

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT

OVERVIEW

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

Attaining the science and technology goals of the Department will require intensive use of the major multiprogram energy laboratories reporting to Energy Research. The major laboratories covered by this program are: Argonne National Laboratory (ANL), Brookhaven National Laboratory (BNL), Lawrence Berkeley Laboratory (LBL), Oak Ridge National Laboratory (ORNL), Pacific Northwest Laboratory (PNL) and Oak Ridge Institute for Science and Education (ORISE). All facilities at these laboratories are government-owned contractor-operated (GOCO) and have an estimated replacement cost of over \$10 billion dollars. The average age of laboratory facilities is 30 years. This program carries out the appropriate federal role of maintaining the taxpayers' investment in the major general purpose facilities at these laboratories.

The strategy of the Multiprogram Energy Laboratories- Facilities Support (MEL-FS) program is to select and support projects necessary to: (1) maintain operations of the laboratories in a safe, cost-effective, environmentally responsible, and productive manner; (2) reduce the backlog of facility deficiencies; (3) address Environment, Safety and Health (ES&H) remediation needs; (4) remove inactive general purpose facilities that are surplus to current and planned operations and costly to maintain; and (5) clean up contaminated portions of general purpose facilities and maintain and prepare for transfer to the Office of Environmental Management (EM) appropriate contaminated general purpose facilities (GPF) for decontamination and decommissioning (D&D).

The MEL-FS program is composed of three subprograms. The general purpose facilities subprogram provides line item construction support for the rehabilitation and replacement of the general purpose facilities at the laboratories. General purpose facilities include general use, service and support facilities such as administrative space, general office/laboratory space, utility systems, sanitary sewers, roads, etc. Operating funds are provided to support program planning, management, and maintenance activities related to this effort. These include implementing the Condition Assessment Survey and Capital Assets Management Process (CAMP), site development planning and preparation of reports required by Section 2203(d) of the Energy Policy Act of 1992. Line item construction projects are those with a total estimated cost (TEC) of \$2 million or higher. The GPF subprogram also includes General Plant Projects (GPP) and General Purpose Equipment (GPE) in support of landlord responsibilities at ORNL and ORISE. GPP funds are essential in providing the laboratories and the Department with flexibility to meet emergency needs and rapidly emerging small construction needs, i.e., those with a TEC of \$2 million or less. GPE funds provide all the non-programmatic equipment at a laboratory such as communication, general-use computers, vehicles, etc.

The Environment, Safety, and Health (ES&H) Support subprogram provides support necessary to correct site-wide ES&H deficiencies identified and prioritized via the DOE ES&H Management Plan. Correcting these deficiencies that have accumulated over many years represents a significant burden to current program budgets at the laboratories. This subprogram helps relieve that burden while providing effective Headquarters oversight of ES&H activities that are not related to a single program and serve all programs at the laboratory. Operating and capital equipment funds support the highest priority compliance-related corrective actions. These include upgrades to fire protection programs; radiological assistance programs; safety and health training programs; pollution prevention through source reductions; recycling projects; education, design, and process initiatives; implementation of chemical tracking programs; effective effluent monitoring; air monitoring activities; emergency response equipment improvements; and underground storage tank compliance. The subprogram also funds line item construction projects to correct ES&H deficiencies; and initiatives to address the highest priority cross-laboratory ES&H issues such as identifying and transferring "noteworthy practices."

The Inactive and Surplus Facilities subprogram provides operating funds to better manage the large number of retired, inactive and contaminated general purpose facilities at the laboratories covered by the program. Most of these laboratories date back to the 1940's and have many facilities that have outlived their usefulness. These facilities cannot be economically maintained or renovated to house current or planned activities and must be retired. In addition, portions of some operating facilities may be inactive due to contamination and must be cleaned up. Those contaminated facilities that qualify for clean-up by EM will be maintained and prepared for transfer in accordance with established criteria. The backlog of activities at the laboratories to be funded by this program is estimated to be \$250 million. The Inactive and Surplus

Overview - MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT (Cont'd)

Facilities subprogram is designed to modify and/or dispose of these facilities in a comprehensive and systematic manner in order to reduce surveillance and maintenance costs, eliminate ES&H liabilities, and to provide for better utilization of site space and land.

The benefits to be gained from supporting the MEL-FS program are: improved laboratory safety, security and environmental compliance levels; reduced health and safety risks; decreased operating costs and improved productivity; and continuity of operations. The program also provides continuity and a broad basis for establishing overall laboratory general purpose infrastructure needs and priorities. The program directly supports the specific science and technology objective to "operate and maintain a cost-effective national laboratory infrastructure." In accomplishing this objective, the program enables the accomplishment of many of the other Departmental strategic planning goals and objectives.

Performance measures used for the MEL-FS program activities include: the number of new construction starts; the square footage of new or rehabilitated buildings; the percentage of high priority ES&H requirements met; the number of inactive/surplus facilities disposed of; the backlog of requirements; and the rate of replacement of equipment. The measures are discussed in the various subprograms as applicable.

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LEAD TABLE

Multiprogram Energy Laboratories - Facilities Support

Activity	FY 1994 Adjusted	FY 1995 Appropriation	FY 1995 Adjustment	FY 1995 Adjusted	FY 1996 Request
Operating Expenses					
General Purpose Facilities	\$668	\$595	\$0	\$595	\$595
Environment, Safety and Health Support.....	595	6,007	0	6,007	8,157
Inactive and Surplus Facilities.....	478	500	0	500	500
Subtotal Operating Expenses.....	<u>1,741</u>	<u>7,102</u>	<u>0</u>	<u>7,102</u>	<u>9,252</u>
Capital Equipment					
General Purpose Facilities	5,821	5,787	0	5,787	5,787
Environment, Safety and Health Support.....	485	500	0	500	500
Subtotal Capital Equipment.....	<u>6,306</u>	<u>6,287</u>	<u>0</u>	<u>6,287</u>	<u>6,287</u>
Construction					
General Purpose Facilities	26,429	23,572	-1,765	21,807	21,228
Environment, Safety and Health Support.....	5,598	7,838	0	7,838	14,249
Subtotal Construction.....	<u>32,027</u>	<u>31,410</u>	<u>-1,765</u>	<u>29,645</u>	<u>35,477</u>
Subtotal Program.....	<u>\$40,074</u>	<u>\$44,799</u>	<u>-\$1,765</u>	<u>\$43,034</u>	<u>\$51,016</u>
Adjustment.....	-747 a/	-1,408 a/	----	-1,408 a/	----
TOTAL PROGRAM.....	<u><u>\$39,327</u></u> b/	<u><u>\$43,391</u></u>	<u><u>-\$1,765</u></u>	<u><u>\$41,626</u></u>	<u><u>\$51,016</u></u>
Summary					
Operating Expenses.....	\$1,716	\$7,102	\$0	\$7,102	\$9,252
Capital Equipment	6,306	6,287	0	6,287	6,287
Construction	31,305	30,002	-1,765	28,237	35,477
TOTAL PROGRAM.....	<u><u>\$39,327</u></u>	<u><u>\$43,391</u></u>	<u><u>-\$1,765</u></u>	<u><u>\$41,626</u></u>	<u><u>\$51,016</u></u>

Authorization: P.L. 95-91, "Department of Energy Organization Act" (1977), Section 647

a/ Share of Energy Supply, Research and Development general reduction for use of prior year balances assigned to this program. The total general reduction is applied at the appropriation level.

b/ Excludes \$26,000 which was transferred to the SBIR program and \$1,000 which was transferred to the STTR program.

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SUMMARY OF CHANGES

Multiprogram Energy Laboratories - Facilities Support

FY 1995 Appropriation.....	\$ 44,799
- Adjustment.....	<u>- 1,765</u>
FY 1995 Adjusted.....	\$ 43,034
- Supports continuation/completion of 5 ongoing GPF projects with one project (ORNL Roofing) slowed. No new projects initiated.....	- 579
- Supports continuation/completion of 6 ongoing ES&H projects and initiation of 3 new starts.....	+ 6,411
- Supports increased operating funding to correct ES&H deficiencies.....	<u>+ 2,150</u>
FY 1996 Congressional Budget Request.....	<u>\$ 51,016</u>

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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

The General Purpose Facility (GPF) operating funds support the planning, management, and maintenance activities related to this subprogram. Funding supports development and implementation of site facilities planning systems at the laboratories such as the DOE Condition Assessment Survey, the Capital Assets Management Process, Site Development Planning and Real Property Inventory System, etc. Funds are also used to support efforts to integrate requirements across laboratories to develop comprehensive identification of needs and plans such as those required by EPACT. Section 2203(d) of the Act requires annual submission of a "plan for conducting future facility maintenance, making repairs, modifications and new additions and constructing new facilities at multiprogram energy laboratories." The operating funds also support site-wide maintenance needs related to general purpose facilities.

The benefits to be gained from the general purpose facilities operating funds are better identification and prioritization of infrastructure requirements.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Operating Expenses.....	\$ 668	\$ 595	\$ 595	\$ 0
Total, General Purpose Facilities	\$ 668	\$ 595	\$ 595	\$ 0

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

Argonne National Lab (East)	\$ 90	\$ 90	\$ 50	\$ -40
Brookhaven National Lab	90	90	50	-40
Lawrence Berkeley Lab	89	90	50	-40
Oak Ridge Institute for Science & Education	35	35	20	-15
Oak Ridge National Lab	114	90	50	-40
Pacific Northwest Lab	97	50	50	0
All Other	153	150	325	175
Total, General Purpose Facilities	\$ 668	\$ 595	\$ 595	\$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Facilities			
Operating Expenses	<p>Provided support to laboratories for infrastructure planning and management activities, such as support for developing and implementing the DOE Condition Assessment Survey (CAS) and Capital Assets Management Process (CAMP) including preparation of Laboratory Integrated Facilities Plans. (\$479)</p> <p>EPACT:</p> <p>EPACT Section 2203(b) "Supporting Research and Technical Analysis":</p> <p>Provided architectural and engineering contractor support to aid in the preparation of a facility policy and plan for the multiprogram energy laboratories as required by Section 2203(d) of the Energy Policy Act of 1992. (\$189)</p> <p>Funding in the amount of \$10,000 and \$1,000 has been transferred to the SBIR program and the STTR program, respectively.</p>	<p>Provides support to laboratories for infrastructure planning and management activities, such as support for developing and implementing the DOE Condition Assessment Survey (CAS) and Capital Assets Management Process (CAMP) including preparation of Laboratory Integrated Facilities Plans. (\$400)</p> <p>EPACT:</p> <p>EPACT Section 2203(b) "Supporting Research and Technical Analysis":</p> <p>Provides architectural and engineering contractor support to aid in the preparation of a facility policy and plan for the multiprogram energy laboratories as required by Section 2203(d) of the Energy Policy Act of 1992. (\$182)</p> <p>Funding in the amount of \$12,000 and \$1,000 has been budgeted for the SBIR program and the STTR program, respectively.</p>	<p>Provides support to laboratories for infrastructure planning and facilities management activities including support for developing and implementing the DOE Facilities Information Management Systems (FIMS), DOE Condition Assessment Survey (CAS), Capital Assets Management Process (CAMP), and the DOE Site Development Planning process, as well as site-wide maintenance needs related to general purpose facilities. (\$532)</p> <p>EPACT:</p> <p>EPACT Section 2203(b) "Supporting Research and Technical Analysis":</p> <p>Provides contractor support to aid in the annual update of facilities plan for the multiprogram energy laboratories required by Section 2203(d) of the Energy Policy Act of 1992. (\$50)</p> <p>Funding in the amount of \$12,000 and \$1,000 has been budgeted for the SBIR program and the STTR program, respectively.</p>
	\$ 668	\$ 595	\$ 595
General Purpose Facilities	\$ 668	\$ 595	\$ 595

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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Environment, Safety & Health Support

The Department has undertaken a thorough review of the environment, safety and health (ES&H) compliance at its laboratories and has identified deficiencies in the annual DOE ES&H Management Plan. Deficiencies have been identified in the environmental area, including noncompliance with laws and regulations e.g., air, water, hazardous materials. Deficiencies have been identified in occupational safety and health, fire protection, emergency preparedness, safety and hazards analyses, conduct of operations, configuration management, work practices and radiation protection. The Environment, Safety and Health (ES&H) Support subprogram provides the support required to correct the highest priority general ES&H deficiencies identified in the ES&H Management Plan.

II. A. Summary Table: Environment, Safety & Health Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Operating Expenses.....	\$ 595	\$ 6,007	\$ 8,157	\$ 2,150
Total, Environment, Safety & Health Support	\$ 595	\$ 6,007	\$ 8,157	\$ 2,150

II. B. Laboratory and Facility Funding Table: Environment, Safety & Health Support

Argonne National Lab (East)	\$ 73	\$ 970	\$ 1,000	\$ 30
Brookhaven National Lab	42	942	1,000	58
Lawrence Berkeley Lab	165	916	1,000	84
Oak Ridge Institute for Science & Education	30	0	0	0
Oak Ridge National Lab	285	1,067	2,000	133
Pacific Northwest Lab	0	500	500	0
All Other	0	812	2,657	1,845
Total, Environment, Safety & Health Support	\$ 595	\$ 6,007	\$ 8,157	\$ 2,150

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety & Health Support			
Operating Expenses	<p>Supported the most critical and highest priority corrective actions and compliance issues identified in the ES&H Management Planning process including the continuation of safety program development; safety training; hazard identification and analysis; health and safety manual improvements and restructuring (LBL); hazardous materials training for compliance with RCRA, DOT, OSHA, supplies (LBL); Clean Air Act Permit analysis work at ANL; installation of radiation signs and labels at BNL; underground storage tank removals at ORISE and ORNL; machine guarding at ORNL; and repair of a leak in the reactor pool at the retired Oak Ridge Reactor. (\$571)</p> <p>Pollution prevention projects at ORNL. (\$24)</p> <p>No activity.</p> <p>Funding in the amount of \$9,000 has been transferred to the SBIR program.</p>	<p>Increases support for the most critical and highest priority corrective actions and compliance issues identified in the ES&H Management Planning process. Examples are: pollution prevention activities through source reduction including chlorofluorocarbon replacement; operating permit development including source identification; upgrades in environmental monitoring practices and procedures; and enhanced hazard assessment and risk prioritization abilities. (\$5,511)</p> <p>Proactively addresses the highest priority cross-laboratory ES&H issues such as identifying and transferring "noteworthy practices" and promoting needed process improvements in high priority areas such as pollution prevention. (\$300)</p> <p>Develops site-wide ES&H performance evaluation process. (\$70)</p> <p>Funding in the amount of \$120,000 and \$6,000 has been budgeted for the SBIR program and the STTR program, respectively.</p>	<p>Increases support for the highest priority corrective actions and compliance issues identified in the ES&H management planning process. Examples are: pollution prevention activities through source reduction and process identification; electrical safety upgrades; fire protection upgrades; UST compliance; industrial hygiene and safety and health upgrades; and facility configuration upgrades. (\$7,182)</p> <p>Proactively addresses the highest priority cross-laboratory ES&H issues such as identifying and transferring "noteworthy practices" and promoting needed process improvements in high priority areas such as pollution prevention. (\$800)</p> <p>No activity.</p> <p>Funding in the amount of \$163,000 and \$12,000 has been budgeted for the SBIR program and the STTR program, respectively.</p>
	\$ 595	\$ 6,007	\$ 8,157
Environment, Safety & Health Support	\$ 595	\$ 6,007	\$ 8,157

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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Inactive and Surplus Facilities

It is the policy of the Department to maintain only those facilities necessary to effectively and economically perform assigned missions and tasks. As research programs' technologies change over the course of time, some existing general purpose facilities (or portions of them) have become permanently inactive. These facilities must be cleaned up if they are to be reused, or removed if they are determined to be surplus. The backlog of activities to be funded by this program is estimated to be \$250 million.

Three categories of facilities are covered in the subprogram:

- removal of inactive/retired facilities that cannot be economically maintained or renovated to house current or planned activities.
- areas of operating facilities that are inactive due to discontinued activities and must be cleaned up for re-use due to operational and liability concerns.
- preparation for transfer of contaminated facilities that qualify for clean-up by EM.

