

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Idaho**

Site Summary Level: **Idaho National Engineering and Environmental Laboratory**

Project **ID-OIM-102 / Idaho Chemical Processing Plant Non-Process Plant Operations**

Report Number: **GEN-01b**

Print Date: **3/10/2000**

HQ ID: **0206**

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## **General Project Information**

### **Project Description Narratives**

#### **Purpose, Scope, and Technical Approach:**

Purpose and Scope: The purpose of PBS ID-OIM-102 is to provide the core functions required by multiple programs at the Idaho Nuclear Technology and Engineering Center (INTEC). This project is necessary for all programs at INTEC and is critical to support all compliance agreements associated with High Level Waste (HLW), Spent Nuclear Fuels (SNF), Special Nuclear Material (SNM), Environmental Remediation (ER), the Federal Facilities Agreement and Consent Order (FFACO), Facility Deactivation, and the Idaho Settlement Agreement relating to INTEC operations. The PBS ID-OIM-102 scope includes managing, planning and providing expertise to provide safe and secure storage of SNM, and protection for SNM, classified information, and government property, utilities for all activities at INTEC. Utilities include the INTEC-wide steam and condensate distribution, electrical distribution system, water production and distribution systems, underground fire water, plant breathing and compressed air, the sanitary waste systems and funding for INTEC electrical power costs. The landlord services provides infrastructure management, operations and maintenance for INTEC non-process facilities and structures, including custodial services, corrections of ES&H deficiencies, corrective and preventive maintenance, excessing and disposal of surplus equipment/materials, as well as the maintenance of the plant roads and grounds. Material support and warehousing provides for the acquisition, receipt and issuance of materials, including personal protective equipment (PPE), in support of all activities at INTEC.

The PBS ID-OIM-102 provides core competencies for site specific management, engineering, ESH&Q, configuration management, and nuclear safety oversight and support. Training and administration support provides guidance and direction for maintenance of INTEC within state, federal, DOE, and M&O Contractor guidelines. This project also includes ES&H and QA program support including the management, coordination, and support for the following programs: Radiological Control; Industrial Hygiene and HEPA Filter/Ventilation; Environmental Compliance; and Quality Assurance.

The PBS ID-OIM-102 provides for the planning, management, design, procurement, and construction activities required for the execution of all INTEC infrastructure GPP and CE. As the facilities and structures increase with age, the need for infrastructure construction funding to support and maintain INTEC's infrastructure is critical to plant operations.

GPPs are required and needed to deliver new and/or adapt existing facilities to meet EM mission needs and reduce or eliminate Environmental, Safety & Health (ES&H) hazards, to affect economies of operation, and to support and maintain the physical infrastructure at the INTEC. These projects are smaller and more flexible and can be constructed to react to emergency and quick turn around infrastructure requirements. Examples of GPPs include roofing upgrades, utility upgrades, facility construction, and facility additions.

INTEC CE provides for the purchase and installation of replacement and new equipment in support of INTEC infrastructure needs as well as multi-program capabilities. CE acquisitions are necessary for the achievement of mission goals, elimination of environmental, and safety & health hazards to effect economies of operations, and support other infrastructure equipment needs

This project also includes funding for the identification and preliminary planning for outyear LICPs. LICPs include general purpose and multi-use new facilities and generally require a significant amount of planning and construction and require multiple years of funding to realize completion.

Due to diminished funding levels, the PBS ID-OIM-102 will support only the highest priority capital improvements primarily as required for compliance agreements, emergencies, and safety and health needs. PBS ID-OIM-102 assumed responsibility for SNM Security in 1999.

