

Physical Sciences Facility

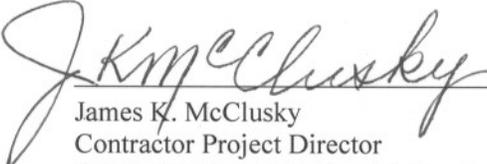
Project Execution Plan CRL-PLAN-PM-001, Revision 0



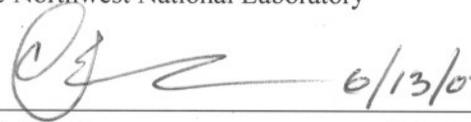
Project Execution Plan (PEP) Physical Sciences Facility (PSF) Pacific Northwest National Laboratory

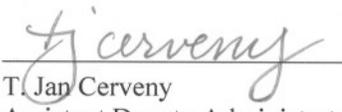
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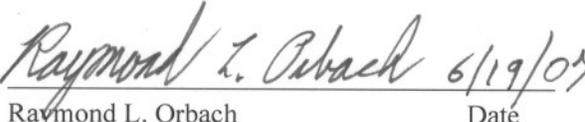
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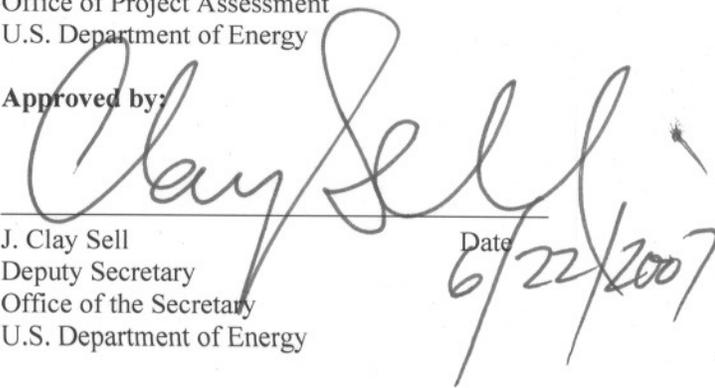
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Acronyms/Abbreviations

325 Building	Shielded Operations
3410 Building	Materials Science & Technology
3420 Building	Radiation Detection
3425 Building	Ultra-low Background/Deep Lab
3430 Building	Ultra-Trace
AE	acquisition executive
A/E	architectural/engineering
BA	Budget Authority
BCP	Baseline Change Proposal
BO	Budget Obligation
BSF	Biological Sciences Facility
CCB	Change Control Board
CD	Critical Decision
CPD	Contractor Project Director
CRL	Capability Replacement Laboratory
CSF	Computational Sciences Facility
DHS	Department of Homeland Security
DOE	U.S. Department of Energy
DOE-RL	DOE Richland Operations Office
DSA	Documented Safety Analysis
EA	Environmental Assessment
EIR	External Independent Review
EM	DOE Office of Environmental Management
EPHA	Emergency Preparedness Hazards Assessment
ESAAB	Energy Systems Acquisition Advisory Board
ES&H	Environmental, Safety and Health
EVMS	Earned Value Management System
FPD	Federal Project Director
HAR	Hazards Analysis Report
HRT	Horn Rapids Triangle
HVAC	heating, ventilation and air conditioning
IES&H	Integrated Environment, Safety and Health
IOPS	Integrated Operations System
IPR	Independent Project Review
IPT	Integrated Project Team
LEED	Leadership in Energy and Efficiency Design

M&O	Management and Operations
NEPA	National Environmental Policy Act of 1969
NNSA	National Nuclear Security Administration
OEEM	Office of Engineering and Construction Management
PARS	Project Assessment and Reporting System
PEP	Project Execution Plan
PIP	Project Implementation Plan
PMB	Performance Measurement Baseline
PMP	Project Management Plan
PNNL	Pacific Northwest National Laboratory
PNSO	Pacific Northwest Site Office
PSF	Physical Sciences Facility
QAP	Quality Assurance Plan
QAPD	Quality Assurance Program Description
RMP	Risk Management Plan
RPL	Radiochemical Processing Laboratory
SAE	Secretarial Acquisition Executive
SBMS	Standards-Based Management System
SC	DOE Office of Science
SCC	structures, systems and components
TEC	total estimated cost
TPC	total project cost
VE	values engineering
WBS	Work Breakdown Structure

1.0 Introduction

1.1 Overview

The U.S. Department of Energy (DOE) is required under the Tri-Party Agreement with its regulators to complete surplus facility disposition and remedial action clean-up of the Hanford Site 300 Area by 2015. With about half of the space used by Pacific Northwest National Laboratory (PNNL) in the 300 Area supporting their research programs, the DOE Office of Science (SC), the National Nuclear Security Administration (NNSA), and the Department of Homeland Security (DHS) have undertaken the Capability Replacement Laboratory Projects (CRL). The CRL projects will ensure the long-term viability of the PNNL and preserve the following vital research capabilities:

- Systems Biology
- Environmental Science/Biomarkers
- Subsurface Science
- Materials Science & Technology
- Chemistry (Radio, Actinide, Analytical) and Processing
- Shielded Operations (Category 3)
- Radiation Detection
- Ultra-trace/Signature Detection
- Information Analysis
- Certification and Dosimetry.

The CRL projects will preserve these capabilities by constructing new facilities, renovating existing facilities, installing new utility infrastructure and relocating staff and existing research equipment. A federally funded line item project, the Physical Sciences Facility (PSF), will construct several new buildings, collectively referred to as the Physical Sciences Facility (PSF-HRT), and perform life extension modifications to the existing 325 Building. A developer will construct two privately financed facilities, the Computational Sciences Facility (CSF) and the Biological Sciences Facility (BSF). Minor renovations will be performed on the 318, 331 and 350 Buildings. This Project Execution Plan (PEP) will focus exclusively on the PSF. The scope of the other CRL projects are described in the CRL project Implementation Plan (PIP) (CRL-PLAN-PM-005) as a reference document to this PEP. The PIP describes how each of the projects relates to the others and defines interface points. The CRL projects are shown in Figure 1. The CRL Work Breakdown Structure (WBS) is shown in Figure 2. The PSF new construction is shown in Figure 3.



Mission Critical Capabilities

- **PSF - HRT**
 - Ultra-trace
 - Radiation Detection
 - Materials Science & Technology
 - Chemistry and Processing
- **PSF - 325**
 - Shielded Operations
 - Radiation Detection
 - Materials Science & Technology
 - Chemistry and Processing

- **BSF**
 - Systems Biology
- **CSF**
 - Information Analytics

} 3rd Party

- **Building 318: GPP/Expense**
 - Certification & Dosimetry
- **Building 331: GPP/Expense**
 - Subsurface Science
 - Environmental Biomarkers
- **Building 350: IGPP**
 - Support Services Shop

Figure 1. Facilities Included in the CRL Projects Scope of Work. The PSF new construction and 325 Building Life Extension efforts are captured as the PSF Line Item scope in this PEP.

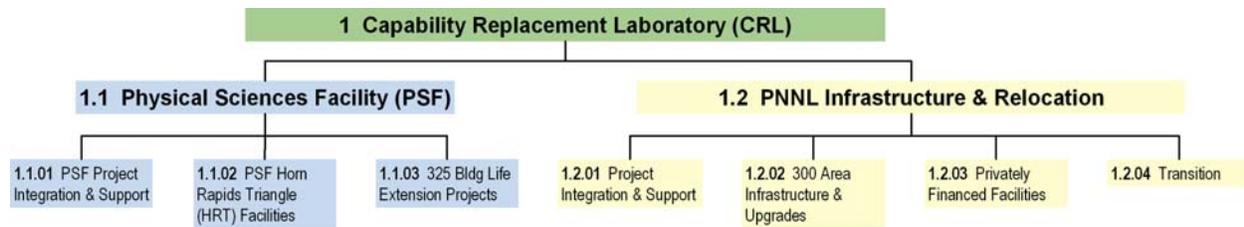


Figure 2. CRL Work Breakdown Structure

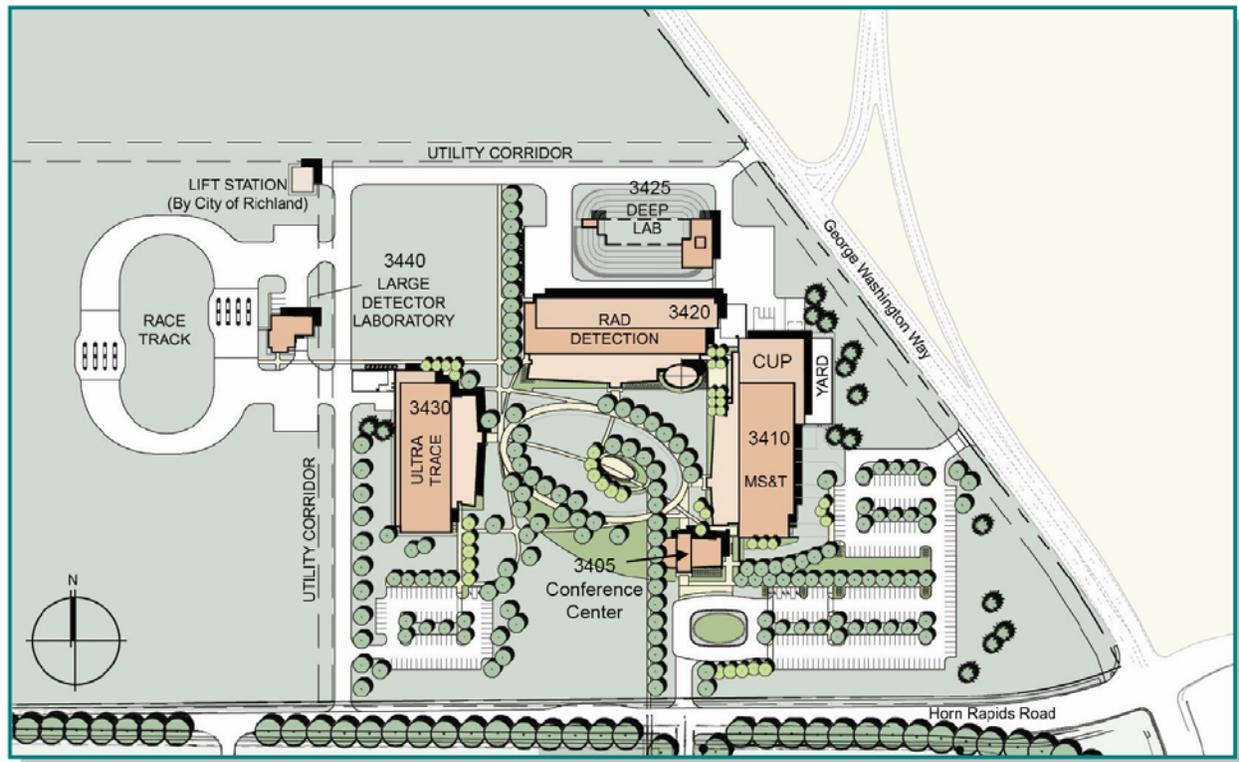


Figure 3. PSF New Construction Site Plan

1.2 Purpose

This PEP defines the PSF project and describes planning, assumptions, constraints, roles, responsibilities, authorities, management interactions, and interface management necessary to successfully execute the PSF project. This PEP was prepared in accordance with the DOE Order 413.3A *Program and Project Management for the Acquisition of Capital Assets*. The Deputy Secretary has previously designated the PSF project as a Major System Project because it is jointly funded by SC, NNSA and DHS. The DOE Deputy Secretary is the Acquisition Executive (AE) for the PSF project. As part of Critical Decision-2 (CD-2) approval, delegation of AE authority to the Under Secretary for Science will be requested and the PSF Line Item project will be designated a Non-MSA Project. This PEP is written with the assumption that after CD-2, the AE for the PSF project will be the Under Secretary for Science.

1.3 Approval and Revisions

Approval of this PEP will occur as an element of CD-2, Approve Performance Baseline. The Deputy Secretary is the AE and approval authority for this PEP. Approval of this PEP confirms the PSF Line Item as a Non-MSA Project. Subsequent to the approval of the PEP and delegation of AE authority as part of the CD-2 decision, changes to the PEP will be approved by the Under Secretary for Science.

2.0 Mission and Objectives

2.1 Mission Need

The following is an extract from the *Justification of Mission Need* document approved by the DOE Deputy Secretary on September 23, 2004, as part of the CD-0 authorization.