II. A. Summary Table: Inactive and Surplus Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Operating Expenses.....t.....	\$ 478	\$ 500	\$ 500	\$ 0
Total, Inactive and Surplus Facilities	\$ 478	\$ 500	\$ 500	\$ 0

II. B. Laboratory and Facility Funding Table: Inactive and Surplus Facilities

Argonne National Lab (East) ...t.....t...	\$ 98	\$ 100	\$ 75	\$ -25
Brookhaven National Lab	139	75	75	0
Lawrence Berkeley Lab	0	0	75	75
Oak Ridge Institute for Science & Education	79	75	25	-50
Oak Ridge National Lab	155	160	200	40
Pacific Northwest Lab t.....t.....t.....	7	75	40	-35
All Other	0	15	10	-5
Total, Inactive and Surplus Facilities	\$ 478	\$ 500	\$ 500	\$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Inactive and Surplus Facilities			
Operating Expenses	<p>Provided for demolition and removal of 10 buildings at various sites, including Bldg. 529, 526B, and 195 at BNL; Bldg. 25 at ANL; Bldg. 9982 at ORNL; and various buildings at ORISE. Also, allowed characterization of retention tanks in Bldg. 310 at ANL prior to transfer to EM. (\$478)</p> <p>Funding in the amount of \$7,000 has been transferred to the SBIR program.</p>	<p>Continues support to determine clean-up/demolition/transfer requirements for high priority facilities; preparatory work to transfer those contaminated facilities that EM will accept; and removal and/or clean-up of selected inactive surplus facilities that cannot be transferred to EM. (\$490)</p> <p>Funding in the amount of \$10,000 has been budgeted for the SBIR program.</p>	<p>Continues support to determine clean-up/demolition/transfer requirements for high priority facilities; preparatory work to transfer those contaminated facilities that EM will accept; and removal and/or clean-up of selected inactive surplus facilities that cannot be transferred to EM. (\$490)</p> <p>Funding in the amount of \$10,000 has been budgeted for the SBIR program.</p>
	\$ 478	\$ 500	\$ 500
Inactive and Surplus Facilities	\$ 478	\$ 500	\$ 500

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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

This subprogram provides funding for general purpose equipment responsibilities at ORNL and ORISE. General purpose equipment funding provides for non-programmatic equipment at a laboratory, such as communications, general-use computers, vehicles, etc. The investment in general purpose equipment at ORNL and ORISE supported by GPE funding is over \$100 million.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Capital Equipment.....	\$ 5,821	\$ 5,787	\$ 5,787	\$ 0
Total, General Purpose Facilities	\$ 5,821	\$ 5,787	\$ 5,787	\$ 0

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

Oak Ridge National Lab	\$ 5,675	\$ 5,318	\$ 5,637	\$ 319
Oak Ridge Institute for Science & Education	146	469	150	-319
Total, General Purpose Facilities	\$ 5,821	\$ 5,787	\$ 5,787	\$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Facilities			
Capital Equipment	Provided GPE funding for ORNL and ORISE including purchase of fleet replacement, additional industrial safety equipment, and health monitoring equipment. It also included replacement of ozone depleting heating, ventilation and air conditioning equipment. (\$5,821)	Provided GPE funding for ORNL and ORISE including purchase of fleet replacement, additional industrial safety equipment, and health monitoring equipment. It also included replacement of ozone depleting heating, ventilation and air conditioning equipment and replacement of underground storage tanks. (\$5,787)	Provides GPE funding for ORNL and ORISE including purchase of fleet replacement, replacement of ozone depleting heating, ventilation and air conditioning equipment and replacement of underground storage tanks. (\$5,787)
	\$ 5,821	\$ 5,787	\$ 5,787
General Purpose Facilities	\$ 5,821	\$ 5,787	\$ 5,787

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MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Environment, Safety & Health Support

The Department has undertaken a thorough review of environment, safety and health compliance at its laboratories and has identified many deficiencies. These deficiencies are identified in the DOE ES&H Management Plan prepared annually. Deficiencies have been identified in the environmental area in noncompliance with laws and regulations e.g., air, water, hazardous materials. Deficiencies have been identified in occupational safety and health, fire protection, emergency preparedness, safety and hazards analyses, conduct of operations, configuration management, work practices and radiation protection. ES&H equipment funding supports the replacement or upgrade of ES&H equipment needed to correct these deficiencies.

II. A. Summary Table: Environment, Safety & Health Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Capital Equipment.....	\$ 485	\$ 500	\$ 500	\$ 0
Total, Environment, Safety & Health Support	\$ 485	\$ 500	\$ 500	\$ 0

II. B. Laboratory and Facility Funding Table: Environment, Safety & Health Support

Argonne National Lab (East)	\$ 51	\$ 75	\$ 75	\$ 0
Brookhaven National Lab	73	78	75	-3
Lawrence Berkeley Lab	97	75	100	25
Oak Ridge Institute for Science & Education	0	35	25	-10
Oak Ridge National Lab	179	150	150	0
Pacific Northwest Lab	85	73	75	2
All Other	0	14	0	-14
Total, Environment, Safety & Health Support	\$ 485	\$ 500	\$ 500	\$ 0

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety & Health Support			
Capital Equipment	<p>Provided funding for required ES&H related equipment including: pollution prevention through source reduction activities, e.g., degreaser equipment (ANL); chlorofluorocarbon replacement (LBL); work stations for computer based safety and health and environmental training (BNL); hand and foot monitors, body counters and training for the Occupational Medical Program (ORNL); and air monitoring equipment purchase and installation to comply with environmental, safety and health regulations (PNL).</p>	<p>Provides support for the purchase of equipment for underground storage tank compliance, chlorofluorocarbon replacement equipment, radio equipment, alpha/beta/gamma counters, and safety and health needs.</p>	<p>Continue to provide for replacement, upgrade and improvement in health physics equipment and environmental monitoring equipment for safety and health needs as identified in the ES&H Management Plan.</p>
	\$ 485	\$ 500	\$ 500
Environment, Safety & Health Support	\$ 485	\$ 500	\$ 500

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KEY ACTIVITY SUMMARY

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: General Purpose Facilities

The subprogram funds line item construction projects (i.e., projects with a total estimated cost of \$2 million or above) that correct deficiencies in general purpose facilities at multiprogram energy laboratories. General purpose facilities are general use, service and support facilities such as administrative space, cafeterias, general office/laboratory space, utility systems, sanitary sewers, roads, etc. There are over 1,000 buildings at the six laboratories covered by this program. These buildings have over 14,000,000 gross square feet of space. Less than half of the space is considered fully adequate, while the remainder needs rehabilitation or replacement/demolition. The large percentage of inadequate space reflects the age of the facilities (30 years or older), changing research needs that require more office space and light laboratory space, stricter environmental, safety and health requirements and obsolete systems.

Capital investment requirements are identified in laboratory Institutional Plans and Laboratory Integrated Facilities Plans which address needs over a five to fifteen year planning horizon based on expected programmatic support. The MEL-FS program has prepared a 5-year program plan that identifies projects totalling over \$700 million for the five year period. Sixty seven percent of this amount is to rehab or replace buildings; 19% is for utility projects; and 14% for environment, safety and health projects.

Projects supported by the General Purpose Facilities subprogram are ranked using the Capital Assets Management Process Prioritization Model.

This program also provides General Plant Project (GPP) funding for ORNL and ORISE. General Plant Projects are small construction projects (i.e., those with a total estimated cost of less than \$2 million). GPP funding provides flexibility to meet new or unforeseen small (i.e., those below \$2 million) construction needs.

II. A. Summary Table: General Purpose Facilities

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Construction.....	\$ 26,429	\$ 21,807	\$ 21,228	\$ a -579
Total, General Purpose Facilities	\$ 26,429	\$ 21,807	\$ 21,228	\$ -579

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

Argonne National Lab (East)a.a.....	4,004	3,350	2,500	-850
Brookhaven National Lab	2,842	4,942	3,710	-1,232
Lawrence Berkeley Laba.a.....	3,162	1,000	0	-1,000
Oak Ridge Institute for Science & Educationa	970	1,000	1,000	0
Oak Ridge National Lab .a.....	12,021	6,197	9,778	3,581
Pacific Northwest Lab	1,940	2,540	4,240	1,700

II. B. Laboratory and Facility Funding Table: General Purpose Facilities

	FY 1994 Adjusted	FY 1995 Estimate	FY 1996 Request	\$ Change
All Other	1,490	2,778	0	-2,778
Total, General Purpose Facilities:	\$ 26,429	\$ 21,807	\$ 21,228	\$ -579

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
General Purpose Facilities			
Construction	Supported completion/continuation of 7 ongoing projects consistent with planned schedules and initiation of 2 new projects including utility and building rehab/upgrade projects. (\$17,697)	Supports completion/continuation of 6 ongoing projects consistent with planned schedules and initiation of 4 new projects including 1 electrical safety project and 3 building rehab/upgrade projects. The square footage of new replacement lab and office space is 17,500 square feet. (\$13,357)	Supports completion/continuation of 5 ongoing projects consistent with planned schedules. One ongoing project (ORNL Roofing) slowed delaying completion by one year. No new projects initiated. (\$12,488)
	Supported GPP funding at ORNL and ORISE. (\$8,732)	Supports GPP funding at ORNL (\$7,450) and ORISE. (\$1,000)	Supports GPP funding at ORNL (\$7,740) and ORISE. (\$1,000)
	\$ 26,429	\$ 21,807	\$ 21,228
General Purpose Facilities	\$ 26,429	\$ 21,807	\$ 21,228

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MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT

I. Preface: Environment, Safety & Health Support

The Department has undertaken a thorough review of environment, safety and health (ES&H) compliance at its laboratories and has identified many facility deficiencies. These deficiencies are identified in the DOE ES&H Management Plan prepared annually. The ES&H Support subprogram provides the support required to correct these ES&H deficiencies by funding line item construction projects (i.e., projects with a total estimated cost of \$2 million or above).

Facilities deficiencies are due to the age, obsolescence, and changing requirements including stricter environment, safety and health requirements. There are over 1,000 buildings at the six laboratories covered by this program in addition to utility systems, roads and other support structures. Thirty-six percent of the building space and a like amount of the utility systems, roads and other support structures are 40 years old or older. Only 44 percent of the building space is considered fully adequate.

Candidate projects are first ranked using the Capital Assets Management Process Prioritization Model and those that have environment, safety and health as the principal driver are funded by this subprogram while the remainder are supported by the General Purpose Facilities subprogram. Projects under this subprogram are then prioritized using the Risk Prioritization Model from the DOE ES&H Management Plan process.

II. A. Summary Table: Environment, Safety & Health Support

Program Activity	FY 1994 Adjusted	FY 1995 Adjusted	FY 1996 Request	\$ Change
Construction.....	\$ 5,598	\$ 7,838	\$ 14,249	\$ 6,411
Total, Environment, Safety & Health Support	\$ 5,598	\$ 7,838	\$ 14,249	\$ - 6,411

II. B. Laboratory and Facility Funding Table: Environment, Safety & Health Support

Argonne National Lab (East)	\$ 825	\$ 1,710	\$ 4,611	\$ 2,901
Brookhaven National Lab	1,869	1,660	4,820	3,160
Lawrence Berkeley Lab	1,940	3,962	4,818	856
Pacific Northwest Lab	964	506	0	-506
Total, Environment, Safety & Health Support	\$ 5,598	\$ 7,838	\$ 14,249	\$ 6,411

III. Activity Descriptions: (New BA in thousands of dollars)

Program Activity	FY 1994	FY 1995	FY 1996
Environment, Safety & Health Support			
Construction	Supported completion/continuation of the 5 ongoing projects consistent with planned schedules.	Supports completion/continuation of the 5 ongoing projects consistent with planned schedules and initiation of 3 new projects - a fire safety project, a sanitary system upgrade and a loss prevention upgrade.	Supports completion/continuation of the 6 ongoing projects consistent with planned schedules and initiation of 3 new projects including rehab of hot cells and support systems at BNL, building electrical service upgrade at ANL-E and sanitary sewer restoration at LBL.
	\$ 5,598	\$ 7,838	\$ 14,249
Environment, Safety & Health Support	\$ 5,598	\$ 7,838	\$ 14,249

ARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST a
 (Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

Office of Energy Research
 ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

IV. A. Construction Funded Project Summary

Project No.	Project Title	TEC	Previous Appropriated	FY 1994 Appropriated	FY 1995 Appropriated	FY 1996 Request	Unapprop. Balance
Multiprogram Energy Laboratories - General Purpose Facilities							
GPE-801	General Plant Projects, ORNL	---	---	\$8,732	\$8,450 a/	\$8,740	---
195-E-310	Multiprogram Laboratory Rehab., I (PNL)	6,100	0	0	400	2,740	2,960
195-E-303	Electrical Safety Rehab. (PNL)	6,800	0	0	240	1,500	5,060
95-E-302	Applied Science Center, Phase I (BNL)	3,870	0	0	600	3,270	0
95-E-301	Central Heating Plant Rehab, Phase I (ANL)	9,500	0	0	1,307	2,500	5,693
194-E-363	Roofing Improvements (ORNL)	16,000	0	3,836	1,525 b/	2,038	10,629
194-E-351	Fuel Storage and Transfer Facility (BNL)	3,600	0	681	2,479	440	0
193-E-325	Potable Water System Upgrade I (BNL)	5,320	1,500	1,957	1,863	0	0
193-E-313	Electrical Systems Upgrade II (ANL)	4,839	1,000	1,796	2,043	0	0
192-E-329	Electrical Substation Upgrade (ANL)	4,908	2,900	2,008	0	0	0
192-E-324	Safety Compliance Mods, 326 Building (PNL)	8,540	4,700	1,940	1,900a	0	0
192-E-323	Upgrade Steam Distribution System, West End (ORNL)	8,701	6,307	2,394	0	0	0
192-E-322	East Canyon Elec. Safety Project (LBL)	3,754	1,332	1,422	1,000	0	0
188-R-806	Environmental Health & Safety Project (LBL)	13,113	11,472	1,641	0	0	0
Subtotala	Line Item Projects	\$XXX,XXX	\$XXX,XXX	\$16,975	\$13,357	\$12,488	\$XXX,XXX
Subtotal Multiprogram Energy Laboratories- General Purpose Facilities Construction							
		---	---	\$25,707	\$21,807	\$21,228	---

<u>Project No.</u>	<u>Project Title</u>	<u>TEC</u>	<u>Previous Appropriated</u>	<u>FY 1994 Appropriated</u>	<u>FY 1995 Appropriated</u>	<u>FY 1996 Request</u>	<u>Unapprop. Balance</u>
Multiprogram Energy Laboratories - Environment, Safety and Health Support							
96-E-332	Building 801 Renovations (BNL)	6,370	0	0	0	800	5,570
96-E-331	Sanitary Sewer Restoration, Phase I (LBL)	2,400	0	0	0	2,400	0
96-E-330	Building Electrical Service Upgrade, Phase I (ANL)	7,350	0	0	0	1,200	6,150
95-E-309	Loss Prevention Upgrades (BNL)	6,970	0	0	600	2,480	3,890
95-E-308	Sanitary System Mods (BNL)	3,532	0	0	960	1,540	1,032
95-E-307	Fire Safety Improvements, III (ANL)	2,880	0	0	210	1,000	1,670
193-E-324	Hazardous Materials Safeguards I (LBL)	4,720	500	970	1,962	1,288	0
193-E-323	Fire and Safety System Upgrade I (LBL)	4,600	500	970	2,000	1,130	0
193-E-320	Fire Safety Improvements II (ANL)	5,350	390	825	1,500	2,411	224
193-E-317	Life Safety Code Compliance (PNL)	1,970	500	964	506	0	0
193-E-315	Roof Replacement, I (BNL)	2,873	904	1,869	100	0	0
Subtotal	Line Item Projects	\$XXX,XXX	\$XXX,XXX	\$5,598	\$7,838	\$14,249	\$XXX,XXX
Subtotal, Multiprogram Energy Laboratories - Environment, Safety and Health Support Construction		\$XXX,XXX	\$XXX,XXX	\$5,598	\$7,838	\$14,249	\$XXX,XXX
Subtotal Multiprogram Energy Laboratories - Facilities Support Construction		---	---	\$31,305	\$29,645	\$35,477	---
Adjustment for Use of Prior Year Balances		---	---	0	-1,408	0	---
Total Multiprogram Energy Laboratories - Facilities Support Construction		---	---	\$31,305	\$28,237	\$35,477	---

a/ Does not exclude general reduction for use of prior year balance of \$80,000.

b/ Does not exclude general reduction for use of prior year balance of \$1,328,000.

IV. B. Action Funded Project Descriptive Summary

1. Project Title and Location: Project GPE-801 General Plant Projects
Various Locations

TEC: \$ 8,740
TPC: \$ 8,740

Start Date: 3rd Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1997

2. Financial Schedule:

Fiscal Year	Obligations	Costs			
		FY 1994	FY 1995	FY 1996	After FY 1996
FY 1994 Projects	\$ 7,242 ^{a/}	\$ 830	\$ 4,412	\$ 2,000	\$ 0
FY 1995 Projects	8,370	0	6,370	2,000	0
FY 1996 Projects	8,740	0	0	6,740	2,000

3. Narrative: This project is required to support landlord responsibilities at Oak Ridge National Laboratory (ORNL) and Oak Ridge Institute for Science and Education (ORISE). The estimate is for minor new construction and other capital alterations to land, buildings and utilities systems. The estimate also includes the cost of installed equipment which is an integral part of the general plant subprojects.

The current estimate is \$7,740,000 for the Oak Ridge National Laboratory and \$1,000,000 for the Oak Ridge Institute for Science and Education. The estimate is for minor new construction which will contribute to greater efficiency, eliminate health and safety hazards and reduce maintenance and operational costs. The total estimated cost of each project will not exceed \$2,000,000.

4. Total Project Funding (B/A):	Prior Years	FY 1994	FY 1995	FY 1996 Request
Construction.....	\$ 0	\$ 8,732	\$ 8,450 ^{b/}	\$ 8,740

^{a/} \$1,490,000 was unobligated in FY 1994.

^{b/} Does not exclude \$80,000 for use of prior year balances.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-310 Multiprogram Laboratory Rehabilitation, Phase I
Pacific Northwest Laboratory
Richland, Washington

TEC: \$ 6,100
TPC: \$ 6,640

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1997

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 400	\$ 400	\$ 300
1996	2,740	-2,740	1,800
1997	2,960	2,960	3,000
1998	0	0	1,000

3. Narrative: This project is part of the Multiprogram Energy Laboratory - Facilities Support Program mission to modernize and renovate aging PNL multiprogram laboratory facilities. This project will involve the remodeling of the 3rd floor of building 331 and construction of a new facility for small animal quarters.

Leading research programs are increasing emphasis on cellular/modular studies and changing use of animal models for the dose-response studies to those which use in vitro/in vivo approaches. As a result, small animal physical facilities need to be renovated or replaced by additional laboratory facilities in which molecular biology and biochemical research can be carried out. This project responds to this new approach.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 0	\$ 400	\$ 2,740	\$ 2,960
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	376	42	52	52	18

11 Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-303 Electrical Safety Rehabilitation TEC: \$ 6,800
 Pacific Northwest Laboratory TPC: \$ 7,600
 Richland, Washington

Start Date: 4th Qtr. FY 1995. Completion Date: 3rd Qtr. FY 1999

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 240	\$ 240	\$ 150
1996	1,500	1,500	1,100
1997	1,500	1,500	1,300
1998	1,500	1,500	1,600
1999	2,060	2,060	1,500
2000	0	0	1,150

3. Narrative: This project will provide for the rehabilitation of electrical systems and correction of numerous National Electrical Code (NEC) violations in various Energy Research buildings in the 300 area of the Hanford Site.

