Department of Energy
Pacific Northwest Site Office
P.O. Box 350, K9-42
Richland, Washington 99352

13-PNSO-0056

DEC 17 2012

Mr. Michael Kluse, Director
Pacific Northwest National Laboratory
Battelle Memorial Institute
Pacific Northwest Division
Richland, Washington 99354

Dear Mr. Kluse:

CONTRACT NO. DE-AC05-76RL01830 - FY 2012 YEAR END EVALUATION OF BATTELLE FOR MANAGEMENT AND OPERATION OF PNNL

Enclosed is the DOE FY 2012 Year End Evaluation Report of Battelle's Management and Operation (M&O) of PNNL. The basis for the evaluation centered on performance expectations found within each of the common DOE Office of Science Performance Objectives and Goals. The grades for each of the eight Goals are provided below. The evaluation focuses on the Contractor's contributions and performance within the areas of Science and Technology (S&T), and is supplemented with the Contractor's ability to manage and operate the Laboratory in the most efficient and effective manner. The Laboratory performance resulted in 97% of the S&T fee earned and 100% of the M&O fee multiplier earned.

Battelle's performance generally exceeded expectations within the S&T Goals (Goals 1-3), as evidenced by the evaluations provided by each of the DOE Headquarters Program Offices and other customers. Battelle's leadership/stewardship performance exceeded expectations. Battelle's performance within the Management and Operations (M&O) Goals (Goals 5-8) and their supporting Objectives either met or exceeded DOE's expectations in most areas.

Performance Goal	Grade
1.0 Mission Accomplishment	A
2.0 Design, Fabrication, Const	B+
3.0 S&T Program Management	A-
4.0 Leadership/Stewardship	A-
5.0 ES&H	A-
6.0 Business Systems	B+
7.0 Infrastructure	A-
8.0 Safeguards/Security	B+

We look forward to working with Battelle throughout FY 2013 to further enhance the value of the Laboratory as it continues to pursue its mission.

If you have any questions, please contact me, or your staff may contact Lance Vickerman, Laboratory Stewardship Division, on (509) 372-4028.

Sincerely,

Roger E. Snyder
Manager

LSD:LRV

Enclosure

cc w/encl:
S. F. Ashby, PNNL
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M. H. Schlender, PNNL

Attachment

U.S. Department of Energy

Office of Science

Fiscal Year 2012

Performance Evaluation Report of the

Battelle Memorial Institute for

Management and Operations of Science and Technology at the

Pacific Northwest National Laboratory

For the period October 1, 2011, to September 30, 2012

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I. OVERALL SUMMARY RATING/FEE

Performance-Based Score and Adjectival Rating:

The basis for the evaluation of Battelle Memorial Institute (the Contractor) management and operations of the Pacific Northwest National Laboratory (the Laboratory) during FY 2012 centered on the Objectives found within the following Performance Goals:

1.0 Provide for Efficient and Effective Mission Accomplishment

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

3.0 Provide Effective and Efficient Science and Technology Program Management

4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory

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

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

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

8.0 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, which assisted in determining the Contractor's overall performance in meeting that Objective. Each of the performance measures identified significant activities, requirements, and/or milestones important to the success of the corresponding Objective. The following describes the methodology utilized in determining the Contractor performance rating.

Calculating Individual Goal Scores and Letter Grades:

Each Objective is assigned the earned numerical score by the evaluating office as stated above. The Goal rating 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 numerical score for each Goal. For the purpose of determining the final Goal grade, the raw numerical score for each Goal will be rounded to the nearest tenth of a point using the standard rounding convention discussed below and then compare to Figure 2. A set of tables is provided at the end of each Performance Goal section of this document to assist in the calculation of Objective numerical scores to the Goal grade. No overall rollup grade shall be provided. The raw numerical score for S&T and M&O will be rounded to the nearest tenth of a point of purposes of determining fee. A standard rounding convention of x.44 and less rounds down to the nearest tenth (here, x.4), while x.45 and greater rounds up to the nearest tenth (here, x.5).

The eight performance Goal grades shall be used to create a report card for the laboratory (see Figure 2, below).

Performance Goal	Grade
1.0 Mission Accomplishment	A
2.0 Design, Fabrication, Const	B+
3.0 S&T Program Management	A-
5.0 ES&H	A-
6.0 Business Systems	B+
7.0 Infrastructure	A-
8.0 Safeguards/Security	B+
4.0 Leadership/Stewardship	A-

Figure 2. Laboratory Report Card

Determining the Amount of Performance-Based Fee Earned:
SC uses the following process to determine the amount of performance-based fee earned by the contractor. The S&T score from each evaluator shall be used to determine an initial numerical score for S&T (see Table A, below),and the rollup of the scores for each M&O Performance Goal shall be used to determine an initial numerical M&O score (see Table B, below).

Program	Numerical Score	Weight	Total Score
ASCR	3.5	1.1%	
BER	3.3	20.9%	
BES	3.5	4.7%	
FES	3.6	0.2%	
HEP	3.4	0.3%	
DHS	3.9	10.5%	
DNN	4.1	44.7%	
EERE	3.2	13.1%	
EM	3.5	0.9%	
HQ	3.7	0.0%	
IN	4.3	3.6%	
		Initial S&T Score	**3.8**

Table A. Fiscal Year Contractor Evaluation Initial S&T Score Calculation

Weight = Program cost divided by total cost

M&O Performance Goal	Numerical Score	Weight	
5.0 ES&H	3.5	25.0%	
6.0 Business Systems	3.4	25.0%	
7.0 Infrastructure	3.5	25.0%	
8.0 Safeguards/Security	3.3	25.0%	
		Initial M&O Score	**3.4**

Table B. Fiscal Year Contractor Evaluation Initial M&O Score Calculation

These initial scores will then be adjusted based on the numerical score for Goal 4.0 (See Table C, below).

	Numerical Score	Weight	
Initial S&T Score	3.8	75%	
Goal 4.0	3.7	25%	
		Final S&T Score	**3.8**
Initial M&O Score	3.4	75%	
Goal 4.0	3.7	25%	
		Final M&O Score	**3.5**

Table C. Fiscal Year Final S&T and M&O Score Calculation

The percentage of the available performance-based fee that may be earned by the Contractor shall be determined based on the final score for S&T (See Table C) and then compared to Figure 3, below. The final score for M&O from Table C shall then be utilized to determine the final fee multiplier (see Figure 3) which will be utilized to determine the overall amount of performance-based fee earned for FY YEAR as calculated within Table D.

Overall Weighted Score from Table A	Percent S&T Fee Earned	M&O Fee Multiplier
4.1 to 4.3	100.00%	100.00%
3.8 to 4.0	**97.00%**	**100.00%**
3.5 to 3.7	94.00%	100.00%
3.1 to 3.4	91.00%	100.00%
2.8 to 3.0	88.00%	95.00%
2.5 to 2.7	85.00%	90.00%
2.1 to 2.4	75.00%	85.00%
1.8 to 2.0	50.00%	75.00%
1.1 to 1.7	0.00%	60.00%
0.8 to 1.0	0.00%	0.00%
0.0 to 0.7	0.00%	0.00%

Figure 3.-Performance Based Fee Earned Scale

Overall Fee Determination	
Percent S&T Fee Earned From Table C.	**97.00%**
M&O Fee Multiplier From Table C.	**X 100.00%**
Overall Earned Performance-Based Fee	**97.00%**

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

Earned Fee Calculation	
Available Fee	**$9,000,000.00**
Overall Earned Performance - Base Fee (Table D)	**X 97.00%**
Earned Fee	**$8,730,000.00**

Table E.-Earned Fee Calculation

II. PERFORMANCE GOALS, OBJECTIVES, AND MEASURES/TARGETS

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

The Contractor produces high-quality, original, and creative results that advance science and technology; demonstrates sustained scientific progress and impact; receives appropriate external recognition of accomplishments; and contributes to overall research and development goals of the Department and its customers.

Objectives

1.1: Provide Science and Technology Results with Meaningful Impact on the Field

1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.

Advanced Scientific Computing Research (ASCR)
PNNL has some very talented researchers, including early career recipients that are having an impact within ASCR programs and in other DOE mission areas with a U.S. leadership role in some areas.

Basic Energy Sciences (BES)

- Chemical Sciences, Geosciences, and Biosciences (CSGB) programs at Pacific Northwest National Laboratory (PNNL) in geosciences, catalysis science, chemical physics, and physical biosciences all completed reviews in FY 2012. The geosciences program reviewed very well, while the catalysis science and chemical physics reviews showed these programs to be outstanding. A small field work proposal in physical biosciences was terminated.

- The director of the PNNL Institute for Integrated Catalysis received strong praise for his leadership of the Basic Energy Sciences (BES) CSGB catalysis science program, which successfully presented a newly integrated and coordinated structure at the review.

- Materials Sciences and Engineering (MSE)-supported projects at PNNL continue to produce high-quality, impactful science in bulk and thin film synthesis and in stress-corrosion cracking.

- PNNL met its notable to deliver impactful science for its Energy Frontier Research Center (EFRC).

Biological and Environmental Research (BER)

- The Lab is producing impactful science across a range of the BER portfolio. In particular they are making substantial contributions to the development of models that leverage experimental results with impacts on research in climate, integrated assessment, subsurface biogeochemistry, "omics," and low dose.

Fusion Energy Sciences (FES)
The Pacific Northwest National Laboratory (PNNL) has done an excellent job, both scientifically and managerially, in the conduct of their structural materials and silicon carbide research for fusion material applications. Working primarily with the Oak Ridge National Laboratory (ORNL) and the University of California, Santa Barbara, they have helped to lead the development of reduced activation ferritic alloys as the prime candidate structural material for fusion facilities beyond ITER. In addition, a senior PNNL scientist is a key contributor to the newly funded multi-institutional Scientific Discovery through Advanced Computing (SciDAC) Center on Plasma Surface Interactions.

Department of Homeland Security (DHS)
In FY-12 PNNL has once again demonstrated its commitment to DHS and the broader Homeland Security Enterprise. PNNL has shown outstanding technical and managerial expertise across all DHS sponsored efforts. Most noteworthy is PNNL's exceptional ability to work with DHS program managers and HSE stakeholders to identify mission needs, create scientific approaches and technologies, deploy and test those approaches and technologies, and use the results to continue to inform the science and technology development process.

Energy Efficiency and Renewable Energy (EERE)
Biomass:
The PNNL team continues a tradition of excellence from their work with the program in the areas of terrestrial biomass conversion (both biochemical and thermochemical technologies) to fungible fuels. They have also emerged as a leading laboratory in the area of algal biofuels.

Building Technologies Program:
We surveyed our technology development managers in Codes/Standards, Emerging Technology, Residential Integration and Commercial Integration.
In the objectives portions of the following answer, we provide the results of these discussions with our managers and provide constructive feedback to resolve any outstanding problems or issues.

Vehicle Technologies Program:
PNNL supports the Department of Energy's Vehicle Technologies Program mission in multiple programmatic areas, but primarily in advanced combustion engine and lightweight materials RD&D through its work on: 1) emission control technologies that enable advanced engine designs, 2) materials innovations and discovery of high strength, lightweight alternatives to traditional ferrous materials used for automotive and commercial truck structures, 3) advanced materials processing and manufacturing, including process modeling and simulations, 4) advancements in the durability and performance of population materials that enable the use of more fuel efficient combustion schemes and engine designs, and 5) electro-thermo-chemical materials and device development that are designed recovery waste energy (heat) from vehicles and utilized to improve overall system efficiencies. In materials science, PNNL consistently produces excellent research and development results in the area of lightweight materials. In particular, the light metals and joining/welding research at PNNL is well regarded by the materials science community and is valuable for achieving DOE lightweight materials goals. PNNL's projects in efficient particulate controls, hydrocarbon/carbon monoxide (HC/CO) oxidation and nitrogen oxide (NOx) reduction catalysts involve the use of sophisticated surface science techniques, advanced modeling, and systems optimization. PNNL employs the state-of-the-art characterization tools at its Environmental Molecular Sciences Laboratory (EMSL), a DOE-BES user facility, as well as the Institute for Integrated Catalysis (IIC). The work focuses on reducing the efficiency losses in emission control devices by reducing flow losses, minimizing regeneration penalties, systems optimization, and enabling new combustion strategies.

Wind and Water Power Program:
Pacific Northwest National Labs (PNNL) provides quality scientific research that advances the overall mission of the Wind and Water Power Program. This has been evidenced through establishment of public databases and organization of workshops to further development in the wind and water industry.

Office of Defense Nuclear Nonproliferation (DNN)
NA-21:
The PNNL provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. PNNL continues to do an excellent job in efficiently and effectively achieving meaningful results to further NNSA/DNN/GTRI's ability to meet Presidential and Departmental goals.

Of the $127,114,107.00 provided to PNNL, 87 percent supports the protect subprogram - which is used for the protection of high priority nuclear and radiological materials worldwide (the funds are evenly split at PNNL

between domestic and international protection efforts). Of the remaining funds, 11 percent was provided for reactor conversion, fuel development, and Mo-99 efforts and the final 2 percent was provided for Remove efforts. PNNL was able to successfully cost and commit 95.64% of all available funds, leaving only 4.36% uncosted/uncommitted at the end of FY2012, exceeding GTRI's goal of 6% uncosted/uncommitted.

NA-22:
The Laboratory consistency provides high quality research and development for nonproliferation, have received external awards for their research, provide technical advice to international nuclear nonproliferation monitoring and policy communities in supporting the verification of nuclear nonproliferation treaties. PNNL has approximately 50 projects for DNN R&D.

NA-24:
GIPP: Supported NA-242 scientist engagement activities with solid technical management. Due to a recent change in management, PNNL has recently started to play a significantly increased role in policy and strategic support to help advance the scientist engagement mission.

SG Tech funded 9 projects at PNNL in FY12 ($1.46M total). Overall the quality, originality, and creativity of these projects were very high, some being the most creative and original in our overall portfolio ($15 M). An important factor in these projects' success was certainly very effective management at the Lab program level.

NA-25:
PNNL provides technical expertise to the SLD program through the Science Team, and other Implementation and Sustainability technical areas. In particular, PNNL was instrumental in developing procurement requirements for new radiation detection monitors. PNNL's expertise was well organized, articulate, and delivered sound recommendations to SLD leadership for consideration.

PNNL physical protection and material accounting experts have contributed to sound upgrades and training programs at foreign sites that cooperate with the Office of Weapons Material Protection, particularly at UEIP, ECP and SOSNY (Belarus).

Office of Environmental Management (EM)
The Contractor has produced satisfactory results in transforming scientific knowledge into practical application. It has actively developed relationships with the broader research community in areas pertinent to EM's mission and continues to work to extend its focus beyond Hanford-centric activities. It endeavors to use its available resources to achieve maximum impact during times of federal funding decreases that are impacting all the U.S. national laboratories.

Office of Intelligence and Counterintelligence (IN)
As was the case last year, PNNL has made exceptional contributions to the Office of Intelligence and Counterintelligence for fiscal year 2012. The Lab consistently provided timely expertise and support to IN headquarters personnel, as well as held a leadership role in several national-level intelligence community (IC) working groups and interagency teams involving HQ staff, other U.S. government agencies and various national laboratories. All assigned missions were accomplished in a timely and efficient manner, and to the best of our knowledge, all IC customers were supported with 100% mission accomplishment and satisfaction. The CI office did a fine job, but two opportunities for improvement recommend themselves: there does appear to be a significant drop in analytical production, despite excellent writing skills and fundamental analytical technique. Increased (quality) production would be welcomed. In addition, the OPSEC plan requires annual review and regular attendance at local OPSEC working group meetings.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Advanced Scientific Computing Research				
1.1 Impact	A-	3.5	50.0%	
1.2 Leadership	A-	3.5	50.0%	
			Overall ASCR Total	3.5
Basic Energy Sciences				
1.1 Impact	A-	3.5	50.0%	
1.2 Leadership	A-	3.5	50.0%	
			Overall BES Total	3.5
Biological and Environmental Research				
1.1 Impact	B+	3.1	60.0%	
1.2 Leadership	B+	3.1	40.0%	
			Overall BER Total	3.1
Fusion Energy Sciences				
1.1 Impact	A-	3.7	50.0%	
1.2 Leadership	A-	3.6	50.0%	
			Overall FES Total	3.7
Department of Homeland Security				
1.1 Impact	A	4.0	60.0%	
1.2 Leadership	A	3.9	40.0%	
			Overall DHS Total	4.0
Energy Efficiency and Renewable Energy				
1.1 Impact	B+	3.2	60.0%	
1.2 Leadership	B+	3.2	40.0%	
			Overall EERE Total	3.2
Office of Defense Nuclear Nonproliferation				
1.1 Impact	A+	4.1	60.0%	
1.2 Leadership	A	4.0	40.0%	
			Overall DNN Total	4.1
Office of Environmental Management				
1.1 Impact	A-	3.5	40.0%	
1.2 Leadership	A-	3.5	60.0%	
			Overall EM Total	3.5
Office of Intelligence and Counterintelligence				
1.1 Impact	A+	4.3	60.0%	
1.2 Leadership	A+	4.2	40.0%	
			Overall IN Total	4.3

Table 1.1 -- Program Performance Goal 1.0 Score Development

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Advanced Scientific Computing Research	A-	3.5	1.6%	
Basic Energy Sciences	A-	3.5	5.1%	
Biological and Environmental Research	B+	3.1	9.5%	
Fusion Energy Sciences	A-	3.7	0.2%	
Department of Homeland Security	A	4.0	11.5%	
Energy Efficiency and Renewable Energy	B+	3.2	14.3%	
Office of Defense Nuclear Nonproliferation	A+	4.1	52.9%	
Office of Environmental Management	A-	3.5	1.0%	
Office of Intelligence and Counterintelligence	A+	4.3	3.9%	
			Performance Goal 1.0 Total	**3.8**

Table 1.2 -- Overall Performance Goal 1.0 Score Development

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

Table 1.3 -- Goal 1.0 Final Letter Grade

Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

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

Objectives

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

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

2.3: Provide Efficient and Effective Operation of Facilities

2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities

SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.