Technical Approach: The PBS ID-OIM-102 will continue to perform the core functions for all project activities. This project provides the cost effective basic levels of service available on a plant-wide basis for operations, maintenance, and ES&H compliance monitoring, and oversight. The project will perform all of those functions using Best Available Technologies (BAT), as appropriate, to meet permit requirements, regulatory

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Project **ID-OIM-102 / Idaho Chemical Processing Plant Non-Process Plant Operations**

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requirements, waste minimization and pollution prevention practices. Methods used to prioritize work and measure performance include CAMP prioritization, benchmarking and performance indicators through Energy Facility Contractors Group (EFCOG), "Best Practices" for functional costs through the Financial Management Systems Improvement Council (FMSIC), and consolidation of maintenance management practices. All GPPs will go through the following: development of functional and operational requirements, conceptual design, value engineering evaluation, energy management and conservation opportunities review and evaluation, operability, safety and quality evaluation, title design, construction, system operations testing, and turnover to responsible operational organization, on a graded approach, as appropriate.

### Project Status in FY 2006:

The PBS ID-OIM-102 will continue beyond FY 2006. PBS ID-OIM-102 will be needed in order to maintain support for High Level Waste (HLW), Spent Nuclear Fuel (SNF) and Deactivation programs. These activities will continue for EM missions to ensure INTEC remains in compliance with all regulatory requirements, Idaho Settlement Agreement and addresses all safety and health issues.

All INTEC GPPs approved and constructed through FY 2005 will be completed and fully operational. All CE approved and acquired from FY 1996 through FY 2005, will also be completed and fully operational.

### Post-2006 Project Scope:

The Post FY 2006 project activities will be similar to those that were performed through FY 2006. The PBS ID-OIM-102 will continue to support HLW and SNF activities until their completion (approximately 2035) at which time the funding profile reflects a reduction in project costs. This project will then continue at a reduced level in support of deactivation, D&D, surveillance and maintenance. Construction required to accomplish existing and planned INTEC EM missions will continue to be performed to include modifications of existing facilities, replacement of existing obsolete equipment and construction of new support facilities and utilities required for compliant operations.

### Project End State

The PBS ID-OIM-102 will be reduced to a minimal level after the current EM program missions for HLW and SNF are completed (approximately 2035). At that time the Program will continue to support deactivation, D&D activities and site remediation.

All necessary construction upgrades and equipment acquisitions will support The Idaho Settlement Agreement through critical infrastructure upgrades required to ensure facilities are operated in a safe and compliant manner, worker safety and health is maintained, and all S&H infrastructure concerns are addressed through the end of the EM missions for HLW, SNF, SNM, Waste Management, Deactivation, and ER.

### Cost Baseline Comments:

During FY 1999 workscope within PBS ID-OIM-102 was prioritized using the Peer Review criteria developed by DOE-HQ and was incorporated into an Integrated Priority List of EM funded work at the INEEL. The PBS ID-OIM-102 INEEL Life Cycle Planning Package (LCPP) Baseline for FY 2000 and beyond were developed by a detailed review of individual control accounts rolling up to the PBS level. The process included cost estimates prepared by professional cost estimating staff from M&O Contractor, Corp of Engineers, and subcontract personnel. Proven methodology including Activity Based Costing, thorough jury review by DOE-ID and work performers of the scope definition, assumptions, and justification of estimate basis were incorporated into the LCPP estimates.

Construction project cost estimates are developed at each phase of the project per the INEEL Cost Estimating Guide. These phases are identified as

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(1) Conceptual Design, (2) Title II Design; and (3) Approved for Construction (AFC). These estimates may change through time as a part of the normal design evolution, further definition of requirements needed to support the existing mission and project uncertainties based on items such as the stage of design complexity (e.g., conceptual versus approved for construction), award prices, approved baseline plans, and subsequent changes. At each project phase, a contingency analysis is performed on each estimate to determine the appropriate level of contingency required to perform the project. Cost estimates are prepared to encompass all scope required to ensure this project supports compliance with the FFACO, and the Settlement Agreement with the State of Idaho. GPCE acquisitions with significant installation costs require engineering cost estimates prior to funding approval. All GPCE acquisitions are purchased in accordance with DOE procurement regulations.