Many of the buildings range in age from 20 to 40 years and electrical equipment and installations contained within them do not meet NEC and DOE standards and criteria for safe and efficient operations. This project will safeguard personnel working with the DOE facility electrical systems and enhance the reliability of those systems.

4. Total Project Funding (B/A):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 0	\$ 240	\$ 1,500	\$ 5,060
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	367	0	94	88	251

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-302, Applied Science Center - Phase I
Brookhaven National Laboratory
Upton, New York

TEC: \$ 3,870
TPC: \$ 3,920

Start Date: 2nd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1997

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 600	\$ 600	\$ 450
1996	3,270	3,270	1,900
1997	0	0	1,520

3. Narrative: The proposed addition to the Department of Applied Science (DAS) building will provide approximately 12,000 sq. ft. of laboratory, office and support space.

The addition will be a two-story structure with an underground passageway. The first floor will be devoted principally to laboratory space with some space for offices, darkroom and bathrooms. The second floor will principally be office space with some space dedicated for a library, lunch room, etc.

The purpose of this project is to consolidate and upgrade the Department's space to alleviate the fragmentation of approximately 240 in-house DAS staff, supplemented at peak periods by research collaborating students and consultants. This fragmentation reduces the efficiency, management and opportunities for the exchange of information.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 600	\$ 3,270	\$ 0
Capital Equipment.....	0	0	0	0
Operating Expenses.....	50	0	0	0

IV. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-301 Central Heating Plant Rehabilitation, Phase I
 Argonne National Laboratory
 Argonne, Illinois
 TEC: \$ 9,500
 TPC: \$ 9,675

Start Date: 3rd Qtr. FY 1996 Completion Date: 2nd Qtr. FY 1999

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$1,307	\$1,307	\$ 550
1996	2,500	2,500	2,620
1997	2,500	2,500	2,730
1998	3,193	3,193	2,730
1999	0	0	870

3. Narrative: This project supports rehabilitation/upgrade of central heating plant systems and components that are no longer adequate, efficient or reliable.

Assessments have identified existing conditions at the central heating plant that do not meet current health, safety and environmental protection standards. Phase I will provide the most urgently needed rehabilitation/upgrade, including (as needed): boilers, boiler auxiliaries, deaerators, condensate tanks, material transport, piping, valves, pollution control equipment, etc.

<u>Total Project Funding (B/A):</u>	<u>Prior Years</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 1,307	\$ 2,500	\$ 5,693
Capital Equipment.....	0	0	0	0
Operating Expenses.....	175	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-363, Roofing Improvements
Oak Ridge National Laboratory
Oak Ridge, Tennessee

TEC: \$ 16,000
TPC: \$ 16,132

Start Date: 2nd Qtr. FY 1994 Completion Date: 2nd Qtr. FY 2000

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1993	\$ 4,024	-4,024 a/	\$ 0	\$ 0
1994	3,300	- 164 b/	3,136	75
1995	3,000	-2,803 c/	197	2,000
1996	2,038	0	2,038	1,700
1997	4,768	0	4,768	1,800
1998	4,000	0	4,000	3,500
1999	1,861	0	1,861	2,000
2000	0	0	0	4,925

a/ This project was proposed as an FY 1993 new start (93-E-329). Application of a portion (-\$4,024,000) of the FY 1993 programmatic general reduction of \$40,000,000 necessitated a delay in the start of this project to FY 1994.

b/ Reflects reductions as follows: \$-68,000 Contractor Salary Freeze; \$-96,000 rescission.

c/ Reflects application of a portion (\$-2,803,000) of Energy Supply, Research and Development reductions.

3. Narrative: This project supports replacement of deteriorated roofing on buildings and facilities throughout ORNL. Requirements are prioritized and those in the worst condition and housing the most critical equipment and activities will have the highest priority.

The purpose of this project is to replace deteriorated roofing on buildings and facilities at ORNL. Seventy percent of the roofs have been in place for more than 20 years. Because of age and deterioration, many of the roofs have developed leaks and require extensive maintenance. This project is needed before leakage problems reach the point that they affect equipment, records and research activities as well as the health and safety of personnel working in the facilities.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 3,136	\$ 1,525 d/	\$ 2,038	\$ 10,629
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	132	0	0	0	0

d/ Does not exclude reduction of \$1,328,000 for use of prior year balances.

IV. Instruction Funded Project Descriptive Summary

1. Project Title and Location: Project 94-E-351 Fuel Storage and Transfer Facility Upgrade
 Brookhaven National Laboratory,
 Upton, New York

TEC: \$ 3,600
 TPC: \$ 3,650

Start Date: 2nd Qtr. FY 1995 Completion Date: 3rd Qtr. FY 1996

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1994	\$1,000	\$- 319 a/	\$ 681	\$ 66
1995	2,479	0	2,479	2,216
1996	440	0	440	884
1997	0	0	0	434

a/ Reflects reductions as follows: \$-88,000 Contractor Salary Freeze; \$-27,000 rescission; and \$-204,000 general reduction.

3. Narrative: This project will upgrade the existing fuel storage and transfer facility to bring it into compliance with local and state code for handling and storage of fuel oil.

This facility will consist of fuel transfer facility enclosure with unloading booms and fire detection and protection systems. This facility will be constructed on a diked containment area equipped with leak detection systems and oil/water separator. The enclosure will be approximately 5,600 square feet.

4. Total Project funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 885 b/	\$ 2,479	\$ 440	\$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	50	0	0	0	0

b/ Does not exclude reduction of \$204,000 for use of prior year balances.

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-E-332 Building 801 - Renovations
Brookhaven National Laboratory
Upton, New York

TEC: \$ 6,370
TPC: \$ 6,420

Start Date: 2nd Qtr. FY 1997 Completion Date: 4th Qtr. FY-1998

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1996	800	800	610
1997	5,570	5,570	3,100
1998	0	0	2,660

3. Narrative: This project, in the west side of Building 801 (the Hot Lab), is part of a comprehensive effort to: upgrade the production of radionuclides and radiopharmaceuticals for supply to the pharmaceutical/medical community outside the laboratory; upgrade major research program leading to new and more effective diagnostic and therapeutic agents; comply with DOE Order 5820.2A, which requires that the generation of low-level radioactive waste be reduced; and bring Brookhaven National Laboratory (BNL) into conformance with Federal, state, and local environmental laws and regulatory requirements. The unique location of BNL over an EPA designated "sole-source" aquifer has heightened regulatory concern over potential ground water contamination from BNL facilities.

Failure to fund this project would increase the potential for ground water contamination and non-compliance with safety regulations.

4. Total Project Funding (BA):

	<u>Prior Years</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 800	\$ 5,570
Capital Equipment.....	0	0	0
Operating Expenses.....	50	0	0

IV. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-E-331 Sanitary Sewer Restoration, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

TEC: \$ 2,400
TPC: \$ 2,415

Start Date: 3rd Qtr. FY 1997 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1996	2,400	2,400	300
1997	0	0	1,200
1998	0	0	900

3. Narrative: Portions of the underground sanitary sewer system will be replaced based upon video camera surveys of site sanitary sewer lines, including approximately 3,480 feet of sanitary sewer lines ranging in diameter from three (3) inches to eight (8) inches. Soil samples will be tested during construction for possible contamination. All excavated material that is contaminated will be either remediated or removed to an authorized hazardous waste site.

Failure to fund this project would increase the potential for ground water contamination, excessive maintenance costs, and non-compliance with safety regulations.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 2,400	\$ 0
Capital Equipment.....	0	0	0
Operating Expenses.....	15	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 96-E-330 Building Electrical Service Upgrade - Phase I
Argonne National Laboratory
Argonne, Illinois

TEC: \$ 7,350
TPC: \$ 7,430

Start Date: 2nd Qtr. FY 1997 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1996	1,200	1,200	1,000
1997	3,500	3,500	4,000
1998	2,650	2,650	2,350

3. Narrative: This project will provide the most urgently needed replacement of emergency generators and the upgrade of building's main electrical services (circuit breaker retrofits, bus duct replacement and emergency generator replacements) that are no longer adequate, reliable, efficient, or in accordance with existing electrical codes/standards and environment, safety and health standards.

Failure to fund this project will increase frequency and duration of general maintenance resulting in increased parts and labor costs, negative impact on scientific programs and non-compliance with safety regulations.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 0	\$ 0	\$ 1,200	\$ 6,150
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	60	20	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. **Project Title and Location:** Project 95-E-309, Loss Prevention Upgrades - Electrical Substation
 Brookhaven National Laboratory
 Upton, New York TEC: \$ 6,970
 TPC: \$ 7,020

Start Date: 4th Qtr. FY 1996 Completion Date: 3rd Qtr. FY 1998

2. **Financial Schedule:**

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 600	\$ 600	\$ 315
1996	2,480	2,480	585
1997	3,890	3,890	3,499
1998	0	0	2,571

3. **Narrative:** This project provides for the upgrade of approximately 96 existing substations. With respect to fire protection, the project includes: relocating transformers; replacing oil-filled transformers with dry type; replacing oil-filled transformers with less flammable fluid; fire stand pipes and hose stations; fire deluge systems; dry chemical extinguishing systems; fire walls and barriers; wire-glass; fire seals; relocating combustible materials and trailers; curbing; and oil retention pits. With respect to substation enclosures, work includes: extending existing fence to proper heights; new fence to replace deteriorating fence; new fence for relocated transformers; replacing fences at proper clearances; non-combustible door for vaults; panic hardware on vault doors; and protective screens. With respect to grounding, work includes: replacing deteriorating ground cable; new grounding for relocated substations; ground jumpers for gates; equipment grounds and reshaping arrester grounding.

The purpose of this project is to minimize potential harmful situations to personnel and to minimize the potential loss of property and experimental program time due to fire. The sites' vulnerability was assessed as a result of Tiger Team findings.

4. **Total Project Funding (B/A):**

	<u>Prior Years</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 600	\$ 2,480	\$ 3,890
Capital Equipment.....	0	0	0	0
Operating Expenses.....	50	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. **Project Title and Location:** Project 95-E-308, Sanitary System Modifications, Phase II
 Brookhaven National Laboratory
 Upton, New York

TEC: \$ 3,532
TPC: \$ 3,772

Start Date: 1st Qtr. FY 1996 **Completion Date:** 2nd Qtr. FY 1997

2. **Financial Schedule:**

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 960	\$ 960	\$ 700
1996	1,540	1,540	1,200
1997	1,032	1,032	1,300
1998	0	0	332

3. **Narrative:** This project is the second phase of the upgrade of the laboratory sanitary waste system. This project continues with replacement of the balance of defective sewer lines and implements treatment plant building improvements.

This phase will include: replacement of approximately 15,440 linear feet of defective sewer pipe; and demolishing the Hyperchlorite Building (No. 576), the Barminator Building (No. 583), and the Influent Measuring Building (No. 584), which are plywood structures. These structures will be replaced with masonry structures. Service Building (No. 575), which is a lunch and spare parts trailer, will be replaced with a masonry addition.

The purpose of this project is to eliminate or minimize present and future infiltration to groundwater and exfiltration to the sewage collection system, to replace structures not presently meeting OSHA and NEC Codes.

4. **Total Project Funding (B/A):**

	<u>Prior Years</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 960	\$ 1,540	\$ 1,032
Capital Equipment.....	0	0	0	0
Operating Expenses.....	240	0	0	0

IV. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 95-E-307 Fire Safety Improvements, Phase III
 Argonne National Laboratory
 Argonne, Illinois
 TEC: \$ 2,880
 TPC: \$ 2,946

Start Date: 2nd Qtr. FY 1996 Completion Date: 4th Qtr. FY 1998

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 210	\$ 210	\$ 170
1996	1,000	1,000	920
1997	1,000	1,000	840
1998	670	670	950

3. Narrative: This project encompasses the third phase of site wide fire safety modifications at ANL. This phase involves correction of "means of egress" deficiencies and fire separation/fire protection of building elements.

This project is proposed as part of ANL's 1991 Action Plan developed in response to DOE Tiger Team findings and is required to correct existing fire and life safety deficiencies.

<u>Total Project Funding (B/A):</u>	<u>Prior Years</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 0	\$ 210	\$ 1,000	\$ 1,670
Capital Equipment.....	0	0	0	0
Operating Expenses.....	66	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-E-324 Hazardous Materials Safeguards, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

TEC: \$ 4,720
TPC: \$ 4,780

Start Date: 3rd Qtr. FY 1994 Completion Date: 2nd Qtr. FY 1996

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1993	\$ 1,500	-1,000 a/	\$ 500	\$ 70
1994	1,000	30 b/	970	426
1995	1,962	0	1,962	1,970
1996	1,288	0	1,288	1,900
1997	0	0	0	354

a/ Application of a portion of the FY 1993 programmatic general reduction of \$40,000,000.

b/ Reduction of \$-30,000 for rescission.

3. Narrative: Project scope modified due to reduction of hazardous materials stored in Building 70. Reduction achieved through use of off-site storage. Modifications include: deletion of chemical delivery system; ventilation system upgrades; and central monitoring and alarm system. This project will upgrade Building 70 to add safety, health and environmental protection safeguards to meet or exceed current standards for public health and safety.

The existing Building 70 is an aged laboratory facility used for materials sciences and semi-conductor research. These operations employ a wide variety of chemicals which are highly flammable and/or toxic. If this project is not supported, research operations must be restricted, resulting in curtailing or eliminating fields of research at LBL.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 500	\$ 970	\$ 1,962	\$ 1,288	\$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	60	0	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. Project Title and Location: Project 93-E-323 Fire and Safety Systems Upgrade, Phase I.
Lawrence Berkeley Laboratory
Berkeley, California

TEC: \$ 4,600
TPC: \$ 4,630

Start Date: 2nd Qtr. FY 1994 Completion Date: 3rd Qtr. FY 1997

2. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1993	\$ 1,500	-1,000 a/	\$ 500	\$ 80
1994	1,000	30 b/	970	378
1995	2,000	0	2,000	1,200
1996	1,130	0	1,130	1,600
1997	0	0	0	1,342

a/ Application of a portion of the FY 1993 programmatic general reduction of \$40,000,000.

b/ Reflects \$-30,000 for rescission.

3. Narrative: Due to budgetary constraints, this project has been stretched out from the 3rd quarter of FY 1996 to the 3rd quarter FY 1997.

This project is the first of several which will bring LBL facilities into compliance with building, fire and life safety codes.

A majority of facilities at LBL were constructed from the 1940s to the mid 1960s. The facilities provided national scientific leadership during a historically significant time. Since this period, major changes have occurred in building, fire and life safety codes. This project will support modifications required to meet new codes and correct noncompliance conditions.

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 500	\$ 970	\$ 2,000	\$ 1,130	\$ 0
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	30	0	0	0	0

IV. B. Construction Funded Project Descriptive Summary

1. **Project Title and Location:** Project 93-E-320, Fire and Safety Improvements - Phase II
 Argonne National Laboratory
 Argonne, Illinois

TEC: \$ 5,350
 TPC: \$ 5,462

Start Date: 1st Qtr. FY 1994 Completion Date: 1st Qtr. FY 1997

2. **Financial Schedule:**

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1993	\$ 1,870	-1,480 a/	\$ 390	\$ 122
1994	850	25 b/	825	600
1995	1,500	0	1,500	1,290
1996	2,411	0	2,411	1,900
1997	224	0	224	1,200
1998	0	0	0	238

a/ Application of a portion (\$-1,020,000) of the FY 1993 programmatic general reduction of \$40,000,000 and a reprogramming (\$-460,000).
 b/ Reflects \$-25,000 for rescission.

3. **Narrative:** Start date changed from 4th quarter FY 1994 to 1st quarter FY 1994 to accommodate revised financial schedule and to optimize use of available funds. Completion date changed from 4th quarter FY 1996 to 1st quarter FY 1997 due to delay in availability of funds in FY 1993. This delay was the result of a programmatic general reduction and a reprogramming in FY 1993.

This project supports Phase II of required fire safety improvements at ANL and Phase II will complete upgrading of existing fire alarm and suppression systems and expand fire suppression systems to cover areas requiring protection:

4. Total Project Funding (BA):	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996 Request</u>	<u>To Complete</u>
Construction.....	\$ 390	\$ 825	\$ 1,500	\$ 2,411	\$ 224
Capital Equipment.....	0	0	0	0	0
Operating Expenses.....	112	0	0	0	0

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
Multiprogram Energy Laboratories - General Purpose Facilities

- | | |
|---|--|
| 1. Title and Location of Project: General Plant Projects, Various locations | 2a. Project No. GPE-801
2b. Construction Funded |
| 3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 1st Qtr. FY 1996 | 5. Previous Cost Estimate:
Total Estimated Cost (TPC) -- None
Total Project Cost (TPC) -- None |
| 3b. A-E Work (Title I & II) Duration: 6-12 Months | |
| 4a. Date Physical Construction Starts: 3rd Qtr. FY 1996 | 6. Current Cost Estimate:
TEC -- \$8,740
TPC -- \$8,740 |
| 4b. Date Construction Ends: 3rd Qtr. FY 1997 | |

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Obligations</u>	<u>COSTS</u>			
		<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>After FY 1996</u>
FY 1994 Projects	\$7,242a/	\$ 830	\$4,412	\$2,000	\$ 0
FY 1995 Projects	8,370	0	6,370	2,000	0
FY 1996 Projects	8,740	0	0	6,740	2,000

a/ \$1,490,000 was unobligated in FY 1994.