Biological and Environmental Research (BER)

The Lab is doing an excellent job of managing its user facilities, the Atmospheric Radiation Measurement (ARM) Climate Research Facility and EMSL, to advance the climate, environmental, materials, and biological sciences.

- PNNL successfully moved forward with several construction / fabrication projects.
- PNNL has an exceptional outreach program for the ARM Climate Research Facility, a balance for access between internal and external users, and a strong resident research community.
- EMSL continued to reach out to the external user community to further strengthen its user base

High Energy Physics (HEP)

PNNL has been working on their first fabrication project for HEP, the BELLE-II project. It is a small project with a TPC of $15 million, but the Lab has paid close attention to the project and CD-1 was approved in September.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Biological and Environmental Research				
2.1 Support Laboratory Programs	B+	3.1	10.0%	
2.2 Construction of Facilities	B+	3.1	20.0%	
2.3 Operation of Facilities	A-	3.5	60.0%	
2.4 S&T Results and Benefits to External User Communities	A-	3.5	10.0%	
			Overall BER Total	3.4
High Energy Physics				
2.1 Support Laboratory Programs			0.0%	
2.2 Construction of Facilities	B+	3.4	100.0%	
2.3 Operation of Facilities			0.0%	
2.4 S&T Results and Benefits to External User Communities			0.0%	
			Overall HEP Total	3.4

Table 2.1 -- Program Performance Goal 2.0 Score Development

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Biological and Environmental Research	B+	3.4	97.7%	
High Energy Physics	B+	3.4	2.3%	
			Performance Goal 2.0 Total	**3.4**

Table 2.2 -- Overall Performance Goal 2.0 Score Development

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

Table 2.3 -- Goal 2.0 Final Letter Grade

Goal 3.0: Provide Effective and Efficient Science and Technology 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.

Objectives

3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.

Advanced Scientific Computing Research (ASCR)

PNNL leadership has put the Laboratory on a path to strengthen its position in the ASCR portfolio. They have attracted some very talented researchers, especially young researchers. PNNL has demonstrated responsiveness to program request and advice to significantly improve their competitiveness position. PNNL has also improved its planning documents and its contributions to ASCR planning activities.

Basic Energy Sciences (BES)

- PNNL management continues to present a clear and concise scientific vision for its chemical sciences programs, notably in catalysis and chemical imaging.
- PNNL management is responsive to headquarters requests and communicates research highlights in a timely manner.
- The new PNNL MSE Lab coordinator is doing an excellent job in working with BES MSE management.

Biological and Environmental Research (BER)

- PNNL is exceptionally responsive to BER needs, provides strong and interactive leadership across BER programs and is very proactive and effective in its research planning.

Fusion Energy Sciences (FES)

PNNL has numerous staff who are leaders in the FES community. This is evidenced by their participation in several groups, committees, and advisory bodies. The Laboratory's fusion materials program is well-aligned with the FES mission and priorities.

Department of Homeland Security (DHS)

PNNL's publications advanced the science of homeland security, and investments in such areas as threat detection and cyber security are paving the way to resolve some of DHS's and the nation's most pressing problems. PNNL also continues to share its innovations with the broader academic and homeland security communities and has

furthered its relationships with the Homeland Security Enterprise. Through activities such as these, PNNL has demonstrated its continued dedication to helping DHS protect the nation from accidental, intentional, and natural disasters.

Energy Efficiency and Renewable Energy (EERE)

Biomass:
PNNL continues to demonstrate research progress which reflects well on their skills in project planning, implementation, management, and reporting.

Building Technologies Program:
We surveyed our technology development managers in Codes/Standards, Emerging Technology, Residential Integration and Commercial Integration. We asked these managers about the Lab's performance on working with the outsider market/community, developing a recognized core competency within the respective area and developing new ideas for research programs and projects.

Vehicle Technologies Program:
PNNL has contributed substantially to the vision, planning and execution of both the Advanced Engine Combustion and Lightweight and Proposition Materials R&D program plans. This leadership is provided through several avenues such as numerous technical society associations, consortium participation, and coordination of industry workshops. PNNL has a substantial impact on the direction and focus of the Advanced Combustion Engine subprogram, through the hosting of planning sessions and project reviews that have led to focused recommendations for the Vehicle Technologies Program. PNNL has also demonstrated the ability to attract world-class staff to its program. PNNL's scientific workforce in the area of lightweight materials is very experienced, with particular strength in light metals, joining, and computational techniques. The Lab maintains effective program vision as demonstrated by continued ideation of new, relevant projects with significant DOE and industry interest.

Wind and Water Power Program:
Pacific Northwest National Lab (PNNL) has been effective in collaborative efforts with national labs and agencies, in addition to communicating the Program's vision with the outside community. PNNL maintains a very high quality staff to support Program needs. However, in some areas, improvements are needed in project management and planning to improve research productivity. Overall PNNL has maintained very good communications with HQ.

Office of Defense Nuclear Nonproliferation (DNN)

NA-21:
PNNL continues to provide valuable leadership to the GTRI Program and has been able to recruit and retain a quality workforce.

NA-22:
The Laboratory attracts and retains world-leading and high-quality scientists, and effectively communicates its results and plans.

NA-24:
GIPP: Supported NA-242 scientist engagement activities with exceptional level of technical expertise. The principal investigators on PNNL projects continue to demonstrate a high level of dedication and expertise.

PNNL provides input for strategic planning and development on bilateral and multilateral safeguards engagement for the Southeast Asia region. PNNL consistently provides high-quality and innovative support to new INSEP initiatives, including work on the SSAC framework for engagement and a new effort to address domestic safeguards inspector qualification programs. PNNL demonstrates a clear vision and strong leadership in the area of program management. Clear indication of systematic and coherent planning. Young and dynamic workforce that routinely performs ahead of expectations.

PNNL personnel did a superb job in planning and implementing the NSG Plenary group meeting in Seattle. The NSG Plenary was a large, highly visible, and from a mission perspective, highly important conference. PNNL handled difficult subcontracting challenges with aplomb, assured local security was adequate for the conference, and generally did an outstanding job in running the conference.

NA-25:
PNNL has provided excellent project management and execution support for the program. This support has been consistently provided across divisions. PNNL consistently provides excellent financial and project management support.

PNNL has consistently provided excellent assistance to SLD in the development of program visions, strategic planning, and development of initiatives. In particular, PNNL's expertise has been pivotal in the development of FY13 strategic initiatives for the Sustainability Program, including assisting SLD in the development of a process to work with partner countries to develop internal radiation detection regulations. Further, PNNL continues to provide exceptional expertise in the planning and execution of table-top and field exercises and in-country technical workshops.

Office of Environmental Management (EM)
The Laboratory has strategically planned its research programs to meet site needs and EM mission requirements. It ensures the value and responsiveness of its research activities by working closely with both EM Headquarters and Hanford Site staff (DOE and contractor personnel), as well as regulators and stakeholders. It uses leveraging, collaboration, and development of new initiatives to maintain its scientific workforce.

Office of Intelligence and Counterintelligence (IN)
PNNL is the most responsive Lab in the entire DOE complex. Outstanding detailees and assignees, and excellence in the areas of nuclear fuel cycle analysis, cyber security and IT operations, and counterintelligence.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Advanced Scientific Computing Research				
3.1 Efficient Strategic Planning and Stewardship	A-	3.5	30.0%	
3.2 Project/Program/Facilities Management	A-	3.6	40.0%	
3.3 Effective Communications and Responsiveness	A-	3.5	30.0%	
			Overall ASCR Total	3.5
Basic Energy Sciences				
3.1 Efficient Strategic Planning and Stewardship	B+	3.4	40.0%	
3.2 Project/Program/Facilities Management	B+	3.4	30.0%	
3.3 Effective Communications and Responsiveness	A-	3.5	30.0%	
			Overall BES Total	3.4
Biological and Environmental Research				
3.1 Efficient Strategic Planning and Stewardship	A-	3.5	20.0%	
3.2 Project/Program/Facilities Management	B+	3.1	30.0%	
3.3 Effective Communications and Responsiveness	A-	3.5	50.0%	
			Overall BER Total	3.4
Fusion Energy Sciences				
3.1 Efficient Strategic Planning and Stewardship	A-	3.5	40.0%	
3.2 Project/Program/Facilities Management	A-	3.5	30.0%	
3.3 Effective Communications and Responsiveness	B+	3.4	30.0%	
			Overall FES Total	3.5
Department of Homeland Security				
3.1 Efficient Strategic Planning and Stewardship	A	3.9	40.0%	
3.2 Project/Program/Facilities Management	A-	3.5	35.0%	
3.3 Effective Communications and Responsiveness	A	3.9	25.0%	
			Overall DHS Total	3.8

Energy Efficiency and Renewable Energy				
3.1 Efficient Strategic Planning and Stewardship	B+	3.3	35.0%	
3.2 Project/Program/Facilities Management	B+	3.1	25.0%	
3.3 Effective Communications and Responsiveness	B+	3.2	40.0%	
			Overall EERE Total	3.2
Office of Defense Nuclear Nonproliferation				
3.1 Efficient Strategic Planning and Stewardship	A	3.9	20.0%	
3.2 Project/Program/Facilities Management	A	3.9	20.0%	
3.3 Effective Communications and Responsiveness	A+	4.1	60.0%	
			Overall DNN Total	4.0
Office of Environmental Management				
3.1 Efficient Strategic Planning and Stewardship	A-	3.5	25.0%	
3.2 Project/Program/Facilities Management	B+	3.3	25.0%	
3.3 Effective Communications and Responsiveness	A-	3.5	50.0%	
			Overall EM Total	3.5
Office of Intelligence and Counterintelligence				
3.1 Efficient Strategic Planning and Stewardship	A+	4.1	30.0%	
3.2 Project/Program/Facilities Management	A+	4.1	20.0%	
3.3 Effective Communications and Responsiveness	A+	4.3	50.0%	
			Overall IN Total	4.2

Table 3.1 -- Program Performance Goal 3.0 Score Development

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Advanced Scientific Computing Research	A-	3.5	0.6%	
Basic Energy Sciences	B+	3.4	5.4%	
Biological and Environmental Research	B+	3.4	15.2%	
Fusion Energy Sciences	A-	3.5	0.2%	
Department of Homeland Security	A	3.8	12.3%	
Energy Efficiency and Renewable Energy	B+	3.2	15.3%	
Office of Defense Nuclear Nonproliferation	A	4.0	45.6%	
Office of Environmental Management	A-	3.5	1.1%	
Office of Intelligence and Counterintelligence	A+	4.2	4.2%	
			Performance Goal 3.0 Total	**3.7**

Table 3.2 -- Overall Performance Goal 3.0 Score Development

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

Table 3.3 -- Goal 3.0 Final Letter Grade

Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory

This Goal evaluates the Contractor Leadership capabilities in leading the direction of the overall Laboratory, 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 weight of this Goal is 100.0%.

This Goal evaluates the Contractor's capabilities and performance in leading the direction of the overall Laboratory, 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 overall grade assigned for this Goal is A-. SC's assessment of this Goal is provided with respect to each of the three Performance Objectives.

4.1: Leadership and Stewardship of the Laboratory

In FY 2012, the Contractor exceeded SC's expectations with respect this objective. Highlights of the Contractor's performance in this area include:

Laboratory senior leadership has demonstrated strong leadership and stewardship of the Laboratory through the development of a compelling vision for the future of PNNL and the progress made toward realization of this vision. PNNL is showing overall excellent performance in all areas, including science, applied programs, national security, and homeland security. PNNL leadership effectively leverages its abilities in applied fields in science and its basic discovery science abilities in applied areas. PNNL's approach of breaking down stovepipes and working across areas is very advantageous to achieving high performance. For example, work was conducted on a myriad of issues involving the electric grid. Leadership has demonstrated its commitment to recruiting talented personnel, including early career and Computational Science Graduate Fellowship (CSGF) personnel.

PNNL's overall successes in reducing cost and achieving efficient operations is commendable. Decisions and actions taken by the Laboratory leadership continue to align work, facilities, equipment and technical capabilities with the Laboratory vision and plan. Efforts to reduce cost to the SC Science Laboratory Infrastructure (SLI) program are commendable; however PNNL is encouraged to prioritize aspects of the Chemical Sciences and Imaging Facility (CSIL) in order to respond to budget realities. DOE encourages PNNL to develop future facility and infrastructure plans (i.e., CRL-II) in careful consultation with DOE and ensure plans are in line with the direction of the DOE program.

PNNL has an excellent track record at creating and participating in partnerships with other laboratories, programs, and the local academic community.

Senior management was effective in providing a clear and logical vision for the Laboratory in the area of chemical sciences. Of particular note were the significant effort and investment of discretionary funds in the area of catalysis that provided enhancement of both BES and applied programs. The recent management change for the materials sciences and engineering area was positive.

Senior management has demonstrated significant effort in transitioning research activities to align with program priorities, especially in Environmental Systems Science. The Laboratory's commitment to human resource development has successfully resulted in awards to early career scientists and recruitment of scientists to augment and expand BER research interests. Laboratory scientists are leaders in their respective research areas and receive full support from PNNL senior management.

4.2: Management and Operation of the Laboratory

In FY 2012, the Contractor exceeded SC's expectations with respect this objective. Highlights of the Contractor's performance in this area include:

While keeping costs stable, the Contractor, an established SC leader in many areas, continued to pursue, invest in and execute significant laboratory-wide improvement initiatives in an already mature M&O culture. These efforts did not interfere with mission execution and instead, enhanced it.

The Contractor demonstrated excellent management and operations of PNNL. The maturity of the Contractor's Assurance System has enabled excellent mission execution. A co-author of SC's approach to Contractor Assurance Systems, the Contractor continues to be a leader in the development and deployment of SC Contractor Assurance Systems. The Contractor continued to deliver on contract requirements while systematically improving the operating framework for the Laboratory's business systems while keeping costs stable (e.g., BIS Roadmap, IMS deployment, HDI, and Integrated Risk Management). In addition, the Contractor matured the Laboratory's operational culture effort by streamlining processes and controls, optimizing organizational structures and R2A2s, implementing improvements in risk management and assurance, and enhancing the safety culture. Also, the Contractor reorganized the F&O Directorate to reflect current operations and address significant real estate and lease issues. The Contractor demonstrated excellent understanding of operational costs and has made significant progress at reducing overall costs while gaining control of those areas that historically have been out of its control. In the area of benefits, the Contractor has been able to make incremental improvements to the benefits system while at the same time reducing the costs. In the area of pension management, the Contractor has continued to keep the fund and investments at a level that minimizes departmental risk. The Contractor continues to make significant improvements with transitioning site services such as occupational medicine and safeguards and security. Lastly, SC's validation of the Contractor's gap closure plan reaffirmed the "open campus" protection strategy and secured funding for unarmed guards. As a result, the Contractor has become the model and benchmark for all of SC on how to implement the Baseline Level of Protection in a cost effective manner.

Management provides effective planning and good vision for the BES-supported programs by making excellent use of laboratory-directed research and development funds to generate new initiatives and bring new capabilities to the Laboratory. PNNL management is responsive to Headquarters' requests and communicates research highlights in a timely manner.

Laboratory organization and management structure are clear and facilitate communication with BER. PNNL management has been successful in using laboratory-directed research and development funds and leveraging resources across the laboratory to augment BER-relevant core capabilities. Management of BER facilities is highly responsive and demonstrates operational efficiency.

The Contractor met the notable outcome identified for this objective in its FY 2012 PEMP.

Demonstrate the use of the full suite of resources at their disposal (including the expertise of laboratory scientists and engineers) to develop innovative, crosscutting strategies for meeting Executive Order 13514 Goals. (Objectives 4.2 and 4.3)

The Contractor has demonstrated effective use of Laboratory M&O and research and development resources to develop, execute, and share innovative, crosscutting sustainability strategies with benefits that extend beyond PNNL.

4.3: Contractor Value-added

In FY 2012, the Contractor exceeded SC's expectations with respect this objective. Highlights of the Contractor's performance in this area include:

The Contractor took several leadership roles in the National Laboratory Directors Council (NLDC) and its Chief Financial Officer, Chief Research Officer, Chief Information Officer, and Chief Operating Officer working groups. Battelle played a significant role in implementing the technology transfer mechanism, Agreements for Commercialization of Technologies (ACT), at not just PNNL but across multiple laboratories. Battelle at PNNL is recognized both within SC and throughout the Department as a leader and a go-to source for assistance on important initiatives. For example, the Contractor is actively addressing complex-wide issues and improvement initiatives such

as the Cost of Doing Business initiative. Battelle fully supported and helped in getting a contract extension in place that met the DOE goals of getting more DOE control of Battelle owned facilities.

The Contractor continues to maintain and build community relations. The Contractor made significant progress with the local STEM school and other education and outreach activities. The Contractor effectively managed workforce reductions without impacting laboratory mission and continues to enable the Laboratory to attract and retain talent.

Management has been successful in making strategic hires for BES programs.

The Contractor is successful in leveraging resources from external funding while maintaining effort and commitment to DOE and BER mission objectives.

The Contractor met the notable outcomes identified for this objective in its FY 2012 PEMP.

Demonstrate the use of the full suite of resources at their disposal (including the expertise of laboratory scientists and engineers) to develop innovative, crosscutting strategies for meeting Executive Order 13514 Goals. (Objectives 4.2 and 4.3)

The Contractor has demonstrated effective use of Laboratory M&O and research and development resources to develop, execute, and share innovative, crosscutting sustainability strategies with benefits that extend beyond PNNL.