The PBS ID-OIM-102 does not reflect the changes to the fixed asset acquisition appropriation methodology where outyear requests are to be approximated in FY 1999 or the new LICP project start year. The PBS does reflect the funding in the required year as planned. Reduced INEEL funding levels will impact the PBS ID-OIM-102 ability to perform critical activities resulting in numerous ES&H deficiencies, potential of disrupting SNF and HLW Settlement Agreement milestones, and failure to realize savings through mortgage reduction.

Significant cost reductions in the baseline are realized beginning in 2036 timeframe because both SNF and HLW missions are planned to be complete.

### Safety & Health Hazards:

This project includes the safe management of those buildings and areas that are unilaterally utilized to support existing programs at the INTEC. These facilities and areas must be controlled and monitored to ensure that all hazards are identified and properly controlled. Hazards encountered at INTEC include potential personnel exposure to: radioactive materials, high voltage, steam, chemicals, compressed gasses, flammable/combustible liquids, asbestos, and hazardous wastes. The general infrastructure and numerous facilities at the INTEC are 30-40 years old and inevitably will result in facility deterioration and system failures creating a high potential for severe worker safety and health incidents. In addition, ongoing operations at the INTEC are subject to accident events due to acts of nature, human and equipment failure. Potential hazards associated with general operations, deteriorated facilities/systems and natural events may include fire, radiological, chemical, lead, asbestos, atmospheric/flooding events, earthquake events, emission releases, facility processes, structural failures, electrical, confined space entry, heavy equipment operation, tool and equipment usage, slips, trips, and falls. Also included are hazards associated with working at heights, hoisting and rigging, walking/working surfaces, welding, and cryogenics. The previously identified types of hazards are a potential throughout the life cycle of this PBS. End state hazards associated with operations will decrease as the Environmental Management mission is completed at the INEEL.

### Safety & Health Work Performance:

The Integrated Safety Management Program mandates that safety be an integral part of the work process. Hazards are identified through work planning, safety controls are implemented, and the work is conducted accordingly. Post job reviews are conducted to identify and discuss problems or successes. Useful information is then distributed through a Lessons Learned Program. Management and workers at all levels with assistance from safety and health professionals are responsible for the development, implementation, maintenance, and promotion of an effective employee safety and health program. This in part is accomplished by review and approval of all Work Control Documents including: work orders, operating procedures, construction and demolition projects, and maintenance plans. Safety and Health contacts are available for every activity/project to assist the responsible worker/manager in planning and executing work according to applicable requirements. The means to accomplish work safely are provided through work control documents with subject matter contacts available in specialty fields such as health, safety, environmental, radiological control, fire protection, occupational medicine, safeguards and security, and emergency management. Safety and health resources are planned and allocated

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into each activity/project proposal according to size of the activity/project and scope of work. Safety and health professionals provide on-site assistance to both workers and supervisors and the Company Voluntary Protection Program (VPP) integrates safety and health into all aspects of the work planning and control process. Safety and Health FTEs average approximately \$100K/FTE/year.

To ensure safety and health programs are implemented at the INTEC, appropriate S&H resources are planned within the framework of the Work Breakdown Structure (WBS) and loaded into the project for each fiscal year. Safety and Health activities planned include: S&H programs interpretation, development and maintenance; conduct of surveillances; development of corrective action plans in response to audits; tracking/trending issues; work document reviews; calibration and maintenance of S&H instrumentation; review of various hazard monitoring data; development and maintenance of electronic hazard monitoring systems; and technical subject matter support to the training organization.