The CRL project's mission is to: Relocate the necessary PNNL capabilities (people and equipment) and infrastructure from the 300 Area to new replacement facilities by the end of FY 2011, while minimizing interruptions to ongoing DOE and national mission-based research programs.

The capabilities being displaced in the 300 Area address critical national needs and support multiple DOE strategic goals, including Science Strategic Goal 5: *Provide world-class scientific research capacity needed to: ensure the success of Department missions in national and energy security; advance the frontiers of knowledge in physical sciences and areas of biological, medical, environmental and computational sciences; or provide world-class research facilities for the Nation's science enterprise.*

CD-1 was approved in December 2005, and a revised implementation strategy was approved as CD-1R in December 2006.

The PSF project described by this PEP will build or modernize the facilities below which will house the PNNL research capabilities described in Section 1.1:

- 3410 Building – Materials Science & Technology
- 3420 Building – Radiation Detection
- 3425 Building – Ultra-low Background/Deep Lab
- 3430 Building – Ultra-trace
- Central Utility Plant (CUP)
- 325 Building – Shielded Operations.

The project has identified two bid alternates: 1) the Conference Center (3405 Building), and 2) the Large Detector Laboratory (3440 Building). The Conference Center is intended to replace meeting room space currently distributed through multiple 300 Area facilities and to provide a convenient resource that will be shared by the three research capabilities validated for transfer from the 300 Area to the Horn Rapids Triangle. If the Large Detector Laboratory bid alternate cannot be funded within the current Total Project Cost of \$224 million, the Office of Science will cover the increased cost to construct this facility, estimated at \$2M.

The need for retention of these capabilities was re-validated by the primary federal clients (i.e., SC, NNSA, DHS, and DOE's Office of Environmental Management [EM]) in a workshop in 2005. Based on that workshop, each of the capabilities listed above were deemed "core" by one or more federal clients, indicating that the capability is necessary and essential for performing the client's work.

Among the applications of these capabilities are to provide advanced detection and analysis systems to prevent nuclear proliferation and terrorism; radiochemistry and radiochemical processing for attribution and mitigation of potential radiological dispersion devices and development of proliferation-resistant fuel cycles; and materials science to increase nuclear plant life and to develop advanced materials for future fission and fusion reactor applications and other advanced energy systems. More information on each capability can be found in the Mission Needs Validation Report dated February 25, 2005.

2.2 Project Objectives

To accomplish the mission described above, the PSF project has established the following overall project goals:

- Construct new facilities and extend the useful life of the 325 Building for 20 years.
- Minimize the impact to research operations and 300 Area Cleanup.
- Ensure that environment, safety, health and security requirements are fully incorporated and properly implemented into the project's design and construction.
- Implement the PSF project within a total project cost (TPC) of \$224 million and complete all PSF project work scope by February 2011.
- Plan and design the new facilities to maximize research efficiencies and optimize space usage
- Achieve Leadership in Energy and Efficiency Design (LEED) certification.
- Update the safety basis documentation to reflect the transition of safety basis approval authority from EM to SC.

3.0 Project Description

The PSF project will construct new facilities on HRT, the PSF, extend the life of the 325 Building for continued use, and conduct the necessary startup activities to accept the new construction and transition the operation of 325 Building from EM to SC.

The new construction element of the PSF project will consist of approximately 190,000 square feet of new research and office space located on the PNNL Site north of Horn Rapids Road (also referred to as the Horn Rapids Triangle or HRT), which is a previously undeveloped portion of DOE-owned land. The physical boundary of the HRT area is the land bordered on the west by Stevens Drive, on the south by Horn Rapids Road and on the northeast by George Washington Way. The HRT comprises approximately 100 acres and is in the city of Richland. The PSF will consist of a collection of facilities (see Figure 3) that will include wet laboratories, clean rooms and office space. The new facilities will house the following capabilities: Materials Science and Technology, Radiation Detection, Ultratrace/Signature Detection, and Non-Nuclear Chemistry and Processing.

In addition to the new construction scope, the PSF project will make necessary modifications to the 325 Building to allow it to operate safely for at least an additional 20 years. The 325 Building is located on federally owned property in the Hanford Site 300 Area, and is bounded on the south by Cypress Avenue, the east by California Street and the west by Wisconsin Street. The 325 Building's site will be isolated on the north perimeter by 6-foot boundary fence, which will be constructed approximately 60 feet from the perimeter of the facility to isolate the facility and its occupants from other 300 Area cleanup zones. Once the modifications are complete, the 325 Building will provide for chemistry research (radiochemistry, actinide chemistry and analytical chemistry) and processing, as well as Category-2 shielded operations capability.

4.0 Organization and Responsibilities

As the lead agency for federal management of the PSF project, SC will provide a Program Manager at DOE headquarters and a Federal Project Director (FPD) at the Pacific Northwest Site Office (PNSO) in Richland, Washington. The Program Manager will serve as the primary interface point with the other program sponsors – NNSA and DHS. As the Management and Operating (M&O) Contractor for PNNL, Battelle Memorial Institute will be the technical design authority for the new and modified federally funded and owned facilities and will provide a Contractor Project Director (CPD) and sub-project managers. PNNL will contract with architectural/engineering (A/E) and construction firms as required, using existing PNNL management systems, for facility design, construction and modification activities. The organizational structure of the project is depicted in Figure 4.

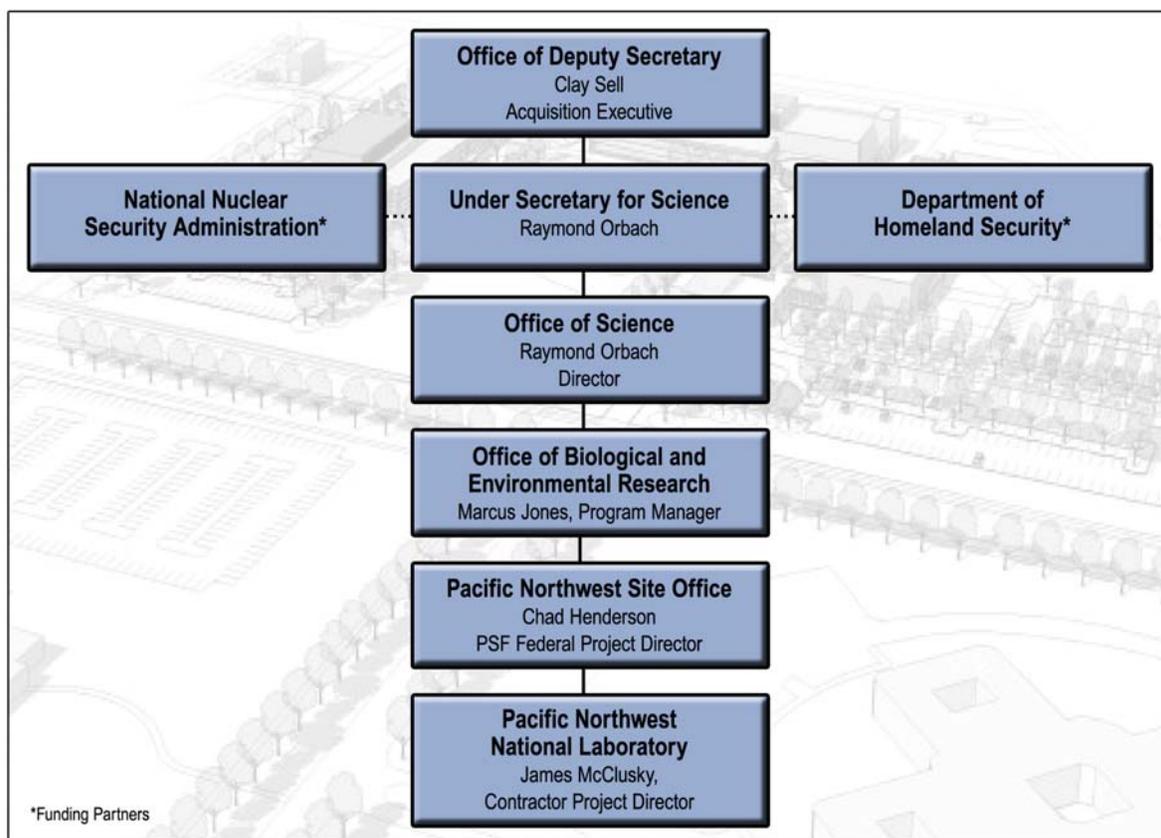


Figure 4. PSF Project Management Structure

In recognition of the multiple federal agencies and DOE program organizations involved in completing the PSF project, the DOE Deputy Secretary has been designated as the AE for this project. The Under Secretary for Science and the NNSA Administrator serve on the Energy Systems Acquisition Advisory Board (ESAAB) to represent respective mission-critical capabilities and requirements. As an integral partner in the project, the Under Secretary for DHS Science and Technology, or delegate, will be invited to sit on the ESAAB. Following CD-2, AE authority will be delegated to the Under Secretary for Science, or his designee, who will hold ESAAB Equivalent board meetings for subsequent CDs. NNSA and DHS and EM representatives will be invited to attend these meetings.

4.1 Department of Energy

4.1.1 Deputy Secretary of Energy

Authority and responsibility for managing DOE programs and facilities resides with the Secretary of Energy. Although the TPC of the PSF project is \$224 million, because of the complexities of the project including funding provided by various sources (SC, NNSA, and DHS), the Deputy Secretary is currently designated as the AE for the project. Specific responsibilities of the AE for the PSF project include:

- Chairs the ESAAB Equivalent Board
- Approves CDs and project change controls as specified in Table 7.
- Approves the PEP
- Delegates approval authority for Level-2 baseline changes and future CDs.

4.1.2 Under Secretary for Science

SC has been delegated responsibility for comprehensive, long-range, basic energy-related research, including state-of-the-art research facilities crucial to achieving goals described in the DOE Strategic Plan.

The Under Secretary for Science, who is also the Director for SC provides overall program policy and guidance, technical oversight, and budgets for implementing its assigned role. The DOE Deputy Secretary is the Acquisition Executive for the PSF project, but has delegated overall management of the Project to the Under Secretary for Science. Under this delegation, the Under Secretary for Science has full responsibility for project planning and execution and for establishing broad policies and requirements for achieving project goals.

4.1.3 Office of Biological and Environmental Research Program Manager

Program management responsibility for the CRL mission, including the PSF, has been assigned to the CRL Program Manager within the DOE Office of Biological and Environmental Research (SC-23). In addition to SC-23, the Program Manager is supported by other SC organizations in the planning, budgeting and execution of this mission. With regard to this project, the Program Manager reports directly to the Under Secretary for Science.

The Program Manager's role and responsibilities are summarized as follows:

- Communicates direction from the Acquisition Executive to the project
- Oversees development of project definition, scope and budget
- Defines programmatic mission requirements and objectives
- Establishes programmatic requirements for nuclear safety and recommends operational readiness to the SC nuclear safety authorization authority
- Prepares, defends and provides project budget with support from the field and SC headquarters organizations
- Reviews and provides recommendations to the Acquisition Executive on Level-0 and Level-1 baseline changes

- Functions as the primary point-of-contact at DOE headquarters for project matters to all parties external to the project team and SC
- Develops project performance measures, and monitors and evaluates project performance throughout the life cycle of the project
- Organizes reviews as necessary
- Ensures that environment, safety and health (ES&H) requirements are implemented by the project
- Coordinates with other SC offices, project sponsors and the DOE Office of Engineering and Construction Management as needed to execute the project
- Controls changes to project baselines in accordance with the PSF PEP.

4.1.4 Pacific Northwest Site Office Federal Project Director

The PNSO reports to SC and administers the M&O contract with Battelle Memorial Institute, which includes day-to-day oversight of PNNL. In carrying out its oversight responsibilities, PNSO obtains matrix support in various technical disciplines from the SC Integrated Support Centers. In addition to the site office, the DOE Richland Operations Office (DOE-RL) has assigned a senior executive to coordinate and resolve conflicted activities of the CRL mission that cross DOE organizational boundaries with EM and RL.

