processes, which improve research productivity.

This Goal measures the Contractor's overall leadership in executing S&T programs. Dimensions of program management covered include: 1) providing key competencies to support research programs to include key staffing requirements; 2) providing quality research plans that take into account technical risks and identify actions to mitigate risks; and 3) maintaining effective communications with customers to include providing quality responses to customer needs.

Battelle met and in many cases exceeded expectations. The HQ Program Offices evaluations gave the Contractor an overall score of **4.03**, which translates to a letter grade of **A**. Specific scores and evaluation data for the Performance Objectives indicated below are included within the individual evaluations provided by each HQ Program Office or other customers (see appendices to this report). A short summary of Program Office evaluations are provided below:

- **BER** – PNNL management continues to exhibit strong and effective leadership and good vision in its planning and implementation of DOE-relevant research programs. This leadership is exhibited through new hires, effective utilization of existing staff, and strategic use of LDRD funds for new capability development.
- **BES** - PNNL management consistently presented a clear and concise scientific vision for the research programs supported by the BES Chemical Sciences, Geosciences, Biosciences (CSGB) Division, most recently in the FY 2008 management review. The stewardship of the laboratory research in the area of catalysis was particularly noteworthy; including the recruitment of two accomplished, mid-career scientists into the catalysis science effort at PNNL.
- **ASCR** – PNNL contributed significantly to planning and communications in key areas. However, PNNL has yet to refine its vision for advanced scientific computing beyond its niche areas. Recent progress indicates the potential for improvement in FY09.
- **FES** - PNNL has a critical role in the materials area. They have been very effective in conducting their research as well as interacting with the rest of the organizations that are conducting similar research. They have been very effective in the utilization of their limited resources and in adjusting their program as the need arises.
- **WDTS** - The science education staff continually shares program management best practices among themselves and with other laboratories. They work closely with headquarters on opportunities to improve program evaluation, and helps us remain current with the state and national literature on science education in the laboratory environment.
- **NNSA** – The PNNL Second Line of Defense (SLD) team in Richland is absolutely first rate. The team continues to provide training and sustainability support for our work in partner countries, including the much praised Hammer training onsite in Richland. It assists with equipment analysis and procurement, has developed an innovative SLD help desk, provides major assistance on configuration management issues, and provides certified project managers to assist with Megaports deployments. In addition to this wide range of duties, PNNL is the first place SLD goes to get assistance when the program needs additional support. The PNNL team supporting SLD is consistently organized, disciplined, creative and dependable.
- **DHS** - PNNL provides the best mix of personnel skills to perform required analysis and has an excellent record of making group recommendations to keep projects on budget and time.
- **EM** – Consistent with EM's performance expectations, PNNL collaborated extensively with SC and other laboratories to provide solutions that address EM's key technical challenges for DOE Office of River Protection (ORP), the DOE Richland Operations Office (DOE-RL), and the broader DOE complex. PNNL researchers



partnered with academia and other national laboratories to publish a foundational report titled A Site-Wide Perspective on Uranium Geochemistry at the Hanford Site in November 2008. The report, prepared for ORP and its tank farm contractor, culminated from years of study of the fate and transport of uranium at the Hanford Site, including recent contributions from the national scientific community with support from SC. The report integrates these findings into a cohesive view of the Hanford Site subsurface geochemistry of uranium, providing a technical foundation for evaluating uranium remediation options.

- **EERE** – PNNL’s deployment tools and materials are avidly sought by stakeholders and partners, as demonstrated by the 40 million hits on the <http://www.energycodes.gov/> web site, the downloading of tools and materials, the use of web-based tools, and the participation in webinars (700-1,400 people per session).
- **IN** – PNNL continues to be DOE/IN’s provider of choice for nuclear fuel cycle intelligence related to the proliferation of nuclear weapons. The PNNL Field Intelligence Element provided technically rigorous intelligence assessments to senior policymakers on pressing nuclear proliferation issues in a number of high-interest countries. This was a record-setting year, as PNNL prepared more than 30 *Nuclear Intelligence Highlights* and *Technical Intelligence Notes*, alerting policymakers to nuclear proliferation concerns worldwide.
- **FE** – Overall, the PNNL effort is well-led, and accomplishes planned technical objectives and milestones in an effective and efficient manner.

**Objectives:**

- 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**
- 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**
- 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
<b>Office of Advanced Scientific Computing Research</b>					
3.1 Effective/Efficient Stewardship	B+	3.2	30%	0.96	
3.2 Project/Program Planning & Management	B-	2.7	40%	1.08	
3.3 Communications and Responsiveness	B+	3.4	30%	1.02	
<b>Total</b>					3.06
<b>Office of Basic Energy Sciences</b>					
3.1 Effective/Efficient Stewardship	A	3.9	40%	1.56	
3.2 Project/Program Planning & Management	A	3.8	30%	1.14	
3.3 Communications and Responsiveness	A	4.0	30%	1.20	
<b>Total</b>					3.90
<b>Office of Biological and Environmental Research</b>					
3.1 Effective/Efficient Stewardship	A-	3.6	20%	0.72	
3.2 Project/Program Planning & Management	A-	3.6	30%	1.08	
3.3 Communications and Responsiveness	A	3.8	50%	1.90	
<b>Total</b>					3.70
<b>Office of Fusion Energy Sciences</b>					
3.1 Effective/Efficient Stewardship	A-	3.7	30%	1.11	
3.2 Project/Program Planning & Management	A	4.0	35%	1.40	
3.3 Communications and Responsiveness	A-	3.7	35%	1.30	
<b>Total</b>					3.81
<b>Office of Workforce Development</b>					
3.1 Effective/Efficient Stewardship	A-	3.5	20%	0.70	
3.2 Project/Program Planning & Management	A-	3.5	40%	1.40	



3.3 Communications and Responsiveness	A-	3.5	40%	1.40	
<b>Total</b>					3.50

**Table 3.1 – 3.0 SC Program Office Goal Score Development**

Science Program Office	Letter Grade	Numerical Score	BA Weight	Weighted Score	Overall Score
Office of Advanced Scientific Computing Research	B+	3.06	3.7%	0.11	
Office of Basic Energy Sciences	A	3.90	20.0%	0.78	
Office of Biological and Environmental Research	A-	3.70	74.5%	2.76	
Office of Fusion Energy Sciences	A	3.81	1.0%	0.04	
Office of Workforce Development	A-	3.50	0.8%	0.03	
<b>Performance Goal 3 Total</b>					3.72

**Table 3.2 – SC Program Office Overall Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
<b>Energy Efficiency and Renewable Energy</b>					
3.1 Effective/Efficient Stewardship	A	3.9	25%	0.98	
3.2 Project/Program Planning & Management	A	3.9	25%	0.98	
3.3 Communications and Responsiveness	A	4.0	50%	2.00	
<b>Total</b>					3.95
<b>Office of Environmental Management</b>					
3.1 Effective/Efficient Stewardship	A+	4.2	30%	1.26	
3.2 Project/Program Planning & Management	A	3.9	35%	1.37	
3.3 Communications and Responsiveness	A	4.0	35%	1.40	
<b>Total</b>					4.03
<b>Office of Counterintelligence</b>					
3.1 Effective/Efficient Stewardship	A+	4.3	40%	1.72	
3.2 Project/Program Planning & Management	A+	4.3	30%	1.29	
3.3 Communications and Responsiveness	A+	4.3	30%	1.29	
<b>Total</b>					4.30
<b>National Nuclear Security Administration</b>					
3.1 Effective/Efficient Stewardship	A	4.0	20%	0.80	
3.2 Project/Program Planning & Management	A+	4.1	20%	0.82	
3.3 Communications and Responsiveness	A+	4.1	60%	2.46	
<b>Total</b>					4.08
<b>Fossil Energy</b>					
3.1 Effective/Efficient Stewardship	A	3.8	40%	1.52	
3.2 Project/Program Planning & Management	A	3.9	30%	1.17	
3.3 Communications and Responsiveness	A	3.8	30%	1.14	
<b>Total</b>					3.83
<b>Department of Homeland Security</b>					
3.1 Effective/Efficient Stewardship	A	4.0	50%	2.00	



3.2 Project/Program Planning & Management	A+	4.1	25%	1.03	
3.3 Communications and Responsiveness	A+	4.2	25%	1.05	
<b>Total</b>					4.08

**Table 3.3 – HQ Program Office Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	BA Weight	Weighted Score	Overall Score
Office of Science	A-	3.72	10.8%	0.40	
Energy Efficiency and Renewable Energy	A	3.95	5.1%	0.20	
Office of Environmental Management	A	4.03	13.5%	0.54	
Office of Counterintelligence	A+	4.30	3.4%	0.15	
National Nuclear Security Administration	A+	4.08	34.8%	1.42	
Fossil Energy	A	3.83	1.8%	0.07	
Department of Homeland Security	A+	4.08	30.7%	1.25	
<b>Performance Goal 3.0 Total</b>					4.03

**Table 3.4 – Overall Performance Goal Score Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 3.3 – 3.0 Goal Final Letter Grade**



#### **4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory**

The Contractor's Leadership provides effective and efficient direction in strategic planning to meet the mission and vision of the overall Laboratory; is accountable and responsive to specific issues and needs when required; and corporate office leadership provides appropriate levels of resources and support for the overall success of the Laboratory.

This Goal measure the Contractor's Leadership capabilities in leading the direction of the overall Laboratory. It also measures the responsiveness of the Contractor to issues and opportunities for continuous improvement and corporate office involvement/commitment to the overall success of the Laboratory.

The Contractor in most cases met expectations. The evaluation resulted in an overall score of **3.14**, which corresponds to a letter grade of **B+**. Specific scores and evaluation data for the Performance Objectives are provided below.

##### **4.1 Provide a Distinctive Vision for the Laboratory and an Effective Plan for Accomplishment of the Vision to Include Strong Partnerships Required to Carry Out those Plans**

Laboratory performance against the measures under this objective met DOE expectations. The Contractor developed a Laboratory Plan which outlined the vision for the laboratory's scientific leadership. The Laboratory Plan also clarified PNNL's core capabilities and provided a basis for alignment of priorities to the capabilities. The promulgation of the scientific vision internally to PNNL should be continued. Battelle is encouraged to build on the momentum created by the development of the Laboratory Agenda and Contribution Plans to continue to refine and focus PNNL's vision. The quality of these plans will enable the definition of the required capabilities to support the Mission Outcomes.

Battelle's effective partnerships with universities and private laboratories have advanced laboratory capabilities and missions. In partnership with Washington State University, PNNL initiated research at the Bioproducts Sciences and Engineering Laboratory (BSEL) during FY 2008. Battelle was instrumental in the recruitment of an internationally recognized researcher to lead the WSU Center of Bioproducts and Bioenergy. Battelle effectively partnered with a private industrial company to initiate construction in FY 2008 for two facilities, the Biological Sciences Facility and the Computational Sciences Facility which are funded by the private developer. The facilities will provide space for capabilities moved from the 300 area, and will be leased by PNNL for the next 19 years. Battelle has delivered sustained contributions to key scientific partnerships including: JGI: growing in proteomics and bioinformatics; EMSL-NHMFL: jointly developing 21T FTICR; Shewenella Federation, ERSP SFA, IFRCs; PNNL-UMd Joint Global Change Research Institute; International Consortium for Clean Energy (with China); and the Washington Life Sciences Discovery Fund: biomarker discovery and validation.

Major laboratory costs including both direct and indirect costs were identified and categorized by the target date (November 30, 2007). The Contractor's cost structure and associated baseline cost of doing business is sufficiently detailed and generated a common understanding between the laboratory and PNSO. During the performance period a significant decrease in the ratio of indirect to direct costs at the Laboratory was achieved. This baseline will be used to trend the cost of doing business in future years. This evaluation results in a score of **3.3** and a grade of **B+**.

##### **4.2 Provide for Responsive and Accountable Leadership throughout the Organization**

The Contractor has taken a number of actions during the year to address the leadership issues identified during FY 2007. The actions appear to be effectively addressing the underlying causes associated with the performance issues. The organizational changes, focus on laboratory mission objectives, clarification and emphasis on individual accountability, and clarification of the laboratory operational model have been instrumental in driving the improvements.

Positive leadership improvement actions this year included the upgrade of R2A2s as well as development of the Chief Operating Officer (COO) structure, Project Life-Cycle Steward role, and the Research Operations Council (ROC). In addition, some of the improvements to operating systems (e.g., Operating Model, How Do I, ICM) are being driven by Laboratory leadership and appear to be moving in the right direction. Finally, focused attention on



completion of corrective actions through the use of an Internal Independent Peer Review (IIPR) Committee demonstrated senior leadership involvement and accountability.

While the actions the Contractor has taken are having a positive impact, some of the initiatives to fundamentally improve performance have only recently been completed and need to move from the definitional stage toward implementation during the coming year. Key improvements yet to be fully implemented include life cycle project management, integrated capability management, workflow delivery and quality management. Sustaining the rate of progress should significantly improve the Laboratory's ability to meet contract expectations in the delivery of products and services associated with the mission outcomes.

The priority and emphasis the Contractor placed on the Laboratory improvements resulted in vulnerability in recognizing emerging issues, specifically leadership failed to recognize a significant emerging issue regarding the weakness in cyber security controls. However, as the cyber security weaknesses were identified and understood, the leadership and management changes implemented throughout the year enabled prompt action to assure the vulnerabilities were adequately addressed. This evaluation results in a score of **2.9** and a grade of **B**.

#### **4.3 Provide Efficient and Effective Corporate Office Support as Appropriate**

Laboratory performance against the measures under this objective met DOE expectations.

Battelle Corporate Leadership implemented a new governance structure across all of the Labs which Battelle manages or co-manages for the DOE. Battelle restructured and repopulated the governing boards at each National Laboratory, and at PNNL, assigned Assurance Committee leads to function as a governing board to oversee Laboratory leadership responsiveness to DOE mission needs. This new structure appears to be effective in instilling responsibility and accountability throughout every aspect of PNNL, however this revised structure needs to be formally submitted to and approved by DOE. In addition, the new Battelle governance has not been particularly transparent to the Site Office, compared to previous governance structures, so that the Site Office can make a judgment on improved performance.

Specific support provided by Battelle corporate included development of a second generation Standards Based Management System (SBMS) which was returned to the Battelle managed laboratories for implementation, demonstrating corporate commitment to delivering best-in-class management systems. The Communities of Practice (CoP) established in FY07, have broadened management engagement, developed solutions, and encouraged ownership of line management in the conduct of research. These CoPs continued to evolve, integrating resources from across several of the DOE Laboratories. Specifically, a new CoP for Diversity and Recruiting was established which is accountable for achieving key objectives and critical outcomes of Battelle's Diversity and Strategic Plan.

Battelle took \$1.8M of financial risk to enable the start of construction on the third party financed Biological Sciences Facility/Computational Sciences Facility. Further, to avoid construction delays, Battelle, assumed some completion risks associated with potential termination liabilities. This action allowed a potential savings of up to \$3,000,000 on the project. These actions are significant in that they will enable modernization of PNNL as capabilities are relocated from the 300 Area of the Hanford Site.

At the beginning of the year, Battelle continued to resist the SC initiative to develop a platform for competing the PNNL contract. Although DOE was able to issue a draft RFP for the PNNL contract in October 2008, it subsequently had to be cancelled and the Department had to enter into discussions with Battelle regarding the future elimination of the use permit. Battelle did work with DOE to reach agreement to discontinue the use permit activities no later than September 30, 2012.

Battelle demonstrated good corporate citizenship, consistent with DOE goals, in the community through the donation of \$72,000 for the initial planning phases of the STEM-focused high school, donation of \$1M to fund educational exhibits and to assist in funding the construction of the Hanford Reach Interpretive Center and by providing leadership for the Tri-Cities Research District and Innovation Zone, a project that encourages technology transfer and deployment within the local area. This evaluation results in a score of **3.3** and a grade of **B+**.



ELEMENT	Letter Grade	Numerical Score	Objective Weight	Total Points	Total Points
4.0 Effectiveness and Efficiency of Contractor Leadership and Stewardship					
4.1 Provide a Distinctive Vision for the Laboratory and an Effective Plan for Accomplishment of the Vision to Include Strong Partnerships Required to Carry Out those Plans	B+	3.3	30%	.99	
4.2 Provide for Responsive and Accountable Leadership throughout the Organization	B	2.9	40%	1.16	
4.3 Provide Efficient and Effective Corporate Office Support as Appropriate	B+	3.3	30%	.99	
<b>Performance Goal 4.0 Total</b>					<b>3.14</b>

**Table 4.1 – 4.0 Goal Performance Rating Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 4.2 – 4.0 Goal Final Letter Grade**



## **5.0 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection**

The Contractor sustains and enhances the effectiveness of integrated safety, health and environmental protection through a strong and well deployed system.

The Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection Goal shall measure the Contractor's overall success in preventing worker injury and illness; implementation of ISM down through and across the organization; and providing effective and efficient waste management, minimization, and pollution prevention.

The Contractor in most cases met expectations as evidenced by the Site Office evaluation providing the Contractor an overall score of **3.17**, which corresponds to a letter grade of **B+**. Specific scores and evaluation data for the Performance Objectives are provided below.