8. Brief Physical Description of Project

In order to support landlord responsibilities at Oak Ridge National Laboratory (ORNL) and Oak Ridge Institute for Science and Education (ORISE), \$8,740,000 is requested for general plant projects. The FY 1996 General Plant Projects funding will also support high priority ES&H activities identified in the Department's ES&H Five Year Plan.

I. Title and Location of Project: General Plant Projects, Various Locations

2a. Project No: GPE-801

2b. Construction Funded

8. Brief Physical Description of Project (Continued)

This estimate is for minor new construction and other capital alterations to land, buildings and utility systems. The estimate also includes the cost of installed equipment which is an integral part of the general plant subprojects. Although it is difficult to identify particular projects in advance, all of the subprojects identified below are currently being considered for FY 1996 support. The estimated costs for each of the subprojects are preliminary in nature, with a project limitation of \$2,000,000. Since needs and priorities may change, other projects may be added and may be substituted for the examples listed below. These general plant projects will contribute to greater efficiency, eliminate health and safety hazards, and reduce maintenance and operational cost.

ES&H Related Projects:

Building 4500 Modification for Physical Therapy Program, Occupational Medical Program (ORNL) \$400

Project will provide modifications to the ORNL Medical Center to house the Physical Therapy program.

Hot Cells Upgrade, Building 3025 (ORNL) \$185

Project will upgrade the ventilation system for the hot cells in Building 3025.

Upgrade Coal Yard Runoff Treatment Sedimentation Basin (ORNL) \$800

Project will install a concrete liner in the coal yard sedimentation basin.

Addition to Building 4500 for Medical Decontamination Facility (ORNL) \$1,700

Project will construct a decontamination facility adjacent to the existing Medical Center.

1. Title and Location of Project: General Plant Projects, Various locations	2a. Project No. GPE-801
	2b. Construction Funded

8. Brief Physical Description of Project (Continued)

Install Safety Showers and Eyewash Stations, Building 4501 (ORNL) \$1,200

Project will remove and replace existing eyewash stations and safety showers in laboratories and corridors of the first and second floors of Building 4501.

Renovate Chemical Makeup Area, Building 4505 (ORNL) \$1,200

Project will remove wall-mounted cabinets, sinks, counters; install a new drop ceiling and fluorescent lights; and replace duct work and HVAC system.

Building Addition to the Fabrication Shop Building 2525 (ORNL) \$840

Project will provide an addition to the south side of the ORNL Fabrication Shop to house coolant recycling operations, tanks and equipment for Plating Shop operations.

Utility Upgrade Projects:

Utilities, Upgrade Condensate Removal Stations, Steam Distribution System (ORNL) \$840

Project will upgrade condensate removal stations to the steam distribution system.

Building Rehabilitation Projects:

Insulate and Upgrade Exterior Surfaces of Building SC-10 (ORISE) \$80

Project will install colored acrylic plaster covering over rigid foam insulation, commonly called EIFS, or Exterior Insulation and Finish Systems.

Upgrade HVAC Systems at Facility on Laboratory Road (ORISE) \$860

Project will upgrade the HVAC systems by changing from 2-pipe supply and return lines to 4-pipes with cooling and heating separated. In addition, coils in all air handling units, variable speed/variable volume pumps, and a complete rework of the controls will be included.

1. Title and Location of Project: General Plant Projects, Various locations 2a. Project No. GPE-801
2b. Construction Funded

8. Brief Physical Description of Project (Continued)

Replace HVAC Systems at Facility on South Illinois Ave (ORISE) \$40

Project will change the direct expansion HVAC refrigeration system into a quieter, more efficient system with fewer operational problems.

Upgrade Electrical Systems at Facility at Freels Bend (ORISE) \$20

Project upgrades underground electric feed into a safer, modern panel.

Building Addition Project:

Addition to Maintenance Shop (ORNL) \$575

Project will construct a 2,500 sq. ft. addition on the Air Conditioning Compressor Building (Bldg. 4509).

9. Purpose, Justification of Need for, and Scope of Project

Building 4500 Modification for Physical Therapy Program, Occupational Medical Program (ORNL)

The need for improving the Physical Therapy program has been recognized in a number of Occupational Medical audits. No facilities currently exist at ORNL to house the program. Employees are required to drive to Y-12 or K-25 for their physical therapy.

Hot Cells Upgrade, Building 3025 (ORNL)

In order to continue to meet programmatic hot cell needs, the ventilation system must be upgraded per ES&H regulations and DOE Orders.

1. Title Location of Project: General Plant Projects, various locations

2a. Project No. GPE-801
2b. Construction Funded

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Upgrade Coal Yard Runoff Treatment Sedimentation Basin (ORNL)

The existing sedimentation basin is constructed from clay. Coal solids from the coal yard accumulate in the pond and need to be removed periodically. A concrete liner will allow these solids to be removed more easily without penetrating or disturbing the clay liner. In addition, increasing the height of the sedimentation basin will serve to protect the pond from floods in White Oak Creek.

Addition to Building 4500 for Medical Decontamination Facility (ORNL)

Occupational Medical audits have recognized that the existing decontamination facility is inadequate. This project will allow accommodation of up to 10 contaminated personnel. It will serve as a combination medical triage/emergency treatment area as well as a facility for the purpose of decontaminating patients exposed to radioactive or hazardous materials.

Install Safety Showers and Eyewash Stations, Building 4501 (ORNL)

This will allow the safety showers/eyewashes to meet ANSI regulations.

Renovate Chemical Makeup Area, Building 4505 (ORNL)

The chemical makeup area has become contaminated through many years of radiochemical operations. Renovation of the area and HVAC system would allow areas not currently being used to be available for research.

Building Addition to the Fabrication Shop, Building 2525 (ORNL)

Project will reduce the amount of disposed coolant from 3,000 gallons per year to 150 gallons per year.

Utilities, Upgrade Condensate Removal Stations, Steam Distribution System (ORNL)

Upgrade is required to prevent water hammer and improve system safety and reliability. Water hammer is an extremely destructive force which can seriously damage piping systems, equipment and threaten operator safety.

1. Title and Location of Project: General Plant Projects, Various locations	2a. Project No. GPE-801
	2b. Construction Funded

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Insulate and Upgrade Exterior Surfaces of Building SC-10 (ORISE)

This project will change the sidewall insulation from about R-3 to about R-11, making the building more energy efficient and providing improved conditions for the occupants. In addition, the pre-colored acrylic plaster requires very little maintenance while greatly upgrading the building's appearance.

Upgrade HVAC Systems at Facility on Laboratory Road (ORISE)

Upgrading is required to properly control the heating and cooling of the buildings during the Spring and Fall seasons, reducing operating costs while providing more comfort for the building's occupants.

Replace HVAC Systems at Facility on South Illinois Ave (ORISE)

This project will provide a quieter, more efficient unit with reduced operating cost.

Upgrade Electrical Systems at Facility at Freels Bend (ORISE)

This project will improve the safety of the electric feed.

Addition to Maintenance Shop (construction only) (ORNL)

This project will provide space for maintenance personnel to work on major air conditioning units and support equipment. Maintenance and repair work is currently performed in the operating areas of the facility, seriously affecting the safe operations of the facility and the safe, expedient repair of these critical equipment items.

10. Details of Cost Estimate

Based on preliminary conceptual design.

11. Method of Performance

Design will be by negotiated architect-engineer contracts. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bids.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
Multiprogram Energy Laboratories - General Purpose Facilities

1.	Title and Location of Project:	Multiprogram Laboratory Rehabilitation, Phase I Pacific Northwest Laboratory Richland, Washington	2a.	Project No. 95-E-310
			2b.	Construction Funded

SIGNIFICANT CHANGES

- o TEC and TPC increased by \$300,000 due to a change in the method of application of overhead rates to capital projects.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project: Multiprogram Laboratory Rehabilitation, Phase I
 Pacific Northwest Laboratory
 Richland, Washington

2a. Project No. 95-E-310
 2b. Construction Funded.

3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 1st Qtr. FY 1995

5. Previous Cost Estimate:
 Total Estimated Cost (TEC) -- \$5,800
 Total Project Cost (TPC) -- \$6,340

3b. A-E Work (Title I & II) Duration: 13 Months

4a. Date Physical Construction Starts: 2nd Qtr. FY 1996

6. Current Cost Estimate:
 TEC -- \$ 6,100 a/
 TPC -- \$ 6,640 a/

4b. Date Construction Ends: 4th Qtr. FY 1997

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 400	\$ 400	\$ 300
1996	2,740	2,740	1,800
1997	2,960	2,960	3,000
1998	0	0	1,000

a/ Increase in TEC/TPC due to a change in method of application of overhead rates to capital projects.

1. Title and Location of Project: Multiprogram Laboratory Rehabilitation,
Phase I
Pacific Northwest Laboratory
Richland, Washington

2a. Project No. 5-E-310
2b. Construction Funded

8. Brief Physical Description of Project

This project will involve the reconfiguration of a portion of the space on the 3rd floor of Building 331 now containing small animal research facilities that are not needed due to age and design. Existing partitions and walls in this area will be removed and the space converted into approximately eight general chemistry laboratories. Laboratory services, as required, will be provided from the second floor mechanical equipment room. Laboratory services will be added or upgraded, as required, to furnish the needs of each laboratory. Laboratory furniture such as laboratory benches, cabinets, sinks, etc. will be provided. Additional mechanical equipment will be provided as needed. Ventilation and ductwork reconfiguration, as required, will meet current code requirements. Additional work includes the removal/demolition of the existing approximately 2,800 square foot virology lab (Building 331-A) that, due to contamination and design, cannot be economically rehabilitated, as well as new construction of a small animal quarters facility. This new addition will be approximately 3,500-4,000 square feet which will contain animal rooms of approximately 150 square feet each plus small change rooms. An existing cage washer on the first floor of Building 331 will service the cage equipment of this new addition.

9. Purpose, Justification of Need For, and Scope of Project

The primary reasons for this project are to renovate, remodel, and extend the useful life of a major DOE multiprogrammatic facility which is critical to the DOE mission. The purpose of this project is to provide additional general purpose chemistry laboratory space in Building 331 and to consolidate animal care facilities into one area. The original purpose of Building 331 was to accommodate the care and use of large and small animals. The facility was dedicated to life span animal research on various species, including experimental exposure to chemical carcinogens and radiation.

The DOE mission objective for the laboratory has recently changed from live animal studies toward molecular biology and biochemical research, utilizing cell and tissue culture. The shift has resulted in underutilization of a considerable amount of space formerly required to house and care for animals and a lack of laboratory space urgently needed for expansion of molecular biology capabilities. Although some live animal studies will continue to be performed, the required space will be reduced significantly. The space currently utilized for live animal research is fragmented between the research laboratories on the first floor and the animal habitat area on the third floor. Building 331-A is not large enough to support the small animal habitat space requirements. Further concern exists over the ability to decontaminate the building sufficiently to allow research animals to be

1. Title and Location of Project: Multiprogram Laboratory Rehabilitation, Phase I Pacific Northwest Laboratory Richland, Washington	2a. Project No. 95-E-310 2b. Construction Funded
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9. Purpose, Justification of Need For, and Scope of Project (Continued)

housed in the building without compromising the validity of research. Therefore, Building 331-A will be demolished to allow room for the new addition.

10. Details of Cost Estimate ^{a/}

	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and management costs.....		\$ 1,900
1. Engineering design and inspection at approximately 32 percent of construction costs, item b.....	\$1,000	
2. Construction management costs.....	700	
3. Project management at 6 percent of construction costs.....	200	
b. Construction costs.....		3,100
1. Improvements to land	10	
2. Buildings	3,075	
3. Utilities	15	
Subtotal.....		<u>5,000</u>
c. Contingencies at approximately 22 percent of above cost		<u>1,100</u>
Total line item cost		<u>\$ 6,100</u> b/

a/ Based on conceptual cost estimate

b/ Includes escalation rates based on the February, 1994 Hanford Material and Labor Escalation Study.

11. Method of Performance

Design and inspection will be performed by the Hanford CPAF Engineer/Constructor. Construction and procurement will be accomplished where possible by fixed-price contracts awarded on the basis of competitive bidding. Some construction may need to be accomplished by the Hanford CPAF constructor because the work to be done is in a building complex where it will need to be coordinated with ongoing operations.

1. Title and Location of Project: Multiprogram Laboratory Rehabilitation,
Phase I
Pacific Northwest Laboratory
Richland, Washington

2a. Project No. E-310
2b. Construction Funded

12. Schedule of Project Funding and Other Related Funding Requirements

	Previous Years	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	Total
a. Total project costs							
1. Total facility costs							
(a) Line item.....e.	\$ 0	\$ 0	\$ 300	\$ 1,800	\$ 3,000	\$ 1,000	\$ 6,100
(b) PE&D	0	0	0	0	0	0	0
(c) Inventories	0	0	0	0	0	0	0
Total facility costs.....	\$ 0	\$ 0	\$ 300	\$ 1,800	\$ 3,000	\$ 1,000	\$ 6,100
2. Other project costs							
(a) R&D necessary to complete construction.....	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
(b) Conceptual design costs.....	200	0	0	0	0	0	200
(c) Other project related costs.....	176	42	52	52	18	0	340
Total other project costs.....	376	42	52	52	18	0	540
Total project costs.....e.....	\$ 376e	\$ 42	\$ 352	\$ 1,852	\$ 3,018	\$ 1,000	\$ 6,640

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

- a. Total project funding
1. Total facility costs
Inventories - Inventories necessary to put the facilities into reuse after modifications and renovations are completed are estimated to cost -- \$ 0.
2. Other project costs
- a. R&D necessary to complete construction - Preconceptual design/engineering studies were performed during FY 1989 through FY 1991 at a cost of \$10,000.
- b. Conceptual design funding - It is expected that Conceptual Design was completed during FY 1992 at a cost of \$200,000.
- c. Other project related costs - Project support and start-up are estimated to cost \$340,000. This item consists of preparation of project management and A-E selection plan prior to project authorization; technical direction of the A-E during definitive design, review of vendor submittals, user liaison and related management services during construction of the project.
- b. Related annual funding
None.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project:	Electrical Safety Rehabilitation	2a. Project No.	95-E-303
	Pacific Northwest Laboratory	2b. Construction Funded	
	Richland, Washington		

SIGNIFICANT CHANGES

- o TEC reduced from \$7,200,000 to \$6,800,000 due to method of distribution of overhead.
- o TPC reduced from \$7,900,000 to \$7,600,000 due to method of distribution of overhead.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project: Electrical Safety Rehabilitation
 Pacific Northwest Laboratory
 Richland, Washington

2a. Project No. 95-E-303
 2b. Construction Funded

3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1995

3b. A-E Work (Title I & II) Duration: 15 Months

4a. Date Physical Construction Starts: 4th Qtr. FY 1995

4b. Date Construction Ends: 3rd Qtr. FY 1999

5. Previous Cost Estimate:
 Total Estimated Cost (TEC) -- \$7,200
 Total Project Cost (TPC) -- \$7,900

6. Current Cost Estimate:
 TEC -- \$ 6,800 a/
 TPC -- \$ 7,600 a/

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 240	\$ 240	\$ 150
1996	1,500	1,500	1,100
1997	1,500	1,500	1,300
1998	1,500	1,500	1,600
1999	2,060	2,060	1,500
2000	0	0	1,150

a/ TEC and TPC reduced due to method of distribution of overhead.

1. Title and Location of Project: Electrical Safety Rehabilitation
Pacific Northwest Laboratory
Richland, Washington

2a. Project No. 95-E-303
2b. Construction Funded

8. Brief Physical Description of Project

This project will provide for the rehabilitation of electrical systems and correction of numerous National Electrical Code violations in 10-12 of the laboratories and support facilities for which Energy Research is responsible in the 300 Area of the Hanford Site.

Many of these buildings range in age from 20 to 40 years and electrical equipment and installations contained within them do not meet current National Electric Code (NEC), DOE standards and criteria for safe and efficient operations. Most of the grounding violations did not meet the existing code when installed. Existing installations, in some cases, do not conform to present standards because other non-electrical equipment systems have been installed in conflict with electrical clearance requirements. Additionally, much of the older equipment is deteriorating and its present condition poses a personnel and fire safety hazard.

Typically, modification and rehabilitation work will consist of work to be done to existing electrical systems as follows: (a) grounding and bonding of equipment for safety; (b) relocating existing electrical equipment and some mechanical equipment to obtain proper working clearances; (c) correcting wire/raceway sizes; (d) providing proper raceway supports; (e) isolating electrical equipment for safety and maintainability; and (f) installing additional circuit breakers, enclosures, etc. to protect equipment. In addition to the above, some major obsolete and deteriorated equipment will also be replaced.

9. Purpose, Justification of Need For, and Scope of Project

The primary purpose of this project is to provide building electrical systems that are safe, efficient, reliable, and maintainable as required by the DOE Order 5480.4 Environmental Protection, Safety and Health Protection Standards; DOE Order 6430.1A, General Design Criteria; and specific requirements of the latest edition of the National Electric Code. This project will safeguard personnel working with the DOE facility electrical systems and enhance the reliability of those systems. Additionally, the project will also consolidate and upgrade electrical equipment, in some cases, where existing equipment is obsolete, deteriorated, or not in code compliance. An extensive code conformance survey conducted by PNL produced a National Electric Code violation data base with several thousand entries. Many of these findings relate to grounding and safe working clearances. Others relate to improper wire sizing, color identification and lack of proper overcurrent protection. This project responds to Tiger Team Finding TS 3-2.

1. Title and Location of Project:	Electrical Safety Rehabilitation Pacific Northwest Laboratory Richland, Washington	2a. Project No. 95-E-303 2b. Construction Funded
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12. Schedule of Project Funding and Other Related Funding Requirements

	Previous Years	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	Total
a. Total project costs								
1. Total facility costs								
(a) Line item.....	\$ 0	\$ 150	\$ 1,100	\$ 1,300	\$ 1,600	\$ 1,500	\$ 1,150	\$ 6,800
Total Facility Costs.....	\$ 0	\$ 150	\$ 1,100	\$ 1,300	\$ 1,600	\$ 1,500	\$ 1,150	\$ 6,800
2. Other project costs								
(a) Conceptual design costs.....	170	0	0	0	0	0	0	170
(b) Other project-related costs.	197	94	88	86	85	80	0	630
Total other project costs.....	\$ 367	\$ 94	\$ 88	\$ 86	\$ 85	\$ 80	0	800
Total project cost (TPC).....	\$ 367	\$ 244	\$ 1,188	\$ 1,386	\$ 1,685	\$ 1,580	\$ 1,150	\$ 7,600
b. Related annual funding (estimated life of project -- 25 years)								
None.								

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

- a. Total project funding
1. Total facility costs
 2. Other project costs
 - a. Conceptual design funding - \$170,000.
 - b. Other project related costs - Project support and start-up are estimated to cost \$630,000. This item consists of preparation of project management and A-E selection plans prior to project authorization; technical direction of the A-E during definitive design; review of vendor submittals, user liaison and related management services during construction of the project and final inspection of non-engineered work.
- b. Related funding requirements (Estimated use of facilities for their programmatic purpose: 25 years):
None

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - ^ePLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project: Applied Science Center - Phase I
 Brookhaven National Laboratory
 Upton, New York

2a. Project No. 95-E-302
 2b. Construction Funded

3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1995

3b. A-EeWork (Titles I & II) Duration: 8 Months

5. Previous Cost Estimate:
 Total Estimated Cost (TEC) -- None
 Total Project Cost (TPC) -- None

4a. Date Physical Construction Starts: 2nd Qtr. FY 1996

4b. Date Construction Ends: 2nd Qtr. FY 1997

6. Current Cost Estimate: ^e
 TEC -- \$3,870
 TPC -- \$3,920

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 600	\$ 600	\$ 450
1996	3,270	3,270	1,900
1997	0	0	1,520

1. Title and Location of Project: Applied Science Center - Phase I
Brookhaven National Laboratory
Upton, New York

2a. Project No. 95-E-302
2b. Construction Funded

8. Brief Physical Description of Project

The proposed addition to the Department of Applied Science (DAS) Building 815 will provide approximately 12,000 square feet of laboratory, office and support space.

The proposed expansion will be at the north side of Building 815. It will be a two-story structure with an underground passageway leading to a large existing basement. To better utilize the existing basement, a passenger/freight elevator will be included. The basement is currently served only by stairs and an outside areaway. The addition is structural steel framing with open web joists, concrete block and brick exterior to match existing and gypsum wallboard on metal stud and concrete block interior partitions. An insulated metal roof deck with built-up roofing will be used. For energy conservation, insulated aluminum windows will be provided for operational and functional requirements.

The first floor plan layout is devoted principally to laboratory space but with some space for offices, a darkroom and toilets. The second floor is principally office space with some space for library, lunch room, file/copy rooms and toilets. Two offices in the existing structure will be modified for conference space.

The addition will be designed according to DOE Order 6430.1, "General Design Criteria" and will meet or exceed the latest DOE Standards for Energy Conservation. The fire protection system will be hydraulically designed, in accordance with NFPA 13. DOE Standards for accessibility for the handicapped will be incorporated into the design of the addition.

9. Purpose, Justification of Need For, and Scope of Project

Building 815, first occupied in 1962, is the only office-laboratory building predominantly occupied by the Department of Applied Science (DAS). It was built as the first phase of integrating the Department's operations. The 1989 Site Development Plan refers to it as the center of the DAS campus at BNL.

As presently structured, DAS does not occupy anything resembling a campus. The eight Divisions, which comprise the Department, are housed in some twelve major buildings and three user facilities with DAS Administration remote from any of its staff. These buildings, in contrast to Building 815, are older (mostly World War II vintage Army buildings), more crowded, and have high maintenance costs due to their age and construction.

1. Title and Location of Project: Applied Science Center - Phase I
Brookhaven National Laboratory
Upton, New York

2a. Project No. 95-E-302
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

DAS, in concert with the Director's Office, has embarked on a five-year program both to consolidate and upgrade the Department's space. For instance, General Plant Project (GPP) monies have and will be used to upgrade Building 801, one of the older permanent structures at BNL. Building 527 is now undergoing a renovation with occupancy planned by late December. After the various stages of this plan are enacted, DAS will be housed in only five buildings, with the three facilities remaining as they are now. A key component of this plan is this addition to Building 815.

Of the eight Divisions which comprise DAS, only Chemical Sciences is fully housed in Building 815 now. Parts of two other Divisions, Applied Physics and Environmental Chemistry, fill the rest of the structure.

Another DAS structure, Building 318, which was constructed during World War II, now houses parts of two other DAS Divisions: Oceanographic & Atmospheric Sciences (O&AS); Biosystems & Process Sciences (B&PS); and a minor part of Applied Physics. All these Divisions have expanding programs and Building 318 has no expansion space available. Expansion needs are primarily related to receipt of funds to participate in DOE's Global Climate Change program.

The proposed addition to Building 815 will house the O&AS Division, providing them with laboratories, offices and some growth potential to consolidate the staff. The site map shown in the conceptual design report graphically demonstrates the need for consolidation within all of the Department's programs. At the same time, this will relieve some pressure on the B&PS Division which will remain in Building 318 for the present. It should also be possible to relocate the Applied Physics space to Building 815.

In summary, the need to replace failing World War II wood structures with modern energy efficient buildings and consolidate the DAS functions is very important to the success of DAS programs and the laboratory. The fragmentation of approximately 240 in-house DAS staff, supplemented at peak periods by research collaborating students and consultants reduces the efficiency, management and opportunities for the exchange of information.

1. Title and Location of Project: Applied Science Center - Phase I Brookhaven National Laboratory Upton, New York	2a. Project No. 95-E-302 2b. Construction Funded
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10. <u>Details of Cost Estimate a/</u>	<u>Item Costs</u>	<u>Total Cost</u>
a. Design and management costs.....		\$ 449
1. Engineering design and inspection and administration at approximately 13 percent of construction costs, Item b.....	\$ 367	
2. Project management at 3 percent of construction costs, Item b.....	82	
b. Construction costs.....		2,833
1. Site Work.....	175	
2. Architectural/Structural.....	1,733	
3. Mechanical Services.....	530	
4. Electrical Services.....	395	
c. Standard equipment.....		120
Subtotal.....		3,402
d. Contingencies at approximately 14 percent of above costs.....		468
Total line item cost.....		\$ 3,870 b/c/

- a/ This estimate is based on a conceptual design report dated December 1990.
- b/ Escalation rates used were taken from DOE Departmental Price Change Index - FY 92 Guidance, August 1990 update.
- c/ Includes \$270,000 of Brookhaven National Laboratory's indirect costs in accordance with Cost Accounting Standards.

11. Method of Performance

Design and inspection will be on the basis of a negotiated architect-engineer contract. Construction and procurement will be accomplished by a competitively obtained lump sum contract.

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC less than \$5,000,000 per draft DOE Order 5100.3a.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required on projects with a TEC less than \$5,000,000 per draft DOE Order 5100.3a.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH & DEVELOPMENT - PLANT & CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project: Central Heating Plant Rehabilitation - Phase I
 Argonne National Laboratory
 Argonne, Illinois

2a. Project No. 95-E-301
 2b. Construction Funded

3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1995

3b. A-E Work (Title I & II) Duration: 11 Months

5. Previous Cost Estimate:
 Total Estimated Cost: None
 Total Project Cost: None

4a. Date Physical Construction Starts: 3rd Qtr. FY 1996

4b. Date construction ends: 2nd Qtr. FY 1999

6. Current Cost Estimate:
 TEC -- \$ 9,500
 TPC -- \$ 9,675

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 1,307	\$ 1,307	\$ 550
1996	2,500	2,500	2,620
1997	2,500	2,500	2,730
1998	3,193	3,193	2,730
1999	0	0	870

1. Title and Location of Project: Central Heating Plant Rehabilitation - Phase I Argonne National Laboratory Argonne, Illinois	2a. Project No. 95-E-301 2b. Construction Funded
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8. Brief Physical Description of Project

This project will provide the most urgently needed rehabilitation/upgrade of the central heating plant (CHP) systems and components that are no longer adequate, efficient or reliable, including (as needed): boilers (tubing, drums, refractory, baffles, casing, insulation); boiler auxiliaries (fans, pumps, drives, soot blowers); deaerators; condensate tanks; material transport (coal, bottom ash, flyash, spent sorbent); piping (steam, condensate, feedwater, blowdown, cooling water); valves (isolation, blowdown, safety, non-return); pollution control equipment (dust collectors, baghouse); instrumentation and control (controllers, transmitters, transducers, recorders, uninterruptible power supply) electrical (switchgear, starters, PA systems, instrumentation, lighting); building envelope and interior (windows, doors, gratings and floor plates, column fireproofing, painting); plumbing (water and drain piping). The project will also include: a 1,500 square foot brick and block cavity wall addition containing a first floor clean assembly and repair area and a space below grade that will be waterproofed to form a 12,000 cubic foot concrete tank for storage of boiler make-up water; two external stair towers; and a new control room.

9. Purpose, Justification of Need For, and Scope of Project

The CHP is a 58,918 square foot steel frame structure that contains 5 water tube boilers, with combined rated steam capacity of 510,000 pounds per hour and has a replacement value of \$45,266,000. The facility provides steam, site-wide, for: heating of buildings; heating of water; absorption air conditioning cycles; turbine drives on emergency electric generators; concentration of radioactive wastewater; food preparation and serving; and research requirements.

A number of studies and assessments have identified existing conditions at the CHP that do not meet current health, safety and environmental protection standards, codes and guidelines or that diminish the reliability of the site steam supply system, a system that is vital for maintaining building and programmatic functions at the laboratory. These conditions are discussed in some detail below.

^eTiger Team concern MA.5-1 states that "the Argonne National Laboratory-East inspection and corrective action program is not effective in assuring the design operability of facility support systems." Given present conditions, ^eimplementation of a maintenance program to accomplish this goal is no longer a viable option for CHP, as follows:

1. Title and Location of Project: Central Heating Plant Rehabilitation-
Phase I
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 95-E-301
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

By the date of the funding for the project, nearly all equipment in the Central Heating Plant will be between 27 and 42 years of age. Adequate maintenance is difficult and very costly because replacement parts for many of the components are no longer available and because there is no dedicated clean area where repairs can be made efficiently and without delay. The condensate tank has no back-up and there is no tank for storage of the make-up water needed during temporary outage of the water treatment plant or in the event of condensate return system contamination or piping failure. The baghouse booster fan enclosure is uninsulated, which causes condensation and corrosion. Boiler pumps and fans and their turbine drives are operating at reduced capacity and are unreliable. Valves do not seat. Boiler No. 5 blowdown piping and some condensate piping is badly eroded and weakened. Operating efficiencies are reduced and fuel costs excessive. There is no secondary containment for oil storage, which is an NFPA-30 requirement. Safe, efficient and reliable plant operation is increasingly difficult to achieve.

Tiger Team Concern FP.2-1 states that "Argonne National Laboratory-East is not in compliance with Life Safety Code, NFPA-101." Recently completed studies have confirmed that the building's emergency egress and emergency public address systems are inadequate.

Tiger Team Finding No. A/CF-7 cites numerous pollutant excursions exceeding NEPA limits. These have occurred because of the currently degraded and unreliable operating condition of the existing flue gas control system.

Based on the building's size, height and occupancy, the applicable codes (Chapter 28 - NFPA 101, Section 3.6 of Appendix B - NFPA 45, Article 3 - BOCA) require that the currently unprotected structural support columns be fireproofed to provide a two-hour rating.

Failure to implement this urgently needed rehabilitation may seriously impact all other operations of this research and development facility, including all ongoing research. Without this rehabilitation work, safety standards for plant and personnel will deteriorate, operating costs and maintenance costs will increase, and the environment will be adversely affected.

1. Title and Location of Project: Central Heating Plant Rehabilitation -
Phase I
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 95-E-301
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

Alternatives to the Proposed Action

There appear to be three alternatives other than the proposed rehabilitation project: (1) take no action; (2) make only minimal repairs and rehabilitate only progressively when and as necessary; and (3) provide a totally new replacement project.

No Action, Alternative 1:

This approach would allow the adverse environmental, fire, safety and health conditions and the inefficient mechanical and electrical systems to continue in their present state. The frequency and duration of partial or total functional shutdowns and negative impact on productivity of scientific work, some of which is time-sensitive, would increase. Yearly maintenance costs would also increase and be subject to inflationary pressures as well. The building would continue to be in violation of life safety and fire protection codes and the potential for structure and equipment failure that could compromise the health and safety of the operational staff would continue to increase. Finally, personnel morale would be impaired. This approach is not recommended.

Minimal and Progressive Rehabilitation, Alternative 2:

This is the option now employed. It is an expensive approach over a long period of time and allows various adverse environmental, fire protection, safety, and health conditions, inefficient physical plant systems and periodic scientific shutdowns to continue until renovation occurs sometime in the future. The repairs are expensive and represent a bandaid approach as some working mechanical and electrical parts are no longer available for the existing systems and equipment. The unreliability of aged and worn components compounds the problems. Importantly, the piecemeal rectification approach over a long period of time increases the number of times that equipment must be shut down for rehabilitation. Due to the adverse ES&H and fiscal impacts, this approach is not recommended.

Total New Replacement Project, Alternative 3:

This approach would involve construction of a new CHP building on a different site at Argonne which would contain approximately 58,918 gross square feet to provide the same functions as the existing facility. The estimated cost at the completion of the project would be \$45,266,000. This approach is not recommended.

1. e and Location of Project: Central Heating Plant Rehabilitation - 2a. Project No. 95-E-3
 Phase I 2b. Construction Funded
 Argonne National Laboratory
 Argonne, Illinois

9. Purpose, Justification of Need For, and Scope of Project (Continued)

Recommendation:

The rehabilitation work and the new building additions as described in this report is the recommended approach to expediently resolve the described problems.

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and management costs.....e.....		\$ 1,155
1. Engineering design and inspection at approximately 13 percent of construction costs.....e.....	881	
2. Project management at approximately 1.5 percent of construction costs	100	
3. Construction management at approximately 2.5 percent of construction costs ..	174	
b. Construction Costse.....		6,715
1. New Additions	887	
a) Clean Assembly/Make-up Water Storage	435	
b) Stair Towers	452	
2. Work to Existing Building .e.....	5,828	
a) Architectural/Structural	964	
b) Mechanical	4,418	
c) Electrical	446	
Subtotal		<u>7,870</u>
c. Contingencies at approximately 15 percent of above costs		<u>1,180</u>
Total line item coste.....		\$ 9,050 b/c/
d. Laboratory overhead assessment.....		<u>450</u>
		<u>\$ 9,500</u>

- a/ Estimates are based on a completed conceptual design and current cost data.
- b/ Overhead assessment to be applied to all construction projects starting in FY 1995 at the following rates: FY 1995- 4.5%; FY 1996 and outyears 5%.
- c/ All costs have been escalated from January 1992 to the midpoint of construction at the rate of 18%. Escalation rate methodology is based upon DOE FY 1993 Guidance, dated August 1991: FY 1992 - 2.5%; FY 1993 - 3.9%; FY 1994 - 4.7%; FY 1995 - 4.8%; and FY 1996 - 4.9%.

1. Title and Location of Project: Central Heating Plant Rehabilitation - Phase I Argonne National Laboratory Argonne, Illinois	2a. Project No. 95-E-301 2b. Construction Funded
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11. Method of Performance

Engineering and design will be performed under a negotiated A/E contract with guidance, review and monitoring by laboratory personnel. Inspection will be performed by laboratory personnel aided by the A/E firm. Construction management and project management will be performed by laboratory personnel. Construction will be accomplished by fixed-price lump sum contract(s) awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

	Previous <u>Years</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total</u>
a. Total project costs							
1. Total facility costs							
(a) Line item	\$ 0	\$ 550	\$ 2,620	\$ 2,730	\$ 2,730	\$ 870	\$9,500
Total direct costs.....	\$ 0	\$ 550	\$ 2,620	\$ 2,730	\$ 2,730	\$ 870	\$9,500
(2) Other project costs							
(a) Conceptual design costs.	150	0	0	0	0	0	150
(c) Documentation costs	25	0	0	0	0	0	25
Total other project costs ..	\$ 175	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 175
Total project costs (TPC)	<u>\$ 175</u>	<u>\$ 550</u>	<u>\$ 2,620</u>	<u>\$ 2,730</u>	<u>\$ 2,730</u>	<u>\$ 870</u>	<u>\$9,675</u>
b. Related annual costs (Estimated life of project: 25 years) None.							

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

a. Total project funding
1. Total facility costs
 (a) Line item -- Narrative not required.

1. Title and Location of Project: Central Heating Plant Rehabilitation -
Phase I
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 95-E-301
2b. Construction Funded

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements (Continued)

(2) Other project costs

(a) Conceptual design costs are for Conceptual Design Reports.