The execution of the PSF project is the responsibility of the FPD. The PNSO Manager will ensure that the FPD has priority access to PNSO resources and, when necessary, resources at the SC Integrated Support Center, for that purpose. The FPD's responsibilities and authorities include the following:

- Provides day-to-day oversight of the project and direction to ensure timely execution
- Monitors, reviews, evaluates and reports on the performance of the project against established technical, cost, and schedule performance baselines
- Ensures ES&H is integrated into the project
- Leads the Integrated Project Team (IPT)
- Controls changes to project baselines in accordance with the PEP
- Participates in Quarterly Project Reviews, ESAAB Equivalent Board meetings, and project reviews conducted by the PSF project and DOE headquarters
- Maintains project data in the DOE Project Assessment and Reporting System (PARS)
- Issues Project Directive Authorizations for disbursement of funds and work authorizations
- Prepares project documents
- Coordinates matrix support from the SC Integrated Support Centers
- Prepares and submits budget and funding documents to the Office of Biological and Environmental Research Program Manager (e.g., Congressional Project Data Sheet and Exhibit 300).

4.2 Pacific Northwest National Laboratory

4.2.1 PNNL Director

The PNNL Director is responsible for managing all activities at the PNNL site, including ensuring that all laboratory programs meet the requirements of DOE Contract DE-AC05-76RL01830 between Battelle Memorial Institute and DOE. Having delegated the authority to manage and execute the PSF project to the CPD, the PNNL Director will ensure that the CPD has priority access to PNNL's resources to achieve project goals. Key PNNL project staff and their roles and responsibilities are depicted in Figure 5.

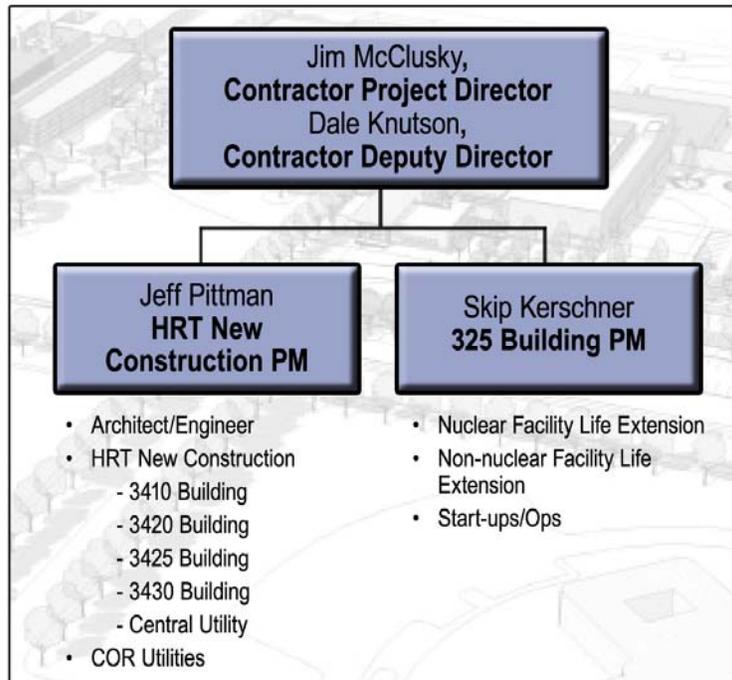


Figure 5. Key Project Staff Roles and Responsibilities

4.2.2 Contractor Project Director

The CPD has overall implementation responsibility for the full scope of project activities, which include the PSF Line Item. In this role, the CPD is a member of the PNNL Director's Office and reports directly to the PNNL Director. The CPD is responsible for the project staff selection at PNNL and at other institutions collaborating in the project. Specific responsibilities of the CPD include:

- Manages day-to-day execution of the project at PNNL and any other collaborating institutions
- Establishes technical and administrative controls to ensure project is executed within approved cost, schedule and technical scope
- Ensures that project activities are conducted in a safe and environmentally sound manner
- Ensures ES&H responsibilities and requirements are integrated into the project
- Directs overall project planning

- Ensures integration of the existing 300 Area research and development programs with the design, fabrication, installation, construction and commissioning of the project
- Represents the project in interactions with DOE; participates in management meetings with DOE and communicates project status and issues
- Chairs the Change Control Board (CCB)
- Approves Level-3 change control proposals; prepares and provides recommendations to the FPD for Levels-0, -1 and -2 change control proposals
- Identifies and manages project risks.

The CPD is responsible for implementing the PSF project baseline. The CPD will report directly to the FPD and will serve as the technical and contracting integrator on the PSF project. The CPD has established a project organization to accomplish the PSF project. The project team includes staff who report directly to the CPD and matrix staff. For the purposes of accomplishing PSF project activities, both direct and matrix members of the team provide management and support services to the project and take project direction from the CPD director.

PNNL will provide project management, integration, contracting, procurement services, technical and engineering support, and other services as needed for the project. The PNNL technical team also is responsible for oversight of the design, construction, facility operational component procurement, equipment installation and testing and startup. In carrying out these responsibilities, PNNL will

- Perform technical reviews of the deliverables
- Integrate future facility operational components into existing PNNL facility management systems
- Implement an Earned Value Management System (EVMS) to track performance against an approved Performance Measurement Baseline (PMB)
- Develop an annual work plan for each sub-project
- Comply with the requirements of the PNNL Performance Evaluation and Management Plan as conveyed via contract
- Be responsible for implementing the facility capability replacement, including design, permitting, material and equipment procurement, infrastructure development, facility construction, equipment installation and component testing and startup
- Be responsible for overall project management and integration, technical and engineering support, and other services as needed.

Contractor Deputy Project Director

The Contractor Deputy Project Director provides senior technical oversight; assists in mitigating project risks and has delegated approval authority from the CPD.

HRT New Construction Project Manager

The HRT New Construction Project Manager is responsible for the design, construction, startup and turnover to operations of the new facilities in the HRT, including 3410 Building – Materials Science &

Technology, 3420 Building – Radiation Detection, 3425 Building – Ultra-low Background/Deep Lab and 3430 Building – Ultra-Trace.

325 Building Project Manager

The 325 Building Project Manager is responsible for the 325 Building life-extension upgrades for retained radiological and nuclear facilities and provides project oversight of the design, construction and readiness activities.

4.3 Project Interfaces

4.3.1 Internal/External Interfaces

The PSF project has internal and external interfaces that will be managed by the FPD, members of the IPT and the CPD. External interfaces are with organizations or individuals outside the oversight responsibility of PNSO and/or PNNL (i.e., NNSA, DHS, EM, State of Washington, City of Richland). Internal interfaces are between PNSO and PNNL, the FPD and the CPD, members of the IPT and the various organizations and contractors involved in the project. Interfaces also exist among the contractors providing services to the PSF project and Hanford (i.e., A/E, commissioning, other project support activities). Interface issues are anticipated to be technical, as well as associated with communications and decision-making.

4.4 Integrated Project Team

The FPD will be supported by an IPT consisting of key project participants. Makeup of the IPT will vary depending upon the functions and expertise necessary to manage the different phases of the project life-cycle. A Portfolio Project Director has been assigned to the IPT by DOE-RL to assist the FPD by providing guidance and facilitating effective integration between the PSF project and the 300 Area cleanup contractor, Washington Closure Hanford. The IPT charter identifies the skill sets and disciplines necessary to support the PSF project as of CD-2 (see Attachment B). This charter will be revised as necessary by the FPD to reflect changes in requirements, needed skill mix and project life cycle.

5.0 Resource Requirements

5.1 Budget Authority

The Budget Authority (BA)/Budget Obligation (BO) by funding source and fiscal year are shown in Table 1. This profile is based on incrementally funding major project engineering and construction subcontracts at a rate sufficient to achieve PSF project schedule objectives.

Table 1. Total Project BA/BO Requirements

Budget Authority/Budget Outlay	PSF			
	OPC ^a (\$million)	PED ^b (\$million)	Construction (\$million)	BA (Funds) (\$million)
Prior Years	\$5.8	\$23.8	\$2.0	\$31.6
FY 2007	\$-	\$4.8	\$15.1	\$19.9
FY 2008	\$1.5	\$-	\$58.8	\$60.4
FY 2009	\$4.3	\$-	\$77.1	\$81.5
FY 2010	\$2.2	\$-	\$19.3	\$21.6
FY 2011	\$0.11	\$-	\$9.9	\$9.0
Total Funding	\$14.0	\$28.5	\$181.5	\$224.0

^a other project costs

^b project engineering and design

Table 2 shows the estimated contributions from the PSF funding agencies—SC, NNSA and DHS.

Table 2. Total Project Annual Funding Requirements

Physical Sciences Facility Funding Profile Guidance							
(K\$'s)							
PSF Line Item	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total
NNSA	\$18,470	\$7,920	\$0	\$37,919	\$3,625	\$1,689	\$69,623
SC	\$10,896	\$10,000	\$35,379	\$30,549	\$7,977	\$3,643	\$98,444
DHS	\$2,250	\$2,000	\$25,000	\$13,000	\$10,000	\$3,684	\$55,934
PSF Project Profile	\$31,616	\$19,920	\$60,379	\$81,468	\$21,602	\$9,016	\$224,000

Note: SC committed to funding mission critical requirements above \$224 M (e.g., \$2M Large Detector Laboratory) without any additional costs to NNSA and DHS.

As a result of the conceptual design process to-date, it has become evident that significant cost savings and research efficiency gains can be achieved if replacement facilities are constructed to maximize capability synergies. Doing so, however, means that funding from multiple sponsors will need to be aggregated and applied to the overall effort.

A Memorandum of Understanding agreeing to pursue these funding shares to support the project was signed on November 7, 2006, by the principals from each agency (see Attachment A).

5.2 Work Breakdown Structure

The PSF project has been organized into a WBS that contains a complete definition of the project's scope and forms the basis for planning, executing and controlling project activities. This WBS is graphically depicted in Figure 6.

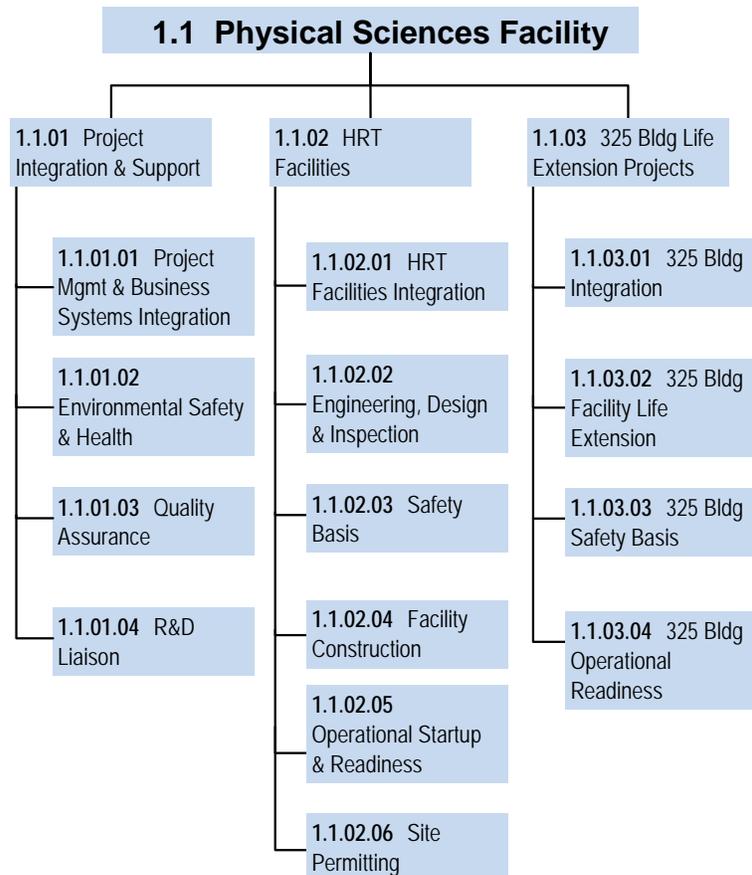


Figure 6. Level-3 PSF Project Work Breakdown Structure

5.3 Acquisition Strategy

The new construction scope of the PSF project will be acquired using fixed-price design and construction contracts. The modifications of the 325 Building will be acquired using fixed price design and construction contracts combined with self performance for specialized activities. Project execution will be managed by DOE and PNNL. PNNL will directly contract with A/E and construction firms for performance of the work. The subcontracted design and construction activities in support of the PSF project will be based on the guiding principle of negotiating fixed-price, milestone-driven contracts with the design and construction subcontractors. PNNL will perform the construction management function and integration of the facilities with existing laboratory research and facility operations requirements, and transition of staff and equipment. Building commissioning will be performed by the A/E.

The project will be designed and managed in accordance with the latest editions of relevant DOE orders and guides, industry codes and standards, and will employ best practices in construction management.

Work Authorization

Work by project participants will be authorized using processes consistent with DOE O 412.1, *Work Authorization System*. Funding will be distributed to PNNL using the Financial Plan Authorization process. Critical Decision approval authority is reflected in Table 3.