### **5.1 Provide a Work Environment that Protects Workers and the Environment**

While PNNL did not meet its cumulative case rate goals for Days Away Restricted Transferred (DART) and Total Recordable Case Rate (TRCR) at year end, its statistical control chart for each measure shows normal variation in the data with no detectable negative trends. The Contractor achieved a DART rate of 0.37 cases per 200,000 hours worked. The cumulative case goal for the Contractor in 2008 was 0.25 cases or less per 200,000 hours worked. The control chart indicated a normal process variation within the control limits with no negative trends detectable. The TRCR (performance was at 0.89 cases per 200,000 hours worked. The cumulative case goal for the Contractor in 2008 was 0.65 cases or less per 200,000 hours worked. There have been no deviations above the upper control limit. The control charts indicated a normal process variation within the control limits with no negative trends detectable. The management of construction safety first aid cases at the Physical Sciences Facility (PSF) site as a result of the onsite nurse's station has been effective in reducing the potential for more serious and delayed trauma cases that would, as well, increase TRCR and DART injury rates. It was further noted that the number of cases of overexertion and strain appeared to be increasing over previous years and is one of the primary contributors to the recordable cases this year, as well as slips, trips and falls. The two categories collectively accounted for 46% of the recordable injuries. Most of these injuries were associated with activities perceived as routine and low risk. Examples included moving boxes for another staff member, cleaning up a conference room, opening a "sticky" door and moving luggage in an airport.

In an effort to further reduce staff injuries and illnesses, Battelle has emphasized hazards associated with routine low risk activities. Battelle has offered training for new line managers to build skills in conducting activity observations by offering a workshop: Interactive Workplace Observations for Leaders. These workshops provided managers with skills to conduct effective and interactive observations in the workplace. Activity observations help enable a stronger safety culture by the managers getting out observing activities with the intent to identify/resolve potential safety issues or hazards, and also to candidly interact with employees to discuss safety behaviors and concerns.

A Preliminary Notice of Violation (PNOV) was received in January as a result of conditions discovered in FY07 in violation of 10 CFR Part 830 and Part 835. The airborne release of Pu-238 in the RPL Building Room 414 and the spread of contamination from a leaking Pu-238 sealed source in the 326 Building were the two identified safety and health related events. In depth causal analyses were conducted. As a result of these events, the sealed source control program at PNNL was redesigned to assure environmental emissions, nuclear safety, and radiological control requirements would be effectively integrated. The significant changes to the program were, institution of a more efficient and effective two-tier risk based approach for control of sealed sources, implementation of a Sealed Radioactive Source Use Permit, formalization of R2A2's for sealed source custodians, users and managers, and institution of a Sealed Source Review Board to insure design and quality assurance requirements are utilized in the program.

In addition, a project level plan under the direction of the laboratory director was instituted to integrate corrective actions for these two PNOV generated incidents, and an independent effectiveness review of these actions is close to being completed. Anecdotal evidence thus far indicates a likely satisfactory result.



Overall the analysis of current performance to date reflects positive outcomes and shows continuous improvement in protecting workers, the public and the environment. This evaluation results in a score of **3.2** and a grade of **B+**.

## **5.2 Provide Efficient and Effective Implementation of Integrated Safety, Health and Environment Management**

Battelle has improved implementation and execution of Integrated Safety Management (ISM) through improved engagement of S&T leadership in operational issues, improvements to the Integrated Operations System (IOPS), and update of the ISM Program Description, R2A2s, and Construction Safety Management Program Description. While many improvements have been made, implementation of new operations authorization requirements (e.g., development of routine operating envelopes and research activity review and approvals) has appeared inconsistent and the Contractor has not developed the means for measuring performance in this area. In addition, actions to set up additional Directorate and Lab-level Zero Accident Councils (ZACs) to improve S&T leadership and involvement in safety have yet to be completed.

Battelle's effort to understand ISM performance and use results to make improvements has also improved this year. Battelle provided timely submittal of their annual ISM assessment and ISM performance objectives, measures, and commitments (POMCs), and the annual ISM Review by PNSO revealed that the Contractor has a strong basis for conclusions regarding ISM effectiveness. In addition, analysis of data has improved this year and senior management involvement is maturing again following the elimination of assurance related forums (e.g., Operations Forum). Management has also taken a more active role in review of corrective action performance through the development of an Internal Independent Peer Review (IIPR) Committee. While these are positive steps, there is a need to clearly document the continuing role of the Research Operations Council (ROC) with respect to the review of ISM performance and monitoring of corrective actions and there continues to be a need to improve development and delivery of efficiency indicators to optimize Laboratory performance.

Overall, Battelle has made many improvements with respect to the two primary indicators for this Objective (i.e., ISM execution and ISM measurement). While these improvements have been positive, there continue to be some areas of concern related to implementation and measurement of operations authorization, deployment of improved mechanisms for S&T leadership involvement in safety, institutionalization of management roles with respect to ISM performance management, and development of efficiency indicators. Collectively, these performance results are offsetting and result in a score of **3.3** and a grade of **B+**.

## **5.3 Provide Efficient and Effective Waste Management, Minimization, and Pollution Prevention**

Battelle has demonstrated increased efficiencies in cradle to grave waste management (WM). The FY09 Budget request includes specific scope tied to implementation of the laboratory level WM Program, and the implementation of a plan for a more robust waste forecasting process. The Waste Management Program Description scheduled to be delivered in FY 08 was delayed until FY09. However, the review of the Waste Management Program Description led to Battelle evaluating 52 Record of Decisions (RODs) and was found to be in full compliance with contractual requirements and SBMS. Work continues towards integrating future waste management requirements into work planning. Progress is being made to assess current and planned Waste Management operations and infrastructure requirements, and incorporation of recommendations and corrective actions into the Laboratory level Program Description.

Measureable progress has been demonstrated toward successful waste management operations without the 331-C TSD. Battelle issued an RFP for enhanced subcontractor hazardous waste services based upon a previous DOE recommendation.

A Transportation Safety & Operations Compliance Assurance Program (TCAP) assessment was conducted in September. The assessment identified critical areas of non-compliance. Battelle took immediate action to develop compensatory measures to ensure the transport of hazardous and radioactive materials would be in compliance with DOT and applicable contract requirements. It was also noted by PNSO there was a system weakness in addressing contractual requirements. However, there were also four noteworthy practices identified in the TCAP report to somewhat offset performance failures in compliance.



The initiation of waste shipments to the Environmental Remediation and Disposal Facility enhanced the utilization of RTL-590 for waste handling, and the reduction of Satellite Accumulation Areas are a few of the additional improvements that have been implemented during FY08. PNNL’s EPA Performance Track commitments (stretch goals) met with approval by EPA. There were no milestones missed under the Start Clean Stay Clean, or Unneeded Materials and Chemicals (UMC) Plan.

Battelle has demonstrated progress in implementing sustainable practices across the Laboratory. They continue to receive external recognition such as the SC Best-In-Class Award and Pollution Prevention Star Award for “Using EMS to improve Chemical Management”. Over 5800 chemicals were identified for redistribution. The nomination for this effort was forwarded by the Office of Science to the President’s Closing the Circle Award Selection panel. Other noteworthy accomplishments include The Pollution Prevention Programs efforts in recycling 3600 sq.ft. of carpet during the EMSL renovation, recycling 130 tons of asphalt from the Research Operations Building and finally, the design effort for PSF resulting in the application for LEED points for emissions monitoring systems, waste management spaces, and collection systems. This evaluation results in a score of **3.0** and a grade of **B**.

ELEMENT	Letter Grade	Numerical Score	Objective Weight	Total Points	Total Points
5.0 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection					
5.1 Provide a Work Environment that Protects Workers and the Environment	B+	3.2	40%	1.28	
5.2 Provide Efficient and Effective Implementation of Integrated Safety, Health and Environment Management	B+	3.3	30%	.99	
5.3 Provide Efficient and Effective Waste Management, Minimization, and Pollution Prevention	B	3.0	30%	.90	
<b>Performance Goal 5.0 Total</b>					<b>3.17</b>

**Table 5.1 – 5.0 Goal Performance Rating Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 5.2 – 5.0 Goal Final Letter Grade**



## **6.0 Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)**

The Contractor sustains and enhances core business systems that provide efficient and effective support to Laboratory programs and its mission(s).

The Provide Business Systems that Efficiently and Effectively Support the Overall Mission of the Laboratory Goal shall measure the Contractor's overall success in deploying, implementing, and improving integrated business system that efficiently and effectively support the mission(s) of the Laboratory.

The Contractor met in most cases and in one instance exceeded expectations as evidenced by the Site Office evaluation providing the Contractor an overall score of **3.14**, which corresponds to a letter grade of **B+**. Specific scores and evaluation data for the Performance Objectives are indicated below.

### **6.1 Provide an Efficient, Effective, and Responsive Financial Management System(s)**

Overall performance against the metrics under this objective generally met DOE expectations. The Contractor was very successful in certain areas and made progress in others. DOE expects the Contractor will be able to effectively address remaining areas of improvement in FY 2009.

Battelle achieved noteworthy performance in meeting DOE's expectation by demonstrating their flexibility, ingenuity and integration in supporting a work around process for field work proposals in support of the FY 2010 budget submittal. Battelle also met the Departmental expectations in implementing the FY 2008 Office of Management and Budget Circular A-123, Appendix A requirements and submitted all deliverables on time, which was a significant accomplishment considering that this was the first year that the Department was required to implement a risk based cyclical testing approach. Furthermore, the Contractor provided excellent support for the financial and budget functions; achieved a successful implementation of the significant changes to the timekeeping policies and procedures that addressed deficiencies identified in a Defense Contract Audit Agency (DCAA) audit report; successfully implemented a new Institutional General Plant Equipment (IGPE) program and expanded the Institutional General Plant Project (IGPP) program that contributes to the success of the Capability Replacement Laboratory.

Battelle continued to make steady progress this year in institutionalizing the recommendations from the Business Process Improvement Program Plan, which addressed deficiencies in the management system. This effort resulted in focused attention on corrective actions and solving problems, continued training of staff and others. However, there continues to be a need for additional and improved communications to DOE to resolve the lack of requirements management documentation.

Although Battelle has shown encouraging progress in submitting quality products, DOE would like further improvements in this area (some examples of where improvements were warranted include: ILA-LSL II, Accounting Practice Changes, Disclosure Statement 2008-2, FY 2008 uncosted report to HQ's, and FY 2009 LDRD Budget Request). In February 2008, Battelle submitted a Project Data Sheet (PDS) for the PSF project that erroneously presented budget data. This occurred despite DOE's continued emphasis for quality control on this product, past difficulties with this PDS, and the clearly sensitive nature and high importance of this project. This appeared to be due to a lack of integration with the contractor overall and not necessarily in the finance area.

While the Contractor met overall expectations and made encouraging progress this year in addressing the areas of concerns identified, some additional improvements are still necessary. Therefore, the evaluation results in a score of **3.2** and a grade of **B+**.

### **6.2 Provide an Efficient, Effective, and Responsive Acquisition and Property Management System(s)**

Acquisition Management has made steady improvement this year, continuing to rebuild its system. More attention has been paid to corrective actions and solving problems, training of staff and others, pride in ownership and delivering for the customer. FY 2008 saw a marked increase in dollar volume of acquisitions (several large



subcontracts for clients) and the number of overall total transactions. During FY 2008 there were issues identified within subcontract closeout procedures and with the quality of work products. There have also been instances within the year of failure to follow stated procedures and policies and without gaining appropriate approval from the Contracting Officer. There also has been very positive performance in the subcontract negotiation of the Physical Sciences Facility Best and Final Offer to meet the Total Project Cost.

Battelle continues to meet or exceed targets associated with the Acquisition Management Balanced Scorecard and Self Assessment, such as Cost to Spend Ratio of 1.5%, significantly lower than the target of 4%, and Overall Cycle Time performance at 6.1 days versus a target of 11 days, these performance targets demonstrate the overall performance of the system. Also during the last quarter of the year, there were increased efforts in compliance through revisions to SBMS and the Acquisition Guidelines (reviewing 58% of the policies and procedures within the year, target was 40%). There were two areas of performance that fell below expectations On-time Delivery at 69% versus a target of 70% and Acquisition Cycle Time (55 days versus target of 30 days), however, these performance issues are minor in nature and did not impact customer satisfaction or the missions of the laboratory.

In FY08, Battelle was successful at managing an efficient and effective Property system. Battelle was successful in meeting all of Balance Scorecard performance metrics. Those metrics focused on different areas within the property system, which include assets located during inventories which was 99.9%, cost per property record at \$2.00, data accuracy at 100%, timely excess of property 99% were dispositioned within 180 days, fleet utilization (>94%), and continued training and education for qualified property management professionals with 100% of staff maintaining training requirements and certifications. Battelle clearly met expectations in this area.

Aside from the abovementioned measures Battelle was also successful in completing the Wall to Wall inventory. The results of the inventory were excellent at 99.9% of all items were located and approx. 800 pieces of equipment were identified for excess. The property staff worked to develop a rapid prototype for an Integrated Asset Management System (IAM), a system on the critical path for exiting the 300 Area and part of a broader Integrated Capability Management initiative. The excessing of the supercomputer was another example of the excellent performance. Battelle was able to avoid high disposal cost and potential environmental issues with the disposal of the supercomputer by selling this unique item to an electronic recycler.

There have been continuing improvements in Acquisition and Property Management. A measurement process is resulting in early identification of issues and performance against balanced scorecard measures is meeting or exceeding expectations. There have been some deficiencies in the quality of work products and a few instances of failure to follow procedures; however there has been positive performance that offsets these minor deficiencies. This evaluation results in a score of **3.1** and a grade of **B+**.

### **6.3 Provide an Efficient, Effective, and Responsive Human Resources Management System**

The capability of Human Resources Management at Battelle was again demonstrated with measures exceeding targets in five out of seven measured categories in FY 2008. In addition, effective HR management was demonstrated through overall contributions to the laboratory.

The achievements within the Human Resources program included the establishment of a standard laboratory process for internal investigations, refinement of the laboratory training program and the initiation of an internal workforce review group, which generated more dialogue between hiring managers and recruiting staff.

The laboratory's ongoing (annual) utilization of the Gallup Q12 survey continued to show a high level of staff engagement, including an increased score in staff engagement for the seventh consecutive year, which is particularly significant when considering the laboratory implemented a new operations model and organizational structure during this assessment period.

The only two areas within the Human Resources management arena that did not exceed expectations were the placement goals for women and minorities. The laboratory continues to pursue additional options to improve further in this area. The increased visibility of the recruiting process, and the focus on dialogue between managers and recruiters should be helpful in further improving the ability to recruit women in the targeted areas.



Battelle continued to maintain competitive total compensation programs within approved ranges, providing for cost effective management of salaries and benefits, while still being able to attract top talent with competitive compensation packages.

Labor/Management cooperation continued to be demonstrated throughout the year, including negotiation and implementation of a revised Workplace Substance Abuse Program that includes updates to the Testing Designated Positions in order to be compliant with 10 CFR 707, Workplace Substance Abuse Programs at DOE Sites. All expectations of this objective were met and the evaluation results in a score of **3.3** and a grade of **B+**.

#### **6.4 Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; and Other Administrative Support Services as Appropriate**

The Planning and Assessment, Independent Oversight (IO), Internal Auditing (IA), Quality, Standards Based Management (SBMS), Information Resource Management System (IRMS), Records, Scientific and Technical Information Management (STI), and Project Management (PM) systems have been in periods of major transition. Battelle's effort in building the Quality Assurance Program against NQA-1-2000 Quality Standards has been noted.

The Project Management (PM) system was reengineered during FY08 to incorporate a graded approach to managing projects and deliver clearer and succinct processes, tools and training. These enhancements were part of the Research Management Corrective Action Plan (RMCAP) which has since been followed-on with a new management initiative - Enabling Excellence in Conduct of Research: Life Cycle Project Management. The anticipated benefits include clarified project requirements for operations, business, and organizational management support, and improved delivery systems for project support. A significant accomplishment was the teaming between the Project Management System and the Research Directorates and Product Line Managers (PLMs) to develop and deliver additional training and education within each research directorate to ensure understanding and compliance with the new requirements and expectations and how they can improve project performance. This has been completed in all research directorates.

The Information Resources Management, Records Management, and Scientific and Technical Information management systems have been merged into a single *Information Resources Management System (IRMS)*. In addition, a new governance process guides and monitors the management systems' alignment with Battelle priorities to better assure that: business processes enhance Battelle project performance & operational excellence; all information is captured and managed digitally, easily accessible and used for research & operations; Information Technology (IT) infrastructure services are highly responsive and dynamically optimized. Software and Safety Software have been reintegrated into the Lab's revised Quality Assurance Program. An effectiveness review for the deployment of Software QA requirements and other extent of deployment assessments indicate good compliance with Software QA requirements although some existing projects still need to meet commitments to close gaps between past practices and the new requirements. Battelle initiated its effectiveness review of the software NTS. PNSO recognizes the review is nearing completion but commitments made in FY08 regarding software QA continue to languish.

The Laboratory integrated Planning, Oversight, Assessment, Quality, SBMS, and elements of IRMS (Software quality assurance [QA] and Safety Software) into a single management system: *Quality and Performance Management System (QPMS)*. This change integrates planning, work processes and controls, standards, measurement, analysis, and improvement into a coherent Quality system for Battelle that can demonstrate to Laboratory management that strategy is being executed efficiently, effectively and compliantly and with a high degree of confidence ultimately helping the organization to become predictive and preventive in managing performance and risk.

Battelle completed several actions to improve its issues management function including the training and qualification of SME's to conduct critiques and causal analysis, the implementation of standards for corrective action plans including management review and approvals, and the establishment of an Internal, Independent Peer Review function and committee which reviews all corrective actions associated with five significant events/issues to ensure effective corrective actions.

PNSO found some instances where Issues Management needs improvement. There were instances where actions were



being closed that were not completed and did not have the proper documentation. Various reviews this year identified concerns regarding the adequacy of requirements management at Battelle. There were several instances where requirements had not been properly identified and/or where it was not clear how requirements were being implemented (e.g., in the areas of transportation management, nuclear safety, financial management, and environmental management). Further review of these concerns also revealed that Battelle does not currently have a well-defined process for review of its requirement set. For example, while the approved IESH Program Description indicates that the Requirements Integration and Tailoring (RIT) process is "... used to evaluate requirements (e.g., laws, regulations, standards, DOE Directives) to identify those that are integrated into SBMS..." reviews of SBMS and discussion with Laboratory staff have revealed that this process is not being used at this time. A corresponding score of **2.9** is awarded and a grade of **B**.