Effectively manage contract change (e.g., use permit transition plan, lease transition, modifications to the contract). (Objective 4.3)

A five-year extension of the DOE-Battelle Prime Contract was successfully negotiated which resolved several key issues. Battelle played a significant role in implementing the technology transfer mechanism, Agreements for Commercialization of Technologies (ACT), at not just PNNL, but across multiple labs. Also, Battelle fully supported and helped in getting a contract extension in place that met the DOE goals of getting more DOE control of Battelle owned facilities.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory				
4.1: Leadership and Stewardship of the Laboratory	A-	3.6	33.0%	
4.2: Management and Operation of the Laboratory	A-	3.7	33.0%	
4.3: Contractor Value-added	A	3.8	34.0%	
			Total	**3.7**

Table 4.1 - 4.0 SC Program Office Performance Goal Score Development

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

Table 4.3 -- Goal 4.0 Final Letter Grade

Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection

This Goal evaluates the Contractor overall success in deploying, implementing, and improving integrated ES&H systems that efficiently and effectively support the mission(s) of the Laboratory.

The weight of this Goal is 25.0%.

5.1: Provide an Efficient and Effective Health and Safety Program

Notable: Demonstrate a maturing operational culture resulting in the prevention of impact to science and technology program activities. - Achieved

Notable Comments: PNNL is considered the leader in the DOE complex on Operational Culture. The information has been shared with EFCOG, NNSA, Communities of Practices with DOE laboratories, and with industry. EHS&S Risk and Performance Profiles have been further institutionalized and matured during the past year. Also, PNNL successfully piloted an innovative, predictive indicator for work groups at high risk for operational incidents that integrates cultural survey data with past experience and provides managers with a more complete view of risk. This synergistic approach integrates VPP, ISM, and ISO 14001 elements into a single set of organizing principles that address the sentiments, minds, and actions of staff and provide a single platform for continuous improvement that enables enhanced mission execution through operational excellence.

General Comments:
The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor's safety performance finished FY 2012 at a level among the best of its peer national laboratories. PNNL now has an occupational medical facility completed to improve the effectiveness of employee health and wellness services. Many transition activities are proving successful within ES&H (e.g., DOELAP Accreditation for External Dosimetry Program, transition of environmental and regulatory permits to support Advanced Agreement).

PNNL achieved SC best-in-class sustainability performance. There was strong environmental performance having twenty-six regulatory inspections with no significant findings. Another area of success was the operational culture performance. PNNL is considered the leader in the DOE complex on this topic. EHS&S Risk and Performance Profiles have been further institutionalized and matured during the past year. Also, PNNL successfully piloted an innovative, predictive indicator for work groups at high risk for operational incidents that integrates cultural survey data with past experience and provides managers with a more complete view of risk.

However, there are also some areas that need improvement. The Contractor does not have a clear process for identification of higher-risk ESH activities early in the planning process in order to appropriately address controls. This is demonstrated in many areas: hazard analysis for the EMSL battery removal, RGD concerns, hydro-treater, and continued concerns relative to proper hazard control on major electrical work. These areas are recognized by the Contractor as improvement areas and will be a continued focus in the upcoming fiscal year.

This evaluation results in a score of 3.2 and a grade of B+.

5.2: Provide an Efficient and Effective Environmental Management System

The Contractor's performance exceeds expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

EPRP (Environmental Protection & Regulatory Programs) received twenty-six external agency on-site visits and/or inspections during calendar year 2012 with no significant findings identified. Performance exceeding expectations for this Objective was demonstrated by the dedication and support of the EPRP staff to the preparation of BMI

facility permits and documents to allow transition to PNSO under an Advanced Agreement. Secondly, PNNL partnered with the Washington State Department of Health (WDOH) to develop an innovative approach for permitting. This effort included the management of volumetrically released material in PNNL facilities. Also, the creation of a new Potential Impact Category 5 (PIC 5) allowed for streamlining of the permitting process and resulted in cost savings. Lastly, exceptional performance was demonstrated by the implementation of an innovative solar air monitoring system on the PNNL Site which also resulted in cost and energy savings. This approach was a first among the SC laboratories.

Another area of performance which met or exceeded expectations was the development of a mature environmental risk and performance profile. This effort contributed to a strategy for PNSO in the conduct of oversight based on documented evidence for selecting specific areas for annual surveillances and assessments. Additionally, contributions to the PNNL Sustainability Program resulted in three Best-In-Class Sustainability awards from SC, and an ESTARS award. Finally, successful implementation of DOE Order 458.1 (Radiation Protection of the Public and Environment) resulted in the integration of radioactive air emissions permitting; environmental radiation protection; and the acquisition, storage, use, tracking, and disposal of radioactive materials across the entire Laboratory.

Three PNNL staff received recognition for their technical excellence as by DOE-HQ, and DOE-RL. First, a staff member was asked to lead the preparation of comments on the revised RCRA permit on behalf of EM, the Department of Justice, and the Richland Operations Office to Washington State Department of Ecology (Ecology) and to the Environmental Protection Agency (EPA). Secondly, a staff member received a letter of appreciation for leadership and technical expertise in the coordination and conduct of the NESHAP (National Emission Standards for Hazardous Air Pollutants) Subpart H program. Finally, a staff member developed a Sea Water Treatment System Engineering Study for Ultraviolet Light Disinfection for Sequim. The study was presented to Ecology and was well received. The replacement of ozonation with ultraviolet light treatment saves money and energy and will eliminate a very large oxygen tank.

Finally, PNNL achieved excellence in environmental leadership as demonstrated by the request from other national laboratories (even outside of the BMI operated laboratories) for training and assistance.

This evaluation results in a score of 3.7 and a grade of A-.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection				
5.1: Provide an Efficient and Effective Health and Safety Program	B+	3.2	50.0%	
5.2: Provide an Efficient and Effective Environmental Management System	A-	3.7	50.0%	
			Total	**3.5**

Table 5.1 - 5.0 SC Program Office Performance Goal Score Development

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

Table 5.3 -- Goal 5.0 Final Letter Grade

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

This Goal evaluates the Contractor overall success in deploying, implementing, and improving integrated business systems that efficiently and effectively support the mission(s) of the Laboratory.

The weight of this Goal is 25.0%.

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

Notable: Demonstrate financial transparency and progress towards a stable transition of financial systems. - Achieved

Notable Comments: In FY 2012, the Contractor successfully led a peer review of the Institutional Cost reporting process. This is an important effort in helping DOE demonstrate the ability to provide timely, accurate, and meaningful data in support of its cost streamlining and containment efforts. This effort helped ensure integrity of a complex wide requirement that is part of DOE's May 2011 Strategic Plan. Additionally, PNNL was also subjected to the review itself and did extremely well.

General Comments:
The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor's management of the overall cost of doing business continues to exceed expectations. PNNL's overall cost of doing business increased only 2.9% as compared to FY 2011 as measured by the fully-burdened charge-out rate. Additionally, the Contractor proactively demonstrated an agile internal business planning process that mitigates financial risk.

The Contractor continued to provide financial leadership at the Departmental level. In FY 2012, the Contractor successfully led a peer review of the Institutional Cost reporting process. This is an important effort in helping DOE demonstrate the ability to provide timely, accurate, and meaningful data in support of its cost streamlining and containment efforts. This effort helped ensure integrity of a complex wide requirement that is part of DOE's May 2011 Strategic Plan. Additionally, PNNL was also subjected to the review itself and did extremely well.

Performance under the Notable Outcome within Goal 6 that includes elements of Objective 6.1 met overall expectations.

While overall performance expectations for this Objective were met, there was a significant issue that occurred during FY 2012 that warrants focus into FY 2013. During FY 2012, the Contractor requested retroactive approval for certain disclosure statement changes. This included the establishment of a Technology Maturation (TM) fund in an indirect cost pool. These costs and the description of the activities appeared to be in conflict with provisions within the contract and the regulations promulgated by FAR and DEAR. However, this accounting practice change was implemented at the beginning of FY 2012 without DOE's approval and unallowable costs were incurred.

This evaluation results in a score of 3.3 and a grade of B+.

6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System(s)

The Contractor's performance exceeds expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor achieved significant cost savings, reduced cycle times, and improved customer service. Despite the significant reduction of Acquisition staff at mid-year, the Contractor still managed to achieve $51.6M in cost savings. The Contractor reduced contract award cycle times (from 4.2 to 3.9 days), improved customer service rating to the Laboratory (from 97.8% to 100%) by streamlining and implementing multiple Acquisition processes

along with improved Acquisition tools while continuing to sustain and meet DOE contractual requirements and deliverables.

Also, the Contractor Achieved an “Outstanding” rating (4.46) on the FY12 Balanced Scorecard.

Work For Others (WFO) Program performance excelled in FY 2012 despite the significant focus on implementing ACT and the Use Permit Transition activities. The effectiveness of WFO program was a key success factor in the Contractor accomplishing these tasks despite the significant increase in proposal and sales volume and despite that the Non-Federal WFO proposal volume tripling in the 3rd and 4th quarters compared to FY 2011.

Significant notable performance is also recognized for the Contractor's development and successful implementation of the Agreements for Commercializing (ACT) mechanism. As part of this effort, PNNL provided a two-day training workshop to the other laboratories that are piloting ACT. PNNL also provided numerous follow-up meetings with these laboratories to communicate “just in time” information resources and tools to ensure a successful startup and implementation of ACT at the other DOE pilot labs. Finally, PNNL also participated in ACT Readiness Reviews on-site at the pilot labs in implementing ACT (five labs reviewed).

The Acquisition organization was a significant contributor in the development of the Laboratory’s new Technical Oversight Representative (TOR) Model.

PNNL continues to serve as the success model amongst other DOE laboratories in regards to the closeout process.

This evaluation results in a score of 3.6 and a grade of A-.

6.3: Provide an Efficient, Effective, and Responsive Property Management System(s)

The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

Overall, Laboratory has been performing satisfactory in the area of Property management. Day to Day operations have been efficient and effective. Laboratory was recognized for its Electric Vehicles, which were implemented this year. Three-year recertification went fairly well, some items for improvement were identified, although we are still waiting for the final report. No other significant issues have been identified.

This evaluation results in a score of 3.3 and a grade of B+.

6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program

The Contractor's performance exceeds expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

During FY 2012, the Contractor had a number of HR issues to deal with related with Workforce Restructuring and budget constraints. The Contractor's performance exceeded expectations due to excellent planning for and execution of workforce restructuring actions. Additionally, the submission of appropriate justification and documentation exceeded expectations. All personal actions were handled in a professional manner and without incident.

This evaluation results in a score of 3.6 and a grade of A-.

6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; Assurance System and Other Administrative Support Services as Appropriate

Notable: Demonstrate a maturing Integrated Management System. Primary effort this year will focus on improving systems for risk management, service management and asset management. - Achieved

Notable Comments: The Contractor continued deployment and improvement of its Integrated Management System (IMS) utilizing an integrated project management framework. Metrics indicate that IMS projects are on track, in general. Performance standards for IMS key roles (Core Business Process Stewards and Management and Operations Program Managers) are developed and being implemented. Developing or migrating tools and approaches to enable an integrated view of risk management. Facilities & Operations (F&O) Service Management and Asset Management within Maximo are on track.

General Comments:

The Contractor's performance exceeds expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The ongoing efforts in the maturation of the Integrated Management System (IMS) continue to enhance mission delivery. The Contractor's enterprise architecture transformation (BIS roadmap) was incorporated into the Contractor's IMS Improvement Initiative and has been demonstrating adequate progress against project goals. The Contractor completed its significant effort in its transition of requirements delivery mechanisms. An IO Assessment indicated that the transition maintained requirement management fidelity, increased traceability, and improved its ability to keep requirements current. The Contractor delivered against assurance attributes through continuous improvements toward proactive/predictive assurance outcomes across the Lab and is adding value by delivering its services to other organizations. Improvements in transparency were gained with the creation or advancement of mechanisms to foster that visibility and access to performance information (EC dashboard, Performance Data Warehouse website, etc.). Finally, the Internal Audit, Independent Oversight, and Quality organizations continued to improve assessment planning through stronger collaboration efforts.

While the Contractor exceeded expectations and made progress towards robust business systems that enable mission, there are a few areas that warrant attention. Although the Contractor has hired staff to address PNSO's concerns regarding DC Arc Flash/Blast hazard identification and mitigation, it will be an area of continued focus for the Site Office. Additionally, while the Contractor has made significant progress in improving assurance mechanisms, connectivity and access to the PNNL networks is an area of concern that is being worked by the Contractor and will remain an area of focus for PNSO.

Performance under the Notable Outcome within Goal 6 that includes elements of Objective 6.5 met overall expectations. This evaluation results in a score of 3.5 and a grade of A-.

6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets

The Contractor's performance just missed meeting expectations against a few aspects of the Objective in question. The Contractor's systems function at a level that does not fully support the Laboratory's current and future science and technology mission, or provide a sustainable performance platform.

The Contractor has demonstrated leadership in this area and remains proactive in its internal and external efforts to enhance technology transfer. Several members of the Contractor’s staff were appointed to key positions on various committees, commission and/or boards. The Contractor participated in several podiums and panels. As noted elsewhere in this evaluation, the Contractor played a key role in the development of Agreement for Commercializing Technology.

The Contractor received two R&D 100 Awards. The Laboratory received its first ever Federal Laboratory Consortium Interagency Partnership Award for its collaborative effort with the United States Navy to significantly improve air quality on submarines. The second award received was a 2012 Excellence in Technology Transfer Award for Chemically Etched Emitters for Nanospray Ionization Mass Spectrometry.

The Contractor met 8 of their 10 metric targets. The Contractor was $6.4M short of meeting its Total Consideration metric and 46 short of their Number of Invention Disclosures target. The Contractor exceeded its targets for the Number of Patent Applications, Privately Funded Technology Transfer Patent Filings, and In-House Patent Fillings. Intellectual Property (IP) Revenue, IP Net Operating Margin, and Use at Facility Funds targets were significantly

exceeded in FY 2012. The Commercialization Technology Transfer group made several significant technology licenses/options.

Finally, the PNNL Lab Director was named 2012 Laboratory Director of the Year by the Federal Laboratory Consortium in February 2012.

However, as discussed elsewhere, there was a notable performance deficiency in this Objective that resulted in expectations not being met. Specifically, the Contractor expended Government funds for development of Technology Maturation prior to obtaining PNSO approval. Additionally, there was an issue related to a license provided to private third party by PNNL that appeared to create a conflict between a DOE mission need and value of the license to the private party.

This evaluation results in a score of 3.0 and a grade of B.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 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+	3.3	20.0%	
6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System(s)	A-	3.6	10.0%	
6.3: Provide an Efficient, Effective, and Responsive Property Management System(s)	B+	3.3	10.0%	
6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program	A-	3.6	10.0%	
6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; Assurance System and Other Administrative Support Services as Appropriate	A-	3.5	40.0%	
6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets	B	3.0	10.0%	
			Total	**3.4**

Table 6.1 - 6.0 SC Program Office Performance Goal Score Development

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

Table 6.3 -- Goal 6.0 Final Letter Grade

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

This Goal evaluates the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today's and tomorrow's mission(s) and complex challenges.

The weight of this Goal is 25.0%.

7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs

Notable: Demonstrate that the facilities and infrastructure planning process is sustainable, repeatable, defensible, fully integrated with related planning activities, and supports the realization of the Master Campus Plan. - Achieved

Notable Comments: Contractor has been effective in planning for and delivering the necessary facilities and infrastructure required to support the continuation and growth of Laboratory missions and programs during FY 2012.

General Comments:
The Contractor's performance exceeds expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor has demonstrated the ability to manage and operate the Laboratory assets in a manner that exceeds DOE's expectations. The F&O Directorate successfully implemented a more efficient service model that yielded cost savings in excess of the 8-percent target by reducing overtime and janitorial service, implementing a new facility operations model, and identifying efficiencies in maintenance activities. Notably, these cost savings were implemented with few negative impacts to mission, compliance, or customer satisfaction and safety performance which were sustained at prior year levels. The Facility & Operation organization's asset utilization and facility reliability index continue to exceed DOE expectations and demonstrate an outstanding degree of reliability in facility operations.

In regards to nuclear operations and facility safety, the Contractor met DOE's expectations for safely operating the Radiochemical Processing Laboratory, a category II nuclear facility. Independent assessments evaluated safety system and safety program performance and concluded they were effectively maintained and operated. Issues Identified from these reviews were dealt with in a manner which demonstrated a strong positive commitment by Contractor management and staff to improve facility performance. Significant performance gains were also obtained after the Contractor made notable enhancements to its Criticality Safety Program in its management and implementation.

PNNL also continues to meet milestone commitments and make notable progress towards sustainability goals. Core business hour & telework pilots are having a positive impact in reducing greenhouse gas emissions while completion of the advanced building meter campaign, coupled with the Building Operations Control Center (BOCC), is providing real time operating data analysis leading to more efficient and cost-effective building operations. In addition, PNNL continues to leverage Laboratory R&D resources to develop, execute, and share innovative sustainability strategies whose benefit extends beyond PNNL.

The Contractor has been proactive in partnering with DOE on the development and execution of business cases to ensure that infrastructure and site utility services will continue to meet PNNL mission needs, while improving affordability and dependability. F&O effectively partnered with PNSO in transitioning the maintenance and operations of the Battelle owned facilities as part of the contract extension.

This evaluation results in a score of 3.6 and a grade of A-.

7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to Support the Continuation and Growth of Laboratory Missions and Programs

The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor has been effective in planning for and delivering the necessary facilities and infrastructure required to support the continuation and growth of Laboratory missions and programs during FY 2012. After many years of evolving and improving the Laboratory Mission Readiness approach and processes, including being subjected to and participating in peer reviews around the DOE Complex, the milestone to formally institutionalize the facility strategic planning process was achieved at PNNL. This process leads to a sound basis for Laboratory facilities and infrastructure planning.

In addition, the Laboratory Campus Master Plan was completed. This overarching planning drove the establishment of several foundational plans, standards, and procedures.

Capital acquisitions executed this year were done effectively -- examples include EMSL Q-Wing and SEF.