Table 3. Critical Decision Approval Authority

Critical Decision Milestone	Approval Authority
CD-0, Approve Mission Need	Deputy Secretary
CD-1, Approve Alternative Selection and Cost Range	Deputy Secretary
CD-2, Approve PSF performance baseline	Deputy Secretary
CD-3a, Approve completion of design; long lead procurements and start of construction for site work, foundation and structural steel for the HRT Facilities	Under Secretary for Science
CD-3b, Approve balance of facility construction for the HRT facilities and the life-extension upgrades for the 325 Building	Under Secretary for Science
CD-4a, Completion of readiness activities for the first Horn Rapids Triangle facility (Ultra-Trace) and subsequent declaration of readiness to operate. Approval authorizes the start of operations of the first HRT facility (3430 Ultra-Trace).	Under Secretary for Science
CD-4b Completion of readiness activities and subsequent declaration of readiness of the last HRT facility (3420-Radiation Detection) and 325 Building. Completion marks the transition to operations of the final HRT facility and the start of PSF project closeout activities.	Under Secretary for Science

5.4 Life Cycle Cost

A preliminary estimate for operations and maintenance costs of the facilities provided by the PSF project, including utilities, facility operations and maintenance but excluding programmatic research costs, is about \$9.7 million per year in FY 2006 dollars. It is expected that the PSF new construction will have a useful operating life of about 40 years and that 325 Building will continue to operate for about 20 years. At the end of its useful operational life the 325 Building will be designated as excess and turned over to EM for D&D actions. A life cycle cost analysis was completed in support of CD-1R and estimated that the cost to demolish the PSF as well as the retained facilities in the 300 Area would be approximately \$170 million.

5.5 Contingency Management

The PSF project has identified cost, schedule, and scope contingency based on risks and uncertainties. To the extent possible, mitigation strategies for identified risks were incorporated into the baseline budget and schedule to minimize project impacts. Contingency estimates are identified outside the performance measurement baseline, and are based on likelihood and severity of the risk and uncertainty. Contingency was derived against individual work elements using appropriate contingency development techniques.

All contingency for the project will be held under the control of the Program Manager, FPD and CPD as governed by the Baseline Change Control process defined in Section 7.2.

6.0 Project Baselines

The PSF technical baseline forms the basis for the other two baseline components: the cost and schedule estimates. The PSF technical baseline has been sufficiently developed through the preliminary design package to support confidence in the corresponding cost and schedule baselines. The technical baseline defines the physical extent of the project, including end points, and is well defined within the described activities and assumptions.

6.1 Technical Scope

The technical scope of the PSF project is to provide adequate space for the retention of the vital research capabilities listed in Section 2.1 by constructing new facilities on the HRT and extending the useful life of 325 Building for 20 years.

6.1.1 Project Integration and Support (WBS Element 1.1.01)

Physical Boundaries. The physical boundaries of this WBS element are consistent with Battelle management, regulatory and administrative services provided in support of developing the HRT site and within the physical perimeters of the 325 Building site within the 300 Area.

Completion. This WBS element will be considered complete when the Acquisition Executive or his designee approves CD-4b, PSF Project Closeout.

Work Scope Description. This WBS element will deliver resources for general management, project integration and support services for the retention and relocation of PNNL capabilities in accordance with the PSF project objectives. This includes establishing and maintaining effective working relationships between the FPD, the IPT and the PNNL Director. The resources within this task will direct and support efforts required to successfully support design, modifications, commissioning, startup and occupancy of the PNNL facilities and associated infrastructure related to WBS elements 1.1.02, HRT Facilities, and 1.1.03, 325 Building Life Extension Improvements. This scope includes identifying and assessing all vulnerabilities and ensuring managerial action is taken to prevent adverse consequences to the PSF project.

6.1.2 HRT Facilities (WBS Element 1.1.02)

Physical Boundaries. The PSF new construction includes all new facilities and supporting infrastructure on the HRT.

Completion. This WBS element will be considered complete when all facilities are complete, the transition to operation requirements in PEP Section 11.0 have been met, and the AE or his designee approves CD-4b, Project Closeout.

Work Scope Description. This WBS element will provide the necessary infrastructure and facilities to relocate the following capabilities from the 300 Area to the HRT: materials science and technology, radiation detection, ultra-trace, and chemistry and processing (non-nuclear). Design, construction, commissioning, readiness assessment, and turnover to operations of the following key project deliverables are included. The following are included in this WBS element:

- 3410 Building – Materials Science and Technology
- 3420 Building – Radiation Detection
- 3425 Building – Ultra-Low Background/Deep Laboratory
- 3430 Building – Ultra-Trace Analysis
- Central Utility Plant (contained in 3410 Building)

Facility engineering, design, inspection and commissioning will be performed by a subcontracted A/E.

6.1.3 325 Building Life Extension Improvements (WBS Element 1.1.03)

Physical Boundaries. The 325 Building life extension includes all modifications to the existing facility in the 300 Area.

Completion. This WBS element will be complete when the approval authority has transitioned from EM to SC and all physical verifications are complete and operationally accepted.

Work Scope Description. This WBS element will perform necessary modifications and upgrades to extend the useful life of the existing 325 Building (also known as the Radiochemical Processing Laboratory [RPL]) for a minimum of 20 years. This work includes definitive design, engineering and inspection services, and authorization basis updates required to modify the facility and extend the facility's operating life. This includes preparation of drawings, specifications and acceptance test procedures to support site work, building alterations and support equipment, furnishings, and authorization or regulatory document revisions. Facility engineering, design and inspection, safety basis technical document preparation and natural phenomena analysis will be performed by a subcontracted A/E. PNNL will provide nuclear safety expertise, processes and procedures as well as design, construction and construction management services required to modify the 325 Building.

To support increased heating, ventilation, and air conditioning (HVAC) capacity requirements, modernization of the 325 Building will include removal of fume hoods, design, fabrication and installation of new hot cells and glove boxes. In addition, roof repairs, replacement of personnel contamination monitoring systems and various HVAC components, design and construction of new second-floor access and structural seismic upgrades recommended by the 10-year update of the natural phenomena hazards assessment will be performed.

6.2 Cost

The TPC is \$224 million. The PSF project cost estimate by WBS is shown in Figure 7.

Project Cost Estimate by Client Reporting Level		Budget (\$M)
WBS	Description	CD-2 Baseline
1.1.1	Project Integration and Support	16.7
1.1.2	PSF HRT Facilities Design, Construction and Startup	123.9
1.1.3	Building 325 Life Extension	32.9
(multiple)	Other Project Cost (OPC)	11.8
	Total Base Budget	185.3
	Contingency	38.7
	Total Project Cost	224.0
	Contingency Percent of To Go Budget (APR-07)	24%

Figure 7. PSF Project Cost Estimate by Work Breakdown Structure

6.3 Schedule

The master schedule is consistent with the WBS and is coordinated with interfacing projects to ensure PNNL transition from the 300 Area supports cleanup objectives and results in minimal impact to research operations. The integrated master schedule is developed and maintained by PNNL in the Primavera P3 Cost and Scheduling software. The Project's critical path runs through the HRT new construction.

The PSF project Level 1 milestones are shown in Table 4, and Level 2 milestones are shown in Table 5.

Table 4. PSF Project Level 1 Milestones

Level and Number	Milestone Description	Completion Date
1-1	CD-0 Approve Mission Need Revalidated	September 2004 (A) February 2005 (A)
1-2	CD-1 Approve Preliminary Baseline Range Revised	December 2005 (A) December 2006 (A)
1-3	CD-2 Approve Performance Baseline	June 2007
1-4	CD-3a Approve Start of Construction – site work, foundation and structural steel for the HRT Facilities	July 2007
1-5	CD-3b Approve Start of Construction – Balance of construction	February 2008
1-5	CD-4a Completion of readiness activities for the first Horn Rapids Triangle facility (Ultra-Trace) and subsequent declaration of readiness to operate. Approval authorizes the start of operations of the first HRT facility (3430 Ultra-Trace).	January 2010
1-6	CD-4b Completion of readiness activities and subsequent declaration of readiness of the last HRT facility (3420-Radiation Detection) and 325 Building. Completion marks the transition to operations of the final HRT facility and the start of PSF project closeout activities.	February 2011

Table 5. PSF Project Level 2 Milestones

WBS Element	Activity Number	Description	Completion Date
1.1.02.04	SM1007	Award Early Sitework Contract – PSF	18-Jul-07
1.1.02.02	SM1080	Complete Final Design	26-Sep-07
1.1.02.04	SM1131	Award Steel Contract	8-Nov-07
1.1.01.01	SM1012	Submit CD-3B Package	9-Jan-08
1.1.02.04	SM1058	Award Balance of Construction Contract	5-May-08
1.1.02.04	SM1024	Complete Structural Steel Contract	7-Nov-08
1.1.03.03	SM1107	Submit 325 Building Modernized DSA for DOE Approval	20-Mar-09
1.1.03.02	SM1239	325 Bldg Infrastructure Upgrade Complete	6-Mar-09
*1.1.03.02	SM1149	325 Bldg Construction Complete	9-Mar-10
1.1.02.04	SM1031	3420-Ultra-trace Facility Construction Complete	15-Jan-10
1.1.02.05	SM1133	Authorization to Operate 3420-Ultra-trace	26-Apr-10
1.1.02.04	SM1032	3410-MS&T Facility Construction Complete	17-May-10
1.1.02.04	SM1034	3420-Rad Detection Facility Construction Complete	22-Jun-10
*1.1.02.04	SM1094	3425- Ultra-low Background/Deep Lab Construction Complete	22-Jun-10
1.1.02.04	SM1030	Central Utility Plant Facility Construction Complete	29-Jun-10
1.1.02.04	SM1035	PSF Facility Construction Complete	21-Jul-10
1.1.02.05	SM1074	Authorization to Operate 3410-MS&T	2-Aug-10
1.1.02.05	SM1105	Authorization to Operate 3420-Rad Detection	21-Sep-10
*1.1.02.05	SM1195	Authorization to Operate 3425 – Ultra-low Background/Deep Lab	21-Sep-10

*Note –Pending approval of baseline change request.

7.0 Project Management Control and Reporting

7.1 Baseline Change Control Management

The PSF project has implemented a project management control system. This system provides the essential earned value information needed for management control of the project and maintains the database for progress reporting. The system integrates the cost and schedule baselines and provides the tools to monitor project performance. The data from the control system is the basis for information entered into PARS.

The PSF project controls changes in functional and physical requirements and evaluates the impact of changes on cost and schedule through a baseline change control process. The process promotes orderly evolution from the baseline design, and ensures that the effect of changes on cost, schedule and technical scope performance are properly evaluated and documented by project management. A Baseline Change Proposal (BCP) must be initiated when there will be an impact on any of the cost, schedule or scope baselines. Thresholds for determining the BCP approval level during project execution, per DOE O 413.3A, are delineated in Table 6.

The CPD has established a change control process in accordance with EVMS criteria to address changes at Level 3 and below. A CCB has been established for Level 2 and above changes requiring DOE approval. The board includes the Chairman (the CPD), a change control manager and board members as defined by the Change Board Charter. At a minimum, the CCB consists of the CPD, the FPD and the SC Program Manager. The board members review the technical, cost and schedule impacts of changes and advise the Chairman. All BCP actions are maintained in a change control log.

Congressional notification is required when a project change results in a 25 percent increase in the total estimated cost (TEC). Project changes caused by Congressional action, such as a funding shortfall or the addition of new requirements, will be called "directed changes." Directed changes will follow the change control process and will be approved by the appropriate authority.

Several key milestones have been selected as performance measurement control points by the FPD. These milestones are listed in Table 5, are defined to be Level 2 milestones, and will be controlled as described in Table 6.