### **6.5 Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets**

Effective transfer of technology is the primary pathway for moving government funded research to commercial applications relevant to industry and society. The successful commercialization of Intellectual Property (IP) generates funds that are reinvested into the Laboratory's staff and their ideas and used in research and development aimed at maturing technology to enhance its commercial potential.

Battelle has significantly enhanced the Technology Commercialization at PNNL. In order to help gauge those efforts, performance measures have been developed. For FY08, Battelle exceeded the targets set. The "Total Consideration" performance measure assists in looking at the quantitative market impact and returns from the effective use of PNNL intellectual assets as deployed by industry. This measure recorded \$45.2 million, surpassing the target of \$30 million. The second measure looks which looks at total Invention disclosures. This measure also performed slightly above target coming in at 227 disclosures vs. the target of 225. This measure is helping us look at how well Battelle is stimulating the generation of IP. As a side note the lab had 56 patent applications filed and 33 patents issued.

Not only did Battelle successfully accomplish the metrics above, but the technology transfer program as a whole was successful in all aspects of technology transfer. Battelle research staff was recognized with three FLC awards, and three R&D 100 awards in FY08. Strong performance in the market deployment of PNNL IP has enabled additional program impact for DOE. Battelle's emphasis on the development of IP strategies relevant to both PNNL mission outcomes and the development of applications of interest to commercial partners is a successful approach which has benefits to both government and commercial business objectives. This was demonstrated in FY08 through the formulation of a start-up company looking at cellulosic ethanol; in addition there was also, the continued success of Safeview, and Metatomix. There has been strong collaboration within the Laboratory between the Technology Commercialization Office (TCO) and the Economic Development Office (EDO), which led to a university student-initiated start-up company based on PNNL technology. Another noteworthy aspect of the technology transfer program this year is the PNNL staff impact to the national innovation dialog. One such organization is DOE's Technology Transfer Working Group, which brings together lab-director appointed representatives from the DOE national laboratories to develop policy and best practices for commercialization. Battelle has been instrumental in working with the HQ Technology Transfer Policy Board to help establish new technology transfer instruments. This activity will affect most national labs and the ability to perform technology transfer in an efficient and effective manner.

This work, plus the performance of the metrics this year demonstrates Battelle's ability to perform outstanding Technology Transfer at PNNL. This evaluation results in a score of **3.5** and a grade of **A-**.



ELEMENT	Letter Grade	Numerical Score	Objective Weight	Total Points	Total Points
6.0 Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)					
6.1 Provide an Efficient, Effective, and Responsive Financial Management System(s)	B+	3.2	20%	.64	
6.2 Provide an Efficient, Effective, and Responsive Acquisition and Property Management System(s)	B+	3.1	20%	.62	
6.3 Provide an Efficient, Effective, and Responsive Human Resources Management System	B+	3.3	20%	.66	
6.4 Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; and Other Administrative Support Services as Appropriate	B	2.9	30%	.87	
6.5 Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets	A-	3.5	10%	.35	
<b>Performance Goal 6.0 Total</b>					<b>3.14</b>

**Table 6.1 – 6.0 Goal Performance Rating Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 6.2 - Goal 6 Final Letter Grade**



## **7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs**

The Contractor sustains and enhances facility and infrastructure systems to provide efficient and effective operations, maintenance and renewal of facilities and infrastructure support to Laboratory programs and its mission(s).

This Goal measures the Contractor's overall success in deploying, implementing, and improving facility and infrastructure systems that efficiently and effectively support the mission(s) of the Laboratory.

The Contractor met expectations as evidenced by the Site Office evaluation providing the Contractor an overall score of **3.35**, which corresponds to a letter grade of **B+**. Specific scores and evaluation data for the Performance Objectives are provided below.

### **7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs**

Battelle has demonstrated its ability to manage real property that maintaining effective operations that includes facility management and worker safety. Additionally this area accomplished all Record Of Decisions associated with the Facility Management System.

The Mission Readiness process was initiated with the delivery of the Strategy for Increasing Investment in Infrastructure to minimize the cost of doing business. The ability for Battelle to meet this objective is evident by its funding profile for maintenance and renewal projects to maintain the facilities safe and current to meet laboratory needs. In addition, the laboratory has initiated a robust but achievable energy plan that meets a majority of the TEAM initiatives and goals. The initial proposal under the Energy Savings Performance Contract (ESPC) received Departmental approval and is proceeding towards the development of the Detailed Energy Survey. Although the ESPC contractor could not identify a viable Renewable Energy project for the IP, Battelle identified a potential sub-project and is requesting the ESPC to evaluate the renewable energy projects viability.

The measures associated with this objective were met and all but one exceeded the target. The maintenance renewal measure is specific for SC owned facilities and Battelle did exceed the target of the Maintenance Investment Index (MII) of 2% of Replacement Plant Value (RPV) by 1.49% to a year end MII of 3.49%, Battelle maintained the remainder of the laboratory facilities not owned by SC in a manner that met or exceeded the mission requirements of the laboratory. Battelle met the deadline for submittal of the Executable Plan; in fact they exceeded expectations by providing a final plan in lieu of the draft that was required. The performance exceeded expectations as laboratory staff worked with the PNSO staff throughout the development process, ensuring guidance requirements would be met. The plan was authorized by signature of the PNSO Manager prior to the December due date as required in the guidance. The utilization of SC owned facilities has exceeded the target of .98, with a score of 1.0. This indicates the facility was at capacity in regards to the amount of staff within the facility. The construction of the new office addition for the EMSL facility served to relieve a significant amount of pressure on space, but did not reduce the Utilization Index number from the original 1.0. Although not required other parts of the laboratory are also doing well in space utilization as measured against the SC target. The Facility Reliability Index far exceeded its target of \$100K by not having unplanned outages that disrupted the laboratory. The costs associated in this area are \$14K. The Operational Performance Index measure was also met with the targets being exceeded in that the boundaries associated with the Facility Use Agreement (FUA) were not exceeded. This evaluation results in a score of **3.4** and a grade of **B+**.

### **7.2 Provide Planning for and Acquire the Facilities and Infrastructure Required to support Future Laboratory Programs**

Battelle demonstrated the ability to provide facilities and infrastructure to meet the laboratories needs. Although there were some issues relating to integration, planning and project completion, the Laboratory was able to support the ongoing projects and missions. Battelle has been responsive to both stakeholders and its customer's mission needs as it addressed the varied construction projects. Battelle consistently maintained the cost and schedule performance measures within tolerance on the Physical Sciences Facility (PSF); overcame the significant challenge



posed by the receipt of a single high bid for the Balance Of Facility Contract by working through a rigorous value engineering process and successfully negotiating costs to within budget and supported the Federal Project Director in obtaining approval of Critical Decision 3B. Additionally, performance in the Transition Project was outstanding, in particular in addressing the various moves and conducting start-up and readiness of new facilities (i.e., Bio-products Sciences and Engineering Laboratory (BSEL), and EMSL Office Addition), it should be noted that additional challenges were identified and resolved in the BESL project working with Washington State University. These transition project activities were conducted without undue interruptions in service or significant project delays and did not affect the laboratory’s mission, which is a very positive indication of the outstanding coordination and integration efforts of the project.

The measures associated with this objective were met except for the small capital projects, where PNSO noted schedule performance issues, and a lack of proper baseline management. However, project scope did get completed and facilities and infrastructure projects were advanced sufficient to support laboratory needs. Two of the sixteen projects did not meet their performance targets. The measure associated with the FY07 Ten Year Site Plan actions was successfully completed, as was the submittal of the Strategy for Increasing Investment in Infrastructure. PNSO reviewed the document and found it acceptable. The Transition Project has maintained cost control within the acceptable variance range. Significant accomplishments have been achieved over this performance period as a result of conducting work effectively and efficiently in a manner that meets the principles of the Memorandum of Agreement between the Office of Science and the Office of Environmental Management and reduces overall risk to the Department. This performance results in a score of **3.3** and a grade of **B+**.

ELEMENT	Letter Grade	Numerical Score	Objective Weight	Total Points	Total Points
7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs					
7.1 Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage and Minimizes Life Cycle Costs	B+	3.4	50%	1.70	
7.2 Provide Planning for and Acquire the Facilities and Infrastructure Required to support Future Laboratory Programs	B+	3.3	50%	1.65	
<b>Performance Goal 7.0 Total</b>					<b>3.35</b>

**Table 7.1 – 7.0 Goal Performance Rating Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 7.2 – 7.0 Goal Final Letter Grade**



## **8.0 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems**

The Contractor sustains and enhances Integrated Safeguards and Security Management and Emergency Management systems to provide efficient and effective operations support to Laboratory programs and its mission(s).

This Goal measures the Contractor's overall success in deploying, implementing, and improving integrated safeguards and security management and emergency management systems that efficiently and effectively support the mission(s) of the Laboratory.

The Contractor met in most cases defined expectations and in one instance failed to meet expectations as evidenced by the Site Office evaluation providing the Contractor an overall score of **2.78**, which corresponds to a letter grade of **B**. Specific scores and evaluation data for the Performance Objectives indicated below are provided within the individual evaluations.

### **8.1 Provide an Efficient and Effective Emergency Management System**

The drills conducted regularly at each facility provide an effective means to continuously improve the PNNL Emergency Preparedness (EP) Program. The comprehensive drill reports identify the program's strengths and weaknesses; and associated actions are tracked to closure. The assessments of Battelle staff in both leased and Hanford facilities for EP awareness by Battelle staff continue to provide direct staff involvement for their responsibilities for emergency preparedness. External assessments performed at the Laboratory level for the Voluntary Protection Program, ISO14001 Program, and the Transportation Safety and Operations Compliance Assurance Process included evaluations of the EP Program rating the program as satisfactory with no repetitive deficiencies and meeting expectations. 100% of all items required to achieve compliance with the PNNL Emergency Management Plan are completed in accordance with an established schedule.

Other notables under this objective include: Battelle executed a successful "fire" operational drill with the city of Richland Fire Department and participated in the annual Hanford Site exercise simulating a fire at the Radiochemical Processing Laboratory with potential offsite consequences. Battelle is addressing an opportunity identified during the RPL exercise, assuring potential upgrades to emergency classifications as an event progresses are provided in a timely manner. Based on this performance, a score of **3.1** is earned and a grade of **B+**.

### **8.2 Provide an Efficient and Effective System for Cyber-Security**

The performance in the unclassified cyber security area has been mixed. With regards to the performance metrics outlined in the PEMP, Battelle struggled with one of the performance metrics which measured how Battelle deals with external reviews, specifically expecting no repetitive findings and whether or not Battelle was implementing and completing corrective actions. Battelle had 3 major audits this year from IG and the Office of Independent Oversight. In most cases, Battelle had very few findings and the findings that were identified were corrected to the satisfaction of the external audit staff. The DOE Office of Independent Oversight completed an unannounced penetration test against the PNNL unclassified cyber networks. The successful penetration identified several areas in the Laboratory's cyber security incident response program and network configuration management which need improvement. Some of those areas identified were the same areas identified in the 2006 Site Assist Visit. In response to the penetration several corrective actions were immediately implemented. Long term corrective actions are being developed and will be based on a formal causal analysis in order to ensure a stronger cyber security program. This penetration raised concern on the quality of the cyber program at PNNL.

The other measure supporting this objective looked at risks associated with cyber security events. Risks associated with cyber-security events are being managed within acceptable limits. The rolling 6-month average score is 0.54; well below our 0.75 baseline (target) score. An incident which occurred in August was closed in August however, later in September an episode involving the same trojan occurred, consequently the August score was modified to better reflect the true impacts for this incident. Additional systems unintentionally visited a malicious website where a Trojan was installed. Two of these systems process PII. The systems involved were removed from the network and the forensic analysis revealed that there was no transmission of files containing PII or any other sensitive data.



During FY 08, PNNL cyber security had some other activities that were notable. A GAP analysis of the NIST 800-53 Revision A and the current CSPP is being finalized and all page changes. This revision was used for the accreditation package for the Chinook supercomputer that has been submitted to PNSO for approval. The Supercomputer accreditation package was submitted and approved by the Designated Approval Authority. PNNL's response to HQ data calls were also provided in a timely manner, very little rework was required after data was submitted. Based on this performance, a score of **1.8** is earned and a grade of **C**.

### **8.3 Provide an Efficient and Effective System for the Protection of Special Nuclear Materials, Classified Matter, and Property**

Battelle successfully completed several Safeguards and Security related reviews/surveys at satellite locations during this evaluation period resulting in overall satisfactory ratings and without any repeat findings. Battelle successfully established a short-duration holding Material Balance Area (MBA) supporting the activity to segregate from the active inventory nuclear materials not being used on actively funded projects/programs was stood-up. Additionally, after a comprehensive review of all accountable nuclear material, 97% of items determined not needed for actively funded projects have been identified and will be transferred to the segregated MBA.

Other notables under this objective include: Implementation of the new common identity credential as required by Homeland Security Presidential Directive 12 (HSPD-12) was initiated. SAS began transitioning from the current DOE badge to the new HSPD-12 compliant credential. This included establishing a "credentialing center" and coordinated the installation of HSPD-12 compliant proximity card readers on more than 75 percent of the primary PNNL facility exteriors through routine life-cycle maintenance processes. The Training Approval Program review was conducted by DOE and resulted in approval of the SAS training programs. This evaluation results in a score of **3.1** and a grade of **B+**.

### **8.4 Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information**

A composite average of 98 percent of staff and management remained current with their SAS training requirements this fiscal year demonstrating a high level of commitment by line management and staff to the SAS program. Numerous enhancements were made to reduce line organization training costs and impacts associated with SAS courses. Training courses were modified using video-based concepts, streamlining the content, and allowing users to self-select portions to tailor courses to their specific responsibilities. Additionally, Battelle reported (and mitigated) all security events within required reporting timeframes with severity index measure composite score limited to 3 per month. Battelle successfully completed several Safeguards and Security related reviews/surveys at satellite locations during this evaluation period resulting in overall satisfactory ratings and without any repeat findings.

Other notables under this objective include: Battelle has completed 100% transitioning of all the eligible stand alone classified systems to a classified diskless architecture or have received approved from the Designated Approval Authority (DAA) to continue as standalone systems. Out of a starting total of approximately 180 standalone systems utilized for processing classified data, only 24 classified standalone systems remain. Secure Safe technology was deployed on the majority of Laboratory classified repositories. Deployment will save the line organizations resources by reducing actions associated with completing required end-of-day checks. Additionally, Secure Safe has contributed to the reduction in open container incidents leading to better protection of assets. This evaluation results in a score of **3.1** and a grade of **B+**.



ELEMENT	Letter Grade	Numerical Score	Objective Weight	Total Points	Total Points
8.0 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM)					
8.1 Provide an Efficient and Effective Emergency Management System	B+	3.1	25%	.78	
8.2 Provide an Efficient and Effective System for Cyber-Security	C	1.8	25%	.45	
8.3 Provide an Efficient and Effective System for the Protection of Special Nuclear Materials, Classified Matter, and Property	B+	3.1	25%	.78	
8.4 Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information	B+	3.1	25%	.78	
<b>Performance Goal 8.0 Total</b>					<b>2.78</b>

**Table 8.1 – 8.0 Goal Performance Rating Development**

Total Score	4.3-4.1	4.0-3.8	3.7-3.5	3.4-3.1	3.0-2.8	2.7-2.5	2.4-2.1	2.0-1.8	1.7-1.1	1.0-0.8	0.7-0
Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F

**Table 8.2 – 8.0 Goal Final Letter Grade**



**APPENDIX 1**  
**Office of Science**



## Laboratory Year-End Performance Assessment Report

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Date:

11/3/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

U.S. Department of Energy - Office of Science

Program Office:

Office of Biological and Environmental Research

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

Goal Score: 3.71

Goal Grade: A-

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### Goal 1.0 Performance Summary Statement:

PNNL provides internationally recognized scientific leadership, conducts impactful research, and publishes in high profile journals in subsurface science, climate research on clouds and aerosols, and proteomics, all DOE relevant mission areas.

PNNL conducts significant, high impact research across the BER portfolio including leading research on the behavior of contaminants in the subsurface environment, climate-relevant formulations of atmospheric cloud and aerosol processes for community climate models, proteomics for DOE's energy and environmental missions, and low dose radiation research. PNNL research in each of these areas has

a significant impact on their respective fields and in some cases, subsurface science and proteomics, PNNL scientists are world leaders in their respective fields.

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 3.7

Grade: A-

Weighting: 30

#### **Objective 1,1 Performance Summary Statement:**

In FY2008 PNNL continues to effectively lead three high-profile projects within the Environmental Remediation Sciences Program (ERSP). These include a SciDAC project and two Integrated Field Research Centers (IFRC). This research is having broad, significant impacts on the research community focused on the behavior of contaminants in the subsurface environment and specific impacts on DOE mission needs in environmental cleanup. The PNNL research group has a consistent presence at national and international meetings as invited speakers.

PNNL climate change research publications increased 12% in FY2008 versus FY2007. PNNL continues to demonstrate scientific leadership to develop and refine climate-relevant formulations of atmospheric cloud and aerosol processes for several community model platforms. Specifically, a PNNL developed parameterization has been successfully implemented in the next generation Community Climate System Model (CCSM) that will be used for the Intergovernmental Panel on Climate Change (IPCC) simulations. A PNNL scientist led the successful International Polar Year experiment that was coordinated with Canada, National Aeronautics and Space Administration (NASA), and the National Oceanic and Atmospheric Administration. NASA reported that the aircraft program of the Atmospheric Radiation Measurement (ARM) Climate Research Facility (ACRF) was exceptional in campaign planning and execution.