### PBS Comments:

The ICPP is situated on approximately 265 acres with 140 buildings and 126 structures with a total square footage of approximately 1,160,000 SF. Many structures and processes have been upgraded or replaced during the past several years, but several facilities designed and constructed in the 1950's do not meet environmental, seismic, or employee safety regulations. Structural upgrades to many of these facilities are cost prohibitive, therefore new facilities are planned to correct known deficiencies. In addition, all paved surfaces throughout the plant are monitored and inventoried. The ICPP Non-Process Plant Operations Project provides infrastructure support to multi-programmatic activities including, but not limited to, facilities, utilities, roads, and capital equipment. This program is committed to providing these support functions in the most cost-effective manner while complying with all applicable laws, orders, agreements, codes and standards, and best management practices. Failure to maintain a viable infrastructure will greatly impact the INEEL's ability to maintain safe and efficient operations and to carry out the requirements of the Idaho Settlement Agreement.

This Project also provides cross-cutting management, engineering, and administrative resources and support to HLW, SNF, Infrastructure, and Deactivation projects at the ICPP in areas of training, nuclear safety, engineering, document control, quality assurance and overall ES&H oversight and support. This includes base engineering providing engineering processes, computer programs and databases, as well as effective processes and systems for document control and management of ICPP records, including centralized optical imaging systems for life-cycle document and records management activities. Facility support training is provided as is nuclear and specialty engineering support and QA program, oversight and support. The completion of GPP and CE projects is necessary for the SNF and HLW Programs to reach the milestones established in The Idaho Settlement Agreement for treatment, handling, and disposal of the existing fuel and wastes located at the ICPP. Reduced funding levels will impact the ICPP Non-Process Plant Operations Project's ability to perform critical activities resulting in numerous ES&H deficiencies, potential of disrupting SNF and HLW Idaho Settlement Agreement milestones, and failure to realize savings through mortgage reduction.

### Baseline Validation Narrative:

Prior to Life Cycle Planning Package (LCPP) development during FY 1999, the INEEL EM Integration Board (joint senior level DOE-ID and LMITCO management) provided an independent validation of the Project Baseline Summary (PBS) ID-OIM-102 in respect to "compliance driven" activities, project planning, cost estimates, schedule, and the basis of estimate for FY 1997 through FY 2006.

During fiscal year 1998, workscope within PBS ID-OIM-102 had additional independent validations including: (1) Army Corps of Engineers and (2) joint DOE-ID and M&O Contractor team reviews. Programmatic objectives, scope of work, milestones, baseline schedules, and baseline costs were

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analyzed. In addition, the planned scope was reviewed to ensure: (a) consistency with achieving compliance with consent orders, laws, and interagency agreements and (b) addressing safety and health and regulatory requirements.

During FY 1999 workscope within PBS ID-OIM-102 was prioritized using the Peer Review criteria developed by DOE-HQ and was incorporated into an Integrated Priority List of EM funded work at the INEEL. The PBS ID-OIM-102 INEEL LCPP Baseline for FY 2001 and beyond were developed by a detailed review of individual control accounts rolling up to the PBS level. The process included cost estimates prepared by professional cost estimating staff from M&O Contractor, Corp of Engineers, and subcontract personnel. Proven methodology including Activity Based Costing, thorough jury review by DOE-ID and work performers of the scope definition, assumptions, and justification of estimate basis were incorporated into the LCPP estimates. A validation effort was then documented with a review of backup data in support of the estimate, agreement on the rationale used in formulation of the scope, and intended approach to execution. The validation team consisted of DOE-ID Program and Budget personnel, including personnel independent from the specific program, as well as contractor personnel. The purpose of the LCPP baseline is to establish a basis from which all can agree on scope, schedule, and costs, therefore allowing a clear and distinct path forward for change control. The LCPP estimate is the agreement between DOE-ID and the performing organization and becomes a living source document for negotiating future changes in scope, schedule, and cost. The format used in developing the LCPP estimates provides a basis for cost accounting and cost collection allowing refinement of unit standards, cost databases and future estimates.