Table 6. Summary Baseline Change Control Thresholds

	Secretarial Acquisition Executive (SAE)	Under Secretary for Science	DOE FPD with Program Manager Concurrence	PNNL Contractor Project Director
Scope	Approval authority only required in case of Deviation as Defined below for the SAE.	A change in scope that 1) does not affect the ability to satisfy the mission need; 2) still meet a Key Performance Parameter; or 3) maintains conformance with the current approved PEP baseline, which must be reflected in the Project Data Sheet.	Any change affecting the approved scope as defined in Section 6.1 of this PEP, but does not affect the mission need.	Any change in scope that does not alter the overall project scope as defined in Section 6.1 of this PEP.
Schedule		Three to six months increase (cumulative) in a Level 1, milestone date (see Table 4), or any change to project completion date.	Any change to a Level 1 milestone date (see Table 4), (except for CD-4b, project completion date) or a change to a Level 2 milestone date (see Table 5), of more than one month or less than six months.	Any change to a Level 2 milestone (see Table 5) of less than one month, unless the change negatively impacts a Level 1 milestone (see Table 4).
Cost		Any increase in TPC and/or TEC	Any increase below PNSO Reporting Level (see Figure 7). Greater than \$500 K use of contingency without an increase to TPC or TEC.	Any increase to a Control Account Level or ≤ \$500 K use of contingency (PNNL Management Reserve) without an increase to TPC or TEC.
Performance Baseline Deviations: Project changes which DO modify the Performance Baseline.				
Performance Baseline Change Authority ¹				
Secretarial Acquisition Executive			Under Secretary (Program Secretarial Officer, if delegated)	
A change in scope that affects the ability to satisfy the mission need, an inability to meet a Key Performance Parameter, or nonconformance with the current approved Project Execution Plan, which must be reflected in the Project Data Sheet.			A change in scope that 1) does not affect the ability to satisfy the mission need; 2) still meet a Key Performance Parameter; or 3) maintains conformance with the current approved Project Execution Plan baseline, which must be reflected in the Project Data Sheet.	
A delay of 6 months or greater (cumulative) from the original project completion date.			A delay of less than 6 months cumulative from the original project completion date, CD-4b.	
An increase in excess of the lesser of \$25M or 25% (cumulative) of the original CD-2 cost baseline.			An increase that is less than \$25M or 25% (cumulative) of the original CD-2 cost baseline.	

7.2 Project Reporting

Project reviews and reporting will be consistent with DOE Order 413.3A and applicable DOE management reporting procedures. PNNL, as the project integrator, will submit formal monthly reports to the FPD no later than the 15th day of each month and at a level of detail associated with the third level of the PSF WBS. The FPD will enter project status information into PARS each month at a minimum and more frequently if circumstances require.

Cost and schedule variance analysis will be performed for variances at the DOE reporting level (one level higher than the control account) against any element of the project baseline that exceeds the following variance thresholds:

- Current Period: $\pm 15\%$ and \$50,000
- Cumulative: $\pm 10\%$ and \$100,000

7.3 Project Meetings and Reviews

7.3.1 Quarterly Progress Reviews

A formal review of the project will be conducted quarterly following approval of CD-0 or as requested by the AE.. This activity is consistent with the performance review requirement in DOE O 413.3A. This review will involve a detailed evaluation of each replacement facility and 325 Building to determine the cost of work completed, milestones accomplished, cost of work yet to be performed, determination of an appropriate contingency factor for the remaining work, and a reassessment of all work schedules to reaffirm the specific facility completion date.

Quarterly reviews are held to communicate accomplishments and issues to the FPD, the IPT and stakeholders as appropriate to maintain project momentum. These reviews can be held in Washington, D.C., or in Richland, Washington, depending on logistical preferences. Maximum use of teleconferencing, when practical, will be pursued to control travel costs.

As part of the quarterly review, the team will verify that all known budget and schedule changes approved since the last review have been incorporated in the approved baseline. A check also will be made to assure that the remaining construction work can be completed within the approved construction schedules.

Emphasis will be placed on identifying PSF project interface questions and concerns to allow for timely SC, NNSA, DHS, EM and PNNL management involvement in resolving issues to maintain project scope, schedule and budget objectives.

7.3.2 Independent Reviews

Peer and independent reviews are an important project management tool and serve to verify the PSF project's mission, organization, development, processes, baseline and progress. Reviews may be initiated internally by the project team or may be independently initiated and conducted by an external organization. Reviews may be scheduled or unscheduled to meet a specific objective or need, such as a budget validation or a CD request.

The following reviews have been performed or are expected for the PSF project:

- **Mission Need–Independent Project Review (IPR).** This was a limited review of the project following CD-0. It refined and validated the mission need. This review was conducted in November 2004, and is documented in the *Mission Need Validation Report*.
- **PMB IPR.** This was a review of the performance measurement baseline by an independent team led by the Office of Project Assessment (SC-1.3). The purpose of the reviews are to evaluate the project's readiness to proceed.

- **PMB External Independent Review (EIR).** This is a detailed review of the entire project, including an Independent Cost Review, prior to CD-2. The EIR verifies the proposed technical scope, schedule and cost baselines and will assess the overall status of the project management and control system.
- **Executability IPR.** This is a general review of the project prior to each of the phased CD-3 decisions that may range from an abridged review of specific areas within a project to a comprehensive review of the entire project. As a minimum, it will verify the readiness of the project to proceed into construction. This review is expected to be completed prior to the formal CD-3 review meeting and again, as required, as project conditions warrant.

7.3.3 Preliminary and Detailed Design Reviews

The design effort is subdivided into preliminary and detailed engineering. Information produced at the completion of a design phase is verified by an independent review. The independent review validates and certifies that the design is in accordance with all applicable local, regional and national engineering codes and regulations and complies with the project specifications. Guidelines for independent verification can be found in DOE-STD-1036-93, *Guide to Good Practices for Independent Verification*. PNNL will coordinate and manage the review process for all engineering drawings and documents in each of the design phases. Rework of the design documents will be carried out until requirements are met.

To attain uniformity in preparing designs and design implementation where such uniformity will contribute to safety, quality and economy, PNNL will use nationally recognized codes and standards. The PNNL lead design engineer will identify and apply the appropriate codes, standards and requirements needed to satisfactorily prepare the design.

The technical objectives for this project will also be implemented by conforming to PNNL design standards. These standards will provide the basis for the design and implementation of this project. Design and constructability reviews will be conducted to verify the design meets the technical and functional requirements. Constructability reviews will include both internal and external reviewers to ensure the design can be efficiently implemented.

Design reviews will be conducted to ensure that current codes and standards are incorporated into specifications, drawings and other related reports (e.g., the energy conservation report) that pertain to the facility functional requirements. The purpose of the review is to verify that the design complies with customer and agency requirements and accepted standards. As the owner of the design contract, PNNL will perform design reviews throughout the development of the design. The PNNL design subcontractor for A/E contracted work or the PNNL Lead Designer for self-performed work will present and defend the design during the review. The formal review will include:

- Assessing technical adequacy and conformance with agency and customer requirements, codes, standards and other criteria such as budgetary constraints
- Identifying consistent problems and errors as lessons learned to pass on to future projects
- Managing reviewer participation and providing a process for conflict resolution.

PNNL will coordinate the review by providing the design documents to qualified participants in the fields of ES&H; all applicable disciplines of engineering, architecture, controls, communications, security, maintenance, fire protection, energy conservation and other areas as necessary and deemed appropriate. The eventual programmatic user of the facility also will participate or be represented in the review to ensure research requirements are achieved.

8.0 Risk Management

The DOE risk management concept is based on the principles that risk management must be analytical, forward-looking, structured, informative and continuous. Effective risk management is an essential element of the PSF project. The risk management process has been fully integrated with the baseline planning process to incorporate mitigating actions as effectively as possible. Undesirable events have been identified, analyzed in terms of the likelihood of occurrence and the resulting consequences and mitigation strategies have been captured in a database.

The Risk Management Plan (RMP) (CRL-PLAN-PM-002) will be maintained to ensure that the project incorporates appropriate, efficient and cost-effective measures to handle unacceptable project-related risks that originate from the scope of the project. The RMP will assess project risk throughout the project life cycle and will identify risks in a number of risk categories.

9.0 Environment, Safety and Health

The PSF project is committed to conducting its business in compliance with applicable regulations and requirements, and to being responsive to the changing regulatory climate and practices. The topics below describe the programs, procedures and documents that demonstrate compliance for the PSF project.

Before beginning work, the FPD and PNNL project team members ensure that the risks and hazards are identified and controlled (with permits, procedures, training, etc.) as specified in approved work planning documents.

Many phases of the PSF project will be performed through acquisition mechanisms, using the services of contracted personnel. PNNL ES&H and acquisition staff will ensure that applicable ES&H requirements are integrated into the contracting mechanisms to flow-down requirements to subcontracted personnel.

The PSF project team will ensure that ES&H resources are available for the different phases of the project (e.g., design, construction and eventual transition into new facilities). The PNNL ES&H organization will be responsible for providing staff (e.g., industrial safety and hygiene, training, radiological control, environmental compliance representative, facility service representative, fire protection, facility safety, waste management, etc.) to support PSF activities and to ensure those activities are conducted in accordance with ES&H policies and procedures. This support includes not only direct PNNL activities, but also oversight of contracted work.

9.1 Integrated Safety Management System

Work conducted under the PSF project shall be performed in accordance with PNNL's Integrated ES&H (IES&H) Program (known by DOE as the Integrated Safety Management [ISM] Program) using the ES&H policies and procedures provided in PNNL's Standards-Based Management System (SBMS) and with an understanding of the PNNL Stopping and Restarting Work (Safety Rights and Responsibilities) subject area. All staff shall promptly report accidents, injuries, ES&H deficiencies, emergencies and off-normal events. Where necessary the approved PNNL ISM Program is supplemented by project specific plans and procedures.

9.2 National Environmental Policy

The National Environmental Protection Act of 1969 (NEPA) internal scoping process for the PSF resulted in a determination that an Environmental Assessment (EA) would be prepared for the project. The EA addressed the effects of constructing and operating the PSF. This project is executed in accordance with existing PNNL ES&H policies, systems and procedures to minimize impact to the environment. Through the EA process, a determination was made that an Environmental Impact Statement was not required and a Finding of No Significant Impact was approved by the PNSO in January 2007.

Processing of permit applications for submittal to regulatory agencies has been incorporated into the project as part of permitting scope for the various phases of the project, and includes any fees required by the agencies to process the application. Conditions and limitations imposed by agencies in the permit approval are integrated into the PNNL management systems and facility and organizational procedures to support readiness activities. Permitting activities will be closed out once integration of the conditions and

limitations occurs. At that point, the management systems and facility and organizational structures will be responsible for costs associated with maintaining, modifying or updating permits.

9.3 Safety Assessment Documentation

9.3.1 Preliminary Hazards Analysis Report—HRT Facilities

The *Hazard Analysis Report* (HAR) satisfies the hazard analysis documentation requirements associated with CD-2 of the DOE acquisition process defined in DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The HAR also 1) meets the optional documentation requirements for a radiological facility specified in Table 2-2 of PNL-MA-440, Safety Analysis, Section 2.0, *Facility Hazard Classification*, and 2) supports the Radiological Facility determination of PSF-TECH-ESH-002, *Hazard Category Determination for the Physical Science Facility*.

9.3.2 Documented Safety Analysis—325 Building

325 Building is a Hazard Category-2 nuclear facility, currently operating with a EM-approved Documented Safety Analysis (DSA). Activities supporting the 325 Building life extension include evaluations of existing 325 Building structures, systems and components (SSC) and administrative programs that are important to safe operation. These activities include reviews of recent applicable DOE directives and guidance for new projects and long-term operational facilities and implementation of Defense Nuclear Facility Safety Board recommendations. The PSF project approach is documented in the *Capability Replacement Laboratory Project Plan CRL-PLAN-ESH-001, Radiochemical Processing Laboratory (RPL) Life Extension Safety Design Strategy*. Development and approval of this strategy has been coordinated with the DOE Safety Basis Review Team.

9.3.3 Emergency Preparedness Hazards Assessment

In assuring the appropriate level of emergency preparedness is provided, an understanding of the hazards associated with each facility will occur by preparing a Hazard Survey and, if necessary, based on the results of the Hazard Survey, an Emergency Preparedness Hazards Assessment (EPHA). The Hazard Survey and, if required, the EPHA will be prepared in accordance with DOE O 151.1C, Comprehensive Emergency Management System, and PNNL-MA-110, PNNL Emergency Management Plan. Building Emergency Procedures, emergency preparedness drills and exercises and the level of required training for staff will all be based on the results of the Hazard Survey and any EPHA.

10.0 Technical Analyses

10.1 Value Engineering

A formal facilitated value-engineering (VE) study was conducted on the PSF-HRT project preliminary design in November 2006 (*PSF Value Engineering Report November 14-16, 2006*, CRL-TECH-PM-001). In addition an operational VE was conducted to finalize the design approach for HVAC modifications in the 325 Building. The operational VE resulted in the two recommendations described below, which are included as Appendix E of the VE report.