The Contractor provided project management expertise to support peer reviews across the Complex.

The Justification of Mission Need for the acquisition of the Chemical Sciences and Imaging Laboratory (CSIL) was approved in the first quarter of FY 2012. This allowed for scope and acquisition strategy alternatives to be evaluated and a conclusion reached in the third quarter of the year. Though the viability of accelerating the acquisition was unfavorable, the study was thorough and provided very valuable data which proved beneficial to many other decisions pertaining to the Campus development.

This evaluation results in a score of 3.4 and a grade of B+.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 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, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs	A-	3.6	50.0%	
7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to Support the Continuation and Growth of Laboratory Missions and Programs	B+	3.4	50.0%	
			Total	**3.5**

Table 7.1 - 7.0 SC Program Office Performance Goal Score Development

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

Table 7.3 -- Goal 7.0 Final Letter Grade

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

This Goal evaluates the Contractor's overall success in safeguarding and securing Laboratory assets that supports the mission(s) of the Laboratory in an efficient and effective manner and provides an effective emergency management program.

The weight of this Goal is 25.0%.

8.1: Provide an Efficient and Effective Emergency Management System

The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor is on track/target in their efforts to provide an efficient & effective Emergency Management System. Performance summary is as follows: 1) Satisfactorily completed facility drills/exercises in accordance with Emergency Management Plan and schedule, to include a lockdown/active shooter drill; 2) Emergency Preparedness awareness rated high during interviews and walkthrough surveillances; and, 3) Successfully completed several Emergency Preparedness program activities to include self-assessments, procedure/plan updates, and conducted training – all of which enhances the Contractors emergency preparedness and response capabilities.

This evaluation results in a score of 3.4 and a grade of B+.

8.2: Provide an Efficient and Effective System for Cyber-Security and National Security Systems (NSS)

The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor is track/target in their efforts to provide an efficient & effective system for Cyber Security & National Security Systems. Performance summary is as follows: 1) Successfully collaborated with the National Nuclear Security Administration on obtaining access to classified telecommunication and video systems and classified networks, e.g., SIPRNet; 2) Favorable feedback from the Office of Inspector General on implementing corrective actions to issues identified during previous audit; 3) Successful and overall satisfactory performance during the Federal Information Security Management Act (FISMA) review; and 4) Showing progress on implementing logical access via HSPD-12 compliant credential.

This evaluation results in a score of 3.4 and a grade of B+.

8.3: Provide an Efficient and Effective System for the Physical Security and Protection of Special Nuclear Materials, Classified Matter, and Property

The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor is on track/target in their efforts to provide an efficient & effective system for the physical security and protection of special nuclear materials, classified matter, & property. Performance summary is as follows: 1) Safeguards and Security subject matter experts completed the final security alarm performance testing and certification for the Systems Engineering Facility; 2) Successful and overall satisfactory performance during recent Information Protection (IP) Limited Scope Security Survey conducted by the SC Integrated Support Center; 3) Instituted the passive approach to prohibited articles enforcement within non-security areas and the a graded approval process for the use of certain controlled and prohibited articles with the appropriate risk mitigation and justification; and, 4) Successfully completed stand-up activities associated with the unarmed protective force and implemented the Office of Science's Baseline Level of Protection initiative in an effective and efficient manner.

However, the Contractor needs to improve pre-job/project planning to ensure appropriate protection measures are in place prior to new assets/activities coming into the Laboratory and/or ensuring existing infrastructure protection can handle these new assets/activities.

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

The Contractor's performance meets expectations against all aspects of the Objective in question. The Contractor's systems function at a level that fully supports the Laboratory's current and future science and technology mission(s).

The Contractor is on track/target in their efforts to provide an efficient & effective system for the protection of classified & sensitive Information. Performance summary is as follows: 1) Continued to demonstrate leadership and commitment to the overall protection program by the integration of classified and sensitive information protection program elements into the culture of the organization through an effective Security Education and Awareness and OPSEC Programs; 2) The Contractor is performing exceedingly well in the area of deterring, detecting and reporting incidents of security concern -- only three significant incidents of security concern were reported this FY, in which all were self-reported in a timely manner with appropriate inquiry, mitigation, and follow-up actions taken.; 3) Successful and overall satisfactory performance during recent Information Protection (IP) Limited Scope Security Survey and Classification and Information Control Site Assistance Visit conducted by the SC Integrated Support Center; 4) Continues to evaluate the asset footprint to reduce and/or maintain low risk; and, 5) Successfully completed stand-up activities associated with the unarmed protective force and implemented the Office of Science's Baseline Level of Protection initiative in an effective and efficient manner.

This evaluation results in a score of 3.4 and a grade of B+.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems				
8.1: Provide an Efficient and Effective Emergency Management System	B+	3.4	25.0%	
8.2: Provide an Efficient and Effective System for Cyber-Security and National Security Systems (NSS)	B+	3.4	25.0%	
8.3: Provide an Efficient and Effective System for the Physical Security and Protection of Special Nuclear Materials, Classified Matter, and Property	B+	3.1	25.0%	
8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information	B+	3.4	25.0%	
			Total	**3.3**

Table 8.1 - 8.0 SC Program Office Performance Goal Score Development

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

Table 8.3 -- Goal 8.0 Final Letter Grade

APPENDIX

List of programs:

Advanced Scientific Computing Research (ASCR)
High Energy Physics (HEP)
Basic Energy Sciences (BES)
Biological and Environmental Research (BER)
Fusion Energy Sciences (FES)
Energy Efficiency and Renewable Energy (EERE)
Office of Defense Nuclear Nonproliferation (DNN)
Department of Homeland Security (DHS)
Office of Intelligence and Counterintelligence (IN)
Office of Environmental Management (EM)
Headquarters (HQ)

Advanced Scientific Computing Research
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 80.00%

Score: 3.5 **Grade:** A-

Goal Evaluation:

PNNL has some very talented researchers, including early career recipients, that are having an impact within ASCR programs and in other DOE mission areas with a U.S. leadership role in some areas.

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

Weight: 50.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
PNNL continues to make progress in focusing its activities in areas relevant to ASCR - with an approach that is consistent with ASCR's view of the Laboratory's strengths.

PNNL has demonstrated continued strength in key areas with a strong research staff that includes many young, promising PIs including several Early Career Research Program awards.

PNNL continued its established leadership in the electric grid. PNNL also continues to grow its role in uncertainty quantification.

PNNL has successfully executed proposed research plans that were funded, with a solid publication record across ASCR investments. The research conducted at PNNL is of high scientific merit and quality and it advances DOE missions.

PNNL has been particularly successful at connecting to larger projects and outreaching to DOE applied communities.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 50.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
PNNL staff members are active in professional organizations, DOE sponsored workshops and strategic planning activities, and take on leadership responsibilities in some key ASCR and DOE mission areas.

Within ASCR funded efforts, PNNL staff have demonstrated leadership in some key areas, including several exascale planning activities and in data-intensive science.

PNNL staff participate in several ASCR supported multi-institutional research collaborations and have demonstrated effectiveness in outreaching to and working with other institutions. For example, in the

FOA for ASCR's new math center PNNL demonstrated both the quality of its proposal writing process and its strength in leveraging synergies with other areas of DOE research and was rewarded with about half of the available funding.

PNNL staff members contribute thoughtful and thorough peer review in a timely manner, when requested by DOE.

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

Weight: 20.00%

Score: 3.5 **Grade:** A-

Goal Evaluation:

PNNL leadership has put the Laboratory on a path to strengthen its position in the ASCR portfolio. They have attracted some very talented researchers, especially young researchers. PNNL has demonstrated responsiveness to program request and advice to significantly improve their competitiveness position. PNNL has also improved its planning documents and its contributions to ASCR planning activities.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 30.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
PNNL continues to make progress in focusing its activities in areas relevant to ASCR.

The PNNL strategy seems slightly evolutionary which is a strength in ease of execution but may be a weakness in long term vision. However, computing seems well integrated into their strategies, including PNNL's WFO efforts, and is well aligned with ASCR goals and strategies.

PNNL has significantly improved in its proposal writing and in its contributions to planning efforts and this is beginning to pay off in terms of ASCR awards.

PNNL has done a good job attracting bright young scientists and some senior personnel in ASCR related areas.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 40.00%

Score: 3.6 **Grade:** A-

Objective Evaluation:
PNNL continues to make progress in focusing its activities in areas relevant to ASCR with laboratory plans and an approach are consistent with ASCR’s view of the laboratory’s strengths.

Computing seems well integrated into their strategies, including PNNL's WFO efforts, and is well aligned with ASCR goals and strategies.

PNNL took considerable risks in the new math center proposals and was rewarded for the quality of their

proposals which demonstrated PNNL's strength in leveraging synergies with other areas of DOE research.

Implementing the new DOE conference management order in the middle (or later) of planning several major conferences for ASCR required considerable effort and responsiveness and PNNL delivered for ASCR.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 30.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
PNNL has been very responsive to ASCR requests in FY12 and has demonstrated agility in the face of changing requirements.

PNNL has kept ASCR program managers and leadership informed with regard to activities at the Laboratory and progress in the research activities, and it is clear with regard to who is responsible for what.

Internal quality control for PNNL documents, especially proposals, has significantly improved and delivered results for the Laboratory that other labs could learn from.

High Energy Physics
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

Weight: 100.00%

Score: 3.4 **Grade:** B+

Goal Evaluation:

PNNL has been working on their first fabrication project for HEP, the BELLE-II project. It is a small project with a TPC of $15 million, but the Lab has paid close attention to the project and CD-1 was approved in September.

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)

Weight: 100.00%

Score: 3.4 **Grade:** B+

Objective Evaluation:
Notable: Achieve CD-1 for the BELLE-II project. -Achieved

Notable Comments: CD-1 for BELLE-II project was approved in September 2012.

General Comments: The project has had good attention from PNNL management. Their internal reviews have identified issues that the Laboratory has addressed before seeking CD-1.

Basic Energy Sciences
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 60.00%

Score: 3.5 **Grade:** A-

Goal Evaluation:

- Chemical Sciences, Geosciences, and Biosciences (CSGB) programs at Pacific Northwest National Laboratory (PNNL) in geosciences, catalysis science, chemical physics, and physical biosciences all completed reviews in FY 2012. The geosciences program reviewed very well, while the catalysis science and chemical physics reviews showed these programs to be outstanding. A small field work proposal in physical biosciences was terminated.

- The director of the PNNL Institute for Integrated Catalysis received strong praise for his leadership of the Basic Energy Sciences (BES) CSGB catalysis science program, which successfully presented a newly integrated and coordinated structure at the review.

- Materials Sciences and Engineering (MSE)-supported projects at PNNL continue to produce high-quality, impactful science in bulk and thin film synthesis and in stress-corrosion cracking.

- PNNL met its notable to deliver impactful science for its Energy Frontier Research Center (EFRC).

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

Weight: 50.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
Notable: Deliver impactful science for the Energy Frontier Research Center: "Center for Molecular Electrocatalysis," as measured by the FY 2012 Science Review. - Achieved: The Center for Molecular Electrocatalysis (CME) EFRC has been productive towards its scientific goals and is at the forefront of catalyst development. To date, the Center reports 33 total journal publications, of which 19 are totally attributed to the EFRC. BES is pleased that CME is utilizing their expertise in hydrogen chemistry to approach challenging concepts in oxygen and nitrogen reduction that could potentially be revolutionary to the field.

Notable Comments

General Comments: An onsite review of the recently unified BES CSGB program in geosciences was conducted in FY 2012. The projects reviewed very well and a number of particularly innovative areas were noted by the reviewers. Ongoing progress towards greater synergy was judged as satisfactory. The large BES CSGB program in catalysis science, managed under the auspices of the PNNL Institute for Integrated Catalysis, was also site reviewed in FY 2012. The overall review was very supportive of the vision for the integrated program and of the accomplishments and productivity of the staff. A new project on catalytic conversion of biomass that reviewed very well will receive a funding increase. This review suggests that the new organization has the strong potential to be a world-class center for catalysis research. A CSGB physical bioscience project on redox enzymology, designed to provide information for generation of bioinspired catalysts, was onsite reviewed in conjunction with the catalysis science review. This project will be

terminated due to reviewer concern that the project lacked the appropriate technical expertise to be successful. A review of the experimental projects in chemical physics that was conducted onsite in late FY 2011 was completed in FY 2012. The reviews indicate that this program is an outstanding research effort in terms of scientific quality, productivity and impact, and relevance to the Department of Energy (DOE) mission. The reviewers found that there are excellent collaborations with the scientists supported by the companion computational and theoretical chemistry program at PNNL. A focused theoretical project in actinide chemistry was mail reviewed in FY 2012, judged to be productive and effective in utilizing the computational capabilities of the Lab and will be renewed. The other CSGB programs not reviewed in FY 2012 continue to be successfully executed, of high scientific merit and quality, and advancing the DOE mission.

MSE-supported programs at PNNL were mail reviewed in FY 2012. Three projects continue to demonstrate good scientific progress and impact in the areas of oxide molecular beam epitaxy and molecular nanocomposites for energy storage, and stress-corrosion cracking. However, an award from 2009 was not renewed. The team was seen as well qualified but reviewers had significant technical concerns regarding the proposed research. The project also had very low productivity. Also, an FY 2011 MSE seed funded activity in radiation effects was not recommended for continued support in FY 2012.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 50.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
The FY 2012 BES review found that the new director of the Institute for Integrated Catalysis has had an impressive impact on the vision and execution of the BES catalysis science program at PNNL. The chemical physics review in FY 2012 recognized the lead principal investigator as a world-class scientist and strongly endorsed the addition a new principal investigator for the cluster project. These two reviews confirmed that the chemical physics and catalysis programs at PNNL are exemplary in their scope, synergy, and effective use of unique facilities, notably the Environmental Molecular Sciences Laboratory (EMSL). The Laboratory is a participant in a new Scientific Discovery through Advanced Computing (SciDAC) project that reviewed successfully and was initiated in FY 2012.

MSE-supported programs at PNNL utilize the unique capabilities at EMSL and are clear leaders in the respective topical areas. Noteworthy are the ongoing long term efforts in doped oxide films with novel electronic and magnetic properties and molecular nanocomposites, which are strongly aligned with DOE mission goals. The Laboratory has successfully recruited a leading principal investigator in the area of dynamic transmission electron microscopy and is aggressively working to enhance leadership at PNNL for materials sciences.

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

Weight: 40.00%

Score: 3.4 **Grade:** B+

Goal Evaluation:

- PNNL management continues to present a clear and concise scientific vision for its chemical sciences programs, notably in catalysis and chemical imaging.

- PNNL management is responsive to headquarters requests and communicates research highlights in a timely manner.

- The new PNNL MSE Lab coordinator is doing an excellent job in working with BES MSE management.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 40.00%

Score: 3.4 **Grade:** B+

Objective Evaluation:
PNNL management continues to present a clear, concise, and bold scientific vision for the research programs supported by the BES CSGB Division. PNNL management continues to define and propose an aggressive and expansive vision for the future of BES basic catalysis science and its integration with applied catalysis research and development at PNNL. The ongoing Laboratory initiative and investment in chemical imaging builds on strengths in the chemical sciences at PNNL and is well connected to current research emphasis in the CSGB Division.

The PNNL program coordinator for MSE-supported projects provides effective program vision and leadership. PNNL has developed a good scientific vision for the MSE-support research and is well-aligned with the Laboratory's strategic goals and vision. MSE programs at PNNL make excellent use of signature capabilities at EMSL and have been successful in the recent equipment competition.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 30.00%

Score: 3.4 **Grade:** B+

Objective Evaluation:
PNNL management is to be commended for the early success of the new director of the Institute for Integrated Catalysis who, even with the constraints of a half-time appointment, is having a strong positive impact on the vision and direction of catalysis science at the Laboratory.
PNNL named a new, acting MSE coordinator during FY 2012. The new coordinator is doing an excellent job working with BES MSE management. The management change is reflective in stronger white papers.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 30.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
Communication between BES CSGB and PNNL management was again regular and strong in FY 2012. PNNL management was very responsive to requests from BES CSGB.

Communication between PNNL management and MSE is very good with frequent contacts. PNNL coordinator provides research highlights when requested.

Biological and Environmental Research
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 25.00%

Score: 3.1 **Grade:** B+

Goal Evaluation:

- The Lab is producing impactful science across a range of the BER portfolio. In particular they are making substantial contributions to the development of models that leverage experimental results with impacts on research in climate, integrated assessment, subsurface biogeochemistry, "omics," and low dose.

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

Weight: 60.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

- All PNNL-managed projects and programs for Subsurface Biogeochemical Research (SBR) continue to produce solid contributions in the literature. Environmental technologies developed within the PNNL program have meaningful impact on subsurface issues within the Office of Environmental Management (e.g., ASCEM) and Legacy Management.
- PNNL-managed projects have produced impactful publications in several areas of Atmospheric Systems Research (ASR) and are reflected in advances in climate modeling.
- The research and resulting publications in the low dose program are of high scientific merit and quality, and have advanced radiobiology technique and knowledge, especially in proteomics.
- The Genomic Science Program Foundational SFA is in the process of developing a new field site at Hot Lake and has made good progress in characterizing this site. Only a limited number of research publications appeared however during FY 2012. The Pan-Omics program continues to be highly productive.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 40.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

- SBR program researchers continue to maintain a leadership presence at DOE meetings and with stakeholders at the Hanford site. PNNL scientists made significant contributions to the SBR Annual PI's Meeting and breakout sessions that were held at the meeting.
- ASR scientists continue to provide sustained leadership in DOE atmospheric research venues (several members of standing committees and working groups of ARM/ASR and lead PI roles for three campaigns).
- The scientists in the Genomic Science Program Foundational SFA are recognized leaders in gaining

understanding of interactions among species in microbial communities. The Pan-Omics program is among the most influential worldwide in developing and applying new technologies for this field.
- PNNL has also been particularly successful in the recruiting and development of new research talent, as evidenced by strong contributions of early career investigators at PNNL to DOE mission critical research and their selection for honors such as DOE Early Career Research Awards.

Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

Weight: 50.00%

Score: 3.4 **Grade:** B+

Goal Evaluation:

The Lab is doing an excellent job of managing its user facilities, the Atmopshperic Radiation Measurement (ARM) Climate Research Facility and EMSL, to advance the climate, environmental, materials, and biological sciences.

- PNNL successfully moved forward with several construction / fabrication projects.
- PNNL has an exceptional outreach program for the ARM Climate Research Facility, a balance for access between internal and external users, and a strong resident research community.
- EMSL continued to reach out to the external user community to further strengthen its user base

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

Weight: 10.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

- During FY12, EMSL prepared a report from a 2011 workshop with the scientific community on the need and research opportunities for EMSL/PNNL to develop a world-leading Ultra Transmission Electron Microscope (UTEM).
- EMSL management briefed BER management and staff on the opportunity to enable significant advances in biological and environmental sciences and they posted the workshop report as the first step towards CD-0 for a new MIE project.
- For the Radiochemistry Annex, EMSL completed Phase II plans and awarded a construction contract.
- For the HPCS-4 project, EMSL proactively initiated facility modification activities to enable installation of a highly energy efficient next generation High Performance Computing (HPC) system.
- EMSL prepared detailed project plans for the MyEMSL project.

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)

Weight: 20.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

- At the beginning of FY12, EMSL successfully opened the Quiet Wing for user research. Electromagnetic and vibrational interference in the Laboratory cells is spectacularly low, and all five of the instruments planned to be made available to users are now available. Some of the instruments are already producing exciting scientific results that have been highlighted on journal covers and have received scientific society awards.
- For the High Resolution and Mass Accuracy (HRMAC) project, EMSL placed the order for the high field magnet, and designed and fabricated a unique, world-leading ion cyclotron resonance (ICR) cell for use within the spectrometer part of the project. The overall project is on track.
- EMSL completed the EMSL Recovery Act project by the end of June 2012, made all of the planned capabilities available to users, and initiated user projects on the vast majority of the new capabilities.

Objective 2.3: Provide Efficient and Effective Operation of Facilities

Weight: 60.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:

- BER conducted a triennial scientific and operations review of the EMSL User Program in October 2011. The reviewers noted EMSL's scientific productivity, strong scientific and management leadership and excellent planning, management and user services. In response to BER's request that EMSL addressed five issues. EMSL management quickly but carefully changed the leadership of one of the three science themes and developed a thorough plan of action and milestones (POAM) to address all of the issues. By mid September 2012, EMSL had completed action on all the milestones and satisfactorily briefed CESD/BER management on the status of the actions.
- PNNL exceeded expectations in Atmospheric Radiation Measurement (ARM) user facility activities designed to expand the capabilities for use by the scientific community. Their management of the Recovery Act implementation was exceptional.
- PNNL is operating the Evergreen Cluster in a manner that is advancing the science and that is responsive to PNNL's research partners, working through challenging time allocation management issues.

Objective 2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities

Weight: 10.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:

- During FY12, the use of EMSL's capabilities enabled users to be featured on the covers of more than a dozen journals in a variety of fields of biological, chemical, environmental and materials science. User publications in extremely high impact journals such as *Science and the Proceedings of the National Academy of Sciences (PNAS) were made possible because of access to a number of new EMSL capabilities, including the nanoDESI system.*
- The functionality of EMSL's NWChem software has been significantly expanded and made available to users through code modifications that were developed under open source software development agreements with multiple national and international universities and software companies. Through the planning and implementation of the MyEMSL project, and through workshops and face-to-face meetings, EMSL staff also established functional interactions with BER's Kbase project and with the Joint Genome Institute, as well as with other centers and other universities.

- For ARM facility activities, PNNL has developed an exceptional outreach program, a balance for access between internal and external users, and a strong resident research community. The data management review of the facility highlighted several examples of exceptional facility capabilities.
- The Pan-Omics Program makes highly effective use of the EMSL, introducing many new users to the capabilities at this Facility.

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

Weight: 25.00%

Score: 3.4 **Grade:** B+

Goal Evaluation:

- PNNL is exceptionally responsive to BER needs, provides strong and interactive leadership across BER programs and is very proactive and effective in its research planning.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 20.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:

- PNNL researchers continue to participate in and provide a subsurface scientific perspective at DOE stakeholder meetings at the Hanford site. PNNL researchers continue to utilize and incorporate the new analytical capabilities available at EMSL into its scientific planning for the SFA program and Integrated Field Research Challenge activities, and are working to strengthen connections and interactions with Terrestrial Ecosystem Science-funded research at PNNL, and to better align with the new Climate and Environmental Science Division (CESD) Strategic Plan.
- PNNL has shown effective planning in the first three-year term of its ASR SFA. This strategic focus was reflected in the renewal SFA plan submitted in late FY 2012.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 30.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

- PNNL management continues to oversee a coherent and well-tuned portfolio of atmospheric research for the ASR SFA.
- PNNL Management has been effective in developing the revised Science Plan for the Genomic Science Program Foundational SFA based on the merit review results communicated to PNNL at the start of FY 2012

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 50.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:

- PNNL continues to maintain good communication with CESD program managers as the collection of programs transition to a new mapping consistent with the new CESD Strategic Plan.
- EMSL continues to proactively notify BER of significant scientific highlights on a regular basis. Regular communications between DOE staff in BER and PNSO, and EMSL management and staff on a variety of subjects, including construction activities, High Performance Computing, MyEMSL, and other projects; strategic/scientific planning; and user operations. This enables BER to maintain awareness of significant issues in a timely manner.
- PNNL staff are coordinating and developing a website for the Climate Modeling program.
- PNNL scientists have been very effective in communicating the results of their scientific work with DOE program managers.
- Responses to requests for information from headquarters program staff are excellent, and DOE Program Managers are promptly informed of both positive and negative events.
- Management consistently provides Headquarters program staff with current information and communicates promptly regarding policy and planning issues in the Genomic Science Program Foundational SFA and the Pan-Omics Program.

Fusion Energy Sciences
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 65.00%

Score: 3.7 **Grade:** A-

Goal Evaluation:

The Pacific Northwest National Laboratory (PNNL) has done an excellent job, both scientifically and managerially, in the conduct of their structural materials and silicon carbide research for fusion material applications. Working primarily with the Oak Ridge National Laboratory (ORNL) and the University of California, Santa Barbara, they have helped to lead the development of reduced activation ferritic alloys as the prime candidate structural material for fusion facilities beyond ITER. In addition, a senior PNNL scientist is a key contributor to the newly funded multi-institutional Scientific Discovery through Advanced Computing (SciDAC) Center on Plasma Surface Interactions.

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

Weight: 50.00%

Score: 3.7 **Grade:** A-

Objective Evaluation:
PNNL exceeded performance expectations against all aspects of this Objective. PNNL research has led to high-impact publications in the field of fusion materials and presentations at international and domestic conferences. Specifically, PNNL scientists published 25 peer reviewed publications in FY 2012 and presented 21 papers at domestic and international conferences. The base program research areas are SiC composite research, microstructural analysis, and material modeling. Three new materials related proposals from PNNL were selected for funding during a competitive solicitation. PNNL scientists provide exceptional quality data of neutron irradiated materials to the US and international fusion communities.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 50.00%

Score: 3.6 **Grade:** A-

Objective Evaluation:
PNNL exceeded performance expectations against all aspects of this Objective. PNNL staff worked effectively across organizational boundaries to maximize their research effectiveness. PNNL staff help to shape the vision of the FES materials program through participation in numerous technical and advisory groups. For example, a senior scientist is Secretary of the International Energy Agency (IEA) Executive Committee for the Implementing Agreement on Fusion Materials Research and participated in the Irradiation Synergism Research Task under the TITAN collaboration between DOE and Japan's Ministry of Education, Culture, Sports, Science, and Technology (MEXT). He also chaired the Fusion Nuclear Science Pathways Assessment Materials Working Group which targeted the identification of research activities necessary to advance fusion nuclear science within the US fusion program.

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

Weight: 35.00%

Score: 3.5 **Grade:** A-

Goal Evaluation:

PNNL has numerous staff who are leaders in the FES community. This is evidenced by their participation in several groups, committees, and advisory bodies. The Laboratory's fusion materials program is well-aligned with the FES mission and priorities.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 40.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
PNNL exceeded performance expectations against all aspects of this Objective. The Laboratory's fusion materials program is well-aligned with the FES mission and priorities. The Laboratory recently hired a leading international scientist to work on the high resolution transmission electron microscope (HRTEM) which provides a unique capability to address mission-important materials science issues.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 30.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
PNNL exceeded performance expectations against all aspects of this Objective. The PNNL fusion materials program manager is always responsive to FES program needs and helps execute programmatic reviews and direction changes. In FY 2012, PNNL added an FES-relevant scientific capability: using internal funds, PNNL has added a high resolution transmission electron microscope (HRTEM) that will be used to investigate microstructures and textures of irradiated samples. This new tool will provide the Laboratory with a unique capability to address mission-important materials science issues.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 30.00%

Score: 3.4 **Grade:** B+

Objective Evaluation:
PNNL has been very responsive to HQ needs. The PNNL Point of Contact for FES funded projects is always responsive to requests for information and provides accurate and timely input to HQ.

Energy Efficiency and Renewable Energy
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 60.00%

Score: 3.2 **Grade:** B+

Goal Evaluation:

Biomass:
The PNNL team continues a tradition of excellence from their work with the program in the areas of terrestrial biomass conversion (both biochemical and thermochemical technologies) to fungible fuels. They have also emerged as a leading laboratory in the area of algal biofuels.

Building Technologies Program:
We surveyed our technology development managers in Codes/Standards, Emerging Technology, Residential Integration and Commercial Integration. In the objectives portions of the following answer, we provide the results of these discussions with our managers and provide constructive feedback to resolve any outstanding problems or issues.

Vehicle Technologies Program:
PNNL supports the Department of Energy's Vehicle Technologies Program mission in multiple programmatic areas, but primarily in advanced combustion engine and lightweight materials RD&D through its work on: 1) emission control technologies that enable advanced engine designs, 2) materials innovations and discovery of high strength, lightweight alternatives to traditional ferrous materials used for automotive and commercial truck structures, 3) advanced materials processing and manufacturing, including process modeling and simulations, 4) advancements in the durability and performance of population materials that enable the use of more fuel efficient combustion schemes and engine designs, and 5) electro-thermo-chemical materials and device development that are designed recovery waste energy (heat) from vehicles and utilized to improve overall system efficiencies. In materials science, PNNL consistently produces excellent research and development results in the area of lightweight materials. In particular, the light metals and joining/welding research at PNNL is well regarded by the materials science community and is valuable for achieving DOE lightweight materials goals. PNNL's projects in efficient particulate controls, hydrocarbon/carbon monoxide (HC/CO) oxidation and nitrogen oxide (NOx) reduction catalysts involve the use of sophisticated surface science techniques, advanced modeling, and systems optimization. PNNL employs the state-of-the-art characterization tools at its Environmental Molecular Sciences Laboratory (EMSL), a DOE-BES user facility, as well as the Institute for Integrated Catalysis (IIC). The work focuses on reducing the efficiency losses in emission control devices by reducing flow losses, minimizing regeneration penalties, systems optimization, and enabling new combustion strategies.

Wind and Water Power Program:
Pacific Northwest National Labs (PNNL) provides quality scientific research that advances the overall mission of the Wind and Water Power Program. This has been evidenced through establishment of public databases and organization of workshops to further development in the wind and water industry.

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

Weight: 60.00%

Score: 3.2 **Grade:** B+

Objective Evaluation:

Biomass:

- EERE funded work allowed PNNL to publish quality research articles in high impact and broadly distributed journals.
- PNNL drove scientific progress in the Biomass program as evidenced by the large scientific impact made by EERE funded efforts.
- They have achieved numerous significant awards and are regularly invited to provide talks. PNNL's high impact and seminal work on microalgal resource assessment has made a major impact on the bioenergy community.

Building Technologies Program:
PNNL's performance within this objective is mixed. Within the Commercial Buildings Program, the DOE managers indicated that PNNL has strong performers and excellent deliverables, but they did note that PNNL needs to devote more support to the key PNNL performers within this area to insure they have the right resources they need to insure project and professional success.

The Emerging Technologies program and the Residential Integration program expressed that PNNL's performance is strong with consistently high quality deliverables noting that "reports were complete, well written, delivering valuable results, and were peer reviewed."

BTP found major problems and issues with the Appliance Standards and Codes projects that need immediate corrective actions. The program reported that, "on the appliance standards side the quality varies greatly depending on the project and PNNL performer."

The Lab should, also, improve its QA/QC process and staffing structure. Multiple examples were provided to DOE leadership of project failures, analysis mistakes, and poor QA. Furthermore, the Codes and Standards program identified projects with missed milestones, poor quality deliverables, and which were over budget.

Vehicle Technologies Program:
Within the Advanced Combustion Engine (ACE) portfolio, PNNL continues to have a long established and sustained effort at the forefront of advanced catalyst research in support of the Vehicle Technologies (VT) ACE program. In the last year, 34 papers covering recent studies conducted at PNNL on topics of NOx removal technologies to diesel participate filtration and vehicle systems integration issues were published in highly visible journals and presented at conferences, including news articles written in C&E News highlighting PNNL's research efforts. PNNL is well represented in the materials science literature and at significant conferences. PIs from the Lab are often symposium chairs or organizers for light metals, joining, and computational material science conferences. The majority of PNNL's portfolio is in the form of cooperative research and development agreements (CRADAs) with automotive and trucks original equipment manufacturers (OEM's), as well as their Tier suppliers. Twenty-six journal articles and conference papers, including associated presentations, and 9 formal CRADA project reports were written in the last year that documents the RD&D activities from each of these activities, and the results also reported in the annual merit review for the VT program.

Wind and Water Power Program:

- PNNL's work addresses important environmental and regulatory issues through a range of effective mechanisms, including information gathering and sharing, scientific research, and efforts to develop monitoring and mitigation techniques
- PNNL's efforts to date have resulted in a publicly accessible database which is anticipated to be widely used by the offshore wind community in the future.
- PNNL balances conducting research and engaging in outreach and education, through active participation in marine spatial planning on the West Coast, active participation in and organization of workshops, and production of reports that address stakeholder needs.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 40.00%

Score: 3.2 **Grade:** B+

Objective Evaluation:
Biomass:

- PNNL's biomass researchers have served in positions of science and technology leadership. Examples include researchers and managers on review committees for the DOE-Office of Biological and Environmental Research Bioenergy Centers and the DOE- Advanced Research Programs Agency for Energy, and the Board of Directors for the Society for Industrial Microbiology and Biotechnology.
- PNNL's algal resource assessment researchers were invited to provide expert testimony for National Research Council Committee on Sustainable Development of Algal Biofuels.
- PNNL's fungal genomics researchers were invited to join the Office of Science's Joint Bioenergy Institute.
- PNNL staff consistently show a willingness to pursue novel approaches and/or demonstration of innovative solutions to problems.
- PNNL is always willing to participate in collaborative efforts, and maintains an extremely high quality of scientists at the Laboratory.

Building Technologies Program:
PNNL's performance within this objective is, again, mixed.

The Emerging Technologies Program and the Residential Integration Program expressed that PNNL's performance is strong with consistently high quality deliverables noting that "reports were complete, well written, delivering valuable results, and were peer reviewed."

However, these focus areas were centered on deployment and service related activities (i.e., trade shows, etc.) rather than core RD and analysis.

BTP found major problems and issues with the Appliance Standards and Codes projects that need immediate leadership and performer corrective actions.

The program reported that in some Codes related projects, "PNNL severely underestimated the amount of work and the work was not being managed well."

Vehicle Technologies Program:
PNNL continues to demonstrate exemplary leadership in the science and technology community, effectively bridging the gap between basic science and application of innovations and new technology. This is recognized externally and demonstrated through letters of recognition received from industrial partners for helping to move key technologies to commercialization. Within the Advanced Combustion Engine R&D Program, PNNL has a major leadership role in the activities by leading two of the three technical subgroups (Diesel Particulate Filter and Selective Catalytic Reduction). Through these activities, the fundamental understanding of chemistry and reaction mechanisms involved with lean NOx-trap catalysts, selective catalytic reduction and soot oxidation has been advanced, in industry partners and fellow national laboratory colleagues, and academia are able to take advantage of to meet emissions reduction and engine combustion performance. This leadership position has defined research priorities, has led focused dialogue and has created an extraordinary degree of effectiveness and productivity. Within the Lightweight Materials portfolio, technology transfer has been a significant focus for PNNL and industry partners. In the last year PNNL has been awarded with a Federal Laboratory Consortium (FLC) Award for excellence in technology transfer of a process that significantly increases the fatigue performance of combustion engine component, which allows engine designers to run higher fuel injection pressures, resulting in increased combustion

efficiencies and better fuel economy. Another recognition of PNNL's work was an R&D 100 Award for innovations in new high temperature, high strength metal composite materials that have application in creating better casting and forging die sets that last longer and reduce down time in manufacturing, leading to improved automotive production plant efficiency and improved part performance. The ultimate result is enabling technologies that support the introduction of new and improved materials and processes in the transportation industry. Such external recognition for the science and technical community provides validation of PNNL's leading research work, demonstrates relevancy impact toward meeting national goals. PNNL engages material science researchers from several divisions at the Lab and combines their unique background to produce high quality, novel results. For example, the collaboration between the Fundamental and Computational Science Directorate and the Energy and Environment Directorate has yielded many beneficial results in lightweight materials.

Wind and Water Power Program:

- PNNL is willing to take creative and diverse approaches to answering questions regarding the environmental effects of offshore wind. Working in a field where a good deal of scientific uncertainty, PNNL devised a number of novel means to address this uncertainty.
- PNNL exhibits leadership and creativity in their environmental research portfolio, and in the communication of these results to a diverse suite of stakeholders. In particular, work under the Basin-Scale Opportunity Assessment project has been particularly strong. PNNL collaborates well with a wide range of partners, however, oversight of joint national lab projects (e.g., PNNL led multi-lab environmental projects) and collaboration with other labs could be stronger.

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

Weight: 40.00%

Score: 3.2 **Grade:** B+

Goal Evaluation:

Biomass:
PNNL continues to demonstrate research progress which reflects well on their skills in project planning, implementation, management, and reporting.

Building Technologies Program:
We surveyed our technology development managers in Codes/Standards, Emerging Technology, Residential Integration and Commercial Integration.

We asked these managers about the Lab's performance on working with the outsider market/community, developing a recognized core competency within the respective area and developing new ideas for research programs and projects.

Vehicle Technologies Program:
PNNL has contributed substantially to the vision, planning and execution of both the Advanced Engine Combustion and Lightweight and Proposition Materials R&D program plans. This leadership is provided through several avenues such as numerous technical society associations, consortium participation, and coordination of industry workshops. PNNL has a substantial impact on the direction and focus of the Advanced Combustion Engine subprogram, through the hosting of planning sessions and project reviews that have led to focused recommendations for the Vehicle Technologies Program. PNNL has also demonstrated the ability to attract world-class staff to its program. PNNL's scientific workforce in the area of lightweight materials is very experienced, with particular strength in light metals, joining, and computational techniques. The Lab maintains effective program vision as demonstrated by continued ideation of new, relevant projects with significant DOE and industry interest.

Wind and Water Power Program:
Pacific Northwest National Lab (PNNL) has been effective in collaborative efforts with national labs and agencies, in addition to communicating the Program's vision with the outside community. PNNL maintains a very high quality staff to support Program needs. However, in some areas, improvements are needed in project management and planning to improve research productivity. Overall, PNNL has maintained very good communications with HQ.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 35.00%

Score: 3.3 **Grade:** B+

Objective Evaluation:

Biomass:
- PNNL is highly effective in joint planning (e.g., workshops) with both the DOE and the outside community and played a lead role in organizing the Algal Biofuels Modeling Harmonization Workshop.
- PNNL scientists are always capable of articulation of scientific vision and are key researchers in their fields. They were responsible for drafting the "Renewable Diesel from Algal Lipids: An Integrated Baseline for Cost, Emissions, and Resource Potential from a Harmonized Model" (June, 2012).
- PNNL scientists have extremely high core competencies and often provide excellent ideas for new facilities and research programs.

Building Technologies Program:
PNNL's performance within this objective is, again, mixed as is expressed in Objective 1.

The Emerging Technologies program and the Residential Integration program expressed that PNNL's performance is strong; however, these focus areas were centered on deployment and service related activities (i.e., trade shows, etc.) rather than core RD and analysis. With respect to RD and analysis, the DOE managers expressed some frustration.

Within the commercial buildings program, DOE managers expressed that the performers are world class providing strategic vision and leadership; however, PNNL leadership has not well equipped them with resources and support to insure project success.

The Codes/Standards program has expressed frustration that PNNL is reactive not proactive with respect to managing problems.

DOE expects the PNNL performers to provide a more technical and professional depth to project execution and content.

Vehicle Technologies Program:
PNNL staff participated as reviewers for Vehicle Technologies Program (VTP) solicitations and for the annual engine conference, and coordinated sessions at the SAE World Congress on emissions technologies. Staff are highly engaged in the 21st Century Truck Partnership (21CTP) through regularly scheduled teleconferences, site visits, and reviews. PNNL staff supported the formal review of the 21CTP conducted by the National Academies, and are also active in the working group established to provide future vision for the VTP program direction. PNNL initiated new programs with PACCAR, Ford and General Motors this last year, of which these were Cooperative Research Agreements (CRADAs). Staff from PNNL are proactively engaged with all members of the industrial community including major vehicle manufacturers, Tier 1 suppliers, as well as Tier 2 suppliers. PNNL co-hosted, with ORNL, the

annual emission control workshop in Detroit. PNNL has shown a consistent and energetic desire to take a leadership role in ensuring that DOE funded research leads to the most impactful and meaningful results consistent with the mission of the VTP. In this regard, their contributions have been invaluable. PNNL staff was essential in executing the Lightweight Materials workshop with the Vehicle Technologies Program and continue to support the effort in compiling workshop output. In addition, the light metals and joining staff are very well qualified both for scientific research and automotive engineering and development.

Wind and Water Power Program:

- PNNL has effectively engaged with the outside community, decision makers in agency federal and regional offices. PNNL has a highly qualified staff whose expertise is highly valued by the program. This staff is further developing their offshore wind expertise.
- While PNNL excels in communicating on their ongoing work to the public, there is a cost/benefit relationship to this outreach and in the future it may make sense to try to encourage PI presentation of work and make more strategic decisions about conference participation.
- PNNL has staff with high levels of expertise and have effectively brought this expertise to bear on environmental issues relevant to the marine and hydrokinetic (MHK) industry. For example, PNNL collaborated with SNL this previous year to conduct a rigorous analysis of the potential physical harm to orcas posed by blade strikes by a ducted turbine, an issue that was marring the regulatory process of an important DOE-funded industry project. Results and methodology stemming from this project have ramifications both for this project's deployment success and for future projects as well.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 25.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

Biomass:

- Overall, PNNL does exemplary work in the project management of competitive awards. PNNL adequately considers technical risks and is successful in identifying and solving technical problems. PNNL provided excellent performance metrics and technical goals in their annual operating plans and quarterly technical reports for their core capabilities work in biochemical conversion technologies.
- PNNL has not consistently demonstrated the willingness to make tough decisions. When managing projects selected under a competitive funding opportunity announcement, PNNL has not managed the non-technical aspects of the project to the standards that would apply to a non-lab led project.
- PNNL helps to develop and maintain extremely high quality R&D and User Facility strategic plans. PNNL has world class facilities and researchers and has successfully leveraged Office of Science's EMSL facilities in conducting advanced bioinformatics analyses of fungal strains.

Building Technologies Program:
PNNL's performance within this objective is, again, mixed (as is expressed in Objective 1).

The Emerging Technologies program and the Residential Integration program expressed that PNNL's performance is strong; however, these focus areas were centered on deployment and service related activities (i.e., trade shows, etc.) rather than core RD and analysis.

With respect to RD and analysis, the DOE managers expressed that the Lab did not present clarity in vision, leadership, and strategic planning.

Furthermore, the Lab did not clearly communicate their vision and leadership.

DOE managers felt that the SOWs and proposal had a mixed quality of clarity of mission and strategy.

Vehicle Technologies Program:
PNNL coordinates its vehicle engine exhaust aftertreatment work under the Exhaust Emissions Science Laboratory (EESL). The portfolio of projects continues to evolve through numerous industrial interactions and has been identified as vital to the development of successful aftertreatment systems for high efficiency gasoline, diesel and alternative fueled engines. Furthermore, these projects are uniquely suited to capitalize on PNNL's existing competencies and to strategically support the mission of the Vehicle Technologies Program (VTP). The lightweight and propulsion materials portfolio is managed under a Work Breakdown Structure (WBS) that includes: 1) Properties & Manufacturing, 2) Multi-Material, 3) Modeling & Computational Material Science (CMS). These coincide with VTP priorities and focus areas for the materials program. PNNL has demonstrated consistently that it has efficient and effective project and program planning. PNNL routinely integrates their VTP Annual Operating Plan with DOE-SC programs in Basic Energy Science, as well as leveraging the DOE-SC user facility located at PNNL – the Environmental Molecular Sciences Laboratory (EMSL). PNNL's Product Lines are accountable for expert delivery on project, ensure quality on technical products, conduct bi-annual reviews of projects, progress, and proactively work with project principal investigators to identify risk and mitigation pathways. PNNL has demonstrated consistently that it has efficient and effective project and program planning. The vision and scope of PNNL's activities are captured thoroughly through a yearly annual operating plan. This plan outlines the broad goals of the program, illustrates the individual components and the project level and tracks and manages all the deliverables and finances. PNNL has a well-coordinated and competent staff who represent the various activities within the VTP. DOE program managers have a clear and effective knowledge of the reporting structure within PNNL and the primary points of contacts on all key activities. PNNL staff rotate through the offices at DOE on a regular basis to provide updates and status on all programs. PNNL staff work proactively with VTP staff to identify and rectify any potential risk or problem.

Wind and Water Power Program:
- In the future it would be good to ensure sufficient staff time is allotted to each project to ensure high caliber deliverables and that realistic timeframes for product delivery are set at the outset of a project. Additionally, at times high staff travel time has led to reduced availability and we would encourage more strategic decisions regarding travel in the future.
- Some PNNL projects could benefit from more thorough project management, both in terms of ensuring that projects have continual oversight as they progress, and that deliverables are thoroughly reviewed prior to submission.
- It is also important that there be adequate time included for DOE review and comments for deliverables. At times over the past year, the Tethys and Annex IV projects could have benefited from additional PNNL content development oversight and review. In these instances, once identified, PNNL has worked to ameliorate these situations. In the future it would be good to ensure that there are adequate staff hours available to ensure completion of high caliber deliverables, even if this means providing a higher cost estimate at the outset of a project.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 40.00%

Score: 3.2 **Grade:** B+

Objective Evaluation:

Biomass:
- PNNL often maintains high quality, accuracy and timeliness of response to customer requests for information. PNNL regularly keeps the Office of Biomass Program informed of both positive and

negative events at the Laboratory so that that the Program can deal effectively with both internal and external constituencies. There is never any issue in determining the appropriate contact (who is on-point for what).

- PNNL provided invaluable technical, and organizational assistance to DOE staff as exampled by PNNL's expertise being used as a pool of expert peer reviewers for a variety of Federal Government solicitations, provided technical assistance and guidance to industries, universities, and others following referral by DOE which provides DOE with a way to guide interested parties to technical expertise.
- PNNL's management were highly responsive to numerous DOE's request for information, including recent requests by the Undersecretary's Office for National Laboratory Core Capabilities, the Biomass Program's call for Annual Operating Plans and subsequent requests for associated milestones and revisions. Most notably, PNNL's team of analysts delivered several new process techno-economic models in a very short timeframe to assist the Program in evaluating key pathways to cost-competitive hydrocarbon fuels.

Building Technologies Program:
PNNL's performance within this objective is, again, mixed as is expressed in Objective 1.

The Emerging Technologies program and the Residential Integration program expressed that PNNL's performance and communication is strong.

The Commercial Buildings program recognizes that the performance, responsiveness, and communications could be strong if the PNNL performers had more support and resources from PNNL leadership. In the case of final deliverables that are market-facing, the quality of the final products have been mixed.

For example, the case studies for the Commercial Building Partnerships program were not delivered in a final, public-facing state (poorly written, not enough content, etc.) and have needed numerous revisions and edits from DOE.

Codes/Standards has expressed ongoing problems within this objective which is further underscored by poor QA/QC of work products, deliverables, and interactions.

Vehicle Technologies Program:
Prime examples of PNNL's responsiveness and effective communications with the DOE-VT program managers, as well as industry and academia, have been detailed in previous responses of this performance evaluation. Additional examples include efforts conducted toward coordination and regular active participation by PNNL staff in support of the 21st Century Truck Partnership (21CTP), Emission Control Partnership (CLEERS) and Annual Merit Review (AMR) meetings. Response to requests from technical peer reviews for these activities is prompt and objective. PNNL is also proactive in communicating changes in cooperative research agreement (CRADA) and program directions and plans, where R&D and partner priorities shift throughout the year. The PNNL team has consistently and effectively met program office needs. There is a clear point of contact who is helpful and easy to work with. Laboratory personnel frequently keep HQ "in the loop" on project developments.

Wind and Water Power Program:

- PNNL is very responsive to communication requests (e.g., meetings, webinars, emails, etc.). However is sometimes unclear whether there has been follow through on specific actions.

Office of Defense Nuclear Nonproliferation
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 65.00%

Score: 4.1 **Grade:** A+

Goal Evaluation:

NA-21:
The PNNL provides significant technical, scientific, and management expertise to the three key subprograms of GTRI–Convert, Remove, and Protect—supporting the comprehensive GTRI approach to achieving its mission to reduce and protect vulnerable nuclear and radiological material worldwide, and denying terrorists access to nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. PNNL continues to do an excellent job in efficiently and effectively achieving meaningful results to further NNSA/DNN/GTRI's ability to meet Presidential and Departmental goals.

Of the $127,114,107.00 provided to PNNL, 87 percent supports the protect subprogram - which is used for the protection of high priority nuclear and radiological materials worldwide (the funds are evenly split at PNNL between domestic and international protection efforts). Of the remaining funds, 11 percent was provided for reactor conversion, fuel development, and Mo-99 efforts and the final 2 percent was provided for Remove efforts. PNNL was able to successfully cost and commit 95.64% of all available funds, leaving only 4.36% uncosted/uncommitted at the end of FY2012, exceeding GTRI's goal of 6% uncosted/uncommitted.

NA-22:
The Laboratory consistency provides high quality research and development for nonproliferation, have received external awards for their research, provide technical advice to international nuclear nonproliferation monitoring and policy communities in supporting the verification of nuclear nonproliferation treaties. PNNL has approximately 50 projects for DNN R&D.

NA-24:
GIPP: Supported NA-242 scientist engagement activities with solid technical management. Due to a recent change in management, PNNL has recently started to play a significantly increased role in policy and strategic support to help advance the scientist engagement mission.

SG Tech funded 9 projects at PNNL in FY12 ($1.46M total). Overall the quality, originality, and creativity of these projects were very high, some being the most creative and original in our overall portfolio ($15 M). An important factor in these projects' success was certainly very effective management at the Lab program level.

NA-25:
PNNL provides technical expertise to the SLD program through the Science Team, and other Implementation and Sustainability technical areas. In particular, PNNL was instrumental in developing procurement requirements for new radiation detection monitors. PNNL's expertise was well organized, articulate, and delivered sound recommendations to SLD leadership for consideration.

PNNL physical protection and material accounting experts have contributed to sound upgrades and training programs at foreign sites that cooperate with the Office of Weapons Material Protection, particularly at UEIP, ECP and SOSNY (Belarus).

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

Weight: 60.00%

Score: 4.1 **Grade:** A+

Objective Evaluation:

NA-21:
Score/Grade=4.0/A

PNNL's support to projects was excellent in FY2012. PNNL exceeded all FY2012 material protection performance and financial targets. As of September 2012, PNNL significantly exceeded the FY2012 target of 105 buildings completed (68 domestic and 37 international) and successfully completed upgrades at 196 buildings (101 domestic and 95 international). PNNL also continues to provide critical support in the sustainability of GTRI physical protection programs, including the development of national regulations, inspection programs, and response force training.

In addition, PNNL provided excellent support for the Electron GAZ removal project that consolidated a very large quantity of radiological material and secured it in a GTRI funded storage facility.

NA-22:
Score/Grade= 3.8/A

The Laboratory has exceeded expectations of the proposed research plans and has provided creative, innovative research to meet our nonproliferation goals. Significant areas of S&T are of outstanding merit and have a positive impact to DOE and other customer missions.

Several projects made significant accomplishments during 2012, notably a demonstration of a helicopter-based radiation detection system, a proliferation detection system, a gamma-ray multi-coincidence analysis system and an ultra-high-precision gas processing system.

Impact:
Our external Review Committee noted that:
o The Review Panel was "impressed by the quality of the science being performed, with the rigor of the modeling being representative."
o The Laboratory was complimented for its fairness: "What separates this project from the field is its breadth and the lack of bias (i.e., the Researchers are NOT touting a preferred material)."
o PNNL has shown competence in treaty verification and if the S&T is successful, this work should ultimately benefit the warhead dismantlement and Arms Control communities.
o PNNL is addressing a very important detection need and "pushing the envelope" in the process.

Peer-Reviewed Publications:
Under NA-22 funding, PNNL staff published 23 peer-reviewed articles in a number of international journals including:
· *Modeling and Simulation in Materials Science and Engineering,*
· *Radiochimica Acta*,
· *Nuclear Instruments and Methods in Physics Research*,
· *Progress in Nuclear Energy*,
· *Analytical and Bioanalytical Chemistry*,
· *Analytical Chemistry*,
· *Journal of Analytical Atomic Spectrometry*,
· *Environmental Science & Technology* ,
· *Journal of Radioanalytical and Nuclear Chemistry*.

Invited talks, citations, making high-quality data available to the scientific community:
Under NA-22 funding, PNNL staff presented 62 invited talks at both domestic and international conferences.

PNNL has hosted Workshops & Courses:
· 3rd Annual Workshop on Scintillator Nonproportionality Physics,
· International Workshop on Signatures of Medical and Industrial Isotope Production,
· Nuclear Detection Summer Course.

Successful technologies are or have been transitioned to users to support DOE Missions for optical signatures, information-gathering and information barriers.

The Laboratory's research is being used in several projects for DOE emergency response and DNDO for algorithm development, unattended sensors and data integration.

Awards:
· PNNL was awarded two R&D 100 Awards in 2012 for "Advanced Carbon-dioxide Removal Unit" (Environmental Technologies) and "Graphene Nanostructures for Lithium Batteries" (Materials Sciences). These projects were not under NNSA direction, but are indicative of quality research at the Laboratory.
· PNNL was awarded a 2012 FLC award for their NA-22 sponsored work in "Chemically Etched Emitters for Nanoelectrospray Ionization Mass Spectroscopy."

NA-24:
Score/Grade=3.9/A

ECRC: Provided technical support for export control tasks including domestic export enforcement, multilateral regimes (AG, MTCR) support, ITAG, NPAIR development, and technical assessments for 29 export licensing cases.