BER-funded biological scientists at PNNL published significant papers in FY 2008 in leading research journals including articles in high impact journals such as *Proceedings of the National Academy of Science* and *Nature Reviews Microbiology* as well as in the leading specialized journals. The very productive proteomics program is a world leader in biological application of mass spectrometry technology development and science applications such as metaproteomics.

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 3.7

Grade: A-

Weighting: 20

#### **Objective 1.2 Performance Summary Statement:**

The PNNL ERSP program recently completed installation of a novel in situ test area within the Hanford 300 Area as part of the Hanford IFRC project. Research performed at this test area will aid future remediation decisions about this site. The PNNL ERSP program integrates laboratory research at small scales with computational modeling and field scale research to provide a holistic understanding of transport processes in the subsurface. The program leadership is very well known and has a talented research staff. A reviewer of PNNL ERSP science plan said that the PNNL group are “some of the best in the world.” The PNNL ERSP invests 20% of its BER funding in key external collaborations. Five Environmental Molecular Sciences Laboratory (EMSL) staff were recognized in FY 2008 by professional societies: the American Vacuum Society, ASTM, the American Association for the Advancement of Science, and the National Academy of Sciences.

PNNL provides leadership in the climate research community. A staff member is serving as topic editor for the *Journal of Geophysical Research*. PNNL staff also led the successful International Polar Year experiment that focused on the impact of aerosols in the climatically sensitive region of the Arctic. Two PNNL scientists were elected fellows of the American Association for the Advancement of Science and one to the Soil Science Society of America. An Atmospheric Radiation Measurement (ARM) Climate Research Facility (ACRF) scientist was invited to chair the Interagency Coordinating Committee for Airborne Geosciences Research and Applications.

PNNL is the world leader in developing the biological applications of mass spectrometry. The leaders of the program are considered world-class leaders in this rapidly growing field. Another PNNL scientist serves as the chief scientist for the Genomics: GTL program as well as lead investigator for the Shewanella Federation, a multi-institutional highly collaborative research program.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 3.6

Grade: A-

Weighting: 20

#### **Objective 1.3 Performance Summary Statement:**

PNNL continues to increase its output of high quality publications in high quality peer-reviewed journals for both climate research and environmental remediation research. Publications have increased 12% in FY2008 versus FY2007. PNNL environmental remediation staff completed a roadmap document as part of a technical report on vadose zone contamination issues at Hanford.

PNNL has expanded its influence by developing significant collaborations with other climate research centers. The PNNL climate research program was very productive in FY 2008. PNNL added chemistry to the basic meteorology framework of a regional climate model that produced more realistic climate predictions. The model is used by hundreds of researchers worldwide. The PNNL research made significant progress and shows that terrestrial sequestration could contribute up to 20% of carbon mitigation needed globally. PNNL has developed collaborations with the University of Washington and Scripps to enhance its technical expertise and extend its scientific influence in climate research.

In FY2008, PNNL scientists supported by the Genomics: GTL program produced over 70 peer reviewed publications. The number of the publications is extraordinary, more than 60 for the proteomics programs alone. PNNL developed an analysis pipeline of open source, publically available software tools to facilitate study of gene regulatory and protein-protein interaction networks, and they collaborated with DOE's Joint Genome Institute (JGI) to develop proteome assisted genome annotation capabilities. Scientists in the proteomics group publish important basic research and technology application papers in leading journals.

### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 3.8

Grade: A

Weighting: 30

#### **Objective 1.4 Performance Summary Statement:**

PNNL completed its FY2008 ERSP metrics on time and within budget throughout the year. The content of the reports exceeded expectations and are a reference for ERSP program activities at the Rifle IFRC site. Both PNNL IFRC projects met their quarterly reporting requirements on time throughout the year. All reports were exceedingly thorough and more than suitable for review by an external committee of experts.

PNNL met the climate change research science metric for FY08 ahead of schedule by providing a series of three cloud and aerosol data products associated with the deployment of the ARM Mobile Facility to Niger. These results are expected to have heavy use by the international climate research community, since this experiment has been the focus of considerable user interest.

The PNNL proteomics team has been exceptionally productive in leading edge development of proteomics techniques and provision of services, including assisting end users in interpreting the complex data and with integration with other datasets. Several FY 2008 publications described new computational methods for analyzing information from proteomic experiments containing large amounts of data. The methods for cross-correlation of proteomic and genomic data were also improved by this research group, enabling better annotation of gene sequence information obtained at the JGI.

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## **Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score: 3.81

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

### **Goal 2.0 Performance Summary Statement:**

EMSL, PNNL's premier scientific user facility, is well run, in high demand, and facilitates the publication of high impact scientific results.

EMSL and PNNL have made remarkable progress in improving the operation and management of EMSL over the last several years and EMSL is now operating as a best-in-class user facility. EMSL and PNNL management continue efforts to improve EMSL's technical capabilities, to attract the highest quality users, to support research that underpins DOE mission needs, and to improve operations.

### **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: 3.2

Grade: B+

Weighting: 0

### **Objective 2.1 Performance Summary Statement:**

During FY 2008, EMSL held workshops and other planning meetings with the user community to assess future instrumentation needs as the basis for developing appropriate project management documentation. In addition, EMSL initiated planning efforts for small facility expansion projects, including a Radiological Annex and other specialized laboratory space. These planning efforts are expected to continue into FY 2009.

### **Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: 3.9

Grade:

Weighting: 15

### **Objective 2.2 Performance Summary Statement:**

During the last quarter of FY 2008, EMSL management worked hard to identify opportunities to

manage unplanned changes to the schedule for acceptance of Phase I of the Chinook high performance computer system. In spite of significant schedule changes caused by circumstances outside of PNNL's control, they identified other opportunities for schedule efficiency, and still managed to keep the project within the planned quarterly metrics. Benchmarking efforts conducted during FY 2008 regarding the Chemical Transmission Electron Microscope are expected to be extremely useful for enabling EMSL to deliver this major system to the user community.

### **Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: 3.8

Grade: A

Weighting: 75

#### **Objective 2.3 Performance Summary Statement:**

Overall, EMSL exceeded its required quarterly and end of year performance metrics for FY 2008 for facility availability. ES&H statistics for FY 2008 were exemplary. Balancing the user support resource needs among the large number of capabilities within EMSL continues to be challenging with relatively flat annual operations funding, and while the total number of users has decreased from FY 2007, this is expected and acceptable as EMSL continues to transition from supporting individual projects on single instruments to multi-disciplinary projects making use of multiple capabilities within EMSL. If the trend of high quality publications from EMSL users continues in FY 2009 and beyond, then it will be clear that this planned transition in operations was the right move.

ACRF exceeded its operating metrics for each quarter for FY 2008. The PNNL ACRF manager reallocated resources to meet the budget challenge rapidly fluctuating dollar exchange rates in order to successfully complete the International Polar Year experiment. PNNL successfully recruited personnel to cover key ACRF activities.

The PNNL/EMSL proteomics facility is extraordinarily productive. The instrumentation is available with minimal downtime

### **Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: 3.8

Grade: A

Weighting: 10

#### **Objective 2.4 Performance Summary Statement:**

In FY 2008, EMSL users produced significant science, including 14 journal covers and 9 publications in *Science*, *Nature* or the *Proceedings of the National Academy of Sciences (PNAS)*. Several EMSL staff received important recognition from the scientific community. Internal users remain a significant fraction of the EMSL user base at slightly over 40%, and so it is clear that PNNL is capitalizing on the EMSL's capabilities. Findings from the September 2008 review of EMSL, and specifically the health of EMSL's user community and outreach program, are still pending.

ACRF exceeded its operating metrics for each quarter for FY 2008. ACRF users produced significant science, including the development of several climate model improvements. For example, one such enhancement significantly improved the simulation of microphysical properties of boundary layer clouds and the simulation of surface and top of atmosphere radiation fluxes. The ACRF met with several user groups, including international workshops, and has supported active outreach; thus, the number of users has significantly exceeded DOE expectations for FY 2008. New ACRF data products developed for model development and testing are proving successful. The international organization,

Global Energy and Water Cycle Experiment (GEWEX) Radiation Working Group will adopt these data products for their research activities. ANL has successfully recruited personnel to cover key facility activities.

PNNL has utilized the proteomics facility to develop an extraordinary research program internally and to reach a large and prominent external research community. More than half of the budget for the proteomics programs in FY 2008 came from sources outside DOE, recognition of the scientific leadership and value of PNNL's capabilities and enabling the support of more than 50 staff members to carry out experiments on a wide array of problems in biology and medicine.

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### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.70

Goal Grade: A-

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 3.0 Performance Summary Statement:**

PNNL has exhibited an excellent response to BER's request for development of integrated research programs in subsurface science, climate, genomics, and low dose radiation.

PNNL management is very proactive in its regular, productive communication with BER staff about its research programs.

PNNL management continues to exhibit strong and effective leadership and good vision in its planning and implementation of DOE-relevant research programs. This leadership is exhibited through new hires, effective utilization of existing staff, and strategic use of LDRD funds for new capability development.

### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.6

Grade: A-

Weighting: 20

#### **Objective 3.1 Performance Summary Statement:**

PNNL exhibited significant leadership in successfully transitioning its core ERSP research to an integrated program. The PNNL science plan successfully communicated an integrated and coherent scientific vision for the PNNL program to an external peer review panel.

The PNNL Hanford IFRC project successfully designed and installed a novel in situ test site for subsurface research at the Hanford 300 Area. The PNNL Rifle IFRC successfully completed field activities for FY2008 including an in situ test of proteomics analyses to evaluate stimulated subsurface microbial communities involved in uranium immobilization. Both PNNL IFRC projects led workshops to clarify overall experimental goals and solidify collaborative research efforts within these large field-oriented projects.

PNNL is a leader in DOE climate change research In 2008. PNNL articulated a strong programmatic vision in clouds and aerosol forcing modeling involving strong external partnerships (e.g., universities)

and hiring new and top scientists. A Laboratory Directed Research and Development (LDRD) project on aerosols shows promise as a new research area that is highly relevant to DOE programmatic needs.

PNNL has shown a strong programmatic vision in planning for its integrated low dose radiation research, and has attracted and successfully hired a highly qualified, internationally recognized scientific leader. PNNL also successfully recruited a highly regarded environmental microbiologist, and is building a new community microbiology LDRD program around his research, that is highly relevant to DOE energy and environmental missions.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 3.6

Grade: A-

Weighting: 30

#### **Objective 3.2 Performance Summary Statement:**

PNNL continues to exercise effective program management. In FY2008 PNNL recommended that several ERSP projects be discontinued as part of its development of a more integrated, DOE relevant program that builds on PNNL's strength in evaluating subsurface contaminant transport. New LDRD funding was also made available to a PNNL ERSP researcher to evaluate microbial communities in the environment. With early input from BER, EMSL management produced a forward-looking EMSL Strategic Plan in August 2008. In addition to outlining strategic directions for the next few years, the plan includes actions EMSL proposes to take to achieve the planned outcomes.

PNNL's strong and effective management of its cloud and aerosol research programs led to a consolidation resources and support for promising new ideas using LDRD funds. PNNL has also responded to a BER call for integrated programs with an innovative and effective organization of efforts in the climate forcing research area.

Several Laboratory scientists played leadership roles in the DOE Workshop on Carbon Cycling and Biosequestration and the Genomics:GTL Knowledgebase Workshop. The Laboratory is developing computational capabilities to describe the proteins and metagenomic functional processes occurring within unsequenced microbial communities. This work involves novel optimization methods that can span proteomic scales from peptide expression to entire functional pathways in an organism.

PNNL's newly integrated low dose radiation research program was developed with a plan for a new systems biology focus, an integrated systems-level understanding of low dose and low dose rate exposure on human skin tissue signaling and response that was previously not possible.

PNNL is the first DOE site to complete and achieve accreditation (in the spring of 2008) by the Association for the Accreditation for Human Research Protection Programs – a major accomplishment. PNNL reports that the process resulted in a more robust program of human research subject protection and an improved website

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 3.8

Grade: A

Weighting: 50

#### **Objective 3.3 Performance Summary Statement:**

A clear line of communication between BER, PNNL ERSP management, and PNNL researchers is well

established and maintained. PNNL representatives are quick to initiate communication on emerging program issues. PNNL consistently keeps BER updated on progress and current activities on all science projects including program development and progress on the two IFRC projects. Quarterly updates from the two IFRCs in FY2008 were received on time. PNNL ERSP leadership visits BER regularly to discuss program developments. EMSL management and staff often initiate discussions with BER on emerging EMSL-related issues, and the management and staff sometimes spend considerable time either in communication with BER or in preparing and providing responses to BER requests for information. PNNL management provides BER staff with proactive, timely reports on any arising issues so that there are no surprises.

Climate research and ACRF staff have developed excellent communications and provide proactive information as well as proposed solutions to problems. The ACRF Manager provides highly informative monthly reports of the facility operations. The manager also contacts in a timely manner DOE concerning any critical issues with proposed solutions. PNNL management visits BER regularly to discuss climate research program developments.

The laboratory management is outstanding in communicating with BER staff and management about all biological research programs. Communications are consistently from appropriate senior staff, who are knowledgeable and who are prompt in reporting developments and problems.



## Laboratory Year-End Performance Assessment Report

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Date:

11/7/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

U.S. Department of Energy - Office of Science

Program Office:

Office of Basic Energy Sciences

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### **Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

Goal Score: 3.99

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 1.0 Performance Summary Statement:**

Materials sciences research programs have demonstrated sustained leadership in the physics and chemistry of ceramic surfaces and in defects and defect processes. Chemical sciences (catalysis and experimental and theoretical condensed phase chemical physics) and geosciences research programs continue to demonstrate outstanding scientific progress and significant impact, with an appropriate level of productivity and effective delivery of S&T results.

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 4.1

Grade: A+

Weighting: 50

## **Objective 1,1 Performance Summary Statement:**

The BES Materials Sciences and Engineering (MSE) Division supported programs at PNNL were reviewed in FY 2008. These programs were found to be scientifically strong and consistent with BES and PNNL missions and goals. The Defect and Defect Processing in Ceramics and Electronic and Magnetic Properties of Doped Oxide Films programs were deemed world class and viewed as contributing to the BES core competencies of materials for extreme environments and magnetic materials synthesis and processing, respectively. Concerns were raised for the Molecularly Organized Nanostructured Materials program over a perceived lack of scientific impact of the research, absence of an integrated modeling task, and a lack of project cohesion. PNNL management identified a new lead principal investigator for the program and strengthened key research elements identified by the reviewers as the most innovative and impactful.

Two programs supported by the BES Chemical Sciences, Geosciences, and Biosciences (CSGB) Division were reviewed in FY 2008. The Separations and Analysis program was reviewed on site in February 2008. The tandem mass spectroscopy of complex ions and their interactions with surfaces was judged to be world class. The results of the research were clearly influencing others in the field, and the principal investigator emerged into a fully independent, mid-career leadership role. The second subtask on chemistry and microphysics of small particles (aerosols) reviewed well, especially the capabilities of the instrumentation and associated data-mining tools. The principal investigator was encouraged to tackle research questions where this instrumentation is uniquely suited to provide fundamental scientific insights. Both efforts were highly productive and strongly supportive of BES goals.

PNNL continued a world-class experimental and theoretical geochemistry program funded under multiple field work proposals (FWPs). These efforts are being unified into one FWP for FY 2010. Two individual projects were renewed for FY 2009 based on excellent reviews; one project received a year of funding pending its reorganization into the unified FWP.

The Chemical Kinetics and Dynamics at Interfaces portion of the Chemical Physics program at PNNL was reviewed on site in March 2008. The reviewers found it to be a world-class research effort in terms of scientific quality, productivity and impact, and relevance to the BES mission. The scope and synergy of the effort and the development and use of unique facilities exemplified the research approach that should be taken at national laboratories. Several principal investigators were recognized as world leaders in their fields, and the group's collaboration with external scientists was deemed extensive. The location of the laboratories within the Environmental Molecular Sciences Laboratory (EMSL) provided enhanced expertise and facilities and mutual benefit to the collocated programs. There were extensive synergies among the individual subtask efforts and excellent collaborations with the scientists supported by the companion research program at PNNL in Molecular Theory and Modeling. Incorporation of the new subtask on Fundamentals of Solvation under Extreme Conditions was a highly favorable development.

Two Hydrogen Fuel Initiative (HFI) projects supported by the CSGB Division, one exploring the use of doped titanium dioxide photocatalysts for solar generation of hydrogen and the other focused on the control of hydrogen release and uptake in condensed phases, were merit reviewed by panel in FY 2008 and received renewal funding based on strong peer reviews.

Ongoing CSGB Division supported programs in catalysis and the molecular theory and the modeling portion of the Chemical Physics program at PNNL were not reviewed FY 2008, but continued to demonstrate excellent scientific progress and significant impact.

## **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 4.0

Grade: A

Weighting: 20

### **Objective 1.2 Performance Summary Statement:**

Research activities in defect processes in ceramics and metal oxide film synthesis supported at PNNL by the BES MSE Division are nationally and internationally recognized as producing forefront research and defining the research directions of their respective fields.

The BES CSGB Division supported mass spectrometry program at PNNL provides a distinct and important scientific resource for DOE. Two of the investigators are world renowned in their fields and a third has a very strong, early-career reputation. The group has strong collaborations with other major programs and hosts visiting students, postdocs and senior researchers. Several Geosciences researchers are nationally and internationally known. The Chemical Kinetics and Dynamics at Interfaces program at PNNL provides a distinct and important scientific resource. A number of the principal investigators are world renowned in their fields. The collaborative style was highly effective and produced notable synergism within the group and with its complementary theoretical program. The Molecular Theory and Modeling program (not-reviewed in FY 2008) was similarly world leading.

## **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 3.8

Grade: A

Weighting: 15

### **Objective 1.3 Performance Summary Statement:**

Research at PNNL supported by the BES MSE Division produced high quality publications in prestigious journals with significant impact.