- Adopt the preferred engineering solution for providing HVAC exhaust system efficiency for the 325 Building (discussed Section 6).
- Eliminate the need for the East Storage Yard enclosure.

These recommendations have been accepted for incorporation into the project baseline.

The VE process will be applied during the design phase to high-cost project activities. Systems engineering trade-offs and functional analyses to identify alternative means of achieving the same function at a lower life-cycle cost will be employed to maximize the return on investment.

10.2 System Engineering

System engineering principles will be employed by all users and stake holders in the development of the project from conceptual design through construction and turnover to operations.

10.3 Configuration Management

Documents defining the configuration of the project baseline are maintained by PNNL through a formal configuration control process. Configuration definition documents for the project are identified in the *CRL Configuration Management Plan*.

10.4 Sustainable Building Design

DOE establishes energy efficiency standards for federal facilities and leads by example in adopting energy efficient and sustainable building design practices. The PSF new construction will be designed and constructed to be LEED certifiable in accordance with the guiding principles of Executive Order 13423. PNNL, as both a developer and promoter of advanced environmental technologies, has set several ambitious project goals for the design and development of the PSF. One of these goals is an explicit desire that the facility be an embodiment of sustainable design and energy efficiency. During the programming phase, ten major sustainable goals were established for the PSF project. A subsequent reduction in project scope carried no associated reductions with respect to the applicability of the goals originally established. The sustainable project goals include

- Promoting a healthy and productive working environment (use of day-lighting, views to the exterior, personal temperature, acoustical and lighting controls, fresh air and improved indoor air quality)
- Reducing environmental impacts by reducing site disturbance and protecting existing habitat
- Minimizing storm water runoff and increasing onsite infiltration

- Reducing the use of potable water for landscape irrigation and maximizing potable water efficiency
- Selecting building materials with the lowest reasonable life cycle cost and environmental impact (e.g., greenhouse gas emissions, recycled content, water and air pollution)
- Minimizing the waste generated from the construction process
- Achieving LEED certification.

10.5 Reliability, Maintainability and Operability

The PSF design is reviewed for reliability, maintainability and operability by the PSF project team, which includes research, engineering, construction management, operations, building management and Environmental, Safety, Health and Quality staff. The primary objective of these reviews is to ensure the development of systems that are constructible, reliable, safe, easy to operate and maintainable with minimum resources. All modifications to the 325 Building are planned and authorized in accordance with 325 Building procedures (RPL Design Guide, Equipment Design, Procurement, Fabrication and Functional Testing, June 1, 2005) for facility modification and account for reliability, maintainability and operability objectives.

10.6 Quality Assurance

The CRL NQA-1 Quality Assurance Program Description (QAPD) implements DOE O 413.3A and the PNNL Quality Assurance Program Description approved by PNSO as meeting 10 CFR 830 Subpart A and DOE O 414.1C. The CRL NQA-1 QAPD applies to overall management of the PSF project and through a stricter graded approach to activities affecting defense-in-depth SSCs for the construction of new facilities in the HRT and for safety significant modifications performed in the 325 Building. PSF project management, staff and contractors are responsible to implement the quality assurance program requirements for the PSF project in accordance with the CRL Quality Assurance Plan (QAP) and applicable contract documents.

11.0 Transition to Operations

11.1 Final Inspection and Acceptance

Consistent with DOE 413.3A, a startup test plan is required for the PSF that provides for a controlled, graded and deliberate approach to achieving normal operations and ensures adequate transitions for design, construction, commissioning, research capability relocation and validation of readiness. Elements of this plan include

- Acceptance testing of systems and components to performance and design criteria to demonstrate that specifications and safety requirements have been met
- Operational testing to validate the design, construction, hardware, programs and personnel are ready to support safe operations
- Operational readiness reviews to determine the facilities are ready for formal readiness assessment and authorization to conduct work.

11.2 Transition to Operations

The collective process for PSF new construction startup and transition to operations will be managed through the following plans:

- The CRL Startup Plan, CRL-PLAN-SU-001, details the overarching processes that will ensure successful startup for the PSF Project from design through operational readiness. The Startup Plan is a CD-2 deliverable.
- The Commissioning Plan, a CD-3a deliverable, will identify commissioning activities that demonstrate, validate and document the performance of facility systems as designed, constructed and installed. The systems are tested to performance criteria to ensure they are capable of being operated and maintained. Commissioning includes verification of design, installation and acceptance testing. System testing is accomplished using Functional Performance Tests to satisfy the acceptance criteria in the basis of design and functional operational expectations.
- Transition activities are not part of the PSF Line-Item scope. Detailed Capabilities Relocation Plans will be provided by PNNL as an integration element. These plans will comprehensively define activities that transition equipment and staff from the 300 Area into the PSF.
- The PSF Operations Plan, developed during CD-3, will determine activities from construction, commissioning and 300-Area transition, that need to be integrated and completed to meet SBMS requirements for *Facility Management* and *Facility Safety* and to ensure successful facility readiness reviews and operations. This includes validation that the design, construction, hardware, programs and personnel are ready to support safe operation of the facility. This plan will ensure that appropriate documentation exists to demonstrate that facility equipment and the facility are properly built and will operate as designed, and that the as-built configuration and the initial operating parameters of the facility are understood and documented. This plan will provide the approach for development of facility-specific operating, maintenance and emergency preparedness procedures. It will also address execution of specific job task analyses, training and qualification required for facility power operators, crafts, and facility staff. The plan will define the level of pre-operational

assessment needed to confirm the adequacy of a facility's overall conduct of operations, including procedures, facility staff training and emergency preparedness.

- The PSF Readiness Review Plan will define the startup authorization authority, processes for preparation and conduct of readiness activities and reviews to confirm a satisfactory state of operations for the PSF.

PNNL's Integrated Operations System (IOPS) structure will be deployed in PSF. PSF facility workspaces will be identified and configured in IOPS following the standard process outlined in PNNL's SBMS, *Establishing and Maintaining IOPS in a Facility*. Work practices and other facility-related content will be developed to reflect the new facility characteristics with relocated staff being trained to the new or upgraded Hazard Awareness Summaries, Work Practices and permits.

Operational readiness is achieved when facility, personnel, equipment and procedures are in a condition that will allow routine operations to be started. The PNNL Management System description identifies the basic set of facility and operational permits and processes needed for supporting routine operations. A Facility Core Team will deploy work processes to manage the building operational boundary through implementation of Facility Use Agreements using the *Establishing a Facility Use Agreement* subject area in PNNL's SBMS. Emergency management functions, including Off-Normal Reporting coordination, will be integrated into the existing PNNL process. Normal maintenance is established by a Facility Core Team after beneficial occupancy has been accomplished.

The 325 Building is a Hazard Category-2 nuclear facility that currently operates under an EM-approved DSA. The transition of authorization authority for the safety basis from EM to SC will occur as a prerequisite for CD-4b. This is further discussed in Section 9.3 Safety Assessment Documentation. As part of this transition, readiness review activities are anticipated. The level of readiness review will be identified in the Readiness Review Plan described above. 325 Building transition of authorization basis and operational acceptance is performed in accordance with CRL-INC-07-0011.

11.3 Lessons Learned

At completion of the PSF Project, a lessons-learned document will be prepared, distributed and placed into the permanent project records. The PSF Project will establish a procedure for identifying and documenting those items and situations that could have relevance to future DOE complex-wide capital acquisition activities. As new lessons-learned reports are generated they will be distributed to the IPT by the FPD. The final lessons-learned report should involve assembling the interim reports as a single document.

11.4 Project Closeout

The purpose of the closeout effort is to ensure that DOE participation in the project is complete or, if items remain to achieve completion, they are clearly and definitively identified. Closeout of DOE participation in the PSF Project will occur when the sub-project acceptance testing is successfully completed for all PSF facilities.

1. 4a = Approve Start of Operations

- Completion of readiness activities for the first Horn Rapids Triangle facility (3430 Building - Ultra-trace) and subsequent declaration of readiness to operate. Approval authorizes the start of operations of the first HRT facility (3430 Building - Ultra-trace).

2. 4b = Close the PSF Line Item

- Completion of readiness activities and subsequent declaration of readiness of the last HRT facility (3420-Radiation Detection) and 325 Building. Completion marks the transition to operations of the final HRT facility and the start of project closeout activities.

The test program to confirm the completion of equipment installation will validate that the identified facility requirements in each sub-project are installed and that systems operate in accordance with specifications. PNNL will develop specific testing plans and criteria for each system or component important to showing completion of construction. The acceptance testing plan will include specific tests and measurements that will be performed as well as the performance criteria that the structure, system or component must achieve to be determined acceptable. PNNL will then perform the acceptance testing and prepare an acceptance report.

A project closeout report will be prepared following approval of CD-4b. This closeout report will contain information that accounts for and validates the expenditure of budget as authorized during the CD process. A list of typical topics to be included in a closeout report follows:

- Technical, scope, cost and schedule baseline accomplishments
- Financial closeout, including a final cost report with details as required
- Log of deliverables and milestones completed
- Equipment installation acceptance test results
- Photographic documentation
- Baseline change control log
- Final lessons-learned report
- Other significant events, if any, that might affect the federal budget appropriation process.

Attachment A – Memorandum From Acquisition Executive on CD-1-R



Department of Energy
Washington, DC 20585

DEC 4 2006

EXEC-2006-015122

MEMORANDUM FOR THE DEPUTY SECRETARY

FROM: INGRID KOLB *Ingrid Kolb*
DIRECTOR, OFFICE OF MANAGEMENT

SUBJECT: ACTION: Approval of Revised Alternative Selection and Cost Range for the Capability Replacement Laboratory (CRL) Project at Pacific Northwest National Laboratory (PNNL).

ISSUE: Following approval of the Alternative Selection and Cost Range (CD-1) in December 2005, the Office of Science conducted additional planning and analysis and determined that to achieve the project objectives and remain within the cost constraints the project acquisition strategy must be revised.

BACKGROUND: The Office of Science briefed you on November 7, 2006, on the revised acquisition approach for the CRL project at PNNL. The revised approach delineates more clearly the scope, cost, and sponsoring participants for acquiring the CRL capability.

DISCUSSION: Based on the discussion held on November 7, 2006, the attached memorandum documents the approval of the revised acquisition approach and project funding strategy for the Office of Science's CRL project.

SENSITIVITIES:

POLICY IMPACT: None

RECOMMENDATION: Sign the attached memorandum to the Under Secretary for Science

APPROVE: *Clay Sell*

DISAPPROVE: _____

DATE: DEC 15 2006





The Deputy Secretary of Energy
Washington, DC 20585

December 15, 2006

MEMORANDUM FOR RAYMOND ORBACH
UNDER SECRETARY FOR SCIENCE

FROM:

CLAY SELL

Handwritten signature of Clay Sell in cursive.

SUBJECT:

Approval of Revised Alternative Selection and Cost Range (CD-1 Revised) for the Capability Replacement Laboratory (CRL) Project at Pacific Northwest National Laboratory (PNNL).

I approve your request for a revised acquisition approach for the Capability Replacement Laboratory (CRL) Project based on the meeting of November 7, 2006. This approval changes the previously approved scope and cost parameters for the project as follows:

- Critical Decision - 1 Revised (CD-1 R) for the line item construction project will include the construction of a new Physical Sciences Facility (PSF) and modernization of the Radiochemical Processing Laboratory (Building 325) in the Hanford 300-Area. The Total Project Cost (TPC) for this line item portion of the CRL project is \$224M. This project will be funded with contributions described in the attached Memorandum of Understanding (Attachment 1).
- The total CRL project funding required is \$277.5M. This total reflects an additional \$53.5M to be funded from other sources including \$7.7M for maintaining and modifying 300-Area buildings 318, 331, and 350. Attachment 2 identifies the profile and strategy for these funds.
- The DOE Office of Environmental Management (EM) is responsible for providing utilities to the Hanford 300-Area.
- SC may continue to pursue third party financing for the Biological Sciences Facility (BSF) and the Computational Sciences Facility (CSF).
- The CRL will no longer include a new Life Science Facility (LSF). The life science function will remain in building 331.