GIPP: Supported NA-242 scientist engagement activities with solid technical management. Several PNNL GIPP projects have been brought to the point of commercialization, helping to achieve a core program objective of long-term sustainability.

PNNL provided excellent science and technology support to the Office of Nuclear Verification Warhead and Fissile Material Transparency (WFMT) Program's U.S.-United Kingdom (UK) Cooperation Program in FY12 through participation in the US-UK Warhead Monitored Dismantlement (WMD) Exercise activities that took place throughout 2011 and concluded in the first quarter of FY12. PPRA: PNNL experts made significant contributions as technical experts and health physicists on three PPRA monitoring missions to Russian facilities in FY12. A PNNL expert also made significant contributions as a member of the U.S. delegation to the December 2011 Joint Implementation and Compliance Commission meeting in Moscow, and is making significant contributions to the effort to bring the last three shutdown Russian reactors into the PPRA monitoring regime. PNNL was extremely well prepared to host a Russian monitoring team at the shutdown Hanford reactors in July 2012. NTL: PNNL experts supporting the NTL program are world-class and are consistently sought out by the Provisional Technical Secretariat (PTS) staff at the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) to address technically complex and diplomatically sensitive issues. PNNL's NTL-related publications make a significant impact in the field (i.e., 5x10^9 Bq/day for Xenon emissions from medical isotope production facilities) and PNNL experts are leaders in making high-quality radionuclide data available to the scientific community. PNNL experts also published the first peer-reviewed scientific paper in the United States on measurement of radioactive debris from the March 2011 Fukushima nuclear accident.

The work of PNNL advances NNSA/customer mission. PNNL has successfully executed project work plans. Work conducted by PNNL is of high merit and quality. PNNL offers unique experience in safeguards-related regulatory and legislative development to fulfill DOE/NNSA mission needs and contribute to meaningful bilateral safeguards cooperation. PNNL is positioning itself to be a leader in safeguards-related R&D in the coming year. The quality of the proposals, value of the research, and standard of program

management has been consistently high.

NA-25:

Score/Grade=4.3/A+

PNNL provides concept of operations development, training materials development, and provides critical scientific expertise related to nuclear detection for the Second Line of defense program. PNNL provides important support for all aspects of the program's implementation in the field.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 40.00%

Score: 4.0 **Grade:** A

Objective Evaluation:

NA-21:
Score/Grade=4.0/A

PNNL has provided exceptional management and services in support of GTRI's ongoing efforts to accelerate the establishment of commercial non-HEU-based production of Mo-99 in the United States and to assist global Mo-99 producers in the conversion of their Mo-99 production processes to LEU targets. They have demonstrated great aptitude in aiding GTRI through program management and integration support. Furthermore, they have expertly managed contracts and provided oversight to assist foreign Mo-99 producers in converting to the use of LEU targets. Finally, they have expertly supported the execution of the Mo-99 program's Semi-Annual Technical Reviews, which provide independent technical consultations to evaluate the progress of each of the domestic cooperative agreement projects.

NA-22:
Score/Grade=3.7/A-

Laboratory staff members hold leadership positions in several professional organizations. One staff member has been invited to become an AAAS fellow.

Staff members have been active in high-level panels providing technical advice to the Department of Energy for future R&D:
· Chief Technical Advisor for Plutonium Disposition,
· Participated in the National Academy of Sciences review of technical aspects of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and attended CTBT Working Group B as part of the US delegation,
· Liaison between the Coordinating Panel for Advanced Detectors (CPAD) and the Cosmic Frontier at the Community Summer Study (Snowmass meetings),
· Two staff members are currently on formal assignment as technical advisors to our office,
· A staff member received an internal Laboratory Director's Award for Exceptional Engineering Achievement award for leadership in international treaty monitoring and as a technical resource in non-proliferation research. This award is given to members of the engineering R&D staff who have made major national and international contributions to the advancement of an engineering field of study. A staff member is an NCNS advisory board leader

The Lab has performed work successfully in teams. Our Review Panel concluded in particular that a PNNL/ORNL collaboration is already producing good work. One strength of this Research Team is the well-balanced focus on modeling and applications.

Letter of recognition and appreciation for Fukushima response - PNNL has been cited by RADM Krol (NNSA/Emergency Response) in a letter of recognition sent March 28 to Laboratory Director Kluse for its assistance in the Fukushima response. PNNL furnished summaries of both local data collected in Richland and OCONUS data collected through the International Monitoring System of the CTBTO to the NA-42 NIT and later the EPA for use in managing the US response as the plume came across the Pacific. The IMS data was the first regional data available to show the time evolution of the plume across the northern Pacific from Japan and across Kamchatka to Alaska, Canada, and the CONUS.

PNNL also manages the Nonproliferation Graduate Fellowship Program which in 2012, rigorously reviewed the credentials of, and subsequently selected 23 graduate students from across the nation to spend a full year supporting one of the NNSA's Defense Nuclear Nonproliferation offices.

The NNSA Office of Proliferation and Verification R&D (NA-22) relies on scientists from PNNL and others to provide external review for research proposals for our Small Business Innovation Research (SBIR) and University programs. For the FY2012 University call, PNNL provided 27 external reviews, and 63 external reviews for the FY2012 SBIR call.

NA-24:
Score/Grade=3.7/A-

ECRC: Support provided for export control tasking was critical in meeting the goals defined by DOE.

GIPP: Supported NA-242 scientist engagement activities with solid technical management. Although a high number of projects have suffered delays, it is expected that new management changes will help to resolve project management issues.

In addition to other Warhead and Fissile Material Transparency (WFMT) Program activities, NTL: The PNNL NTL Lab Lead has a number of significant leadership positions: Chairman of the U.S. CTBT Verification and Monitoring Task Force Radionuclide Subgroup, Chairman of the international CTBT Radionuclide Expert Group, and Radionuclide Scenario Development Leader for On-Site Inspection Integrated Field Exercise 2014. He was also a significant contributor to the March 2012 NAS CTBT report. PNNL experts coordinated and led the June 2012 Workshop on Signatures of Medical and Industrial Isotopes, which has been a great success in encouraging the production and monitoring communities to discuss options to address a serious issue that could significantly affect CTBT monitoring.

PNNL staff members are active participants in professional organizations, committees, and activities, and take on leadership responsibilities commensurate with experience and expertise. PNNL staff members have leadership positions in NNSA sponsored workshops and strategic planning activities. PNNL submits competitive proposals that open significant new areas of exploration that are aligned with NNSA mission needs. In general, even relatively young and still-developing PNNL researchers have demonstrated a notable level of leadership potential within the community. PNNL very effectively hosts a peer-review coordination role for some DOE projects.

NA-25:
Score/Grade=4.1/A+

PNNL has provided excellent project management and execution support for the program. PNNL also provides critical R&D and testing support and supports multiple aspects of the program's implementation.

PNNL continues to provide excellent technical expertise to the SLD Program. PNNL has provided excellent information to the SLD program regarding the lifecycles of handheld equipment and made recommendations for future program procurements.

PNNL also contributes to peer papers and reviews on technical issues important to SLD.

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

Weight: 35.00%

Score: 4.0 **Grade:** A

Goal Evaluation:

NA-21:
PNNL continues to provide valuable leadership to the GTRI Program and has been able to recruit and retain a quality workforce.

NA-22:
The Laboratory attracts and retains world-leading and high-quality scientists, and effectively communicates its results and plans.

NA-24:
GIPP: Supported NA-242 scientist engagement activities with exceptional level of technical expertise. The principal investigators on PNNL projects continue to demonstrate a high level of dedication and expertise.

PNNL provides input for strategic planning and development on bilateral and multilateral safeguards engagement for the Southeast Asia region. PNNL consistently provides high-quality and innovative support to new INSEP initiatives, including work on the SSAC framework for engagement and a new effort to address domestic safeguards inspector qualification programs. PNNL demonstrates a clear vision and strong leadership in the area of program management. Clear indication of systematic and coherent planning. Young and dynamic workforce that routinely performs ahead of expectations.

PNNL personnel did a superb job in planning and implementing the NSG Plenary group meeting in Seattle. The NSG Plenary was a large, highly visible, and from a mission perspective, highly important conference. PNNL handled difficult subcontracting challenges with aplomb, assured local security was adequate for the conference, and generally did an outstanding job in running the conference.

NA-25:
PNNL has provided excellent project management and execution support for the program. This support has been consistently provided across divisions. PNNL consistently provides excellent financial and project management support.

PNNL has consistently provided excellent assistance to SLD in the development of program visions, strategic planning, and development of initiatives. In particular, PNNL's expertise has been pivotal in the development of FY13 strategic initiatives for the Sustainability Program, including assisting SLD in the development of a process to work with partner countries to develop internal radiation detection regulations. Further, PNNL continues to provide exceptional expertise in the planning and execution of table-top and field exercises and in-country technical workshops.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 20.00%

Score: 3.9 **Grade:** A

Objective Evaluation:

NA-21:
Score/Grade=4.0/A

PNNL has continued to be a leader by working with GTRI HQ to develop and advance GTRI's sustainable security goals and objectives towards the facilities that have implemented GTRI security upgrades.

NA-22:
Score/Grade=3.5/A-

The Laboratory attracts and retains a high quality scientific workforce, and they are widely recognized within the U.S. and international nuclear nonproliferation monitoring and policy communities for leadership in supporting the verification of the Comprehensive Test Ban Treaty.

An external Review Panel concluded that:
· "PNNL is the 'Gold Standard' for the rigorous collection and compilation of optical signatures,"
· "the Researchers have a very good grasp of the gaps in the science,"
· "S&T work showed a unique combination of theory and experiment which will open the door to many publishing opportunities."

PNNL's Lab Director was awarded the 2012 FLC "Laboratory Director of the Year" award.

A PNNL staff member has been chosen to lead a sub-team in an international exercise for CTBT in FY14.

NA-24:
Score/Grade=3.6/A-

ECRC: Laboratory capabilities were adroitly managed to help achieve the programs' strategic goals. The Laboratory has done an exceptional job of attracting and retaining high-quality staff member that seamlessly integrate with team members at other labs. Ensured that technical expertise would be available at all times in response to emergent tasking.

In addition to other Warhead and Fissile Material Transparency (WFMT) Program activities, PPRA program management strongly supports the PNNL strategic plan; PPRA plan at PNNL is well aligned with DOE mission goals. NTL program management at PNNL strongly supports the PNNL strategic plan. Flexibility in the face of changing budgets is to be commended, along with PNNL consistently looking for ways to leverage related work in other programs (e.g., NCNS).

PNNL is able to retain and recruit staff for a sustainable program, shows strategic vision for its work, is uniquely qualified for the work it does, and has Laboratory plans that are aligned with NNSA mission goals. PNNL has a coherent plan for addressing future workforce challenges. Clear evidence of careful and effective strategic planning and vision.

Within the Policy arena, numerous times during the reporting year, PNNL failed to exhibit strategic vision as well as take direction from DOE/NNSA relating to specific work being supported by DOE/NNSA

NA-25:
Score/Grade=4.0/A

PNNL's mission and strategic direction are well aligned with the needs and requirements for program implementation.

PNNL continues to provide important technical expertise in the evaluation of technical issues associated with installed radiation detection monitors. PNNL's assistance includes supporting over 40 countries worldwide with a Help Desk that supports local maintenance providers in the maintenance of radiation detection monitors and computer hardware/software. PNNL also provides sound root cause analysis studies to SLD management, which contain options/recommendations for program processes, procedures, or technical improvements. Further, PNNL's ability to recruit, train, mentor, and sustain quality personnel has

consistently benefited the SLD program; quality personnel permits SLD to more effectively and efficiently implement SLD's mission.

This year, PNNL project management experts have assisted OWMP greatly with re-writing sustainability contracts for the final year of comprehensive support at two Russian sites whose HEU mission will be going away in late 2013. PNNL experts had to dispassionately break down and re-write contracts from another lab for more cost effective support of essential sustainability activities, amidst resistance within long-established teams (and disagreement within the HQ team). Thanks especially to two staff members for their objective and tactful support.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 20.00%

Score: 3.9 **Grade:** A

Objective Evaluation:

NA-21:
Score/Grade=4.0/A

PNNL has provided vital leadership in project management and risk analysis efforts for GTRI's Mo-99 program and serves as the lead project management integrator for all of the domestic and international projects for Mo-99. In this role, PNNL has worked to establish performance baselines, detailed risk analyses, and project execution plans. PNNL established a SharePoint site to support the integration of the work occurring at the various national laboratories where status on expected milestones and deliverables are reported weekly, providing GTRI with a clearer and more accessible avenue to manage work being executed at the national laboratories in support of the Mo-99 program. In addition, PNNL's work on the compilation of an Executive Monthly Report for GTRI upper management has resulted in an indispensible programmatic document. PNNL's team continues to provide outstanding service to GTRI in this area that has been invaluable to progress in achieving these complex program missions.

PNNL has also provided vital leadership in project controls, project management and risk analysis in support of GTRI's protect, reactor conversion, Mo-99, and fuel development programs. PNNL is the lead project management integrator of multiple-lab teams for each of these programs. In this role, PNNL established performance baselines and detailed risk analyses and risk management plans for each of these programs, and is currently leading the lab teams in providing status for the baselines and plans. Additionally PNNL serves as the pillar lead for the fuel fabrication capability effort under the convert program. PNNL has continued to be a leader for project management practices and expectations within the protect project. PNNL's team continues to provide outstanding service to GTRI in this area to ensure progress in these complex program missions.

Last, PNNL has provided expert project management and physical protection expertise. Their cross-cutting protection support on Search and Secure, centralized equipment procurement, equipment test bed management, and the GTRI Protection and Sustainability Criteria document has been critical to GTRI's Protect mission. PNNL maintains high standards of project controls by assisting HQ staff in the organization of milestones, budget, and baselines in G2 and continues to do a good job of performing its project management duties and providing physical protection expertise for international radiological protect projects.

NA-22:
Score/Grade=3.4/B+

The Laboratory is effectively planning its research projects and tracking progress.

The Review Panel commented on specific projects:
· project pursuing an "incredibly ambitious" scope of work,
· "extremely well-organized effort,"
· Strong leadership by Principal Investigator,
· A strategic hire was made to replace a staffing need.

The Laboratory has fielded a great team of researchers, including students and post-docs.

NA-24:
Score/Grade=3.6/A-

ECRC: Effectively provided creative solutions to allow for continued success of export control tasking during times of increasing fiscal austerity through astute relocation of funds and resources.

CBM: Instrumental in planning and implementing the first technical nuclear forensics course sponsored by the International Atomic Energy Agency and NA-242's Confidence Building Measures Program hosted at PNNL in February 2012. PNNL succeeded in helping NNSA organize a technical training course that received extraordinarily positive feedback from participants, international experts and the IAEA.

In addition to other Warhead and Fissile Material Transparency (WFMT) Program activities, PNNL management of PPRA strongly supports the Laboratory strategic plan and U.S. national interests. Technical risks related to PPRA implementation are well-considered. U.S. certified CTBT Radionuclide Laboratory (RL-16) at PNNL consistently receives "A" grade in proficiency testing. PNNL experts serve as an OSI surrogate inspector trainee (Haas) and trainers for the international community. PNNL looks to leverage work in other programs to the benefit of NTL and the international CTBT effort. PNNL experts are consistently involved, by invitation, in the planning and conduct of any CTBT radionuclide meetings, exercises or workshops. PNNL is acutely aware of the need to protect U.S. interests while engaging the international CTBT community. PNNL's effective management and efficient implementation of project/program plans has shown the Lab's ability to be flexible when responding to ongoing and future WFMT UK cooperation program needs in support of future nonproliferation initiatives.

Research plans and management actions are proactive, not reactive. Management is prepared for budget fluctuations and changes in NNSA program priorities. LDRD investments, overhead funds, and other Laboratory funds are used to strengthen Lab plans. Programs managed in close alignment with proposed plans. Effectively use of LDRD that has led to continued funding under this NA-241.

Within the Policy arena, numerous times during the reporting year, PNNL failed to exhibit strategic vision as well as take direction from DOE/NNSA relating to specific work being supported by DOE/NNSA

NA-25:
Score/Grade=4.0/A

PNNL provides a variety of important technical support for the implementation of the program, especially in their support for the Second Line of Defense program. SLD's FY13 budget reduction forced the Program to make deep cuts in technical expertise. PNNL proactively met with SLD and provided various recommendations and options that kept as much of the superb technical expertise 'on-board' as possible, including reshuffling responsibilities, ranking their staff, and offering new ideas for management consideration.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 60.00%

Score: 4.1 **Grade:** A+

Objective Evaluation:
NA-21:
Score/Grade=4.0/A

PNNL has helped GTRI to fill critical needs in project management, physical protection and contract execution through the M&O contractors that it provides. PNNL has continually demonstrated to be knowledgeable, professional, and critical project teams. Communication and responsiveness to requests from GTRI are always prompt and effective.

NA-22:
Score/Grade=3.7/A-

Communication to headquarters is prompt and timely by the points-of-contact and administrative staff. The staff is exceptionally responsive and concerned with ensuring that PNNL resolves any outstanding issues and concerns with regard to information or personnel.

The administrative staff member who updates our online database with project plans and deliverables should be commended for her timeliness, accuracy, communication and quality of work. All active projects submitted all required quarterly reports in FY2012.

The Laboratory also manages our web-based process for handing proposals. This year they had to make many last minute changes to the system which worked very well for us under this critical circumstance.

NA-24:
Score/Grade=3.8/A

ECRC: PNNL has provided effective responsiveness in support of HQ external communications efforts. Staff throughout the Laboratory organization generally engaged in good communication practices. Responses to requests for information are prompt and thorough in all instances. The accuracy and integrity of the information provided is never in doubt. Up-to-date point-of-contact information is widely available for all programmatic areas. Headquarters is kept informed of both positive and negative events at the Laboratory.