(b) Documentation costs include preparation of project data sheets, design criteria/reviews, and Environmental Evaluation Notification Form (DOE-CH 560).

b. Related annual funding
None.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT CAPITAL AND EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
Multiprogram Energy Laboratories - General Purpose Facilities

Location of Project:	Roofing Improvements	2a. Project No. 94-E-363
	Oak Ridge National Laboratory	2b. Construction Funded
	Oak Ridge, Tennessee	

SIGNIFICANT CHANGES

- o Due to reductions in FY 1995, project completion has been delayed until the 2nd Quarter of FY 2000.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT^a
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project: Roofing Improvements Oak Ridge National Laboratory Oak Ridge, Tennessee	2a. Project No. 94-E-363 2b. Construction Funded
3a. Date A-E Work Initiated, (Title I Design Start Scheduled) 1st Qtr. FY 1994 3b. A-E Work (Title I & II) Duration: 12 Months	5. Previous cost estimate: Total Estimated Cost (TEC) -- \$16,000 Total Project Cost (TPC) -- \$16,332
4a. Date Physical Construction Starts: 2nd Qtr. FY 1994 4b. Date Construction Ends: 2nd Qtr. FY 2000	6. Current Cost Estimate: TEC -- \$16,000 TPC -- \$16,332

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1993	\$ 4,024	-4,024 a/	\$ 0	\$ 0
1994	3,300	- 164 b/	3,136	75
1995	3,000	-2,803 c/	197	2,000
1996	2,038	0	2,038	1,700 a
1997	4,768	0	4,768	1,800
1998	4,000	0	4,000	3,500
1999	1,861	0	1,861	2,000
2000	0	0	0	4,025

- a/ This project was proposed as an FY 1993 new start (93-E-329). Application of a portion (-\$4,024,000) of the FY 1993 programmatic general reduction of \$40,000,000 necessitated a delay in the start of this project to FY 1994.
- b/ Reflects reductions as follows: \$-68,000 Contractor Salary Freeze; \$-96,000 rescission.
- c/ Reflects application of a portion (\$-2,803,000) of Energy Supply Research and Development reductions.

1. Title and Location of Project: Roofing Improvements
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2a. Project No. 94-E-363
2b. Construction Funded

8. Brief Physical Description of Project

This project will replace deteriorated roofing on buildings and facilities throughout the Oak Ridge National Laboratory complex. ORNL has over 2.4 million square feet of roof area on approximately 160 buildings. Based on a recent study by the laboratory's Plant and Equipment Division, approximately seventy percent of the total area needs to be replaced due to age and deterioration. This project is the first of several planned projects to replace the deteriorated roofing. It will replace the roofs that are in the worst condition (top priority) on buildings housing the most important facilities. Most of the existing roofing materials contain asbestos and much of it has traces of radioactive contaminants. This project will provide for the installation of new roofing and includes the necessary engineered controls to assure compliance with applicable health and safety regulations.

9. Purpose, Justification of Need For, and Scope of Project

The purpose of this project is to replace deteriorated roofing on buildings and facilities at ORNL. As mentioned in Item 8, ORNL has over 2.4 million square feet of roof area. Approximately 70 percent of the roofs have been in service for over 20 years. Because of age and deterioration, many of these roofs have already developed leaks and require an increasing amount of maintenance. The results of the Plant and Equipment Division study of these roofs, giving the type and condition of each roof by building, including conditions of asbestos and/or radioactive contamination, were used as the basis of the conceptual design. In some cases the problems have reached the point that they could affect equipment, records, and research activities, as well as the health and safety of personnel working in the buildings or facilities.

During the past few years budget constraints and the increased cost of satisfying Environment, safety and health regulations have resulted in a reduction in funds available for roof replacement. The effects of this shortfall have been compounded by the increased cost associated with restrictions placed on work with or around asbestos materials. Most of the roofs needing replacement involve asbestos materials. This combination of factors has resulted in a growing backlog of roofs that need replacement due to a lack of adequate funding. The current average annual cost of roof repairs is \$800,000. This does not include damage from leaks before repairs are made. There is currently a backlog of over \$5 million of repairs needed. The roof replacement program is normally funded from expense funds; however, line item funding is requested because of the magnitude of the backlog and the need to provide an acceptable margin of response to meeting future replacement needs in a timely manner.

1. Title and Location of Project: Roofing Improvements
 Oak Ridge National Laboratory
 Oak Ridge, Tennessee

2a. Project No. 94-E-363
 2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

Failure to fund this project will result in a continuation of the expensive piece-meal repair program. As the roofs age, the number of leaks will increase, repairs will become more expensive and the potential for serious structural and equipment damage will grow, along with the threat to employee health and safety. Further deterioration of facilities could result in decreased program funding for DOE and ORNL.

Use of the metric system of measurement for design, procurement and construction of this project was considered; but because of the nature of the work and the prevailing practices in the region, it was determined to be uneconomical.

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Costs</u>
a. Design and management costs.....		\$ 2,300
1. Engineering design and inspection at approximately 7 percent of items b and c.	\$ 800	
2. Construction management at approximately 12 percent of items b and c.....	1,300	
3. Project management costs approximately 2 percent of item b.....	200	
b. Construction costs (install new roofing) b/.....		2,860
c. Removal and packaging of existing roofing.....		8,040
d. Design and project liaison, testing, checkout and acceptance.....		200
Subtotal.....		<u>13,400</u>
e. Contingencies at approximately 19 percent of above costs.....		2,600
Total line item cost		<u>\$16,000</u>

a/ The cost estimate is based on conceptual design completed April 1991 at a cost of \$70,000 and updated March 1993. The DOE Headquarters Economic Escalation Indices for Construction Projects were used as appropriate over the project cycle.

b/ Construction costs include \$60,000 for readiness reviews.

1. Title and Location of Project: Roofing Improvements
Oak Ridge National Laboratory
Oak Ridge, Tennessee

2a. Project No. 94-E-363
2b. Construction Funded

11. Method of Performance

Design shall be performed under a negotiated architect-engineer contract and inspection shall be performed by the operating contractor. To the extent feasible, construction and procurement shall be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

	Previous Years	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	Total
a. Total project costs									
1. Total facility costs									
(a) Line item	\$ 0	\$ 75	\$ 2,000	\$ 1,700	\$ 1,800	\$ 3,500	\$ 2,000	\$ 4,925	\$16,000
Total direct costs.....	\$ 0	\$ 75	\$ 2,000	\$ 1,700	\$ 1,800	\$ 3,500	\$ 2,000	\$ 4,925	\$16,000
2. Other project costs									
(a) Conceptual design costs.....	70	0	0	0	0	0	0	0	70
(b) Site characterization.....	7	0	0	0	0	0	0	0	7
(c) NEPA documentation.....	5	0	0	0	0	0	0	0	5
(d) Other project related costs.....	50	0	0	0	0	0	0	0	50
Total other project related costs .	132	0	0	0	0	0	0	0	132
Total project costs (TPC)	\$ 132	\$ 75	\$ 2,000	\$ 1,700	\$ 1,800	\$ 3,500	\$ 2,000	\$ 4,925	\$16,132
b. Related annual funding (Estimated life of project: 20 Years).....									\$ 515

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

- a. Total project funding
1. Total facility costs
 - (a) Line item costs for design, procurement, removal of the old roofing, proper packaging of all project waste, and installation of the new roof are estimated to be \$16,000,000. This includes \$60,000 for readiness reviews.
 2. Other project costs
 - (a) Conceptual design costs - The conceptual design was completed April 1991 at a cost of \$70,000.
 - (b) Site characterization costs - \$7,000.

1. Title and Location of Project: Roofing Improvements Oak Ridge National Laboratory Oak Ridge, Tennessee	2a. Project No. 94-E-363 2b. Construction Funded
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13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements (Continued)

2. Other project costs

(c) NEPA documentation costs - \$5,000.

(d) Other project related funding - Design criteria completed July 1992 at a cost of \$50,000.

b. Related annual funding

1. Other costs - The estimated average annual cost in FY 1994 dollars to repair the roofing installed by this project over the estimated 20 year life is \$515,000.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
Multiprogram Energy Laboratories - General Purpose Facilities

1. Title and Location of Project: Fuel Storage and Transfer Facility Upgrade Brookhaven National Laboratory Upton, New York	2a. Project No. 94-E-351 2b. Construction Funded
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3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1994 3b. A-E Work (Title I & II) Duration: 8 Months	5. Previous Cost Estimate: Total Estimated Cost (TEC) -- None Total Project Cost (TPC) -- None
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4a. Date Physical Construction Starts: 2nd Qtr. FY 1995 4b. Date Construction Ends: 3rd Qtr. FY 1996	6. Current Cost Estimate: TEC -- \$ 3,600 TPC -- \$ 3,650
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7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1994	\$1,000	\$-319 a/	\$ 681	\$ 66
1995	2,479	0	2,479	2,216
1996	440	0	440	884
1997	0	0	0	434

a/ Reflects reductions as follows: \$-88,000 Contractor Salary Freeze; \$-27,000 rescission; and \$204,000 general reduction.

1. Title and Location of Project: Fuel Storage and Transfer
Facility Upgrade
Brookhaven National Laboratory
Upton, New York

2a. Project No. 94-E-351
2b. Construction Funded

8. Brief Physical Description of Project

This project will upgrade the existing fuel storage and transfer facility (FSTF) at BNL to bring it into compliance with local and state codes for handling and storage of fuel oil, and will be in compliance with the NEPA and related DOE Orders.

A fuel truck unloading and transfer facility capable of unloading four trucks will be constructed. This facility will consist of a two sided pre-engineered enclosure with unloading booms and fire detection and protection systems, all constructed on a diked containment area equipped with leak detection systems and oil/water separator.

The fuel transfer facility enclosure will be constructed of uninsulated metal siding on a structural steel frame totalling approximately 5,600 square feet.

A pump house will be constructed adjacent to the fuel transfer enclosure. The pump house will draw fuel from the trucks via unloading booms and will discharge to the various fuel storage tanks. The pump house will consist of a building of approximately 1,200 square feet. The pump house will have pumps connected to the unloading booms via piping in a pipe tunnel located below grade. The pipe tunnel will provide secondary containment and will be fitted with a leak detection system and an oil/water separator connected to holding tanks. The pump house will have pumps for transferring oil among tanks and for circulating oil for tank heating.

Modifications to fuel piping will require installation of approximately 6,000 feet of above ground and underground distribution piping fitted with heat-tracing, leak detection and secondary containment systems. Modifications to fuel storage tanks will require coating the inner bottom of six tanks with an epoxy coating system.

Application of the epoxy requires stripping, degassing and sandblasting of the tanks. Additional modifications required for storage tanks are: (1) installation of double bottoms and leak detection systems in two tanks; (2) installation of cathodic protection systems on eight tanks; and (3) installation of fixed foam fire protection.

1. Title and Location of Project: Fuel Storage and Transfer
Facility Upgrade
Brookhaven National Laboratory
Upton, New York

2a. Project No. 94-E-351
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project

This project will bring the BNL FSTF into compliance with state and local codes for handling and storage of fuel oil. The FSTF provides the only supply of fuel for the BNL Central Steam Facility (CSF) and the CSF is the primary source of heating and process steam for the entire laboratory. Renewal of the major petroleum facility license for the FSTF is contingent upon timely upgrade of the facility to meet current code requirements. Failure to receive a renewed license could jeopardize operation of the CSF and impact programmatic operations.

The location of BNL over an EPA designated sole-source aquifer has heightened regulatory concern over potential groundwater contamination from BNL facilities. In 1987, DOE and BNL agreed to comply with Suffolk County Department of Health Services' (SCDHS) regulations targeted at groundwater protection. The regulations applicable to the FSTF are defined by SCDHS Sanitary Code Article 12 and by the New York State Department of Environmental Conservation (NYSDEC) rules for bulk petroleum storage facilities.

The BNL FSTF has a current storage capacity of over 2,000,000 gallons of residual and light petroleum fuels. This facility has been modified and expanded several times from its original construction in 1948 until 1986. However, these modifications preceded recent changes in state and local code requirements for the storage and handling of petroleum fuels.

Current regulations require that fuel off-loading areas be provided with shelter from rain and have improved containment. The capacity of the containment must exceed the largest fuel truck capacity by 10 percent. The regulations also require that all underground piping must have secondary containment and leak detection systems as must all new above ground piping. All storage tanks must have overfill protection systems and impervious secondary containment. Those tanks in direct contact with the ground must have cathodic protection systems and, depending on their date of installation, must have their bottoms coated with epoxy or fitted with a double bottom and leak detection system.

BNL has been able to meet the requirements of some of the new code modifications through the General Plant Projects (GPP) program. All the tanks have or are in the process of having overfill protection systems installed and have had the necessary modifications for secondary containment. However, the scope and cost of meeting full compliance for the FSTF requires a line item project.

1. Title and Location of Project: Fuel Storage and Transfer
Facility Upgrade
Brookhaven National Laboratory
Upton, New York

2a. Project No. 94-E-351
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

The regulatory timetable for achieving compliance for the FSTF has been exceeded and will require a temporary waiver to continue operations. Renewal of the NYSDEC Major Petroleum Facility license will be dependent upon having a conceptual plan and a funding commitment in place to perform the upgrades needed to achieve full compliance.

An additional benefit of implementing this project is that it will enable reactivation of the Alternate Liquid Fuel Program (ALF). The ALF program, as required by SEN 28, reduces the consumption and dependence on imported petroleum. The ALF program had to be curtailed because the FSTF did not meet the compliance requirements for the light fuels handled and stored as part of the ALF program.

In order to bring the FSTF into compliance with all applicable codes, the following actions will be undertaken during this project:

- a. A fuel truck unloading enclosure will be constructed to minimize run-off in the fuel handling area. The area will have diked secondary containment with leak detection systems and an oil/water separator to process any run-off collected.
- b. A pump house will be constructed to enable unloading and transfer of fuel from trucks more safely.
- c. All underground piping will be replaced with new piping fitted with secondary containment and leak detection systems.
- d. New above ground piping fitted with secondary containment and leak detection will be installed where necessary to improve the safety of transfer operations.
- e. All fuel storage tanks in contact with the ground will be epoxy coated on the inner bottom. Those tanks containing light fuels will have double bottoms and leak detection systems installed.
- f. All fuel storage tanks in contact with the ground will be fitted with cathodic protection systems.
- g. Fuel tanks which store fuel oils with flashpoints below 100° F will be fitted with fixed foam fire protection systems.

1. Title and Location of Project: Fuel Storage and Transfer
 Facility Upgrade
 Brookhaven National Laboratory
 Upton, New York

2a. Project No. 94-E-351
 2be Construction Funded

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and management costs.....e.....		\$ 448
1. Engineering, design and inspection at approximately 14 percent of construction costs, Item b (Design, Drawings and specifications: \$184).....	\$ 386	
2. Project management at 2 percent of construction costs (item b) and EDI (item a.1).....	62	
b. Construction costs.....e.....		2,700
1. Fuel transfer facility.....	1,030	
2. Piping upgrades.....	900	
3. Fuel tank upgrades.....	580	
4. Fire protection upgrades.....e.....	190	
Subtotal.....		<u>\$3,148</u>
c. Contingencies at approximately 14 percent of above costs.....		452
Total line item costs		<u>\$3,600 b/</u>

a/ The above estimates are based on the Conceptual Design Report dated December 1991.

b/ Escalation rates used were taken from DOE Department Price Change Index - FY 1993 Guidance, August 1991 update.

11. Method of Performance

Engineering, design and inspection shall be performed by the operating contractor in conjunction with a fixed price^e evaluated architect/engineer contract. Construction and procurement shall be accomplished by fixed price contracts awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000 per draft DOE Order 5100.3a.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Conceptual design completed at \$50,000. Other data not required on projects with a TEC of less than \$5,000,000 per draft DOE Order 5100.3ae

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories-Facilities Support
Multiprogram Energy Laboratories - Environment, Safety and Health Support

- | <p>1. Title and location of project: Building 801 - Renovations
Brookhaven National Laboratory
Upton, New York</p> | <p>2a. Project No. 96-E-332
2b. Construction Funded</p> | | | | | | | | | | | | | | | | |
|--|---|--------------------|----------------------|--------------------|--------------|------|--------|--------|--------|------|-------|-------|-------|------|---|---|-------|
| <p>3a. Date A-E Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1996</p> | <p>5. Previous Cost Estimate:
Total Estimated Cost (TEC): None
Total Project Cost (TPC): None</p> | | | | | | | | | | | | | | | | |
| <p>3b. A-E Work (Title I & II) Duration: 9 months</p> | <p>6. Current Cost Estimate:
TEC -- \$ 6,370
TPC -- \$ 6,420</p> | | | | | | | | | | | | | | | | |
| <p>4a. Date Physical Construction Starts: 2nd Qtr. FY 1997</p> | <p>7. <u>Financial Schedule (Federal Funds):</u></p> | | | | | | | | | | | | | | | | |
| <p>4b. Date Construction Ends: 4th Qtr. FY 1998</p> | <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 25%;"><u>Fiscal Year</u></th> <th style="text-align: left; width: 25%;"><u>Appropriation</u></th> <th style="text-align: left; width: 25%;"><u>Obligations</u></th> <th style="text-align: left; width: 25%;"><u>Costs</u></th> </tr> </thead> <tbody> <tr> <td>1996</td> <td>\$ 800</td> <td>\$ 800</td> <td>\$ 610</td> </tr> <tr> <td>1997</td> <td>5,570</td> <td>5,570</td> <td>3,100</td> </tr> <tr> <td>1998</td> <td>0</td> <td>0</td> <td>2,660</td> </tr> </tbody> </table> | <u>Fiscal Year</u> | <u>Appropriation</u> | <u>Obligations</u> | <u>Costs</u> | 1996 | \$ 800 | \$ 800 | \$ 610 | 1997 | 5,570 | 5,570 | 3,100 | 1998 | 0 | 0 | 2,660 |
| <u>Fiscal Year</u> | <u>Appropriation</u> | <u>Obligations</u> | <u>Costs</u> | | | | | | | | | | | | | | |
| 1996 | \$ 800 | \$ 800 | \$ 610 | | | | | | | | | | | | | | |
| 1997 | 5,570 | 5,570 | 3,100 | | | | | | | | | | | | | | |
| 1998 | 0 | 0 | 2,660 | | | | | | | | | | | | | | |

1. Title and location of project: Building 801 - Renovations
Brookhaven National Laboratory
Upton, New York

2a. Project No. 96-E-332
2b. Construction Funded

8. Brief Physical Description of Project.

This project in the west side of Building 801 (the Hot Lab), is part of a comprehensive effort to accomplish the following: upgrade the production of radionuclides and radiopharmaceuticals for supply to the pharmaceutical/medical community outside the laboratory; upgrade major research program leading to new and more effective diagnostic and therapeutic agents; comply with DOE Order 5820.2A, which requires that the generation of low-level radioactive waste be reduced; and support a continuing effort to bring Brookhaven National Laboratory (BNL) into conformance with Federal, state, and local environmental laws and regulatory requirements. The unique location of BNL over an EPA designated "sole-source" aquifer has heightened regulatory concern over potential ground water contamination from BNL facilities.

Work to renovate the Facility consists of the following:

- a. A radiological cleaning of the building interior.
- b. Removing asbestos and lead.
- c. Installing security and fire alarm systems and connecting telephone lines to laboratory security and fire detection main systems.
- d. Removing and replacing the entire ventilation system and exhaust system with a new central air conditioning system with humidification.
- e. Removing and replacing the existing fume hoods and equipment with new fume hoods and equipment in accordance with OSHA 1910.1450.
- f. Upgrading the electrical power and removing and replacing the entire electrical and lighting system to meet new codes and the most recent energy conservation requirements.
- g. Removing and replacing the plumbing system, including piping, valves, fixtures, tanks, and controls with new equipment that will meet all codes and regulations.

1. <u>Title and location of project:</u> Building 801 - Renovations Brookhaven National Laboratory Upton, New York	2a. Project No. -332 2b. Construction Funded
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8. Brief Physical Description of Project (Continued)

- h. Decontaminating, removing, packaging, and replacing the neutralization system and "A", "B", & "D" waste systems, including piping, valves, tanks and controls with new equipment that will meet all codes and regulations, including DOE Order 5820.2A, which requires segregating low-level waste by classes.
- i. Packaging and shipping all radioactive, chemical, and asbestos waste to appropriate disposal sites for burial in compliance with all applicable codes and regulations.

9. Purpose, Justification of Need for, and Scope of Project

- a. The Radionuclide and Radiopharmaceutical Research Group of the Medical Department is involved in many fundamental aspects of radiopharmaceutical research leading to new and more effective diagnostic and therapeutic agents. Recent major emphasis in this program has been on the research on radiolabeled monoclonal antibody immunoconjugates for both imaging and therapy, blood cell labeling techniques and mechanisms, and new radiopharmaceutical development for oncology. Extensive nuclear and radiochemical studies, isotope production, development of radiosynthetic and analytical procedures, ligand synthesis, mechanistic investigations, animals' studies, and clinical trials are integral parts of this program.

Building 801 is used for offices, chemistry laboratories for non-radioactive work, chemistry laboratories for low-medium level radioactivity work hot cells, a counting room, and hot waste storage. The building is 41 years old. The facilities and laboratories are inadequate for current uses and do not comply with environmental, safety, and health standards. The specific justifications of the major items requested in this renovation are described below.

- b. Replace Fresh Air Ventilation System: A major problem for the entire building is the dirt coming from all the fresh air ventilation ducts. This causes problems with sensitive, chemical analytical equipment in the labs.
- c. Renovate Semi-Hot Labs: These obsolete laboratories need to be completely refurbished; particularly the hoods, which no longer meet code, have poor lighting, and unsafe wooden sashes. In addition, the mechanisms for raising or lowering the sashes are broken and wood blocks or cotter pins are used to hold up the sashes. The laboratory furniture also is broken, and many desk drawers do not work. The floor tile is so worn that spilled radioactive solutions tend to make decontamination more difficult.

1. Title and location of project: Building 801 - Renovations
Brookhaven National Laboratory
Upton, New York

2a. Project No. 96-E-332
2b. Construction Funded

9. Purpose, Justification of Need, and Scope of Project (Continued)

- d. Renovate Laboratories: Laboratories contain obsolete lead caves with old rectilinear manipulators, used mostly for processing reactor targets. They are poorly laid out, contain no port holes, and have inadequate ventilation. The manipulators, built in-house at least 30 years ago, offer only restricted motion, are difficult to use, and are unreliable. These caves should be replaced with modern hot boxes.
- e.e. Upgrade the Liquid Radioactive Waste System: The "B" system for storing higher level B₂ liquid radioactivity was taken off line years ago due to corrosion. Our present level of operations (and future enhanced levels) produce liquid radioactive waste that is too hot for the existing "D" system. Removing this waste is a major problem; therefore, a "B" system is required. Also the acid neutralization system for halogenated acid hot waste (eg. HCl) is defunct. As most of the BLIP targets are resolved in HCl, we continuously generate this category of mixed waste, and presently, cannot dispose of it at all. The acid neutralization, "B" & "D" waste systems must be replaced because they do not meet code.
- f. Install a Counting Room: Install a counting room in the hot area. Radioactive samples are presently carried to the low-level counting room for analysis. This room is on the other side of the building in the cold area. A counting room in the hot area suitable for higher level samples will mostly eliminate the need to move radioactive sources through the cold area.
- g. Remove Archaic Hot Cells and Install a Shielded Storage Vault: The hot cells in the high bay area are as old as the building. They have not been used in over 20 years and are inoperable. Although we need additional storage space for radioactive material, the size and access to these cells make them inappropriate for such use. Therefore, they should be decontaminated, removed, and replaced with new storage vaults.
- h. Install Refurbished Laboratory: This space contains an obsolete cave, a jury-rigged hood, and several old laboratory benches. The ventilation of the cave and hood is grossly inadequate, the laboratory lighting is poor, and the temperature is poorly controlled due to the proximity to an exterior door. This laboratory must be renovated with new fume hoods, furniture, and must be partitioned from the entry door and the neighboring waste treatment area, in accordance with OSHA 1910.1450.
- i. Build Additional Office Space: This project will require additional staff in our group. Thus, four additional offices are needed.

1. Title and location of project: Building 801 - Renovations
Brookhaven National Laboratory,
Upton, New York

2a. Project No. 96-E-552
2b. Construction Funded

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and Management Costs.....		\$ 730
1. Engineering, design and inspection at approximately 14% of construction costs, Item c (Design, Drawings, and Specifications: \$275).....	633	
2. Project Management at approximately 2% of construction costs (Item c) and EDI (Item a.1).....	97	
b. Construction costs.....		4,577
1. Building	2,640	
2. Asbestos abatement	716	
3. Decontamination radioactive abatement	1,221	
c. Standard Equipment.....		1
Subtotal.....		5,308
d. Contingencies at approximately 20% of above costs.....		1,062
e. Total Line item cost (Section 12.a.1.(a)).....		<u>\$ 6,370</u> b/

11. Method of Performance

Design and inspection will be on the basis of a negotiated architect-engineer contract. Construction and procurement will be accomplished by a competitively obtained lump sum contract.

a/ Estimate is based Conceptual Design Report dated December 1992; Revised February 1994.

b/ Escalation rates used were taken from DOE Departmental Price Change Index - FY 1996 Guidance, August 1993 Update.

1. Title and location of project: Building 801 - Renovations Brookhaven National Laboratory Upton, New York	2a. Project No. 96-E-332 2b. Construction Funded
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12. Schedule of Project Funding and Other Related Funding Requirements

	<u>Prior Years</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Total</u>
a. Total project costs					
1. Total project costs					
(a) Line Item.....	\$ 0	\$ 610	\$ 3,100	\$ 2,660	\$ 6,370
Total project cost	\$ 0	\$ 610	\$ 3,100	\$ 2,660	\$ 6,370
2. Other project costs					
(a) Conceptual design costs.....	50	0	0	0	50
Total project cost (TPC)....	\$ 50	\$ 610	\$ 3,100	\$ 2,660	\$ 6,420
b. Related annual funding (Not applicable)					

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

- a. Total project funding**
 - 1. Total facility Costs**
 - (a) Line item--Narrative not required.
 - (b) PE&D--None.
 - (c) Expense-funded equipment--
 - (d) Inventories--None.
 - (e) Non-Federal Contribution--None.
 - 2. Other project costs**
 - (a) R & D --None
 - (b) Conceptual design--No narrative required.
 - (c) D&d --None
 - (d) Other project related costs--
 - (e) Non-Federal Contribution --None.
- b. Related annual funding (Not required)**

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories-Facility Support
Multiprogram Energy Laboratories - Environment, Safety and Health Support

- | | |
|--|--|
| <p>1. Title and Location of Project: Sanitary Sewer Restoration, Phase I
Lawrence Berkeley Laboratory
Berkeley, California</p> | <p>2a. Project No. 96-E-331
2b. Construction Funded</p> |
| <p>3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1996</p> | <p>5. Previous Cost Estimate
Total Estimated Cost (TEC): None
Total Project Cost (TPC): None</p> |
| <p>3b. A-E Work (Titles I & II) Duration: 15 months</p> | |
| <p>4a. Date Physical Construction Starts: 3rd Qtr. FY 1997</p> | <p>6. Current Cost Estimate:
TEC -- \$2,400
TPC -- \$2,415</p> |
| <p>4b. Date Construction Ends: 4th Qtr. FY 1998</p> | |
| <p>7. <u>Financial Schedule (Federal Funds):</u></p> | |

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1996	\$ 2,400	\$ 2,400	\$ 300
1997	0	0	1,200
1998	0	0	900

1. Title and Location of Project: Sanitary Sewer Restoration, Phaseal
Lawrence Berkeley Laboratory
Berkeley, California

2a. Project No. 96-E-331
2b. Construction Funded

8. Brief Physical Description of Project

Portions of the underground sanitary sewer system will be replaced based upon video camera surveys of site sanitary sewer lines. This project will replace sections of the system where the video camera survey indicates the potential for imminent failure or leakage, including approximately 3,480 feet of sanitary sewer lines ranging in diameter from three (3) inches to eight (8) inches. Additional video surveys are planned to assess the balance of the sanitary sewer system.

Soil samples will be tested during construction for possible contamination of suspected leaks. Samples will be analyzed by a certified laboratory to characterize any contamination. All excavated material that is contaminated will be either remediated or removed to an authorized hazardous waste site.

These improvements to existing government-owned facilities will be located on land owned by the University of California and will serve or be operated in conjunction with other government-owned facilities at the Lawrence Berkeley Laboratory (LBL).

9. Purpose, Justification of Need For, and Scope of Project

The sanitary sewer system at LBL was put into service when the laboratory commenced operations over 50 years ago. Portions of the sewer system have deteriorated or failed due to age, the past practice of discharging corrosive substances, and unstable geological conditions. The video survey has clearly shown the need to replace broken, deteriorated and poorly aligned portions of the system. These conditions cause soil contamination, excessive maintenance and sewer line cleaning problems.

The video survey and analysis of findings revealed sewer breaks, offsets, obstructions and undulations. These conditions were caused by ground movement and differential settlements over a long period of time. Breaks and offsets have allowed sanitary sewer effluent to disperse in the surrounding soil. Obstructions and undulations increase the potential for failure and leakage where the lines cannot properly drain.

Recent soil tests adjacent to damaged sanitary sewer lines reveal the presence of hazardous substances in the soil. Federal and state regulations require contaminated soil to be remediated or transported to an authorized disposal site. Excavated areas must be back-filled with clean soil.

1. Title and Location of Project: Sanitary Sewer Restoration, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

2a. Project No. 96-E-331
2b. Construction Funded

10. Details of Cost Estimate

	<u>Item Cost</u>	<u>Total Cost</u>
a. Engineering, design, and inspection (ED&I)		
1. Engineering, design, and inspection at approximately 21% of construction.....		\$ 290
2. Project management at approximately 7% of construction.....		100
b. Construction costs.....		1,400
1. Utilities.....	\$ 1,400	
c. Relocations/Removals.....		0
Subtotal.....		<u>1,790</u>
d. Contingency at approximately 25% of above costs.....		450
Subtotal.....		<u>2,240</u>
e. LBL overhead at approximately 8%.....		160
Total line item cost.....		<u>\$ 2,400</u>

Construction costs have been escalated at 1.8% for FY 1992, 2.6% for FY 1993, 3.4% for FY 1994, 4.0% for FY 1995, 3.9% for FY 1996, 3.8% for FY 1997, and 3.6% for FY 1998, compounded to midpoint of construction.

Conceptual design is complete.

1. Title and Location of Project: Sanitary Sewer Restoration, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

2a. Project No. 96-E-331
2b. Construction Funded

11. Method of Performance

Titles I, II and III engineering will be performed by an Architect/Engineer firm on a negotiated, fixed-price Subcontract. The LBL Plant Engineering Department will provide construction inspection. Construction and procurement will be accomplished by fixed-price Subcontracts awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories-Facilities Support
 Multiprogram Energy Laboratories - Environment, Safety and Health Support

-
1. Title and Location of Project: Building Electrical Service Upgrade - Phase I
 Argonne National Laboratory
 Argonne, Illinois
- 2a. Project No. 96-E-330
 2b. Construction Funded
-
- 3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1996
 3b. A-E Work (Title I & II) Duration: 6 months
5. Previous Cost Estimate:
 Total Estimated Cost (TEC): None
 Total Project Cost (TPC): None
-
- 4a. Date Physical Construction Starts: 2nd Qtr. FY 1997
 4b. Date Construction Ends: 4th Qtr. FY 1998
6. Current Cost Estimate:
 TEC -- \$7,350
 TPC -- \$7,430
7. Financial Schedule Federal Funds:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1996	\$ 1,200	\$ 1,200	\$ 1,000
1997	3,500	3,500	4,000
1998	2,650	2,650	2,350

1. Title and Location of Project: Building Electrical Service Upgrade - Phase I 2a. Project No. 96-E-330
Argonne National Laboratory 2b. Construction Funded
Argonne, Illinois

8. Brief Physical Description of Project

This project will provide the most urgently needed replacement of emergency generators and the upgrade of the building's main electrical services (circuit breaker retrofits, bus duct replacement and emergency generator replacements) that are no longer adequate, reliable, efficient, or in accordance with existing electrical codes/standards and environment, safety and health standards. The proposed upgrade and replacement are as follows:

- Upgrade thirty-one (31) switchgear assemblies by installing solid state trip devices and/or retrofitting circuit breakers in fourteen (14) buildings. This includes: removal of old breaker equipment from the cell position; disconnection of line and load side bus and cable connections; installation of a new circuit breaker retrofitted package; reconnection of bus and cable connections; upgrading breaker cell space positions; upgrading some switchgear breakers by installing solid state trip units; and installing instrument panels.
- Replace all 1960 vintage ITE bus duct with the latest design, including plug-in devices, in two (2) buildings.
- Replace five (5) steam-turbine emergency generators and one (1) diesel emergency generator with new diesel generator including remote radiators, prefabricated metal or masonry wall enclosures, diesel oil storage tanks, day tanks, batteries, switches and wiring.

9. Purpose, Justification of Need For, and Scope of Project

The frequency and duration of general maintenance has continued to increase beyond normal expectations, which results in longer than desired operation of stand-by units, greater probability of failure, increased parts and labor costs, and increased potential for negative impact on scientific programs.

The equipment to be replaced under this project does not comply with current OSHA, NEC, NEMA and IEEE Standards and Regulations; therefore, the equipment is not in compliance with DOE Orders.

The main electrical indoor substation switchgear equipment was manufactured prior to 1950 (this equipment had been used by the WWII armed services before installation at Argonne). Electrical switchgear contains several circuit breakers which are switching devices designed to open a current-carrying circuit under abnormal current conditions. The safety of all electrical installations depends heavily upon the function of protective devices like the circuit

1. Title and Location of Project: Building Electrical Service Upgrade - Phase I
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 96-E-330
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

breaker (or fuse) to disconnect the source of supply from any portion of a system which has experienced a fault (short circuit) or an overload condition.

Because a circuit breaker is called upon to operate under short circuit or overload conditions, it must constantly be maintained in proper operating condition. This requires the replacement of worn or deteriorated parts, resulting in increased maintenance costs.

After a certain number of years, the useful life of the circuit breaker is considered expended. At that time, spare parts are often no longer available, or deterioration has progressed to the point where dependable repair can no longer be effected.

Bus Duct

A portion of bus duct systems in two buildings have an old, outdated version of the ITE bus duct and will be replaced where necessary. The original equipment manufacturer recommends the replacement of this bus duct with ducts of newer design because of aged and deteriorated insulation.

Emergency Generators

The existing emergency generators provide the critical back-up electrical power when there is an interruption or failure of the normal power source feeders. The generators provide power to pumps, critical air exhaust fans, selected distribution panels for laboratory instruments, and emergency lighting. In many cases, their capacity and operational functions are critical toward protecting long-term scientific experiments. Most of the existing generators to be replaced are steam driven turbine systems, which totally rely on steam pressures of 180 to 200 lbs to reach their original design capacity.

Recent load tests revealed the generators were providing only 60 to 80% of their rated capacity at maximum supplied steam pressures. It is logical to presume, from experience, that this age-related degradation of capacity will continue until the generators are no longer capable of serving their connected loads.

1. Title and Location of Project: Building Electrical Service Upgrade - Phase I
 Argonne National Laboratory
 Argonne, Illinois

2a. Project No. 96-E-330
 2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

In addition, the capacity of the generators is directly dependent on the ability of the existing steam distribution system to maintain adequate steam pressure and flow, an ability that could be compromised by component failure or by damage to the boiler house and/or steam distribution piping caused by disasters such as tornados.