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The above acquisition approach and CD-1R do not change the approval conditions 1 and 2 of CD-1, dated December 23, 2005 (Attachment 3). Condition 3 is revised as below:

- Critical Decision - 4 criteria will be met when the research capabilities have been relocated to their new locations under the CRL and the surplus PNNL facilities within the Hanford 300-Area are ready to be transferred to EM. In addition, this work will be performed without interrupting the ongoing mission essential research programs.

cc: Under Secretary for Energy
Under Secretary for Nuclear Security/Administrator for National Nuclear Security Administration
Director, Office of Management
Assistant Secretary for Environmental Management

Attachments

1. Memorandum of Understanding among the United States Nuclear Security Administration, and the United States Department of Energy, Office of Science, and the United States Department of Homeland Security on the Physical Sciences Facility Capability Replacement Laboratory at the Pacific Northwest National Laboratory
2. CRI Total Project Cost, PNNL Capability Replacement Laboratory Project Path Forward, November 2007
3. Approval of Critical Decision - 1, December 23, 2005

DRAFT MEMORANDUM OF UNDERSTANDING
among the
THE UNITED STATES NATIONAL NUCLEAR SECURITY ADMINISTRATION,
and the
THE UNITED STATES DEPARTMENT OF ENERGY, OFFICE OF SCIENCE,
and the
THE UNITED STATES DEPARTMENT OF HOMELAND SECURITY
on the
PHYSICAL SCIENCES FACILITY CAPABILITY REPLACEMENT LABORATORY
AT THE PACIFIC NORTHWEST NATIONAL LABORATORY

I. Purpose

The purpose of this MOU is to establish a Funding Strategy among the Parties that, to the extent funding is appropriated and available, provides a predictable funding profile, critical to finishing this project on schedule and within budget.

II. Common Agreement on Funding Strategy

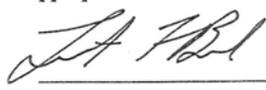
The three Parties are committed to their total funding shares for the Physical Science Facility (PSF) and refurbishment of Building 325 (in thousands): NNSA - \$69,623; DOE SC - \$98,444; DHS - \$55,934 for a total of \$224,000. The total cost for the Capability Replacement Laboratory (CRL) is \$277,500. The difference between \$224,000 and \$277,500, \$53,500, will be borne by other parties. The Office of Science will manage the overall project and will deal with any funding growth without additional costs to NNSA and DHS. The preferred funding schedule is:

Funding Strategy	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total
NNSA	\$18,470	\$7,920	\$0	\$37,919	\$3,625	\$1,689	\$69,623
SC	\$10,896	\$0	\$35,379	\$40,549	\$7,977	\$3,643	\$98,444
DHS	\$2,250	\$0	\$25,000	\$15,000	\$10,000	\$3,684	\$55,934
Subtotal PSF Line Item	\$31,616	\$7,920	\$60,379	\$93,468	\$21,602	\$9,016	\$224,000
Assumed Cong. Mark (SC)		+10,000*		-10,000*			
Assumed Cong. Mark (DHS)		+2,000*		-2,000*			
Project Profile	\$31,616	\$19,920	\$60,379	\$81,468	\$21,602	\$9,016	\$224,000

(*) The total project profile in FY 2007 is based on the assumption that the lower of Congressional marks for the SC FY 2007 appropriation (\$10 M) is added. Contributions in FY 2009 will be reduced by the amount of any earmarks in the FY 2007 appropriation (e.g., DHS appropriation of \$2M added in 2007 and commensurate reduction in DHS contribution in 2009).

III. Acceptance

The preferred funding profile is shown above in Section II. The Parties recognize that specific annual amounts will depend on OMB and Congressional action. It is understood that, to the extent funding is appropriated and available, the Parties shall adhere to this profile.



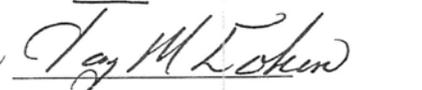
Ambassador Linton F. Brooks,
Under Secretary and
Administrator, National Nuclear
Security Administration

Signed 11/17/06



Dr. Raymond L. Orbach,
Under Secretary for Science,
United States Department of
Energy

Signed 11/17/06



Rear Admiral Jay M. Cohen, USN (ret.),
Under Secretary for Science and
Technology, United States
Department of Homeland Security

Signed 11/17/2006

Attachment 1

2005-013352



The Deputy Secretary of Energy
Washington, DC 20585

December 23, 2005

MEMORANDUM FOR RAYMOND ORBACH
DIRECTOR, OFFICE OF SCIENCE

FROM: CLAY SELL
DEPUTY SECRETARY

SUBJECT: Approval of Critical Decision – 1, Approval of Alternative Selection and Cost Range, for the Capability Replacement (CRL) Project at Pacific Northwest National Laboratories (PNNL)

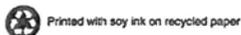
Based on the recommendation from the Energy Systems Acquisition Advisory Board (ESAAB) during a meeting conducted on December 15, 2005, I approve the following:

1. Critical Decision – 1 for PSF line item project (TPC range of \$200M to \$260M) allowing the design phase to begin;
2. Pursuing alternative financing proposals for other facilities to meet the mission need requirements; and
3. Relocating the radiological support services to PSF and vacating building 318.

The approvals are subject to the following conditions:

1. That the alternative financing proposals will be presented for my approval;
2. Safety requirements are fully incorporated and properly implemented into the project's design and construction in accordance with your memorandum dated December 5, 2005, and shall be addressed as part of the Critical Decision – 2 ESAAB briefing; and
3. That Critical Decision – 4 criteria will be met when the research capabilities have been relocated out of the 300 Area of the Hanford Site and the PNNL facilities are ready to be transferred to EM. This includes work associated with PSF and the remaining facilities without interrupting ongoing mission essential research programs.

I am designating the CRL project as a Major System Project due to its complexity and the joint funding between the Office of Science, the National Nuclear Security Administration, and the Department of Homeland Security.



Attachment 3

Attachment B – Integrated Project Team Charter

Pacific Northwest Site Office Pacific Northwest National Laboratory Physical Sciences Facility Revision 4 – 3/15/07

Mission

The mission of the Department of Energy Office of Science (DOE-SC) Pacific Northwest Site Office (PNSO) Integrated Project Team (IPT) for the Pacific Northwest National Laboratory (PNNL) Physical Sciences Facility (PSF) project is to plan and guide the PSF project to successful completion.

Project Objectives

Provide facilities to enable relocation of PNNL research capabilities from the majority of Hanford 300 Area facilities which they currently occupy. Design and construct new replacement facilities and facility modifications to extend the life of 325 Building in the Hanford 300 Area. Do so in a manner that

- Minimizes the impact to the PNNL programmatic research missions.
- Minimizes delays to the demolition and cleanup of the Hanford 300 Area.
- Provides the necessary infrastructure for PNNL staff to fulfill the research requirements necessary to meet mission needs.
- Maximizes research efficiencies/synergies across the entire PNNL research complex.
- Optimizes space usage.
- Optimizes the safety envelope of the replacement facilities with appropriate hazard categorization.
- Expedites the DOE project management process in support of the project's critical-path schedule.
- Completes the technical objectives in accordance with the cost and schedule baselines approved by the Acquisition Executive.
- Designs and constructs new facilities and modifies existing facilities within the fixed Total Project Cost (TPC) of \$224 million.

Project Organization

This project will be managed by the DOE-SC Federal Project Director (FPD) located at PNSO. The FPD will be responsible and accountable for project execution to the HQ Program Manager. The FPD has chartered an IPT which will assist the FPD as necessary to accomplish the project objectives.

Integrated Project Team Membership

The IPT is composed of experienced federal and contractor staff with the knowledge, skills and abilities necessary to execute the project. The IPT members are those project participants that are primarily dedicated to project execution tasks and work on the project on a daily basis, or as a minimum half of their time. See the table below for membership by functional discipline.

IPT Members *	
<u>Discipline</u>	<u>Member</u>
Federal Project Director -PSF	Chad Henderson
Program Manager (Office of Science)	Marcus Jones
Portfolio Project Director (Richland Operations Office) EM	Dave Brockman
Federal Project Director - 325 Building Sub-Project	Russell Warren
Facility Transition Manager	Julie Turner
Safety Basis Review Team Lead/Nuclear Safety Analyst (Oak Ridge Operations)	Randy Persinger
Contractor Project Director (Battelle)	James McClusky

*located at PNSO unless otherwise noted

Roles and Responsibilities

Federal Project Director

The FPD will lead the IPT and will be the primary point of contact for communication and coordination with entities external to the IPT. The FPD is responsible, with the assistance of the IPT members, for the following tasks:

- Develop, staff, and issue the IPT charter.
- Single point of contact between federal and contractor staff.
- Plan, implement and complete the project using a systems engineering approach.
- Tailor DOE project management requirements to the project.
- Develop and implement the Acquisition Strategy and the Project Execution Plan.
- Define project objectives and technical, schedule, and cost scopes.
- Ensure timely completion and quality of required project documentation.
- Assess contractor project performance versus contract requirements.
- Proactively identify and resolve critical issues within Federal control.
- Integrate and manage the timely delivery of government reviews, approvals, property, services, and information.
- Ensure the design, construction, environmental, safety, health, and quality efforts performed are in accordance with the contract, public law, regulations, and Executive Orders
- Evaluate and verify reported progress and report project performance in the Project Assessment and Reporting System (PARS).
- Approve changes in accordance with the PEP change control process.
- Manage project contingency funds.

Program Manager

The SC Program Manager will be the primary point of contact for communication and coordination with other federal agencies participating in the project, which include the National Nuclear Security Administration (NNSA), the Office of Environmental Management (DOE-EM), and the Department of

Homeland Security (DHS). In addition to this role, the Program Manager will be responsible for the following tasks:

- Oversees development of project definition, technical scope and budget
- Defines programmatic mission requirements and objectives
- Establishes programmatic requirements and recommends operational readiness to the authorization authority
- Prepares, defends and provides project budget with support from the field organizations
- Reviews and provides recommendations to the Acquisition Executive on Level-0 and Level-1 baseline changes
- Functions as the primary point-of-contact at DOE headquarters for project matters
- Develops project performance measures, and monitors and evaluates project performance throughout the life cycle of the project
- Organizes reviews as necessary
- Ensures that environment, safety and health (ES&H) requirements are implemented by the project
- Coordinates with other SC offices, project sponsors and the DOE Office of Engineering and Construction Management as needed to execute the project
- Controls changes to project baselines in accordance with the PSF PEP.

Portfolio Project Director

Due to the inter-relationship of the PSF with the Hanford 300 Area cleanup activities managed by the Richland Operations Office (RL), a Portfolio Project Director (PPD) at RL has been assigned half-time to the project. The PPD is an experienced SES level manager who will assist the FPD by providing guidance and advice on management of the project and facilitate communication and coordination between PNSO and RL for the new utility infrastructure that will be funded and installed by RL for the retained 300 Area facilities and the ultimate transfer of full operational responsibility from RL to SC.

Federal Project Director – 325 Building Sub-Project

The FPD for the 325 Building Sub-Project reports to the PSF FPD and will:

- Define project objectives and technical, schedule, and cost scopes.
- Ensure timely completion and quality of required project documentation.
- Assess contractor project performance versus contract requirements.
- Proactively identify and resolve critical issues within Federal control.
- Integrate and manage the timely delivery of government reviews, approvals, property, services, and information.
- Ensure the design, construction, environmental, safety, health, and quality efforts performed are in accordance with the contract, public law, regulations, and Executive Orders

- Evaluate and verify reported progress.
- Evaluate proposed changes in accordance with the PEP change control process and make recommendations to the PSF FPD.

Facility Transition Manager

Although facility transition is not funded as part of the PSF line item, a federal Facility Transition Manager (FTM) has been assigned to facilitate this effort because of its importance to the project goals of minimizing adverse impacts to the PNNL research missions and delays to the demolition and cleanup of the Hanford 300 Area.

The FTM will:

- Work with the M&O contractor and RL to execute the new utility infrastructure that will be funded and installed by RL for the retained 300 Area facilities.
- Establish PNSO policy and objectives for obtaining new utility and service provider contracts and agreements for the retained 300 Area facilities
- Provide federal oversight of PNNL research capability (staff and equipment) relocation to new and retained facilities.

Safety Basis Review Team Lead / Nuclear Safety Analyst

Lead the Safety Basis Review Team (SBRT), as described in the SBRT charter. Review contractor prepared nuclear safety plans and documentation. Provide advice and assistance on nuclear safety issues as requested by the FPD.