The quantity and quality of research outputs from CSGB Division supported programs in peer-reviewed journals were deemed excellent by peer review. In the FY 2008 Separations and Analysis review, 36 publications were listed reflecting the scientific progress of the three-year review period. In the FY 2008 review of the Chemical Kinetics and Dynamics at Interfaces Program, 87 publications were listed reflecting the scientific progress of the three-year review period, a prodigious output, with several articles in the highly prestigious journal *Physics Review Letters*.

## **Objective 1.4 Provide for Effective Delivery of Products**

Score: 3.8

Grade: A

Weighting: 15

### **Objective 1.4 Performance Summary Statement:**

The activities supported by the MSE Division were effective in transmitting the results to the community. PNNL management for the materials research program was very responsive to BES requests for the delivery of scientific results.

CSGB Division research programs were effective and efficient in meeting scientific objectives and milestones, as measured by peer review; the programs were responsive to requests from BES for information and research highlights.

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## **Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of**

## **Research Facilities**

Goal Score: 0.00

Goal Grade: NA

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

### **Goal 2.0 Performance Summary Statement:**

#### **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: NA

Grade: NA

Weighting: 0

#### **Objective 2.1 Performance Summary Statement:**

#### **Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: NA

Grade: NA

Weighting: 0

#### **Objective 2.2 Performance Summary Statement:**

#### **Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: NA

Grade: NA

Weighting: 0

#### **Objective 2.3 Performance Summary Statement:**

#### **Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: NA

Grade: NA

Weighting: 0

#### **Objective 2.4 Performance Summary Statement:**

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### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.90

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 3.0 Performance Summary Statement:**

BES research programs at PNNL have demonstrated effective leadership and clear strategic planning. In the catalysis program the laboratory has devoted significant effort and LDRD funding to building an internationally recognized focus area.

#### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.9

Grade: A

Weighting: 40

#### **Objective 3.1 Performance Summary Statement:**

PNNL is a recognized leader in defect processes in ceramics and metal oxide thin films as evidenced by the most recent on-site peer review. The laboratory launched a Transformational Materials Sciences Initiative in order to fortify their expertise and capabilities in materials sciences.

PNNL management consistently presented a clear and concise scientific vision for the research programs supported by the BES CSGB Division, most recently in the CSGB FY 2008 management review. The stewardship of the laboratory in the area of catalysis was particularly noteworthy; including the recruitment of two accomplished, mid-career scientists into the CSGB catalysis science effort at PNNL.

#### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 3.8

Grade: A

Weighting: 30

#### **Objective 3.2 Performance Summary Statement:**

The research supported by the MSE Division was closely coupled to the Department's technology programs, including those of the Offices of Energy Efficiency and Renewable Energy, Fusion Energy Sciences, and Environmental Management.

PNNL management successfully coordinated CSGB Division sponsored programs, particularly in chemical physics, catalysis, and geosciences, with the scientific themes and user capabilities of the EMSL. The resultant synergy was evidenced by enhanced and often unique experimental and computational capabilities, scientific productivity, and impact in a manner that clearly benefits both BES and the Office of Biological and Environmental Research.

PNNL management continued the work of developing the PNNL catalysis effort into an internationally recognized focus area for the laboratory. Unfortunately, a critical leadership position, the director for the Institute of Interfacial Catalysis, remained unfilled.

**Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 4.0

Grade: A

Weighting: 30

**Objective 3.3 Performance Summary Statement:**

The coordinator for the MSE Division program at PNNL performed well, particularly with respect to his detailed attention to program reviews. He was responsive to BES comments and directions provided in the guidance letter.

Communications between laboratory management and the CSGB Division was frequent and effective. Managers and scientists at PNNL interacted frequently and appropriately with program managers in BES, and the lab prepared annual summary presentations and program booklets that kept BES well informed of research progress in all programs. PNNL management was responsive in providing a detailee to the BES Biosciences program.



## Laboratory Year-End Performance Assessment Report

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Date:

11/5/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

U.S. Department of Energy - Office of Science

Program Office:

Advanced Scientific Computing Research

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

Goal Score: 3.41

Goal Grade: B+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### Goal 1.0 Performance Summary Statement:

ASCR supported PNNL researchers are delivering excellent work in a few critical areas. However, the PNNL program is very narrow, focused on one or two good PIs and a strong niche in subsurface science and related multiscale mathematics but a National Laboratory with the resources of PNNL should have more such researchers.

#### Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Score: 3.5

Grade: A-

Weighting: 40

**Objective 1.1 Performance Summary Statement:**

ASCR supported PNNL researchers are delivering excellent work in a few critical areas. PNNL is involved in eight SciDAC projects and leads one - playing a major role in both SciDAC effort for modeling subsurface reactive transport of contaminants through groundwater with the potential to contribute to related efforts in carbon sequestration. In applied mathematics, ASCR supports only one researcher's basic research efforts underpin progress in the SciDAC groundwater projects. In computer science, the work in scalable fault tolerant operating systems and tools is not only critical to ASCR program goals with a strong publication record but was also, in FY08, recognized with the 2007 Laboratory Director's Award for Exceptional Scientific Achievement.

**Objective 1.2 Provide Quality Leadership in Science and Technology**Score: 3.4

Grade: B+

Weighting: 30

**Objective 1.2 Performance Summary Statement:**

Though few in number, several of the ASCR supported PNNL researchers are either recognized leaders in their field or are up and coming young investigators. However, the PNNL program is very narrow, focused on one or two good PIs and a strong niche in subsurface science and related multiscale mathematics but a National Laboratory with the resources of PNNL should have more such researchers.

**Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**Score: 3.2

Grade: B+

Weighting: 15

**Objective 1.3 Performance Summary Statement:**

In areas of strength, PNNL have sustained outputs that advance ASCR goals in Computer Science and department goals in subsurface science.

**Objective 1.4 Provide for Effective Delivery of Products**Score: 3.4

Grade: B+

Weighting: 15

**Objective 1.4 Performance Summary Statement:**

PNNL publishes results in scientific journals and workshop proceedings. Software is usually made available via open source with documentation and support with two new code releases in FY08.

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**Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score: 0.00

Goal Grade: NA

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 2.0 Performance Summary Statement:**

**Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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**Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.06

Goal Grade: B+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

### **Goal 3.0 Performance Summary Statement:**

PNNL contributed significantly to planning and communications in key areas. However, PNNL has yet to refine its vision for advanced scientific computing beyond its niche areas. Recent progress indicates the potential for improvement in FY09. There was also a significant cyber security event at a laboratory with major WFO activities that should have been leveraged to prevent such incidents.

### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.2

Grade: B+

Weighting: 30

#### **Objective 3.1 Performance Summary Statement:**

Efficiency and Effectiveness of joint planning (e.g., workshops) with outside community;

- PNNL contributed significantly to joint planning for cyber security in FY08 and participated in many other planning efforts.

Articulation of scientific vision;

- PNNL has yet to refine its vision for advanced scientific computing beyond its niche areas.

Development of core competencies, ideas for new facilities and research programs; and

Ability to attract and retain highly qualified staff.

- PNNL has had some success in attracting high quality in 2008.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 2.7

Grade: B-

Weighting: 40

#### **Objective 3.2 Performance Summary Statement:**

Quality of R&D and/or user facility strategic plans

- PNNL activities have yet to coalesce into a strategic plan in ASCR space.

Adequacy in considering technical risks; success in identifying/avoiding technical problems; and effectiveness in leveraging (synergy with) other areas of research;

- PNNL had a significant cyber security event which falls under this area because PNNL failed to leverage the significant, successful and directly relevant WFO activities to strengthen its internal protections.

Demonstration of willingness to make tough decisions (i.e., cut programs with sub-critical mass of expertise, divert resources to more promising areas, etc.).

- PNNL demonstrated this in both FY07 and FY08 but the difficult changes have not always paid off for the laboratory in ASCR space.

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 3.4

Grade: B+

Weighting: 30

#### **Objective 3.3 Performance Summary Statement:**

PNNL has greatly improved communications with ASCR and made many contributions to ASCR outreach and planning efforts. Reports and required documentation is generally useful and provided on time. However, budget information continues to have difficulties with timeliness and consistency.



## Laboratory Year-End Performance Assessment Report

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Date:

11/20/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

U.S. Department of Energy - Office of Science

Program Office:

Fusion Energy Sciences

FY Funding Level: (Budget Authority)

\$1.5 M

Evaluator:

Phone Number:

E-mail Address:

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### **Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

Goal Score: 3.85

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 1.0 Performance Summary Statement:**

Pacific Northwest National Laboratory (PNNL) exceed expectations in mission accomplishment.

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 4.0

Grade: A

Weighting: 25

#### **Objective 1,1 Performance Summary Statement:**

PNNL has done an excellent job both in the conduct of their own research as well as interacting with the rest of the US fusion materials community in doing joint activities. Their technical expertise in their areas of research is well recognized both domestically and internationally.

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 fiber reinforced silicon carbide composites), on body-centered cubic metals (focusing on ferritic/martensitic steels, nanostructured ferritic alloys, and vanadium alloys), 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 make numerous contributions to address critical feasibility issues in the use of these materials in a fusion environment.

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 4.0

Grade: A

Weighting: 25

#### **Objective 1.2 Performance Summary Statement:**

The principal investigator, has provided strong leadership in several areas of fusion materials research domestically and internationally, and provided leadership of the vanadium alloy research task under a US-Japan collaboration. The laboratory has provided personnel resources to the U.S. Fusion Materials Science Coordinators Organization (MASCO) and has made important contributions to collaborative research on fusion materials under the International Energy Agency (IEA) as well as providing technical expertise on the U.S. 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.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 3.7

Grade: A-

Weighting: 25

#### **Objective 1.3 Performance Summary Statement:**

The PNNL research staff is very well respected in both the domestic and international communities and has produced numerous peer-reviewed publications in key areas of fusion materials research. PNNL's original and creative scientific output has advanced the science of fusion materials and has shown sustained progress and impact in the field. The scientific community holds the PNNL staff in very high regard and they submitted a number of papers for the December 2007 International Conference on Fusion Reactor Materials which is the premier fusion materials conference held every two years.

### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 3.7

Grade: A-

Weighting: 25

#### **Objective 1.4 Performance Summary Statement:**

PNNL has done an excellent job of meeting all of its milestones and in transmitting their results to the fusion and materials communities

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**Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score: 0.00

Goal Grade: NA

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 2.0 Performance Summary Statement:**

**Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.80

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 3.0 Performance Summary Statement:**

PNNL exceed expectations in science and technology program management.

### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.7

Grade: A-

Weighting: 30

#### **Objective 3.1 Performance Summary Statement:**

PNNL continues to focus its efforts on the most important tasks of the materials program: material issues with the ITER device, the ITER test blanket program, U.S. participation in international collaborations of a bilateral nature (mainly Japan) and of a multinational nature (mainly, with Europe, Japan, and the Russian Federation under the IEA Implementing Agreement on Fusion Materials).

PNNL has a critical role in the materials area. They have been very effective in conducting their research as well as interacting with the rest of the organizations that are conducting similar research. They have been very effective in the utilization of their limited resources and in adjusting their program as the need arises.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 4.0

Grade: A

Weighting: 35

#### **Objective 3.2 Performance Summary Statement:**

PNNL strongly contributes to all elements of the Fusion Materials Science Program effort including ferritic/martensitic steels, nanostructured ferritic alloys, vanadium alloys, fiber reinforced silicon carbide composites, and fundamental studies of irradiation effects in key face-centered cubic metals. In addition, PNNL manages key elements of the two U.S.-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, continues to support this year the fusion plasma chamber community in their 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 Oak Ridge National Laboratory (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 U.S. contributions to the ITER device.

**Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 3.7

Grade: A-

Weighting: 35

**Objective 3.3 Performance Summary Statement:**

PNNL is highly responsive to DOE and to fusion community input in setting the direction of their work. They have also help the other contractors involved in fusion materials research in guiding their activities to be consistent with the overall needs on the program.



## Laboratory Year-End Performance Assessment Report

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Date:

11/3/2008

Headquarters Program Office Fiscal Year 2007 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

U.S. Department of Energy - Office of Science

Program Office:

Workforce Development for Teachers and Scientists

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

Goal Score: 3.15

Goal Grade: B+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### Goal 1.0 Performance Summary Statement:

The science education office at Pacific Northwest National Laboratory has dedicated itself to program and process improvement both of which are most evident by the overall quality of the internship/educator research products. The education staff is as well managed, creative and has good working relationship with the research divisions. Their program are data driven using WDTS participant surveys, research mentor evaluation, quality of deliverables, and self-evaluation to annually improve the quality and management of the program.

PNNL manages its education programs to capitalize on the influences within their operating framework, specifically the local community colleges and universities, middle/high public school

system, and business community and engages them as they deliver science education to meet regional needs. The education office uses these stakeholders effectively to leverage resources to extend the number of internships

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 3.5

Grade: A-

Weighting: 25

#### **Objective 1,1 Performance Summary Statement:**

- PNNL's education staff effectively plans all intern educator placements and mentor researchers to maximize the strengths of both. Mentors have a pre approved research assignment that is matched to interest and skill level on the participant. Research interns and fellows must prepare in advance for their laboratory experience by read ahead materials, online orientation, and guidance from their mentor so they are able to integrate into the research quickly.
- The education staff is ensures the mentors are carefully selected, encouraged to participate in mentor training, have access to online mentor best practices, and are provided support by education office in developing appropriate intern research projects.

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 3.5

Grade: A-

Weighting: 30

#### **Objective 1.2 Performance Summary Statement:**

- The science education office has made themselves an invaluable part of the laboratory operation. They are very well managed and provide value added to the research divisions by supplying serious talented interns/educators. They look for opportunities to improve their processes, and contribute to the mentor mentee experience.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 3.5

Grade: A-

Weighting: 20

#### **Objective 1.3 Performance Summary Statement:**

- At PNNL the intern/educator research experience and science enrichment activities are judged to be of the highest quality. The abstracts are excellent as judged by a peer review and participant surveys validate the overall research experience is competitive with best in class.
- The staff continually shares program management best practices among themselves and with other laboratories.

### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 3.5

Grade: A-

Weighting: 15

#### **Objective 1.4 Performance Summary Statement:**

- Mentors are quite willing to accept a research intern because they know the education staff will provide someone who is well managed, serious, and technically competent.

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**Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score:

Goal Grade:

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 2.0 Performance Summary Statement:**

**Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: Select...

Grade:

Weighting: 0

**Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: Select...

Grade:

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: Select...

Grade:

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: Select...

Grade:

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.50

Goal Grade: A-

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 3.0 Performance Summary Statement:**

The science education staff continually shares program management best practices among themselves and with other laboratories. They work closely with headquarters on opportunities to improve program evaluation, and helps us remain current with the state and national literature on science education in the laboratory environment

### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.5

Grade: A-

Weighting: 20

#### **Objective 3.1 Performance Summary Statement:**

- The education office maintains a good balance of ensuring that interns/educators are contributing the research while taking advantage of the multiple opportunities throughout the laboratory for science education.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 3.5

Grade: A-

Weighting: 40

#### **Objective 3.2 Performance Summary Statement:**

- The education staff is outstanding in their development and assessment of policies, procedures, and program deliverables.
- The managers in the office work as a very cohesive team, willing to support one another, and peer review each others work in an effort to improve the program.
- The team approach is implemented so successfully in this office the it is one of their best and most recognized assets.

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 3.5

Grade: A-

Weighting: 40

#### **Objective 3.3 Performance Summary Statement:**

- Commitment to communication and an appreciation for learning and research is a basic principle

for operation within the laboratory. It is a quality that is impressed upon every participant and guides all interactions between mentor and mentee, as well the effective program relationship between WDTS and the education staff.

- The education staff is with WDTS and within the laboratory is known for efficiently and effectively managing science education activities. Customer communication is among it highest priorities and their customer commitment is documented by surveys with many/most of their stakeholders: interns, mentors, laboratory division directors, and HQ program managers and score high compared to all laboratories.