## General PBS Information

Project Validated?	Yes	Date Validated:	2/13/1996					
Has Headquarters reviewed and approved project?	No							
Date Project was Added:	12/1/1997							
Baseline Submission Date:								
FEDPLAN Project?	Yes							
Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	Y	Y	Y	Y	N	Y	Y	N

## Project Identification Information

DOE Project Manager:	James R. Cooper
DOE Project Manager Phone Number:	208-526-5698
DOE Project Manager Fax Number:	208-526-9150
DOE Project Manager e-mail address:	cooperjr@inel.gov

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HQ ID: **0206**

Project **ID-OIM-102 / Idaho Chemical Processing Plant Non-Process Plant Operations**

## General PBS Information

Is this a High Visibility Project (Y/N):

## Planning Section

### Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	698,515	7,055,356	7,753,871	56,458	56,458	52,029	53,244	60,165	51,283	66,643	72,853	78,918	87,882	87,175	85,109	
PBS Baseline (constant 1999 dollars)	640,237	2,904,791	3,545,028	56,458	56,458	52,029	53,244	60,165	51,283	62,990	67,049	70,584	76,386	73,564	69,729	
PBS EM Baseline (current year dollars)	698,515	7,055,356	7,753,871	56,458	56,458	52,029	53,244	60,165	51,283	66,643	72,853	78,918	87,882	87,175	85,109	
PBS EM Baseline (constant 1999 dollars)	640,237	2,904,791	3,545,028	56,458	56,458	52,029	53,244	60,165	51,283	62,990	67,049	70,584	76,386	73,564	69,729	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	89,956	88,333	92,271	105,514	530,229	576,285	657,519	762,307	744,167	654,112	545,607	521,650	415,956	416,414	398,337	456,699
PBS Baseline (constant 1999 dollars)	71,973	68,749	69,858	77,709	359,729	363,123	363,463	363,860	309,569	235,127	168,411	138,457	95,427	82,642	67,747	68,947
PBS EM Baseline (current year dollars)	89,956	88,333	92,271	105,514	530,229	576,285	657,519	762,307	744,167	654,112	545,607	521,650	415,956	416,414	398,337	456,699
PBS EM Baseline (constant 1999 dollars)	71,973	68,749	69,858	77,709	359,729	363,123	363,463	363,860	309,569	235,127	168,411	138,457	95,427	82,642	67,747	68,947

## Baseline Escalation Rates

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HQ ID: 0206

Project ID-OIM-102 / Idaho Chemical Processing Plant Non-Process Plant Operations

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	0.00%	5.80%	2.70%	2.90%	2.90%	3.00%	3.00%	2.40%	2.80%	2.80%
2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.80%	2.80%	0.60%	4.10%	2.20%	3.20%	2.80%	3.30%	2.90%	3.00%	2.90%	3.30%	1.80%

## Project Reconciliation

### Project Completion Date Changes:

Previously Projected End Date of Project: 9/1/2070

Current Projected End Date of Project: 9/30/2070

Explanation of Project Completion Date Difference (if applicable):

### Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	2,128,225	Actual 1997 Cost:	56,458	Actual 1998 Cost:	53,244
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	2,018,523	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			54,500
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	2,073,023				

### Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):	35,950	The managing, planning, and providing expertise to provide safe, secure, protection of SNM.
Cost Growth Associated with Scope Previously Reported (+):	1,327,564	Increase based upon Life Cycle Planning Package estimates for work scope needed for minimum safety.
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	3,436,537	

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## Project Reconciliation

Additional Amount to Reconcile (+): 4

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): 3,436,541

## Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Project Mission Complete	ID-OIM-102-2		9/30/2070								
Project Start			10/1/1996								

## Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Project Mission Complete	ID-OIM-102-2					Y					
Project Start				Y							PBS Baseline start

## Technology Needs

Site Need Code: ID-8.1.01

Site Need Name: Disposition of HEU at INTEC

Focus Area Work Package ID:

Focus Area Work Package:

Focus Area:

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate