

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Idaho**

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

Project **ID-OIM-107 / INEEL Electrical Distribution Upgrade**

Report Number: **GEN-01b**

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

HQ ID: **0211**

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## **General Project Information**

### **Project Description Narratives**

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

Definition of Scope: This project will upgrade portions of the electrical distribution system which supplies electrical power to numerous users at the INEEL including nationally recognized energy research programs, nuclear reactor test research programs, radioactive waste reduction/processing facilities, and associated safeguard and security facilities throughout the 900 square miles of the INEEL. The electrical distribution system has been managed carefully and has operated reliably, therefore, an excellent safety record has been maintained over the past years. However, safety codes deemed applicable to the INEEL have changed as have requirements and applicable codes enforced at the time of construction. This has resulted in numerous concerns regarding the present installation. It is necessary that the system changes be made to provide a high level of safety, reliability and cost effective maintainability.

The upgrade consists of 1) resolution and correction of code and standard deficiencies and 2) correction of age deterioration and obsolescence conditions. The extent of scope of this project will start at the secondary connections of the 138 kV step down transformers and go to the service disconnects at the utilization area. The scope will include but is not limited to such occurrences as conductor deterioration, conductor termination, electrical line clearance and sag, pole and pole hardware general condition, transformer condition, transformer hardware and grounding condition, general electrical grounding, transformer pad and electrical duct deterioration, substation interior and fencing requirements, minimum required protective relaying, fusing and circuit breaker protection, and any other unsafe, worn out, or insufficient condition found whether governed by a code requirement or not. Modifications to the Scoville Substation Control Building are included which will allow additional space to correct wiring and equipment deficiencies. These items have been identified as major items of scope; however, additional deficiencies identified during studies and design efforts will be prioritized and included in this project as funding allows.

Technical Approach: All DOE facilities are designed and constructed in accordance with applicable Public Laws, Executive Orders, OMB Circulars, Federal Property Management Regulations, and DOE Orders. The total estimated cost of the project includes the cost of measures necessary to assure compliance with Executive Order 12088, "Federal Compliance with Pollution Control Standards"; section 19 of the Occupational Safety and Health Act of 1970, the provisions of Executive Order 12196, and the related Safety and Health provisions for Federal Employees (CFR Title 29, Chapter XVII, Part 1960); and the Architectural Barriers Act, Public Law 90-480, and implementing instruction in 41 CFR 101-19.6. The project will be located in an area not subject to flooding determined in accordance with Executive Order 11988.

The Department of Energy Idaho Operations Office (DOE-ID) shall be responsible for implementation of the project, including selection of principal contractors and approval of specified procurement actions. DOE-ID program direction will be provided from the Office of Program Execution and Office of Infrastructure Management. DOE-ID project management shall be performed by Construction Management, Office of Program Execution and Office of Infrastructure Management. DOE-ID required administrative and other project support functions shall be furnished to the project by the DOE-ID functional organization.

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Lockheed Martin Idaho Technologies Company (LMITCO) shall be the operating contractor responsible for the development of the project's technical requirements, completion of the Architectural and Engineering Design, review and management of the engineering and construction activities, procurement of selected equipment, construction subcontracting, checkout of systems, and maintenance of the completed project. LMITCO project management and construction management shall be performed by the Site Services Organization as required to complete the project in a timely, safe, and cost effective manner. Administrative and other support functions shall be furnished to the project on a matrix basis by the LMITCO functional organizations.

Each fiscal year of funding will be used to complete the design and construction of a defined portion of the project work scope. This divides the project scope into three parts (phases), each scheduled to start design approximately one year apart. Each phase will be planned and designed to minimize power outage times and impacts to power users during the construction activities. Consideration will be given to minimizing future impacts during maintenance activities.

This project is reviewed via the validation process prior to approval of fiscal year funding .

### **Project Status in FY 2006:**

The INEEL Electrical Distribution Upgrade project will be completed and fully operational prior to FY 2006. Construction will be completed in FY 1999. The project is being accomplished in three phases. As each individual segment of work is completed, it will be tested and placed into service at that time.

### **Post-2006 Project Scope:**

N/A

### **Project End State**

The INEEL Electrical Distribution Upgrade project will provide a fully operational INEEL electrical distribution system upgraded to meet INEEL mission needs in compliance with applicable codes and standards. An upgraded Electrical distribution system will support the Idaho Settlement Agreement through the end of the EM mission.

No additional projects are required.

### **Cost Baseline Comments:**

The costs are based upon activity based costs and standard industry accepted estimating basis. Project Cost estimates are developed at each phase of the project per the INEEL Cost Estimating Guide. These phases are identified as (1) Conceptual Design, (2) Title 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 AFC), 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

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## **Project Description Narratives**

supports compliance with the FFACO, and the Settlement Agreement.

### **Safety & Health Hazards:**

The principle hazards associated with this project are standard industrial, high voltage, and construction hazards. The electrical distribution system at the INEEL is operated and maintained by the power management organization, and includes installations that are accessible by INEEL workers. A safety evaluation has been performed on this project. The evaluation requires that all work will be conducted in accordance with established regulations in effect at the INEEL, including the safety and health regulations for construction issued by the Secretary of Labor in Part 1926, Vol.37 of 29 CFR, No. 243 of the Federal Register, and the Occupational, Safety and Health Act. Hazards and injuries to INEEL workers will be minimized by following the requirements as outlined in the LMITCO Safety Manual, LMITCO Radiological Controls Manual, LMITCO Conduct of Operations Manual, and by using approved procedures for all operations. Training will be conducted as specified in the LMITCO Safety Manual.

This project is in construction of Phase II, with project construction completion scheduled for September 1999.

### **Safety & Health Work Performance:**

The resources necessary to accomplish the work safely are provided through the project team and support organizations. Safety is mitigated through incorporation of safety codes and standards in the project design, i.e. ANSI, NFPA, NESC, etc.. Representatives from S&H are involved during design reviews, and constructability reviews to assure that adequate controls are included in the construction package. Construction subcontractors are required to submit a project safety plan for review and approval prior to the start of construction. Construction contracts require daily plan of the day meetings and safety oversight. In addition, weekly industrial safety and industrial hygiene oversight and assessment are required. Upon completion of installations, testing is done, and the Power Management Organization verifies acceptability for re-energization. Preventative maintenance plans and operating procedures are reviewed and revised as necessary. Training is provided as required.

(The estimated cost of an ES&H FTE is \$99K.)

### **PBS Comments:**

N/A

### **Baseline Validation Narrative:**

The INEEL EM Integration Board (joint senior level DOE-ID and LMITCO Management) provided an independent validation of the Project Baseline Summary in respect to "compliance driven" activities, project planning, and cost estimates beginning in Fiscal Year (FY) 1997 through FY 2002. Scope, schedule, cost estimates, and basis of estimates (including resource requirements) were reviewed and validated by a team consisting of six members.

FY 1998 planning had an additional independent validation by a joint DOE-ID and LMITCO team review. Programmatic objectives, scope of work, milestones, baseline schedule, and baseline costs were 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.

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This project was validated by DOE-ID in April 1996 by the annual construction project validation process. This validation process evaluates the project for readiness to proceed into the Department's budget process, and examines the planning, development, and baseline of the project to ensure that the funds requested are commensurate with the project's anticipated scope and schedule.

## General PBS Information

**Project Validated?** Yes      **Date Validated:** 4/15/1996  
**Has Headquarters reviewed and approved project?** No  
**Date Project was Added:** 12/1/1997  
**Baseline Submission Date:**  
**FEDPLAN Project?** Yes

|                 |               |             |              |            |               |              |                   |              |
|-----------------|---------------|-------------|--------------|------------|---------------|--------------|-------------------|--------------|
| <b>Drivers:</b> | <b>CERCLA</b> | <b>RCRA</b> | <b>DNFSB</b> | <b>AEA</b> | <b>UMTRCA</b> | <b>State</b> | <b>DOE Orders</b> | <b>Other</b> |
|                 | N             | N           | N            | N          | N             | N            | Y                 | Y            |

## Project Identification Information

**DOE Project Manager:** Wayne B. Shigley  
**DOE Project Manager Phone Number:** 208-526-1986  
**DOE Project Manager Fax Number:** 208-526-9150  
**DOE Project Manager e-mail address:** shiglewb@inel.gov  
**Is this a High Visibility Project (Y/N):**

## Planning Section

### Baseline Costs (in thousands of dollars)

|                                     | 1997-2006<br>Total | 2007-2070<br>Total | 1997-2070<br>Total | 1997  | Actual<br>1997 | 1998  | Actual<br>1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|-------------------------------------|--------------------|--------------------|--------------------|-------|----------------|-------|----------------|------|------|------|------|------|------|------|------|
| PBS Baseline (current year dollars) | 9,967              | 0                  | 9,967              | 6,862 | 1,580          | 3,105 | 3,119          |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| PBS Baseline (constant 1999)        | 9,967              | 0                  | 9,967              | 6,862 | 1,580          | 3,105 | 3,119          |      | 0    | 0    | 0    | 0    | 0    | 0    | 0    |

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## Baseline Costs (in thousands of dollars)

|   | 1997-2006<br>Total | 2007-2070<br>Total | 1997-2070<br>Total | 1997  | Actual<br>1997 | 1998          | Actual<br>1998 | 1999          | 2000          | 2001          | 2002          | 2003          | 2004          | 2005          | 2006          |               |
|---|--------------------|--------------------|--------------------|-------|----------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| dollars)                                      |                    |                    |                    |       |                |               |                |               |               |               |               |               |               |               |               |               |
| PBS EM Baseline<br>(current year dollars)     | 9,967              | 0                  | 9,967              | 6,862 | 1,580          | 3,105         | 3,119          |               | 0             | 0             | 0             | 0             | 0             | 0             | 0             |               |
| PBS EM Baseline<br>(constant 1999<br>dollars) | 9,967              | 0                  | 9,967              | 6,862 | 1,580          | 3,105         | 3,119          |               | 0             | 0             | 0             | 0             | 0             | 0             | 0             |               |
|   | 2007               | 2008               | 2009               | 2010  | 2011-<br>2015  | 2016-<br>2020 | 2021-<br>2025  | 2026-<br>2030 | 2031-<br>2035 | 2036-<br>2040 | 2041-<br>2045 | 2046-<br>2050 | 2051-<br>2055 | 2056-<br>2060 | 2061-<br>2065 | 2066-<br>2070 |
| PBS Baseline (current<br>year dollars)        | 0                  | 0                  | 0                  | 0     | 0              | 0             | 0              | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             |
| PBS Baseline<br>(constant 1999<br>dollars)    | 0                  | 0                  | 0                  | 0     | 0              | 0             | 0              | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             |
| PBS EM Baseline<br>(current year dollars)     | 0                  | 0                  | 0                  | 0     | 0              | 0             | 0              | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             |
| PBS EM Baseline<br>(constant 1999<br>dollars) | 0                  | 0                  | 0                  | 0     | 0              | 0             | 0              | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             |

## Baseline Escalation Rates

| 1997  | 1998      | 1999      | 2000      | 2001      | 2002      | 2003      | 2004      | 2005      | 2006      | 2007      | 2008      | 2009      |
|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0.00% | 0.00%     |           | 2.70%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     |
| 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 |
| 2.10% | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     | 2.10%     |

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## Project Reconciliation

### Project Completion Date Changes:

Previously Projected End Date of Project: 9/1/1999  
 Current Projected End Date of Project: 8/31/2000  
 Explanation of Project Completion Date Difference (if applicable):

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

|   |        |  |       |                   |       |
|---|--------|--|-------|-------------------|-------|
| Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):            | 10,152 | Actual 1997 Cost:  | 1,580 | Actual 1998 Cost: | 3,119 |
| Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars): | 5,453  | Inflation Adjustment (2.7% to convert 1998 to 1999 dollars): |       |                   | 147   |
| Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):            | 5,600  |  |       |                   |       |

### Project Cost Changes

Cost Adjustments    Reconciliation Narratives

|   |        |   |
|---|--------|---|
| Cost Change Due to Scope Deletions (-):                       |        |   |
| Cost Reductions Due to Efficiencies (-):                      |        |   |
| Cost Associated with New Scope (+):                           |        |   |
| Cost Growth Associated with Scope Previously Reported (+):    |        |   |
| Cost Reductions Due to Science & Technology Efficiencies (-): |        |   |
| Subtotal:   | 5,600  |   |
| Additional Amount to Reconcile (+):                           | -5,600 | This is a line item project. The TPC has not changed. |

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): **0**

### 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 (Complete Construction) | ID-OIM-07-05         |               | 8/31/2000     |            | 8/31/2000     |             |    |       |               |              |           |

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## Milestones

| Milestone/Activity | Field Milestone Code | Original Date | Baseline Date | Legal Date | Forecast Date | Actual Date | EA | DNFSB | Mgmt. Commit. | Key Decision | Intersite |
|--------------------|----------------------|---------------|---------------|------------|---------------|-------------|----|-------|---------------|--------------|-----------|
| Phase III)         |                      |               |               |            |               |             |    |       |               |              |           |
| 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<br>(Complete Construction Phase III) | ID-OIM-07-05         |                   |                       |               |             | Y                |           |                 |                |           |                       |
| Project Start   |                      |                   |                       | Y             |             |                  |           |                 |                |           | PBS Baseline Start    |