In general, PNNL's management of the Office of Nuclear Verification's WFMT Program resources, and ongoing written and verbal communication with the NA-243/WFMT Program sponsor was exceptional. This enabled the WFMT and PNNL Teams to work together to make key project direction decisions throughout the year and ensure that funds were consistently applied in an effective manner, thereby helping ensure that the maximum amount of work was being accomplished. PNNL communications and responsiveness on PPRA issues are outstanding; never a surprise and PNNL always has well-considered solutions to issues. PNNL communications and responsiveness on NTL issues are outstanding; never a surprise, even with the breadth of issues and international emphasis of the program.

Laboratory management has instilled a culture throughout the Lab that emphasizes good communication practices. Communication channels are well-defined and information is effectively conveyed. Responses to HQ request for information are prompt, correct, thorough, and succinct. PNNL on numerous occasions has responded in an efficient and effective manner to requests for information from Headquarters, particularly requests regarding PNNL's involvement in safeguards engagement in the Southeast Asia and Middle East regions. PNNL's response to HQ exceeds that of all other labs in the SG Tech portfolio. It is time, effective, in-depth and consistently accurate.

NA-25:
Score/Grade=4.3/A+

PNNL is responsive and effective in their communications with HQ staff and programs.

PNNL has provided outstanding support to both the Second Line of Defense and the MPC&A programs, including excellent project management, training and contract support. Overall, PNNL has been very efficient, timely, and helpful to SLD.

PNNL continues to exceed the standard of performance in many areas of support to the Megaports program. PNNL provides certified project management expertise to Megaports augmenting the federal staff in managing over 30 projects. Project managers support the Program in the management of work scope, schedule, and budget and the execution of program implementation.

PNNL continues to be flexible in planning, purchasing and delivering equipment. PNNL has done a very good job supporting the Core Mobile Detection program.

PNNL has continued to provide exceptional support to the Sustainability Program. PNNL has continued to be instrumental in the creation and improvement of a multitude of planning and evaluation tools for the Sustainability Program, including 'stoplight charts' for SLD Management, new links for local maintenance providers to update on-line forms, and continuous training for the Sustainability Managers. Further, PNNL has been consistently proactive in the identification of required improvements and in the implementation of successful resolutions, including Help Desk data organization and reporting tools, parameter setting protocols with ORNL and LANL, and conducting root cause analysis.

Department of Homeland Security
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 60.00%

Score: 4.0 **Grade:** A

Goal Evaluation:

In FY-12 PNNL has once again demonstrated its commitment to DHS and the broader Homeland Security Enterprise. PNNL has shown outstanding technical and managerial expertise across all DHS sponsored efforts. Most noteworthy is PNNL's exceptional ability to work with DHS program managers and HSE stakeholders to identify mission needs, create scientific approaches and technologies, deploy and test those approaches and technologies, and use the results to continue to inform the science and technology development process.

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

Weight: 60.00%

Score: 4.0 **Grade:** A

Objective Evaluation:
PNNL is a recognized and valued partner of the Homeland Security Enterprise (HSE) that provides critical, relevant, and innovative solutions to key challenges. PNNL has done an outstanding job working with stakeholders across the HSE to identify needs, create innovative scientific approaches and technologies to meet those needs, deploy and test those approaches and technologies, and use the results to inform the science and technology development process.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 40.00%

Score: 3.9 **Grade:** A

Objective Evaluation:
PNNL is using its experience in designing imaging technology to develop the next generation of person-scanning systems, increasing speed, expanding the number of threats evaluated, and providing clearer images for rapid decision making. PNNL also continues to provide world-leading nuclear material forensics expertise to support the DNDO National Technical Nuclear Forensics center, including serving as co-writer of the draft Nuclear Forensics International Technical Working Group Exercise Strategic Plan.

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

Weight: 40.00%

Score: 3.8 **Grade:** A

Goal Evaluation:
PNNL's publications advanced the science of homeland security, and investments in such areas as threat detection and cyber security are paving the way to resolve some of DHS's and the nation's most pressing problems. PNNL also continues to share its innovations with the broader academic and homeland security communities and has

furthered its relationships with the Homeland Security Enterprise. Through activities such as these, PNNL has demonstrated its continued dedication to helping DHS protect the nation from accidental, intentional, and natural disasters.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 40.00%

Score: 3.9 **Grade:** A

Objective Evaluation:
PNNL facilitated the development of and is serving as the first chairperson of the DOE National Laboratory Consortium for Explosives Detection. Six national labs are working in partnership with DHS S&T on explosives detection in the aviation security and mass transit environments to develop a multi-year strategic plan, technology roadmap, and recommended programmatic guidance. These products and the insights gleaned during their development will assist DHS S&T in identifying the most impactful technologies to pursue and potentially shorten the technology development lifecycle.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 35.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
Under DNDO, the RPMP focused efforts in four main areas in FY-12: 1) sustaining the coverage at port of entry sites where scanning has been implemented; 2) providing technical support for the continued operations of all deployed systems: 3) addressing system end-of-design life issues: and, 4) planning efforts to ensure the needs of DHS will be met in a fiscally challenged future.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 25.00%

Score: 3.9 **Grade:** A

Objective Evaluation:
As an example, using experiences gained from numerous regional relationships, PNNL worked with DHS S&T, the state of Colorado, and the Denver region to develop an all-hazards framework for disaster recovery, with annexes on chemical, biological, and radiological incidents. This framework helped inform a draft federal document offering national guidance on developing recovery frameworks.

Office of Intelligence and Counterintelligence
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 60.00%

Score: 4.3 **Grade:** A+

Goal Evaluation:
As was the case last year, PNNL has made exceptional contributions to the Office of Intelligence and Counterintelligence for fiscal year 2012. The Lab consistently provided timely expertise and support to IN headquarters personnel, as well as held a leadership role in several national-level intelligence community (IC) working groups and interagency teams involving HQ staff, other U.S. government agencies and various national laboratories. All assigned missions were accomplished in a timely and efficient manner, and to the best of our knowledge, all IC customers were supported with 100% mission accomplishment and satisfaction. The CI office did a fine job, but two opportunities for improvement recommend themselves: there does appear to be a significant drop in analytical production, despite excellent writing skills and fundamental analytical technique. Increased (quality) production would be welcomed. In addition, the OPSEC plan requires annual review and regular attendance at local OPSEC working group meetings.

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

Weight: 60.00%

Score: 4.3 **Grade:** A+

Objective Evaluation:
Under the new DOE-IN foreign nuclear intelligence management paradigm, PNNL was given the responsibility to help define the relevant issues and conduct analytical and technical research to address those issues, subject to final approval by DOE-IN. A PNNL staff member was the informal group leader of the combined "fuel cycle labs" and played a major role in drafting the first coordinated production plan for PNNL, ORNL, and SRNL.

PNNL played a very important role in helping DOE-IN respond to the House Appropriations Committee Surveys and Investigations staff review of IW and the role of the national labs in the intelligence community. PNNL also played an important supporting role in the PDDNI's visit to a couple of field sites.

The PNNL CI program created the Threat and Risk Assessment (TARA) project as a proactive approach for identifying and mitigating potential insider threats. The first version of TARA was demonstrated during an inspection conducted in March, and the project was highlighted in the inspection report.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 40.00%

Score: 4.2 **Grade:** A+

Objective Evaluation:
In addition, the Cyber Intelligence Center (CIC) provided analytical briefings to several agencies and industry leaders regarding threats to US critical infrastructure. This reporting has directly affected (in a positive way) industry support for DOE-IN participation in the various cyber initiatives of recent prominence. The CIC also provided critical leadership in the re-design and reconfiguration of the HAL

network to improve performance and security of the network, and will pave the way for making HAL a JWICS peer in compliance with various directives and requirements. The CIC also defined a CONOPS and provided a cross-domain solution that supports the routine transfer of data from the DOE-IN managed unclassified network at PNNL to HAL. Two PNNL members of the CI staff were key contributors to a DOE HQ working group tasked with executing the integration of CARDS data into the CI Portal application. During each meeting of this working group, technical and user-related challenges were routinely identified for which the staff members provided strategic recommendations for the resolution of issues and concerns. These two staff members directly helped insure the successful incorporation of CARDS data into the CI Portal.

PNNL analysts working on NMIP site security and transportation security assessments have excelled above many of their peers in their support to us this FY. In particular, PNNL staff provided excellent support to our efforts to prepare senior policy makers (including the President) for the 2012 Nuclear Security Summit in Seoul, and in response to short-suspense queries from key policy makers, including Congressional staff and NCPC.

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

Weight: 40.00%

Score: 4.2 **Grade:** A+

Goal Evaluation:

PNNL is the most responsive lab in the entire DOE complex. Outstanding detailees and assignees, and excellence in the areas of nuclear fuel cycle analysis, cyber security and IT operations, and counterintelligence.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 30.00%

Score: 4.1 **Grade:** A+

Objective Evaluation:
PNNL provided classes on graphite moderated reactors and small scale reprocessing, bringing experts in the field at PNNL into the classroom to train members of the intelligence community, DOE and DOE/NNSA analysts and policy-makers. There was exceptional interest in the course, and PNNL expanded the course by 20 percent to accommodate the demand. Even then, there were people left on the waiting list. Students across the board found the course to be very relevant to their work, and they said that they were going to recommend it highly to others in their organization. Both courses are becoming "must haves" among DOD and IC analysts.

PNNL offers another course on Nuclear Fuel Manufacturing, which provides both classified and unclassified material and activities, as well as tours of production facilities in the region.

The CIC also supported the Eagle Horizon national level exercise as the Devolution Cyber Directorate (IN-44). Members of the CIC received a formal recognition for their outstanding performance and their excellent contributions to the exercise. The exercise identified a few areas for improvement for the entire IN organization, which resulted in a complete rewrite of the DOE-IN COOP plan, later submitted to the DNI. The ODNI staff found the new COOP implementation plan to be so well-written that they directed it be shared with DHS, State, Treasury and FBI as a model for those domestic intelligence agencies to follow in their own plan development. This ended as a highly-successful effort, and the CIC in particular and PNNL in general can and should take great pride in their significant role in the process.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 20.00%

Score: 4.1 **Grade:** A+

Objective Evaluation:
We don't have a long history here, but the person who oversees all intelligence-related work for the Defense, Homeland and Special Programs Sector seems to be working well with the PNNL FIE Director. The PNNL FIE Director has always been our "go to" guy when we need something on short notice from PNNL. The management team seems to be in good shape and is very responsive to IC requirements and our too-frequent short-term needs.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 50.00%

Score: 4.3 **Grade:** A+

Objective Evaluation:
Responsiveness has been PNNL's forte for many years, and this year was no different. The Freeze Frame SharePoint tool was delivered to and made operational at the site of a very important customer of great national security significance to the United States. The Lab spent several months interfacing with and installing and training the customer's staff on the application.

PNNL also provided a very important briefing to the Congressionally-appointed "R&D Commission," which was very well-received. The Lab also participated in briefings and to the House Appropriations Committee Surveys and Investigations staff and to support the visit of the Principal Deputy Director for National Intelligence, when she visited some of the field sites. In all cases, the Lab (and DOE-IN) received very positive feedback.

Office of Environmental Management
Pacific Northwest National Laboratory
FY 2012 Performance Evaluation
Office of Science

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 60.00%

Score: 3.5 **Grade:** A-

Goal Evaluation:

The Contractor has produced satisfactory results in transforming scientific knowledge into practical application. It has actively developed relationships with the broader research community in areas pertinent to EM's mission and continues to work to extend its focus beyond Hanford-centric activities. It endeavors to use its available resources to achieve maximum impact during times of federal funding decreases that are impacting all the U.S. national laboratories.

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

Weight: 40.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
DOE field leadership reports that the Contractor performs excellent quality work that exceeds expectations in some cases. Technology development and treatability testing work conducted by the Contractor in 2012 in support of groundwater and vadose zone work was described as outstanding. The Contractor develops appropriate research plans and communicates its results clearly. It actively publishes technical reports, journal articles, and other documents describing its work. Its scientists engage in national and international research conferences and also disseminate their results to a broad audience, including DOE's Office of Environmental Management (EM) Headquarters staff, via seminars and invited talks. Publications in 2012 include reports on a variety of topics, including glass corrosion, Hanford pump and treat system operation, geophysical imaging, geochemical controls on contaminant transport, Hanford tank waste retrieval, deep vadose zone characterization and remediation, and risk associated with residual tank waste. Examples of the Contractor's positive impacts to field activities in 2012 include 1) the determination that pH adjustment was not needed at Hanford's 100-KR-4 pump and treat system, eliminating significant expense, and 2) design and implementation of the PHOENIX GIS-based system for data sharing and visualization at Hanford. Hanford site leadership also reports that two field tests conducted by the Contractor were seminal: 1) vadose zone desiccation test; 2) flux-based analysis of volatile organic contaminants in the vadose zone.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 60.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
The Contractor does not report having had involvement or membership in National Academy-level panels in 2012 to discuss and set Environmental Management (EM)-related research directions. However, its scientists do meet the A- criterion of having leadership positions in professional organizations that discuss and formulate scientific strategy and direction. Contractor scientists working under EM funding also assume leadership roles by organizing and leading sessions at scientific conferences and problem-solving workshops. They engage in EM- and DOE-level strategic planning, such as the recent DOE Secretary-

mandated efforts to identify research opportunities in the areas of tank waste, mercury remediation, and other areas (in conjunction with Savannah River National Laboratory). The Contractor's scientists pursue creative approaches to address technical problems that are unique to the EM complex. As one example, the Contractor issued a report that correlated the corrosion of ancient (archaeological) glasses to glass corrosion mechanisms that affect the durability of vitrified nuclear waste.

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

Weight: 40.00%

Score: 3.5 **Grade:** A-

Goal Evaluation:

The Laboratory has strategically planned its research programs to meet site needs and EM mission requirements. It ensures the value and responsiveness of its research activities by working closely with both EM Headquarters and Hanford Site staff (DOE and contractor personnel), as well as regulators and stakeholders. It uses leveraging, collaboration, and development of new initiatives to maintain its scientific workforce.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 25.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
The Contractor's research for EM is guided by sound planning with input from multiple offices at EM Headquarters, the Richland site office, and external experts. For example, it participates in the Tank Waste Corporate Board, Hanford tank waste system strategy sessions, and EM/NE/NNSA roadmap development for nuclear separations technology. The Contractor's portfolio takes advantage of access to unique facilities such as the Environmental Molecular Sciences Laboratory and the infrastructure of the Hanford Site. The Contractor strives for new opportunities to address emerging needs across the EM complex. It has developed world-class expertise in at least one EM-related discipline, nuclear waste glass, and it is also recognized as a leader in vadose zone studies.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 25.00%

Score: 3.3 **Grade:** B+

Objective Evaluation:
The Contractor, Pacific Northwest National Laboratory (PNNL), is adept at leveraging the investments and expertise of national and international partners, internal (LDRD) programs, and other funding agencies. During these times of limited resources for research and development, however, the Contractor may have to make difficult decisions to realign or cut programs rather than petitioning EM Headquarters for additional funding, especially since it is not the only national laboratory facing challenges in maintaining core competencies. Furthermore, the Contractor must be consistent in how it reports its EM funding profile. The Contractor overstated Fiscal Year 2010 and 2011 funding it received from EM's Office of Soil and Groundwater Remediation by combining it with funds from an unrelated program (Public Safety Resource Protection), thus giving the incorrect impression of drastically decreased Soil and Groundwater funding in Fiscal Year 2012. This could have posed serious negative repercussions for other recipients of Soil and Groundwater funding had the office been instructed to "restore" funding to PNNL at the expense of others.

DOE Richland leadership reported a problem in the condition of the lysimeter facility 622-S at turnover from the Contractor to Richland, noting that maintenance and facility management needed improvement to meet Richland standards.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 50.00%

Score: 3.5 **Grade:** A-

Objective Evaluation:
The Contractor is punctual and thorough in its responses to inquiries or requests from EM Headquarters. Research progress and financial updates are provided regularly. Yearly reports, strategy documents, and technical publications are generally of good quality, and presentations and other visual materials are polished and professional-looking. The Contractor maintains clear communications channels with DOE and other partners, and it serves an important role as an interface for communications between EM offices and relevant research programs funded by the Office of Science. However, DOE Richland leadership reports that Pacific Northwest National Laboratory (PNNL) "needs to improve their services alignment and communications to customer needs instead of delivering what they feel is appropriate from self-assessing those needs."

PNSO Concurrence Sheet

bcc:
PNSO Off File
PNSO Rdg File
PNSO Feds All

RECORD NOTE: This memo transmits the FY 2012 Performance Evaluation to the Contractor as required by SCMS and the FAR. The Contractor achieved a 97% S&T rating and a 100% M&O rating for FY 2012. The Contractor received very high S&T scores from NNSA, DHS, and IN (which together account for nearly 59% of the S&T grading weight).

Per SC-32's year-end PEMP timeline, the Contractor is scheduled to be verbally briefed by SC-1, SC-2, and the Site Office Manager regarding their FY 2012 Evaluation during the week of 12/10/12. At approximately 9AM PST ~~12-noon~~ on 12/17/2012, PNSO will deliver the attached Performance Evaluation Report and Incentive Determination to Battelle. SC-32 will then post all PEMP contractor report cards on the SC website on either 12/18/12 ~~or 12/19/12~~ AT 9:00 AM PST.

13-PNSO-0056/ted

Concurrence
Office & Init/Sig. **MGR/Davis** TD
Date 12/3/12
Office &Init/Sig. **LSD/Vickerman** JV
Date 12/4/12
Office &Init/Sig. **LSD/Biancosino** 12/4/12
Date
Office & Init/Sig. **LSD/Trader** JT
Date 12/4/2012
Office & Init/Sig. **OD/Haffner (PAC)**
Date
Office &Init/Sig. **OD/Pietrok** TMP
Date 12/10/12
Office &Init/Sig. **MGR/Fletcher** MRF
Date 12/17/12
Office &Init/Sig. **MGR/Erickson** AJE
Date 12-17-12