## **APPENDIX 2**

### **Office of Defense Nuclear Nonproliferation**



## Laboratory Year-End Performance Assessment Report

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Date:

11/10/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

Department of Energy - National Nuclear Security Administration

Program Office:

Defense Nuclear Nonproliferation

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

Goal Score: 3.98

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### Goal 1.0 Performance Summary Statement:

### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

- Supported conceptualization and implementation of Next Generation Safeguards Initiative (NGSI) including by participating in the Safeguards Summit, NGSI International Meeting, and contributed to drafting of the Fundamental Review report, and the NGSI Program Plan. (NA-24)
- Supported Global Nuclear Energy Program (GNEP) activities including identifying

**emerging and evolving proliferation threats that could arise as a result of the global expansion of nuclear energy and authored a study on a potential grid-sharing arrangement among Middle East and North African partners. (NA-24)**

- 3. • Supported NA-243 Safeguards team on NGS Human Resources programs; Advanced Safeguards Approaches (ASA-100); and Safeguards Policy Support (including a study on State Evaluation Report process). Overall, PNNL has provided excellent support to the NA-243 Safeguards team. The lab did, however, fail to retain one of its top experts on IAEA safeguards (which will delay completion of two projects); and at least one study (EC/SG Integration) is going to be delivered much later than expected.**

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 4.0

Grade: A

Weighting: 25

#### **Objective 1,1 Performance Summary Statement:**

PNNL has provided excellent support to SLD in 2008 in a range of areas. (NA-25)

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 3.7

Grade: A-

Weighting: 15

#### **Objective 1.2 Performance Summary Statement:**

In sum, PNNL has performed admirable work on NA-22 funds. NA-22 believes that the laboratory is well positioned for future high-quality research and has all the requisite skills and capabilities to be a driving force in the research community. (NA-22)

PNNL gave an accurate evaluation of its work for NA-241, and NA-24 concurs in the self evaluation grades. PNNL has done a fine job of providing support to NA-241's programs. The preparation and analytical work at HQ for NNV and the on-the-ground work in the DPRK has been superb. It is nice to see that on page 1, PNNL lists its DPRK work as the second bullet under their "Key Accomplishments" section. (NA-24)

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 4.0

Grade: A

Weighting: 30

#### **Objective 1.3 Performance Summary Statement:**

Across the board, NA-22 Program Managers were extremely positive in their feedback on the quality, relevance, timeliness and cost-effectiveness of R&D programs at PNNL. They felt that the laboratory fundamentally addressed hard problems and moved research forward in measurable ways that pushed the edge of both science and technology. Equally important, the NA-22 Program Managers believe that the PNNL staff is world-class in their research fields and are the "go to" individuals to lead national and

international collaborations and agendas. (NA-22)

**Objective 1.4 Provide for Effective Delivery of Products**

Score: 4.1

Grade: A+

Weighting: 30

**Objective 1.4 Performance Summary Statement:**

In toto, the Office of Nonproliferation Research and Development (NA-22) concurs with Pacific Northwest National Laboratory's self-assessment of the quality, relevance and timeliness of FY08 work completed for NA-22. Based on the Office of Science grading criteria, NA-22 assigns the grade of "A" for work completed in FY08. (NA-22)

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**Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score:

Goal Grade:

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 2.0 Performance Summary Statement:**

**Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: Select...

Grade:

Weighting: 0

**Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: Select...

Grade:

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

### **Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.3 Performance Summary Statement:**

### **Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.4 Performance Summary Statement:**

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### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 4.08

Goal Grade: A+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 3.0 Performance Summary Statement:**

### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

- 1. • Supported INSEP by anticipating our needs and more often than not producing ideas that the team adopts, particularly, in the nuclear infrastructure development arena. INSEP looks forward to greater contributions in the safeguards arena as well. (NA-24)**
- 2. • Provided very good management of INECP projects. INECP's engagement in Central Asia runs like clockwork, and PNNL has contributed greatly to starting and running engagements in other parts of the world. PNNL staff also score high marks for responsiveness, since it is always easy to get information, answers or anything else HQ needs from the PNNL staff. (NA-24)**
- 3. • Supported NGS Human Capital development efforts through its "Safeguards Summer Interns" program. (NA-24)**

### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 4.0

Grade: A

Weighting: 20

### **Objective 3.1 Performance Summary Statement:**

PNNL gave an accurate evaluation of its work for NA-241, and NA-24 concurs in the self evaluation grades. PNNL has done a fine job of providing support to NA-241's programs. The preparation and analytical work at HQ for NNV and the on-the-ground work in the DPRK has been superb. It is nice to see that on page 1, PNNL lists its DPRK work as the second bullet under their "Key Accomplishments" section. (NA-24)

From a business, operations, safety, security and environment/health perspective, NA-22 has been quite pleased with PNNL performance over the grading period. At no time has there been even a hint of problem with security or safety issues on NA-22 funded projects. Further, interaction with the laboratory in terms of funding or program management has been equally as smooth. The lab has been extremely responsive to NA-22 needs and requests. (NA-22)

PNNL also is managing construction of a new facility (the PSF/CRL) under partial NA-22 funding. This effort has been extremely taxing for the laboratory due to the unique funding arrangement. Throughout the year, NA-22 has found the laboratory to be extremely responsive and easy to engage. We are confident that, given the funds needed to finish the project, the laboratory has all the requisite capabilities to complete the project within scope and projected cost. (NA-22)

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 4.1

Grade: A+

Weighting: 20

### **Objective 3.2 Performance Summary Statement:**

Two outstanding M&Os from PNNL are providing support at headquarters. Both have proven invaluable in moving the SLD program forward. (NA-25)

The SLD team in Richland, is absolutely first rate. The team continues to provide training and sustainability support for our work in partner countries, including the much praised Hammer training onsite in Richland, assists with equipment analysis and procurement, has developed an innovative SLD help desk, provides major assistance on configuration management issues, and provides certified project managers to assist with Megaports deployments. In addition to this wide range of duties, when particular issues arise in which the program needs additional support, the PNNL team is always the first place SLD goes to get assistance. The PNNL team supporting SLD is consistently organized, disciplined, creative and dependable. (NA-25)

The Regional Training and Technical Support Infrastructure Project has done a good work in training. Excellent PNNL team lead. (NA-25)

The Protective Force Project has done excellent work. The team lead is excellent as are the members of the team. (NA-25)

The MPC&A Program has always placed a strong emphasis on Russian infrastructure. **However the lab's assertion of a "much stronger emphasis" would not be correct.** The project team lead for the Transportation Security Project is a PNNL employee. **However, it is not correct to say that PNNL is "providing secure transportation for SNM movements."** Although not specifically mentioned,

PNNL provided good support to the MPC&A Education Project. (NA-25)

**PNNL support was dramatically reduced at the end of FY07 when the management of the Mayak project was moved to LANL (for cause). PNNL has continued to provide some technical and contracting support to this project and has done so in a professional manner. However, PNNL does not play a large role in the OWMP scope of work and therefore does not have the expansive impact that it claims throughout the self-assessment, (e.g., We would not identify PNNL as the "Laboratory of choice." However, they are clearly very active in other parts of the Program.) (NA-25)**

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 4.1

Grade: A+

Weighting: 60

#### **Objective 3.3 Performance Summary Statement:**

PNNL support for the Russian Program in Office of Fissile Materials Disposition was focused primarily on managing thirteen existing task order contracts with the Russian regulatory agency, Rostekhnadzor. PNNL personnel consistently met their FY 2008 performance expectation to provide timely review of Russian technical deliverables (within 45 days of receipt), per requirements of the contracts for the disposition of Russian surplus weapons-grade plutonium. PNNL also awarded a competitive technical support contract and quickly provided task orders that gave the program access to resources allowing key technical work and oversight at Russian Institutes to continue. Overall, PNNL has continued to provide excellent support to NA-263. (NA-26)

PNNL plays a substantial role in project management and contracting support. PNNL's FY08 performance has been, in general, very good. **A single complaint is the capacity of PNNL's contracting organization; there is a sense within some NA-25 teams that PNNL may have too junior and too few contracting officers for the task, and that contracts can get held up in a pile of other work, leaving it to the project team to pursue the contracting officer.** (NA-25)

PNNL also is managing construction of a new facility (the PSF/CRL) under partial NA-22 funding. This effort has been extremely taxing for the laboratory due to the unique funding arrangement. Throughout the year, NA-22 has found the laboratory to be extremely responsive and easy to engage. We are confident that, given the funds needed to finish the project, the laboratory has all the requisite capabilities to complete the project within scope and projected cost. (NA-22)



**APPENDIX 3**

**Department of Homeland Security**



## Laboratory Year-End Performance Assessment Report

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Date:

11/13/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

Department of Homeland Security

Program Office:

Office of Science and Technology/Division of Research/Office of National Labs

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

Goal Score: 4.14

Goal Grade: A+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### Goal 1.0 Performance Summary Statement:

PNNL and its research and development staff continue to provide leading edge technology for DHS customers. They have excelled in working with new customers to whom S&T provides technology support. PNNL's work to transition technologies to the marketplace, makes the DHS investment even more accessible and beneficial to the end users.

#### Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Score: 4.2

Grade: A+

Weighting: 40

### **Objective 1,1 Performance Summary Statement:**

PNNL's work had a positive impact on the fields of science and technology through developing innovative technologies, advancing scientific knowledge, and creating first-of-a-kind methods. For example, PNNL's strong capability for developing organic signatures to indicate biomaterials production methods is helping DHS gain information to narrow possible suspects in biological terrorism. PNNL's efforts in immunoassay reagent and assay development are improving capabilities and enabling development of revolutionary systems to detect biological agents in the food supply and other complex samples. PNNL is also developing a validated strategy and methods for sampling anthrax so that decision makers can have high confidence of detecting contamination and of certifying buildings for re-occupation. In addition, PNNL created a uniquely designed sealed plutonium metal source for use in nuclear detection research, development, testing, and evaluation. PNNL is also working with other national labs, universities, DHS, and industry to initiate state-of-the-art, leading-edge science and engineering solutions to address global supply chain security.

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 4.1

Grade: A+

Weighting: 30

### **Objective 1.2 Performance Summary Statement:**

PNNL staff continue to provide quality leadership in science and technology via pioneering development of new models, innovative approaches, and mentoring of future scientists. For example, through a unique multidisciplinary approach, PNNL is developing a software framework to assess the likelihood of a group to engage in violent behavior, potentially stopping terrorism before it escalates into action. Working with the Transportation Security Laboratory, PNNL is demonstrating the effectiveness of active millimeter wave imaging to detect threats such as a suicide bomber at a distance in real-time. PNNL supports the DHS University Centers of Excellence by collaborating on research and partnering to develop and mentor scientists as they study ways to prevent terrorist attacks within the U.S., reduce America's vulnerability to terrorism, and minimize the damage and recovery efforts from disasters. PNNL is also using modern computer gaming techniques to address the issues that cause Hispanics, other minorities, and women to lose interest in science and mathematics during middle school.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: NA

Grade: NA

Weighting: 0

### **Objective 1.3 Performance Summary Statement:**

The outputs from PNNL's work sustain critical DHS program goals. For example, PNNL serves as the onsite technical coordinator and integrator for the Interagency Biological Restoration Demonstration project to provide coordinated, system-level approaches for the recovery and restoration following the release of a biological agent. In that role, PNNL staff have been praised by DHS, its partnering agencies, and other contractors for their ability to partner with other organizations and share information and insights in a collaborative manner. In addition, PNNL is meeting a DHS bioassays portfolio goal by developing and validating polymerase chain reaction assays, which can be used to assess the impact of pathogens detected in the environment such as through the BioWatch program. PNNL is also leading the Integrated CBRNE (chemical, biological, radiological, nuclear, and explosive) Detection System Demonstration in Los Angeles to address Congressional legislation that requires DHS S&T to integrate its maturing sensor systems with those of other agencies to improve situational awareness and decision making in emergencies. In addition, PNNL is leading the Standoff Technology Demonstration Program supporting the U.S. Secret Service and Transportation Security Administration in accelerating the development and deployment of explosives countermeasures using standoff technologies to allow for the non-intrusive, non-checkpoint screening of large numbers of

people and vehicles. PNNL also provided key capabilities to DNDO's Injection Study project, leading the work in terms of technical scope and coordination among a team of national laboratories and universities.

#### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 4.1

Grade: A+

Weighting: 30

#### **Objective 1.4 Performance Summary Statement:**

Because PNNL staff understand the needs of DHS components and first responders, Lab staff also effectively delivered science and technology. For example, PNNL used its capabilities in modeling, simulation, and operations research to develop a generalized process that examines the efficacy of U.S. airport entry screening and operational impacts of pandemic influenza. The Centers for Disease Control and Prevention has expressed interest in using the PNNL-developed airport simulation to conduct additional analyses, leveraging this work. PNNL is also deploying its Fused Analytic Desktop Environment at the U.S. Coast Guard Maritime Intelligence Fusion Center Pacific, using data from previously unknown sources and sometimes in formats that are not currently handled, thus significantly expanding the information available to identify and deter criminal and terrorist activities. In addition, PNNL is supporting the S&T mission to prototype and deploy technology developed at the DHS University Centers of Excellence for use by first responders. PNNL is coordinating the effort to facilitate the process of technology adoption by connecting technology developers and first responders to establish a mutually agreed on plan for technology research, development, and adoption, in this case at the Port Authority of New York/New Jersey. In addition, PNNL moved quickly to design, procure, construct, install, and commission two additional radiation portal monitor sites for the Southeast Transportation Corridor Pilot, which has been highly successful in interfacing with state-level agencies (who own the systems), in part because PNNL developed customized state turnover documentation.

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#### **Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score: 0.00

Goal Grade: NA

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 2.0 Performance Summary Statement:**

#### **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: NA

Grade: NA

Weighting: 0

#### **Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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**Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 4.08

Goal Grade: A+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 3.0 Performance Summary Statement:**

PNNL provides the best mix of personnel skills to perform required analysis and has an excellent record of making group recommendations to keep projects on budget and time.

**Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 4.0

Grade: A

Weighting: 50

**Objective 3.1 Performance Summary Statement:**

PNNL staff provided stewardship and programmatic vision by applying advanced scientific concepts

and thought leadership. For example, PNNL is providing the vision for the Generalized Data-Driven Analysis and Integration project, which is bringing advanced technologies to bear on knowledge analysis, improving allocation of resources, allowing timely identification of important suspects, and increasing arrests. PNNL also continued to provide explosives subject matter expertise and technical leadership in support of the S&T Explosives Division. Also, one of PNNL's internationally known experts supports several DHS components in identifying, reviewing, developing, and adopting standards to help the nation's emergency response personnel safely and efficiently prevent, prepare, train, and respond. In addition, PNNL played a major role in the West Coast Small Vessel Maritime Preventative Rad/Nuc Detection Pilot, including chairing a subcommittee of the Area Maritime Security Committee related to the pilot, supporting capability gap analyses, helping stakeholder agencies develop a pilot concept of operations for human-portable equipment, establishing training and exercise schedules, and coordinating the Puget Sound background measurement campaign. PNNL also coordinated control systems security efforts among federal, state, local, and tribal governments to protect the nation's critical infrastructures and provided program strategy, standards expertise, training, and other technical support.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 4.1

Grade: A+

Weighting: 25

#### **Objective 3.2 Performance Summary Statement:**

PNNL provided effective and efficient program planning and management by managing some of DHS's most important work, including the Radiation Portal Monitor Project (RPMP) and the National Visualization and Analytics Center (NVAC). Through the RPMP, PNNL, in partnership with its federal clients, has made outstanding progress in accomplishing two goals: deploying technology to scan 100% of incoming international traffic and cargo for illicit radioactive materials at the approximately 250 ports of entry and approximately 770 border crossings into the U.S., and maintaining the uninterrupted flow of legitimate trade and travel. All milestones are on track for completion as required by the Secretary. The NVAC is developing the visual analytics capabilities to reduce the risk of catastrophic terrorist attacks, minimize the vulnerabilities of the nation's infrastructures, and be prepared for and respond to disasters. NVAC staff bring together innovative leadership, powerful partnerships, and advanced visual analytics research that address DHS missions. Technologies developed at NVAC, such as the Scalable Reasoning System, have been deployed and are in use among first responders, increasing their ability to respond quickly and effectively.

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 4.2

Grade: A+

Weighting: 25

#### **Objective 3.3 Performance Summary Statement:**

PNNL maintained effective communication and responsiveness to customer needs across programs and projects. For example, PNNL exceeded DHS expectations for a pilot to test tunnel resiliency, earning the project team a "job well done". PNNL staff also identified a potential key gap in DHS planning: having law enforcement agencies validate technology gaps in the research and development agenda. PNNL is working with law enforcement to develop a prioritized list of challenges facing law enforcement and identify these technology gaps. In addition, PNNL recognized that state agencies face challenges in homeland security, from choosing the right instrument to detect chemicals and radiation to raising awareness among staff on how to detect and respond to biological and explosive threats.

Some challenges are so complex they can only be met by developing new technology and pushing the bounds of science. In FY08, PNNL helped eleven western states and the Territory of Guam find a potential answer: partner with the regional national laboratories. Under encouragement from DNDO and S&T, PNNL is working with the states and territory to consider how a partnership of multiple states, teamed with national laboratories, could strengthen the collaboration with DHS and better ensure the security of the states. S&T is already considering extending this model to other regions of the country.



## **APPENDIX 4**

### **Office of Environmental Management**



## Laboratory Year-End Performance Assessment Report

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Date:

11/19/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

Department of Energy

Program Office:

Office of Environmental Management

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### **Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

Goal Score: 4.10

Goal Grade: A+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 1.0 Performance Summary Statement:**

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 4.2

Grade: A+

Weighting: 50

#### **Objective 1,1 Performance Summary Statement:**

PNNL provided essential data and analysis to understand and predict the behavior of contaminants in the Hanford Site vadose zone (the mostly unsaturated zone between the soil surface and the permanent groundwater table). The Laboratory significantly advanced the understanding of the vadose zone and geochemistry of uranium as documented in foundational reports and journal publications. The Laboratory also provided new integrated approaches to treat groundwater and the vadose zone through in situ remediation methods. PNNL leveraged investments by the DOE's Office of Science (SC) and EM to test and evaluate groundwater remediation options along the Columbia River, and invested Laboratory Directed Research and Development (LDRD) funds in developing novel approaches for vadose zone remediation and next-generation computational models. This work is designed to protect the Columbia River, a major waterway in the Pacific Northwest.

PNNL provided vital scientific data for continued design and construction of WTP. PNNL provided leading edge process science and engineering, and through prototype testing, delivered data and analysis necessary to support the technical basis and close the most challenging issues raised by the External Flowsheet Review Team (EFRT) in 2006. Results have notably reduced design uncertainty, facilitated the continuation of critical construction activities, increased functional operability and reduced out-year operational and lifecycle costs. These include the following accomplishments.

Verified pipeline waste velocities and recommended methods to reduce risks of pipeline plugs. Pipeline plugging issues are directly tied to the behavior of Newtonian and non-Newtonian fluids in the WTP waste feed. PNNL developed test plans and designed, constructed, and built a slurry test loop program, in PDL-East, and performed hundreds of test runs to resolve EFRT Issue M1. PNNL's results from this testing program supported that Newtonian fluids will behave within the WTP design guide. However, PNNL data also showed that the behavior of non-Newtonian fluids requires additional consideration to eliminate concerns with solids deposition increasing the risk of line plugging.

Delivered data and facilities to verify performance of waste processes. PNNL delivered the technical basis for tank waste leaching and filtration, identified as critical for WTP success. Providing the technical basis for WTP involved extensive scaled testing using actual tank waste and nonradioactive simulants. This specialized work required the utilization and adaptation of three facilities at PNNL.

Results:

Completed extensive laboratory and bench-scale radiological tests, requiring a year of dedicated use of the hot cells at PNNL's Radiochemical Processing Laboratory (RPL)

- Dedicated and prepared a 5,000-sq-ft facility for the Pretreatment Engineering Platform (PEP), a 1:4.5 scale prototype of the WTP sludge treatment processes

- Designed, tested, and verified simulants needed for larger scale testing

- Developed test plan and procedures for PEP testing

- Installed, integrated components, and completed initial shakedown tests of the PEP.

- The work completed in FY 2008 enabled future tests scheduled for early FY 2009.

Delivered test data required to assess mixing system design. PNNL performed scaled, parametric testing yielding data to validate the technical basis for the WTP mixing system. These tests confirmed that the current mixing system design for WTP tank HLP-22 is inadequate. The results are being used to determine necessary system changes and remaining testing necessary to finalize design of critical

vessels within the WTP.

## **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 4.0

Grade: A

Weighting: 20

### **Objective 1.2 Performance Summary Statement:**

PNNL leadership is providing a foundation for collaborative research in uranium fate and transport in groundwater and contaminant remediation. PNNL was awarded management of two DOE research sites to investigate field-scale issues related to uranium transport in the vadose zone and groundwater, and evaluate remediation concepts. These research sites are located at the Hanford Site in Washington State, and the Rifle Site in Colorado.

At the Hanford Site, PNNL is performing research on the key processes controlling uranium behavior and mass transfer (exchange between the mobile and immobile phases of the subsurface) in the 300 Area, and research results are integrated into the schedule for final remediation and closure of the site. A separate Environmental Remediation Sciences Program project focused on subsurface geophysics is performing surveys to assist with the site-selection process.

PNNL is effectively integrating these efforts with ongoing DOE EM site remediation activities. Additional detail is provided below.

PNNL collaborations advanced understanding of Hanford Site subsurface geochemistry of uranium. PNNL researchers partnered with academia and other national laboratories to publish a foundational report titled *A Site-Wide Perspective on Uranium Geochemistry at the Hanford Site* in November 2008. The report, prepared for ORP and its tank farm contractor, culminated from years of study of the fate and transport of uranium at the Hanford Site, including recent contributions from the national scientific community with support from SC. The report integrates these findings into a cohesive view of the Hanford Site subsurface geochemistry of uranium, providing a technical foundation for evaluating uranium remediation options.

PNNL detailed “State of Understanding” on vadose zone issues in peer-reviewed journal. PNNL led and authored, with collaboration from other DOE national laboratories and contractors, a special issue of *The Vadose Zone Journal*, a widely read publication of the Soil Science Society of America, about the Hanford Site vadose zone. The journal, which focuses on interdisciplinary research and assessment of the vadose zone (the mostly unsaturated zone between the soil surface and the permanent groundwater table), publishes both independent scientific papers and special issues focused on individual topics. The November 2008 issue was a collection of articles that summarized research done over the past 10 years on the Hanford Site vadose zone. This work was funded by EM through site-directed research and application projects and by SC through the Environmental Management Science Program and the Environmental Remediation Sciences Program.

PNNL develops innovative analytical method to improve sludge safety analysis. An analytical procedure has been developed and approved for routine analyses of uranium metal concentration in K Basin sludge, speeding analysis times and analytical sensitivity significantly. The method uses less than 25% as much sample, requires only about 10% of the time, and occupies much less valuable laboratory and hot cell space as the previous research method while exceeding the goal sensitivity by a factor of seven.

Uranium metal present in K Basin sludge poses a safety hazard to sludge storage, processing, and

shipment to its ultimate destination at the Waste Isolation Pilot Plant (WIPP) because its reaction with water produces flammable hydrogen gas. The new method achieves more timely determination of uranium metal concentrations in sludge streams and will allow more responsive assessment of sludge properties to support safe handling and treatment decisions.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 3.9

Grade: A

Weighting: 0

#### **Objective 1.3 Performance Summary Statement:**

PNNL successfully advanced scientific understanding of hexavalent chromium, which is impacting the Columbia River. Through column tests and detailed geochemical studies with Hanford sediments, PNNL characterized the transport behavior of chromium in the vadose zone, discovering that it ranges from highly mobile and easily remediated to relatively immobile and insoluble forms. Also, PNNL discovered that chromium form and sediment geochemistry dictate the distribution. The results from this two-year project funded by DOE Headquarters will provide key information for determining the best method for remediating chromium contamination at the Hanford Site.

### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 4.0

Grade: A

Weighting: 30

#### **Objective 1.4 Performance Summary Statement:**

PNNL led and authored, with collaboration from other DOE national laboratories and contractors, a special issue of The Vadose Zone Journal, a widely read publication of the Soil Science Society of America, about the Hanford Site vadose zone. The journal, which focuses on interdisciplinary research and assessment of the vadose zone (the mostly unsaturated zone between the soil surface and the permanent groundwater table), publishes both independent scientific papers and special issues focused on individual topics. The November 2008 issue was a collection of articles that summarized research done over the past 10 years on the Hanford Site vadose zone. This work was funded by EM through site-directed research and application projects and by SC through the Environmental Management Science Program and the Environmental Remediation Sciences Program.

PNNL installed the WTP PEP ahead of schedule. On May 23, 2008, PNNL achieved a major milestone a few days ahead of schedule with completion of the installation of the PEP in PDL West. The PEP is critical to confirming the process flowsheet and design, needed for WTP construction to proceed. PNNL dedicated the entire PDL West building and completed construction preparations, making the facility ready for receipt of process skids in 2007. Over four months, 16 process skids constituting the PEP were manufactured and shipped to PNNL. Installation completion in May 2008 enabled the acceptance and integration shakedown testing of the system to begin. Installation was a significant undertaking supported by construction subcontractors, PNNL technical and facilities staff, and WTP staff. Under significant schedule pressure and industrial hazards, PNNL diligently held worker safety paramount and completed installation safely and ahead of schedule. Integration and water testing was initiated after system installation, and is progressing well. Simulant testing is on schedule to begin early in FY 2009.

PNNL delivered subsurface science and technology ahead of schedule. PNNL delivered high-quality products and services to address soil and groundwater contamination at the Hanford Site. A significant

example is the initiation of field-scale vegetable-oil substrate injection campaign ahead of schedule, after completing extensive preparations. The preparations included soil column tests to identify the transport and retention properties of the immiscible substrate being considered for injection; studies to examine denitrification and chromate reduction for the selected substrate and an alternative; and design and procurement of the needed vegetable-oil emulsion. Initiation of the injection allowed EM to meet key milestones and will support further decisions regarding groundwater remediation, designed to keep chromium from impacting the Columbia River. For further details, see “PNNL initiated field test of transformational technology to remediate chromium plume.”

Ahead of schedule, PNNL completed testing of processes that assure WTP vessel integrity. Large-scale testing of the control system for the WTP’s pulse jet mixers was completed ahead of schedule. Testing was designed to confirm that the controllers for these mixers could limit the over blow of air into the tanks. Excessive over blow could affect the structural integrity and life of the vessels. The test team performed all of the tests safety and effectively in record time, confirming the adequacy of the controller system design, and avoiding costly rework of WTP system design or impacts on plant operability.

PNNL delivered waste processing science assessment on time. To support a dialogue between EM and SC on basic research for waste processing, a key mission for DOE, PNNL delivered a complex-wide assessment of the associated research opportunities (see “PNNL initiated foundational EM/SC science assessment to reduce waste processing risks” for more details)

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## **Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score:

Goal Grade:

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

### **Goal 2.0 Performance Summary Statement:**

## **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: Select...

Grade:

Weighting: 0

### **Objective 2.1 Performance Summary Statement:**

## **Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: Select...

Grade:

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: Select...

Grade:

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: Select...

Grade:

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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**Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 4.03

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 3.0 Performance Summary Statement:**

**Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 4.2

Grade: A+

Weighting: 30

**Objective 3.1 Performance Summary Statement:**

Consistent with EM's performance expectations, PNNL collaborated extensively with SC and other laboratories to provide solutions that address EM's key technical challenges for ORP, the DOE Richland Operations Office (DOE-RL), and the broader DOE complex. PNNL researchers partnered with academia and other national laboratories to publish a foundational report titled A Site-Wide Perspective on Uranium Geochemistry at the Hanford Site in November 2008. The report, prepared for ORP and its tank farm contractor, culminated from years of study of the fate and transport of uranium

at the Hanford Site, including recent contributions from the national scientific community with support from SC. The report integrates these findings into a cohesive view of the Hanford Site subsurface geochemistry of uranium, providing a technical foundation for evaluating uranium remediation options.

PNNL formulated the strategy and led development of a DOE complex-wide assessment of basic research opportunities to reduce the risk and uncertainty of legacy waste cleanup. The team identified four science themes critical to addressing DOE's waste processing challenges. The report provided the starting point for a dialogue between EM and SC on the need for basic research on waste processing, a key mission for DOE. At SC's request, EM is following this model and formulating a similar assessment of subsurface science and remediation.

PNNL invested Laboratory-Directed Research and Development (LDRD) funds in six projects focused on capability development and enhancement to support EM. The five selected projects focused on

- Transformational in situ remediation technologies for deep vadose zone cleanup
- Simulation capabilities to support design and control of in situ remediation, and
- Process simulation capabilities to support transport and mixing of complex solid/liquid suspensions.

Results from these investments are being shared with EM as potential contributions to future cleanup actions. For example, proof of concept tests of a soil desiccation approach to soil treatment will support evaluation of this option for vadose zone remediation treatability testing.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 3.9

Grade: A

Weighting: 35

#### **Objective 3.2 Performance Summary Statement:**

PNNL delivered subsurface science and technology ahead of schedule. PNNL delivered high-quality products and services to address soil and groundwater contamination at the Hanford Site. A significant example is the initiation of field-scale vegetable-oil substrate injection campaign ahead of schedule, after completing extensive preparations. The preparations included soil column tests to identify the transport and retention properties of the immiscible substrate being considered for injection; studies to examine denitrification and chromate reduction for the selected substrate and an alternative; and design and procurement of the needed vegetable-oil emulsion. Initiation of the injection allowed EM to meet key milestones and will support further decisions regarding groundwater remediation, designed to keep chromium from impacting the Columbia River.

PNNL's WTP Seismic Boreholes Project was awarded "Project of the Year" by the local Columbia River Basin Chapter of Project Management Institute (PMI). The award recognized the PNNL-led team's efforts in 2006 and 2007, which resulted in successful resolution of the seismic issues that had halted construction of the WTP for 2 years. The local award qualified the project for the international competition. In September 2008, PNNL was notified it was one of three finalists for the prestigious international PMI Project of the Year award. The international winner will be announced in October 2008.

An accepted baseline for WTP's secondary waste streams, which include long-lived radionuclides, is a challenging issue as the long-term environmental impacts from secondary waste may be significant. In collaboration with DOE and EM's Hanford Site tank farm contractor, PNNL led a workshop to develop the roadmap to the baseline. PNNL coordinated and documented the results of the workshop, with support and counsel from an advisory and expert panel that includes EM, Washington State

Department of Ecology, the Nuclear Regulatory Commission (NRC), the tank farm contractor, and external technical experts from DOE laboratories and industry. A draft roadmap was issued in 2008 and will help guide EM planning and project decisions.

Because of the size and complexity of the PEP, a large chemical processing system, PNNL has taken significant steps in FY08 to ensure safe PEP installation and startup. For example, PNNL participated in a technical session hosted by WTP and EM, about lessons learned from operating test platforms and test facilities. PNNL and nine commercial and government contractors presented their experiences with test facility activities. With the knowledge gained at this session, PNNL improved the effectiveness of testing and program management of the PEP. Further, PNNL commissioned an internal oversight assessment of PEP operations and a management assessment to determine operations and testing readiness. PNNL will remain vigilant to operations challenges, both planned and unforeseen, in the future.

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 4.0

Grade: A

Weighting: 35

#### **Objective 3.3 Performance Summary Statement:**

At DOE's request, PNNL increased the level of technical expertise provided to DOE-RL's and ORP's multi-project teams to integrate field work and other activities across the Hanford Site. Most of these teams are focused on specific geographic areas undergoing characterization and remediation that extend across past-practice waste sites being addressed by the two primary Hanford Site contractors. Recently, the multi-project teams were expanded to address cross-cutting issues, including characterization and modeling and risk assessment. PNNL's direct support in technically managing and coordinating the teams, including coordinating and communicating activities with EM-20, will assure effective resolution of key technical integration issues.

PNNL instrumental in successful National Academies review of EM challenges. When EM commissioned a NAS review of DOE's long-term environmental cleanup challenges and associated S&T capabilities, PNNL stepped up to the challenges the review presented. For example, PNNL participated in all of the NAS review panel site visits. PNNL worked closely with DOE and Hanford Site contractors to coordinate the agenda and presentations for the Hanford Site visit. PNNL responded to follow-up questions with timely, detailed information and attended subsequent NAS review panel meetings. Committee members repeatedly indicated the information provided was "right on" target. They appreciated the excellent information presented and were grateful for the effort expended to make their visit so successful. The resulting NAS recommendations helped clarify the S&T needed to address EM's long-term challenges.

PNNL supplies expertise at EM's request. EM identified several Intergovernmental Personnel Act (IPA) positions as important for further integrating national laboratories with DOE HQ. PNNL quickly responded to this request with four PNNL experts. Two PNNL candidates were selected by EM. One is now on assignment, and the other is awaiting approval of the IPA agreement.

PNNL has committed to keeping DOE senior management informed of any PNNL projects that may involve potential DOE sensitivities in time for DOE to mitigate any potential concerns. In December 2007, PNNL notified EM management at the Hanford Site and DOE-HQ of two projects with potential sensitivities with the Hanford Tank Closure and Waste Management (TC&WM) Environmental Impact Statement (EIS). The first project was a newly funded and potentially sensitive effort on the Hanford Site low-level waste burial ground performance assessment. The second project was assessing

uncertainty in groundwater flow at Gable Gap. In both cases, DOE decided to postpone and/or redirect the projects to avoid potential issues and negative impacts on the TC&WM EIS.

At EM's request, PNNL provided a senior-level technical expert to support a small HQ-led team assessing the baseline assumptions for tank farms closure and waste treatment. The team also identified fundamental cost assumptions that could be changed, and assessed the technical, operational, and cost impacts of potential changes. This team included DOE and contractor staff with experience in high-level waste. This strategic planning effort was started in late January 2008 and the team delivered initial input in July 2008.

EM established a High-Level Waste (HLW) Corporate Board early in 2008 consisting of senior federal employees from DOE-Headquarters, ORP, and the Savannah River, Idaho, and Richland Operations offices. In addition, contractor staff members were selected as advisors. Three PNNL senior technical staff were selected as advisors and alternate advisors to the board representing PNNL and SC. The board will serve as a consensus-building body to integrate DOE's HLW management and disposition activities across the EM program and, with the coordination and cooperation of other program offices, across the DOE complex. The Board advises and provides actionable recommendations to senior EM management.



## **APPENDIX 5**

### **Office of Energy Efficiency and Renewable Energy**



## Laboratory Year-End Performance Assessment Report

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Date:

11/20/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:  
Department of Energy

Program Office:  
Office of Energy Efficiency and Renewable Energy

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### **Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

Goal Score: 3.83

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 1.0 Performance Summary Statement:**

The PNNL thermal conversion team made excellent progress in converting biomass to gasoline and diesel biofuels using pyrolysis pathways. This work was done in partnership with NREL and Universal Oil Products, and is a leading technology for deployment of advanced biofuels technology.

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 3.9

Grade: A

Weighting: 30

#### **Objective 1,1 Performance Summary Statement:**

In the area of diesel particulate filtration, PNNL has been teaming with Dow Automotive to develop a novel combustion engine particulate emissions filter. This research led to the development of a diesel particulate filter (DPF) that meets Audi R10 DPF requirements. The research utilized advanced micro-modeling that was supported by substrate 3-D imaging reconstruction and characterization techniques developed at PNNL.

PNNL staff have been hard working and very responsive to the fast changing needs of the appliance standards program.

PNNL provides sustained technical progress in several areas of FEMP's program, including expert advice on carrying out large scale energy efficiency projects for Federal agencies, particularly with the Army using utility company financing.

PNNL has developed a parallel regeneration scheme for spent ammonia borane based on transition metal hydride activation of hydrogen gas. Proof-of-concept has been demonstrated, and optimization of the chemistry to maximize yield and efficiency continues.

In fiscal year 2008, PNNL science and technology efforts continued to provide high impact, quality, and effective delivery of products to advance the Hydrogen Program's objectives and mission.

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 3.8

Grade: A

Weighting: 30

#### **Objective 1.2 Performance Summary Statement:**

Pacific Northwest National Laboratory has initiated two new research programs. First, in the summer of 2008, PNNL and PACCAR, Inc. signed a Cooperative Research and Development Agreement (CRADA) focused on the combination and integration of a DPF and selective catalytic reduction (SCR) for NO<sub>x</sub> and particulate matter control in a single aftertreatment unit. (PACCAR designs and builds light, medium, and heavy-duty trucks under the Kenworth, Peterbilt and DAF nameplates.)

Several of the staff have played a significant role in ASHRAE and other organizations that developed work DOE could adopt or use portions of as the basis for regulations and test procedures

PNNL provides leadership in several areas of FEMP's program, including strong performances in expert advice on lighting and metering at Federal agencies. The lab has developed new ideas and set priorities in collaboration with Federal agency working groups on sustainability, Federal water use, and Federal building codes.

PNNL's project ranked very high in comparison to other hydrogen storage projects at the Hydrogen Program's Annual Merit Review.

PNNL is supporting the Hydrogen Program by addressing mission critical technical barriers related to fuel cells and hydrogen storage, and ensuring progress with hydrogen production technology and infrastructure issues.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 3.8

Grade: A

Weighting: 20

#### **Objective 1.3 Performance Summary Statement:**

In the VTP-LM, the Engineering Property Prediction Tools for Tailored Polymer Composite Structures project has developed a new fiber-orientation model for long-fiber thermoplastic composites in conjunction with the University of Illinois. The new fiber-orientation model is a key breakthrough in the accurate modeling of long-fiber-reinforced composites, and is currently being incorporated into the commercial modeling code Moldflow.

Documents and analysis are improving as PNNL gains experience working on appliance standards.

PNNL's work for FEMP produced several notable achievements. PNNL completed the Fort Meade lighting demonstration project and prepared outreach and case study materials, including a conference paper, "New Lighting Technologies Demonstrated at Defense Commissaries," prepared for presentation at the World Energy Engineering Congress, October 2008.

PNNL and its team have been working on the synthesis of supported cathode catalysts for PEM fuel cells to improve durability.

### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 3.8

Grade: A

Weighting: 20

#### **Objective 1.4 Performance Summary Statement:**

For VTP advanced combustion engine technology, PNNL met or exceeded every agreement milestone as specified by the EERE Laboratory plan. PNNL has taken a proactive position in project management and has worked effectively with industrial partners.

Lack of experience writing rulemakings may have hampered clarity in timing actions to meet deadlines. An example where timelines slid was the high intensity discharge lighting determination.

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### **Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score:

Goal Grade:

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 2.0 Performance Summary Statement:**

### **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs**

(i.e., activities leading up to CD-2)

Score: NA

Grade: NA

Weighting: 0

**Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: NA

Grade: NA

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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**Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.95

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 3.0 Performance Summary Statement:**

PNNL's deployment tools and materials are avidly sought by stakeholders and partners, as demonstrated by the 40 million hits on the <http://www.energycodes.gov/> web site, the downloading of tools and materials, the use of web-based tools, and the participation in webinars (700-1,400 people per session).

### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.9

Grade: A

Weighting: 25

#### **Objective 3.1 Performance Summary Statement:**

PNNL continues to show vision and leadership in both the biochemical and the thermal conversion areas. PNNL assisted the Biomass Program in the development of key strategic planning documents during fiscal year 2008.

PNNL has also contributed substantially to the vision, planning, and execution of the Advanced Combustion Engine R&D program. PNNL's leadership through numerous technical associations, through consortiums and through the CLEERS program has had a substantial impact on the direction and focus of the EERE VTP Advanced Combustion Engine program.

### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 3.9

Grade: A

Weighting: 25

#### **Objective 3.2 Performance Summary Statement:**

PNNL contributed with HQ and other key contractors in planning next year's activities in market-based programs (not R&D).

Appliance Standards: Laboratory staff adapt their existing knowledge very well to the potential future consequences of standards rulemakings.

Building Codes: Creative and proactive management permitted progress in a year of increased funding and early year changes in course.

PNNL has demonstrated consistently that it has efficient and effective project and program planning.

### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 4.0

Grade: A

Weighting: 50

#### **Objective 3.3 Performance Summary Statement:**

PNNL goes above and beyond to meet PMP and quarterly deadlines, either ahead of time or by the date requested.

Lighting: PNNL is very responsive to inform and update HQ about situations for quick decisions, changes of approach, or delays.

Appliance Standards: Reporting and communications are very good.

Building Codes: Communications and responsiveness to EERE quickly overcame several miscommunications, stressful delays in approval, and changes in program directions to result in some significant successes.



**APPENDIX 6**  
**Office of Fossil Energy**



## Laboratory Year-End Performance Assessment Report

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Date:

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

Department of Energy

Program Office:

Office of Fossil Energy

FY Funding Level: (Budget Authority)

Evaluator:

Briggs White

Phone Number:

E-mail Address:

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### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

Goal Score: 4.00

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### Goal 1.0 Performance Summary Statement:

This evaluation applies to three FWP's with PNNL: These solid state energy conversion alliance (seca) core technology program projects have been successful in achieving program objectives. The PNNL team's work on cross-cutting solid oxide fuel cell (SOFC) R&D issues including fuel cell cost reduction and coal-based fuel cell scale-up was effective and efficient.

#### Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Score: 4.0

Grade: A

Weighting: 30

**Objective 1.1 Performance Summary Statement:**

The work at PNNL has continued to develop materials solutions which are reducing fuel cell costs and improving their durability. PNNL also continues to develop modeling tools which are needed by the SECA Industry Teams to continue their cell/stack modeling and design efforts.

**Objective 1.2 Provide Quality Leadership in Science and Technology**Score: 4.0

Grade: A

Weighting: 30

**Objective 1.2 Performance Summary Statement:**

Several technical topic area leads within the PNNL team, are leaders in the field of materials development and component modeling for SOFC cells and stacks. They have exhibited leadership roles in relevant professional societies. The PNNL team has established and maintained good working relationships with the SECA Industry Teams as well as SECA Core Technology Program peers.. The project is currently developing a low-cost stainless steel/coating system for fuel cell interconnect, a high priority within the SECA program.

**Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**Score: 4.0

Grade: A

Weighting: 20

**Objective 1.3 Performance Summary Statement:**

The project has met or exceeded all programmatic milestones. Output has been appropriate for the level of funding. Work and output continues to generate SECA Industry Team interest.

**Objective 1.4 Provide for Effective Delivery of Products**Score: 4.0

Grade: A

Weighting: 20

**Objective 1.4 Performance Summary Statement:**

The PNNL team has met or exceeded all programmatic milestones for FY08. In an effort to develop improved fuel cell components, the PNNL team has systematically investigated large experimental test matrices, often running test for up to 1 year, followed by subsequent microanalysis. These efforts have resulted in the development and validation of a low-cost stainless steel/coating system for fuel cell interconnects, a number of promising cathode-side contact past compositions, and a stack performance modeling tool suitable for large-size cells operating at high-pressure on gasified coal. Additionally, a large effort was completed on determining the effects of expected coal contaminants on SOFC performance. The modeling tools developed by PNNL continue to be used by SECA industrial teams and the stainless steel/coating system has been transferred to them as well. Finally, PNNL has collaborated with LBNL and NETL to develop a stack testing device that will help to validated fuel cell materials and designs under conditions similar to large industrial-size stacks and at a fraction of the cost. The implementation of this testing device will accelerate technology transfer from the SECA core technology program to participants to the SECA Industrial Teams.

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**Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of**

## **Research Facilities**

Goal Score:

Goal Grade:

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

### **Goal 2.0 Performance Summary Statement:**

#### **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.1 Performance Summary Statement:**

#### **Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.2 Performance Summary Statement:**

#### **Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.3 Performance Summary Statement:**

#### **Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.4 Performance Summary Statement:**

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### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 3.83

Goal Grade: A

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 3.0 Performance Summary Statement:**

Overall, the PNNL effort is well led and accomplishes planned technical objectives and milestones in an effective and efficient manner.

#### **Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 3.8

Grade: A

Weighting: 40

#### **Objective 3.1 Performance Summary Statement:**

Technical capabilities and results are valued by SECA Program Management. Relevant core competencies are well-established.

#### **Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 3.9

Grade: A

Weighting: 30

#### **Objective 3.2 Performance Summary Statement:**

R&D work is of excellent quality, and is managed well. The PNNL team accomplishes what it states it will do.

#### **Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 3.8

Grade: A

Weighting: 30

#### **Objective 3.3 Performance Summary Statement:**

Responses to DOE requests for information are generally timely and of high quality. PNNL is very responsive to programmatic direction.



**APPENDIX 7**

**Office of Intelligence**



## Laboratory Year-End Performance Assessment Report

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Date:

11/13/2008

Headquarters Program Office Fiscal Year 2008 Evaluation of Battelle Memorial Institute for Management and Operation of the Pacific Northwest National Laboratory

Agency:

Department of Energy

Program Office:

Office of Intelligence and Counterintelligence

FY Funding Level: (Budget Authority)

Evaluator:

Phone Number:

E-mail Address:

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### **Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

Goal Score: 4.30

Goal Grade: A+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 1.0 Performance Summary Statement:**

PNNL accomplishments in FY2008 demonstrated continued proactive support, technology innovation, and mission critical results for program objectives related to counterintelligence, counter terrorism, and nuclear nonproliferation. PNNL technologies, approaches and instructional materials had an impact on DOE's Office of Intelligence and Counterintelligence (DOE/IN) operations at multiple sites.

### **Objective 1.1 Science and Technology Results Provide Meaningful Impact on the Field**

Score: 4.3

Grade: A+

Weighting: 30

### **Objective 1,1 Performance Summary Statement:**

Two PNNL analysts received a special award from the Deputy Director of National Intelligence (DDNI) for analysis of nuclear programs.

PNNL intelligence activities are having a direct impact on U.S nuclear negotiations. Key findings of these intelligence activities are briefed to the Secretaries of Energy and State, the Director of National Intelligence (DNI), and various policymakers.

PNNL provided high impact analytical products, including 337 Intelligence Information Reports and 132 Analysis Reports, along with more than 30 Nuclear Intelligence Highlights and Technical Intelligence Notes. PNNL also contributed to National Intelligence Estimates (NIEs) and the President's Daily Intelligence Brief.

PNNL Senior Counterintelligence Office Director and Deputy Director received the Director's Award and the Deputy Director's Award, respectively, from DOE/IN. Both awards recognized sustained excellence in performance.

In recognition of outstanding contributions to local education and the eastern Washington state community, an employee of the lab was one of six nominees for the Fitzner-Eberhardt Award, based on special presentations on economic espionage to academic and civic audiences.

In FY 08, the PNNL Counterintelligence Field Office, in conjunction with the DOE Counterintelligence Training Academy (CITA), concluded a series of 17 investigative case study workshops that were based on two PNNL investigations of national level importance. The Director of IN-20 deemed the workshops mandatory training for all current and newly assigned DOE counterintelligence (CI) personnel. Approximately 230 CI personnel participated in the workshops, which received overwhelming positive student response. The CITA plans to call on the PNNL CI Field Office for continued support, as they look to schedule additional workshops for new CI personnel (Senior Counterintelligence Officers, Counterintelligence Officers, Analysts, and Technical Experts and Specialist) as they are brought on board.

### **Objective 1.2 Provide Quality Leadership in Science and Technology**

Score: 4.3

Grade: A+

Weighting: 30

### **Objective 1.2 Performance Summary Statement:**

PNNL plays a leading role in the Presidentially-directed Nuclear Materials Information Program (NMIP), which monitors nuclear materials throughout the world. PNNL provided critical input to the multi-agency NMIP, coordinated within DOE/IN. PNNL is responsible for evaluating security of nuclear materials in ~15% of the sites included in NMIP, reviewing input from other NMIP partners defining the locations, quantity, and characterization of nuclear materials at sites and transportation routes that are under evaluation by NMIP. PNNL also is part of the Materials Characterization Working Group, defining the types of materials information that needs to be incorporated into NMIP. In addition, PNNL has been part of the site security methodology update, as well as the development of the methodology to evaluate transportation routes.

In May, PNNL analysts briefed the results of DOE/IN-sponsored work at the Quadripartite Nuclear Intelligence Exchange held in Albuquerque, New Mexico. The presentations on emerging nuclear powers demonstrated the unequaled technical rigor that the DOE national laboratory system can bring

to bear on nuclear proliferation problems. All five presentations were well received and they generated significant group discussion by the large international audience in attendance.

Two staff members were awarded Secretary of Energy Appreciation Awards for their efforts in identifying, investigating, and neutralizing threats to a major DOE network.

The project manager and analysts were recipients of the Deputy Director's Award from the DOE Office of Intelligence and Counterintelligence. The awards recognized their excellence in the performance of duties.

The PNNL staff in the CI Office Cyber Program was selected to become part of a national group of subject matter experts to participate in the first DOE Cyber Security Summit attended by key DOE senior managers. The purpose of the summit was to draft a strategy for DOE's participation in a new Presidential initiative to redesign all federal networks. In FY 08 PNNL staff received a special commendation from the Director DOE/IN for participation in this initiative.

PNNL's performance led to its being selected to represent DOE at the 3<sup>rd</sup> Annual Intelligence Community Technology Exposition (IC: Tech Expo 2008), sponsored by the DNI and the ODNI's Director of Science and Technology. The purpose of the two-day event, held in the U.S. Capitol, is to obtain feedback on the government's investments in the intelligence community and the return on those investments. The target audience includes members of Congress, congressional staffers, military representatives, and the Defense Department community, from whom PNNL received good feedback.

### **Objective 1.3 Provide and Sustain Outputs that Advance Program Objectives and Goals**

Score: 4.3

Grade: A+

Weighting: 20

#### **Objective 1.3 Performance Summary Statement:**

PNNL developed and delivered a Small Scale Reprocessing Course for intelligence analysts this year. Participating students from the intelligence community have identified this as one of the best courses DOE/IN offers.

PNNL was chosen to be a Beta test site for the IN-20 Second Sight initiative. During the last two quarters of FY 2008, the CI Program installed the system and set up a unique multi-platform review process to integrate it into all aspects of CI program activity.

The PNNL CI Field Office contributed to a major multi-agency counterintelligence cyber initiative supporting the intelligence community. The concept and scope of this effort is specifically designed to address a magnitude of international cyber intrusion events, at multiple locations, with national security impact. The PNNL CI program developed with its intelligence community partners one of the most sophisticated operational scenarios ever applied in response to this type of hostile activity. This is planned to be a multi-year endeavor.

In conjunction with the CITA, the PNNL CI Field Office developed in FY 08 a new counterintelligence case study training course for the benefit of CI program technical experts and computer security specialists. This course is based on a past PNNL cyber "crisis" investigation. It was successfully introduced to the DOE complex at two national laboratories during the summer of 2008.

As a result of a specially funded project on behalf of another U.S. government agency, PNNL's CI Field Office developed a new counterintelligence cyber interaction review methodology

named “*Context Analysis*”. This new method shows considerable promise for providing improved intelligence collection from existing datasets of a voluminous nature. It will be applied to Second Sight and other uses, both investigative and analytical, in FY-09.

#### **Objective 1.4 Provide for Effective Delivery of Products**

Score: 4.3

Grade: A+

Weighting: 20

#### **Objective 1.4 Performance Summary Statement:**

Through the Applied Technology Program (ATP), a portal program between the intelligence community and DOE's national laboratories, PNNL had a record-setting \$1.3 million in new projects. This is the highest level of funding ever received since the program's start in 1986. The four projects funded in FY08 cover various areas, from biometrics to sensors to nano-materials. The quality that PNNL is delivering has led to a strong potential (greater than 75%) that all four projects will be picked up by the four correlating user communities.

PNNL made significant improvements to the software system for Freeze Frame, creating a Sharepoint and Wiki environment for dynamic online updating, adding linked related documents, and enabling editing technical data capability judgments for country write-ups. Prior to 2008, Freeze-Frame existed as a specialized desktop software tool operating in a “batch environment.” The switch to widely used Microsoft Sharepoint in the Wiki environment, along with the use of areas-of-responsibility (AORs), enables analysts working at different laboratories to collaboratively update information online.

Staff from PNNL's Joint Global Change Research Institute, coordinated and wrote the science-based sections of the National Intelligence Assessment (NIA), “The National Security Implications of Climate Change to 2030.” In addition, data on comparative adaptive capacity generated at the Joint Institute were used in a section of the NIA that correlated these data with conflict-related data. The science-based sections, “Climate Change and National Security” and “Regional Climate Trends to 2030”, were quoted at length in the June 25, 2008 testimony before Congress of Dr. Thomas Fingar, the DDNI for Analysis and Chairman of the National Intelligence Council (NIC).

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#### **Goal 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities**

Goal Score:

Goal Grade:

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

#### **Goal 2.0 Performance Summary Statement:**

#### **Objective 2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

Score: Select...

Grade:

Weighting: 0

#### **Objective 2.1 Performance Summary Statement:**

**Objective 2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)**

Score: Select...

Grade:

Weighting: 0

**Objective 2.2 Performance Summary Statement:**

**Objective 2.3 Provide Efficient and Effective Operation of Facilities**

Score: Select...

Grade:

Weighting: 0

**Objective 2.3 Performance Summary Statement:**

**Objective 2.4 Utilization of Facilities to Grow and Support Lab's Research Base and External User Community**

Score: Select...

Grade:

Weighting: 0

**Objective 2.4 Performance Summary Statement:**

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**Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

Goal Score: 4.30

Goal Grade: A+

Please complete the Objective fields then click the Calculate button to get the final Score and Grade.

**Goal 3.0 Performance Summary Statement:**

**Objective 3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

Score: 4.3

Grade: A+

Weighting: 40

**Objective 3.1 Performance Summary Statement:**

PNNL continues to be DOE/IN's provider of choice for nuclear fuel cycle intelligence related to the proliferation of nuclear weapons. This was a record-setting year, as PNNL prepared more than 30 *Nuclear Intelligence Highlights* and *Technical Intelligence Notes*.

**Objective 3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

Score: 4.3

Grade: A+

Weighting: 30

**Objective 3.2 Performance Summary Statement:**

In FY08, the PNNL CI Field Office reorganized its professional structure to better complement the post-consolidation transformation objectives of DOE/IN. Key elements of that reorganization were the creation of two new positions to replace two Counterintelligence Officers following their retirement. One position is a Counterintelligence Officer with collection management and reports writing responsibility; the other is a Counterintelligence Officer who will also serve as the CI Field Office scientific advisor. This change has enhanced the intelligence collection piece of the CI mission in an Office of Science laboratory environment.

**Objective 3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

Score: 4.3

Grade: A+

Weighting: 30

**Objective 3.3 Performance Summary Statement:**

The Laboratory responded to 112 requests for information (RFI) from throughout DOE and other government agencies and received positive feedback on the quality and timeliness of its reporting.

The Laboratory further supported the DOE CI program by providing technical expert support to other DOE/NNSA sites, including Richland Operations, Oak Ridge National Laboratory, Los Alamos National Laboratory, and Idaho National Laboratory.