Contractor Project Director

The Contractor Project Director (CPD) is responsible and accountable for successful execution of the Contractor's project scope of work and is a key member of the IPT. The CPD:

- Supports the FPD in implementing the DOE project management process.
- Provides input on project documents and develops and maintains contractor project documentation.
- Defines the contractor project organization.
- Manages the day-to-day project execution activities.
- Implements the contractor performance measurement system.
- Completes project deliverables as defined in the Project Execution Plan (PEP), the approved contractor Work Plan, the performance baseline approved at Critical Decision – 2, other project documentation and as directed by the FPD.
- Proactively identifies and ensures timely resolution of critical issues within Contractor's control which impact project performance
- Communicates accurate and reliable project status and performance issues to the FPD.
- Identifies and manages project risks.

- Approves changes within authority threshold in accordance with change control process defined in the PEP.
- Manages project contingency funds.

Subject Matter Expert Support

Additional support in specific disciplines will be necessary to execute the project on a periodic and intermittent task basis and will be obtained as required, on a matrix basis, from PNSO and SC Support Center staff. The disciplines required and anticipated sources are listed below.

PNSO: Contracting Officer, safety, health, quality, environmental permitting, security

Oak Ridge Support Center: CFO, budget, procurement, legal

Integrated Project Team Life

This charter will expire when CD-4b, Project Closeout, has been approved by the acquisition executive. The charter is a living document and the membership will change during the life of the project. The FPD will issue revisions to the charter periodically as necessary.

Attachment C – Summary of DOE Order 413.3A Requirements and Applicability to the PSF Project

DOE O 413.3A & DOE/NNSA Implementing Manual Requirements		Applicability to PSF	Documentation for Applicable Requirement	Justification for Tailoring/ Non-Application & Suggested Tailoring
Chapter/ Section	Title			
Chapter I	Critical Decisions			
1.	Major System (MS) Project CDs	NA		The total cost of the PSF project is below the \$400 million threshold for an MS project. The PSF project is replacement of DOE capital assets and does meet the requirements defined in DOE Order 413.3.
2.	Other Project CDs	A		See above.
	CD-0, Approve Mission Need	A	Memorandum from Deputy Secretary	Memorandum from Deputy Secretary McSarrow on 9/23/2004, "Approval of the Mission Need (CD-0) for the Pacific Northwest National Laboratory Capability Replacement Laboratories Project."
	CD-1	A	Memorandum from Deputy Secretary	Memorandum from Deputy Secretary Sell on 12/15/05
	CD-2a/3a	A	Memorandum from Deputy Secretary	Acquisition Executive authority currently resides with the DOE Deputy Secretary.
	CD-2b/3b	A	Memorandum from Acquisition Executive	Delegate Acquisition Executive authority to the Director of SC or their
	CD-4	A	Memorandum from Acquisition Executive	Acquisition Executive authority currently resides with the DOE Deputy Secretary.
3.	Environmental restoration (ER) & Facility Disposition (FD) Project CDs	NA	NA	Not an ER or FD Project.
Chapter II	Baseline Change Control			
1.	Baseline Change Control Approval Authority (A2 & A5)	A	PEP Section 5.2	The CRL project will establish baseline change control thresholds that results in delegation of most change approvals to lowest possible level while maintaining compliance with DOE Order 413.3, Attachment 5.
2.	Thresholds (A3)	A	PEP Section 5.2	See above.
3.	Variances	A	PEP Section 5.2	See above.
4.	Programmatic Baseline Changes	A	PEP Section 5.2	See above.
Chapter III	Acquisition Process			
1.	Pre-conceptual Planning			
1.1	Mission Needs Statement (A4)	A	Justification of Mission Need	The CRL Project <i>Justification for Mission Need</i> (8/4/2004) was submitted and approved as part of CD-0.
1.2	Integrated Project Team	A	PEP Section 3.4	An IPT has been established.
1.3	Pre-conceptual Design (IM)	A	<i>Mission Need Statement</i> and <i>300 Area Capability Transition Plan</i>	The PSF is a replacement project, meaning the pre-conceptual design is the existing capabilities. Design is being performed in accordance with PSF programmatic requirements.

DOE O 413.3A & DOE/NNSA Implementing Manual Requirements		Applicability to PSF	Documentation for Applicable Requirement	Justification for Tailoring/ Non-Application & Suggested Tailoring
1.4	System – Level Functions & Requirements (IM)	A	Facilities Program & Requirements Document	System level functions and requirements are identified in the CDR. The Facilities Program and Requirements Document documents the final scope and requirements subsequent to the facility programming.
2.	Risk Identification & Analysis			
2.1	Preliminary Risk Comparison & Assessment (IM)	A	PEP Section 4.7 and Preliminary Risk Analysis and Strategy	Draft Preliminary Risk Analysis and Strategy for CRL project included in CDR.
2.2	Risk Mgmt Plan (IM)	A	PEP Section 5.9 and CRL project Risk Management Plan (RMP)	A RMP has been developed to govern the process for managing risks.
3.	Acquisition Process			
3.1	Conceptual Design Report	A	CDR	CDR submitted as part of the CD-1 package. All design is performed in accordance with applicable design codes, standards and requirements.
3.2	Design Project Data Sheet (A4)	A	Project Data Sheets	Project Data Sheets will be prepared as part of the CD process.
3.3	Preliminary Hazards Analysis (A4)	A	Preliminary Hazards Analysis Report	A tailored Preliminary Hazards Analysis Report has been developed.
3.4	Configuration Management Plan (IM)	AT	PEP Section 5.3	A Configuration Management Plan has been developed for this project. Plans for configuration management of the technical baseline and design are consistent with existing PNNL facility design processes.
3.5	System Engineering Plan (IM)	AT	PEP Section 5.5	The application of systems engineering will be tailored to meet the project's needs.
3.6	QA Program Description	A	PEP Section 6.2	A summary level description of the QA Program is included in the PSF PEP. The project QAP will be an appendix to the PNNL Project Implementation Plan (PIP).
3.7	Work Breakdown Structure (IM)	A	PEP Section 4.3 and 4.5	A multilevel WBS has been developed for the PSF.
3.8	Design Baseline	A	PEP Section 4 and CDR	A summary level design baseline is located in the PSF PEP. A more detailed description of the Technical Baseline is located in the CDR.
3.9	Earned Value Management System (IM)	AT	PEP Section 5.7	A summary level discussion of the PSF EVMS is located in the PEP. PNNL will implement a detailed EVMS in accordance with ANSI/EIA 748-A-1998 prior to submittal of documentation for CD-2.
3.10	Preliminary Project Baseline Range	A	PEP Section 4.8 and 4.9	The preliminary baseline range is summarized in Section 4.8 and 4.9. Preliminary cost and schedule information is contained in the CDR.
4.	Acquisition Planning			
4.1	Acquisition Strategy (IM)	A	CRL Project Acquisition Strategy	The CRL Project Acquisition Strategy submitted with the CD-1 document package.
Chapter IV	Project Execution Process			
	Preliminary Documented Safety Analysis (PDSA) (A4)	NA	PDSA Is Not Required	A Hazard Analysis Report will be developed and submitted to DOE prior to the CD-2 review.
	NEPA Documents (A4)	AT	CDR	NEPA strategy and approach is based on obtaining an EA prior to CD-2.

DOE O 413.3A & DOE/NNSA Implementing Manual Requirements		Applicability to PSF	Documentation for Applicable Requirement	Justification for Tailoring/ Non-Application & Suggested Tailoring
	Finalize Performance Measurement Baseline (IM)	A	PEP Section 4	A PMB, based on the costs/schedules/scope for each subproject, will be developed and submitted at CD-2.
	Independent Cost Review/Estimate (A4)	A	PEP Section 5.10.3	An Independent Cost Review will be performed.
	Finalize Site Location (IM)	A	PEP Section 4.4	The capability replacement laboratories will be located on the PNNL Site. Considerations include federal and private property.
	Construction Project Data Sheet (A4)	A	Project Data Sheets	Project Data Sheets will be prepared as part of the budget process.
	ES&H Document	AT	PNNL PMP	PNNL ES&H documentation is included in the Integrated Safety Management Plan.
	Safety Evaluation Report (IM)	A	Safety Evaluation Report (SER)	The SER documents the DOE determination that a DOE-owned facility is safe to operate in the United States. Will be prepared as part of the CD-2 document package.
	Preliminary Design (IM)	A	Preliminary Design Report (PDR)	The PDR will be prepared and submitted as part of the CD-2 document package.
	Final Design & Review (A4)	AT	PEP Section 5.10.4	DOE and PNNL will provide extensive oversight of design
	Operational Readiness Review & Acceptance Report (A4)	AT	Operational Readiness Review & Acceptance Report	Startup and Commissioning is being performed in accordance with DOE and PNNL Operational System requirements. An Operational Readiness Review and Acceptance Report will be developed and submitted prior to the CD-4 review.
	Project Transition to Operations Report (A4)	AT	Project Transition to Operations Report	Startup and Commissioning is being performed in accordance with DOE and PNNL Operational System requirements. A Project Transition to Operations Report will be developed and submitted prior to the CD-4 review.
	Final Documented Safety Analysis (FDSA)	NA		
	Project Closeout Report (A4)	A	PEP Section 5.11 and CRL project Closeout Report	A Project Closeout Report will be submitted at CD-4b.
	Lessons Learned Report (IM)	A	PEP Section 5.10.6	Lessons learned reports will be generated throughout the life of the project.
1.	Project Execution Plan			
1.1	Preliminary PEP	A	Preliminary PEP, 6/30/2005	A draft preliminary PEP will be developed as part of the CD-1 document package.
1.2	Final PEP	A	PEP	The PSF PEP will be finalized and submitted with the required CD-2 documentation.
1.3	Update PEP (IM)	A	PEP	The PSF PEP will be reviewed at least annually, maintained, and submitted for review at each CD level as addressed in Section 1.2.
2.	Source Selection Plan	AT	Acquisition Strategy	Source Selection Plan included in the PSF Acquisition strategy and plan.
3.	Business Clearances	NA	NA	No business clearance negotiation to be performed.
Chapter V	Energy Systems Acquisition Advisory Board	AT		Internal DOE/NNSA requirements per DOE Order 413.3, Chapter V for ESAAB process.
Chapter VI	Performance Reviews & Reporting			
1.	Performance Reviews			
1.1	Contractor PM System Review (A4)	A	PEP Section 5.10	PNNL's Project Management System will be reviewed by DOE and OEMC.

DOE O 413.3A & DOE/NNSA Implementing Manual Requirements		Applicability to PSF	Documentation for Applicable Requirement	Justification for Tailoring/ Non-Application & Suggested Tailoring
1.2	Quarterly Project Reviews	A	PEP Section 5.10.2	Quarterly project reviews will be scheduled.
2.	Independent Reviews (A2)			
2.1	CD-0 Mission Validation IPR	AT	Covered in Deputy Secretary memo dated 9/23/2004	Complete.
2.2	CD-1 Mission Need IPR (IM)	AT	See 2.1 above	Complete. The Mission Need was reviewed and approved at CD-0.
2.3	CD-2 Performance Measurement Baseline EIR (A4)	AT	PEP Section 5.10.3	This EIR is being planned as part of the CD-2 review process.
2.4	CD-3 Construction Start IPR	AT	PEP Section 5.10.3	This IPR is being planned as part of the CD-3 review process.
2.5	Execution Readiness IPR (A4)	AT	PEP Section 5.10.3	This IPR is being planned as part of the CD-4 review process.
3.	Reporting	AT	PEP Section 5.10	The FPD will generate internal management reports. PNNL will provide a detailed monthly report to the FPD that identifies project status, issues and cost and schedule performance. EVMS performance will be reported after the performance baseline is finalized at CD-2.
Chapter VII	Additional Requirements			
1.	Chief Operating Officer Watch List and A7	AT	PEP Section 5.10	If significant cost and schedule variances and/or technical issues are identified the PSF may be placed on the Chief Operating Officer Watch List until improvement is identified.
2.	Project Manager Development	A	Per McSlarrow CD-0 approval	Applies to Federal Project Managers and Directors.
3.	Contractor Project Management System		PNNL PMP	PNNL has identified in their PMP how they will implement all the requirements identified in the Contractors Requirements Document, DOE O 413.3, Attachment 1
4.	Value Engineering	AT	PEP Section 5.4	The work is being performed in accordance with PNNL existing facility operations requirements. A summary level discussion is included in the PSF PEP.
5.	Integrated Safety Management	AT	PEP Section 6	An Integrated Safety Management Plan tailored for the CRL project has been developed and is an appendix to the PNNL PMP.
6.	Sustainable Building Design	AT	NA	Sustainable design principles will be followed in the siting, design, and construction of federal facilities.