Lastly, these steam driven turbine generators are not in compliance with the National Electrical Code (NECE- Article 700) nor the National Fire Protection Association (NFPA 10) which require that Level-1 emergency power supply (EPS) systems shall be provided with an on-premise fuel supply and will not be dependent on other sources of fuel supply. Level-1, which refers to applications that protect against loss of human life or serious injury, further requires that emergency power supply systems shall be located in separate and dedicated two-hour fire-rated interior enclosures or non-combustible sheltered exterior enclosures. One of the existing steam turbines fulfills these requirements.

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Cost</u>
a. Engineering, design, and inspection (ED&I).....		\$ 758
1. Engineering, design, and inspection at approximately 9% of construction.....	\$ 524	
2. Construction management at approximately 2.5% of construction.....	146	
3. Project management at approximately 1.5% of construction.....	88	
b. Construction costs b/.....		5,793
1. Switchgear.....e.....	3,688	
2. Bus duct.e.....e.....e.e.....e.....	414	
3. Emergency generators.....e...e.....e.....	1,691	
Subtotal.....e.....		<u>\$ 6,551</u>
c. Contingency at approximately 12.2% of above costs.e.....		799
Total line item cost.....		<u>\$ 7,350</u>

a/ Estimates are based on a completed conceptual design and current cost data. An overhead assessment has been applied at the rate of 5% for FY 1996 and outyears.

b/ All costs have been escalated from January 1994 to the midpoint at a rate of 1.1525 for switchgear and bus duct and 1.1480 for emergency generators. Escalation rate methodology is based upon DOE FY 1996 Guidance dated August 1993: FY 1994 - 3.4%; FY 1995 - 4.0%; FY 1996 - 3.9%; FY 1997 - 3.8%; FY 1998 - 3.6%.

1. Title and Location of Project: Building Electrical Service Upgrade - Phase I
 Argonne National Laboratory
 Argonne, Illinois

2a. Project No. 96-E-330
 2b. Construction Funded

11. Method of Performance

Engineering and design will be performed under a negotiated architect/engineer (A/E) contract with guidance, review and monitoring by laboratory personnel. Inspection will be performed by laboratory personnel aided by the A/E firm. Construction management and project management will be performed by laboratory personnel. Construction will be accomplished by fixed-price lump sum contract awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

	<u>Prior Years</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Total</u>
a. Total project funding							
1. Total facility costs							
(a) Line item (Sec. 10).....	\$ 0	\$ 0	\$ 0	\$ 1,000	\$ 4,000	\$ 2,350	\$ 7,350
Total direct costs.....	0	0	0	1,000	4,000	2,350	7,350
2. Other project costs							
(a) Conceptual design costs.....	\$ 45	\$ 10	\$ 0	\$ 0	\$ 0	\$ 0	\$ 55
(b) Documentation costs.....	15	10	0	0	0	0	25
Total other project costs.....	\$ 60	\$ 20	\$ 0	\$ 0	\$ 0	\$ 0	\$ 80
Total project costs.....	\$ 60	\$ 20	\$ 0	\$ 1,000	\$ 4,000	\$ 2,350	\$ 7,430
b. Related annual funding (estimated life of building: 30 years)							
1. Facility operating costs.....							\$ 0
2. Programmatic operating expenses directly related to the facility.....							0
3. Capital equipment not related to construction but related to the programmatic effort in the facility.....							0
4. Maintenance, repair, GPP or other construction related to programmatic effort in the facility.....							0
Total related annual funding.....							\$ 0

1. Title and Location of Project: Building Electrical Service Upgrade - Phase I
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 96-E-330
2b. Construction Funded

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

- a. Total project funding
1. Total facility costs
 - (a) Construction line item - Narrative not required.
 2. Other project costs
 - (a) Conceptual design costs are for Conceptual Design Report.
 - (b) Documentation costs includes preparation of project data sheets, design criteria/reviews, and Environmental Evaluation Notification Form (DOE-CH 560).
- b. Related annual funding
1. Facility operating costse- Implementation of this program will replace existing physical components in the electrical distribution system with new state-of-the-art equipment. This will result in a reduction of maintenance and operating costs while restoring an acceptable level of operational efficiency and reliability to the system, thus the facility operating cost is given as zero.
 2. Programmatic operating expenses directly related to the facility - Although this project will restore and replace general purpose facilities employed to supply electrical power to a wide variety of activities, there is no activity operating expense directly related to, or required for support of this project, thus the activity operating expense is given as zero.
 3. There is no capital equipment related to the programmatic effort in the facility.
 4. There iseno maintenance, repair, GPP or other construction related to programmatic effort in the facility.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - Environment, Safety and Health Support

-
1. Title and Location of Project: Loss Prevention Upgrades
 Electrical Substations
 Brookhaven National Laboratory
 Upton, New York
- 2a. Project No. 95-E-309
 2b. Construction Funded
-
- 3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1995
- 3b. A-E Work (Title I & II) Duration: 24 Months
- 4a. Date Physical Construction Starts: 4th Qtr. 1996
- 4b. Date Construction Ends: 3rd Qtr. FY 1998
5. Previous Cost Estimate:
 Total Estimated Cost (TEC) -- None
 Total Project Cost (TPC) -- None
6. Current Cost Estimate:
 TEC -- \$ 6,970
 TPC -- \$ 7,020
-
7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 600	\$ 600	\$ 315
1996	2,480	2,480	585
1997	3,890	3,890	3,499
1998	0	0	2,571

1. Title and Location of Project: Loss Prevention Upgrades
Electrical Substations
Brookhaven National Laboratory
Upton, New York

2a. Project No. e. 95-E-309
2b. Construction Funded

8. Brief Physical Description of Project

This project provides for the upgrade of approximately 96 existing substations to bring the installations back into compliance with codes and regulations, the restoral and repair of personnel protection equipment, and the restoral or improvement of substation enclosures.

The work with respect to fire protection includes: relocating transformers; replacing oil-filled transformers with dry type; replacing oil-filled transformers with less flammable fluid; providing fire stand pipes and hose stations; providing fire deluge systems; providing dry chemical extinguishing systems; providing fire walls and barriers; providing wire glass; providing fire seals; relocating combustible materials and trailers; providing curbing; and providing oil retention pits.

Substation enclosures work includes: extending existing fence to proper heights; providing new fence to replace deteriorating fence; providing new fence for relocated transformers; replacing existing fences at proper clearances; providing non-combustible door for vaults; providing panic hardware on vault doors; and providing protective screens.

The work to be performed with respect to grounding includes: replacing deteriorating ground connection; replacing deteriorating ground cable; providing new grounding for relocated substations; providing ground jumpers for gates; providing equipment grounds; and reshaping arrestor grounding.

9. Purpose, Justification of Need for, and Scope of Project

This project was initiated as a result of the T.S.A. Tiger Team Finding FP 4-2 identifying the site's vulnerability to being shut down for an unacceptable period of time as a result of a credible fire. A survey of the site was conducted. The survey reviewed over 100 substations containing over 300 transformers. Applicable standards and codes were utilized to perform the evaluation.

This project is justified by minimizing potential harmful situations to personnel due to inadequate grounding and physical protection, as well as minimizing the potential loss of property and experimental program time due to fire.

1. 1. and Location of Project: Loss Prevention Upgrades
Electrical Substations
Brookhaven National Laboratory
Upton, New York

2a. Project No. 95-E-309
2b. Construction Funded

9. Purpose, Justification of Need for, and Scope of Project (Continued)

Existing conditions at some of the substations are as follows:

- Transformer location being too close to buildings as outlined in Factory Mutual guidelines.
- Fire standpipe and hose stations are required as outlined in Factory Mutual guidelines.
- Curbing to contain oil spills is required as outlined in Factory Mutual guidelines.
- Fire extinguishing system is required as outlined in Factory Mutual guidelines.
- Oil retention pit is required by EPA and as outlined in Institute of Electrical and Electronic Engineers (IEEE) Standard 980.
- Relocate trailer, combustible material, and gas storage shed to minimize potential fires as required by NFPA.
- Provide fire dampers in ductwork, wire glass in windows and fire seals in fire wall penetrations to prevent the spread of fires as required by NFPA.
- Provide new fence to replace deteriorating fences.
- Provide new fence with proper clearances as required by National Electrical Code (NEC) and National Electric Safety Code (NESC).
- Provide fence or modify existing fence to have proper height per NEC and NESC.
- Provide lockable access gates or doors with proper hardware per NEC and NESC.
- Replace new or supplemental grounding to gates, fence, and equipment as required.

Project work is divided into two major groups. The first group (A) is a higher priority due to immediate personnel protection concerns and life safety considerations. The second group (B) is the remainder of the substations.

1. Title and Location of Project: Loss Prevention Upgrades
 Electrical Substations
 Brookhaven National Laboratory
 Upton, New York

2a. Project No. 95-E-309
 2b. Construction Funded

10. Details of Cost Estimate a/	Item Cost	Total Cost
a. Design and management costs.....		\$ 987
1. Engineering, design and inspection at approximately 15 percent of construction costs, Item b.....	\$ 822	
2. Project management at approximately 3 percent of construction costs (Item b) and EDI (Item a.1).....	165	
b. Construction costs.....		5,353
1. Substation modifications group A (First Priority).....	3,560	
2. Substation modifications group B (Second Priority).....	1,793	
Subtotal.....		6,340
c. Contingencies at approximately 10 percent of above costs.....		630
Total Line item cost		<u>\$ 6,970</u> a/b/

a/ Estimate is based Conceptual Design Report dated January 1993.

b/ Escalation rates used were taken from DOE Departmental Price Change Index - FY 95 Guidance, August 1992 Update.

11. Method of Performance

Engineering, design and inspection will be performed by the operating contractor. Construction and procurement will be accomplished by fixed price contracts awarded on the basis of competitive bidding.

1. Title and Location of Project: Loss Prevention Upgrades
 Electrical Substations
 Brookhaven National Laboratory
 Upton, New York

2a. Project No. 95-E-309
 2b. Construction Funded

12. Schedule of Project Funding and Other Related Funding Requirements

	<u>Previous Years</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Total</u>
a. Total project costs						
1. Total facility costs						
(a) Line Item	<u>0</u>	<u>\$ 315</u>	<u>\$ 585</u>	<u>\$3,499</u>	<u>\$2,571</u>	<u>\$6,970</u>
Total facility cost	<u>0</u>	<u>\$ 315</u>	<u>\$ 585</u>	<u>\$3,499</u>	<u>\$2,571</u>	<u>\$6,970</u>
2. Other project costs						
(a) Conceptual design costs.....	<u>50</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>50</u>
Total project cost.....	<u>\$ 50</u>	<u>\$ 315</u>	<u>\$ 585</u>	<u>\$3,499</u>	<u>\$2,571</u>	<u>\$7,020</u>
b. Related annual funding						
Not applicable.						

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

- a. Total project funding
1. Total facility costs
 - (a) Line item--Narrative not required.
 - (b) PE&D--None.
 - (c) Expense-funded equipment--None.
 - (d) Inventories--None.
 - (e) Non-Federal Contribution--None.
 2. Other project costs
 - (a) R & D --None.
 - (b) Conceptual design--No narrative required.
 - (c) D&d --None.
 - (d) Other project related costs--None.
 - (e) Non-Federal Contribution --None.
- b. Related annual funding--Not required.

DEPARTMENT OF ENERGY
FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
Multiprogram Energy Laboratories - Environment, Safety and Health Support

<p>1. Title and location of project: Sanitary System Modifications Phase II Brookhaven National Laboratory Upton, New York</p>	<p>2a. Project No. 95-E-308 2b. Construction Funded</p>
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<p>3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 1st Qtr. FY 1994</p> <p>3b. A-E Work (Title I & II) Duration: 10 Months</p>	<p>5. Previous Cost Estimate: Total Estimated Cost (TEC) -- None Total Project Cost (TPC) -- None</p>
<p>4a. Date Physical Construction Starts: 1st Qtr. FY 1996</p> <p>4b. Date Construction Ends: 2nd Qtr. FY 1997</p>	<p>6. Current Cost Estimate: TEC -- \$ 3,532 TPC -- \$ 3,772</p>

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 960	\$ 960	\$ 700
1996	1,540	1,540	1,200
1997	1,032	1,032	1,300
1998	0	0	332

1. 1. Name and location of project: Sanitary System Mod. Stationse
Phase II
Brookhaven National Laboratory
Upton, New York

2a. Project No. 95-E-308
2b. Construction Funded

8. Brief Physical Description of Project

This project is the second phase of upgrades to the laboratory sanitary waste system. Under phase I, major operational systems of the waste treatment plant have been upgraded and about 7,000 linear feet of trunk sewer lines and 26 manholes upstream of the treatment plant have been replaced. This phase continues with replacement of the balance of defective sewer lines and implements treatment plant building improvements.

Included in this second phase are the following upgrades:

- a. Replacement of approximately 15,440 linear feet of defective sewer pipe with cement-lined ductile iron or heavy wall PVC pipe. The pipe size varies from 6 inches to 30 inches.
- b. Hyperchlorite Building (No. 576) - demolish plywood structure and replace with masonry structure.
- c. Barminator Building (No. 583) - demolish plywood structure and replace with masonry structure.
- d. Influent Measuring Building (No. 584) - demolish plywood structure and replace with masonry structure.
- e. Service Building (No. 575) - replace adjacent lunch and spare parts trailer with masonry addition.

9. Purpose, Justification of Need for, and Scope of Project

Deteriorating Sewer Lines and Manholes

The laboratory is situated over Long Island's sole source aquifer. The 1990 Tiger Team Assessment states "...sound environmental management practices dictate that sewage collection systems be repaired and maintained to minimize contamination of soils and groundwater through sewer lines exfiltration or, conversely, to prevent overloading of waste treatment facilities due to infiltration of storm water." A video inspection of the sewage collection system, conducted in 1988, identified areas where pipes were cracked, broken, and in some cases, nearly collapsed. Root intrusion is prevalent and some lines contain dips or may slope the wrong way giving rise to areas, which are continually flooded and contain standing debris. Most of the lines are vitrified tile with joints at 4 foot intervals. Twenty-six defective sanitary manholes were also identified.

To generally eliminate or minimize present and future infiltration to the groundwater and exfiltration to the sewage collection system, existing defective sewer piping will be replaced with approximately 15,440 linear feet of new

1. Title and location of project: Sanitary System Modificationse
Phase II
Brookhaven National Laboratory
Upton, New York

2a. Project No. 95-E-308
2b. Construction Funded

9. Purpose, Justification of Need for, and Scope of Project (Continued)
Deteriorating Sewer Lines and Manholes

cement lined ductile iron or heavy wall PVC pipe from manhole to manhole. Piping will be installed in 18 to 20 foot lengths and be connected with the highest quality gasketed joints.

Wastewater Treatment Plant Building Improvements

Building Nos. 576, 583 and 584 are plywood structures that do not presently meet the standards of the New York State Building Code and are in violation of OSHA and NEC codes since heating and electrical systems are not suitable for the existing hazardous atmospheres and adequate ventilation is not provided. The structures will be demolished and replaced with new block structures.

In Bldg. 575 (Service Building) an adjacent trailer serves as lunch room and spare parts storage area. The trailer is old, cramped and in a deteriorated condition. The spare parts area is inaccessible to large parts storage, as it lacks a double door at ground level. The trailer will be replaced with a masonry addition large enough for a storage area with hoisting equipment and a separate lunch room.

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and management costs.....		\$ 431 .
1. Engineering, design, and inspection at approximately 14% of construction costs, item b.....e.....	\$ 371	
2. Project management at 2 percent of construction costs.....	60	
b. Construction costs.....e.....e.....e.....e.....e.....		2,650
1. Pipe Replacement Contract No. 1.....e.....e.....e.....e.....e.....	930	
2. Pipe Replacement Contract No. 2e.....e.....e.....e.....e.....	1,400	
3. WWTF Building Improvementse.....e.....e.....e.....e.....	320	
Subtotale.....e.....e.....e.....e.....e.....		<u>\$3,081</u>
c. Contingency at approximately 14% of above costs.....		451
Total line item costs.....e.....e.....e.....e.....e.....e.....		<u>\$3,532 b/</u>

a/ Estimate is based on a Conceptual Design Report dated March 1992.

b/ Escalation rates used were taken from DOE Departmental Price Change Index - FY 1993 Guidance, August 1991 update.

1. Title and location of project: Sanitary System Modifications
Phase II
Brookhaven National Laboratory
Upton, New York

2a. Project No. 95-E-308
2b. Construction Funded

11. Method of Performance

Design will be accomplished under a negotiated architect-engineering contract and project management, quality assurance and inspection will be accomplished by Design and Construction Division of Plant Engineering. Construction and procurement will be accomplished by three or more competitively obtained lump sum contracts.

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Conceptual design completed at \$50,000. Other data not required on projects with a TEC of less than \$5,000,000.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

ENERGY SUPPLY RESEARCH & DEVELOPMENT - PLANT & CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - Environment, Safety and Health Support

1. Title and Location of Project: Fire Safety Improvements - Phase III
 Argonne National Laboratory
 Argonne, Illinois

2a. Project No. 95-E-307
 2b. Construction Funded

3a. Date A-E Work Initiated, (Title I Design Start Schedule): 2nd Qtr. FY 1995

3b. A-E Work (Title I & II) Duration: 10 Months

5. Previous Cost Estimate:
 Total Estimated Cost (TEC) -- None
 Total Project Cost (TPC) -- None

4a. Date Physical Construction Starts: 2nd Qtr. FY 1996

4b. Date Construction Ends: 4th Qtr. FY 1998

6. Current Cost Estimate:
 TEC -- \$ 2,880
 TPC -- \$ 2,946

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 210	\$ 210	\$ 170
1996	1,000	1,000	920
1997	1,000	1,000	840
1998	670	670	950

1. Title and Location of Project: Fire Safety Improvements - Phase III
Argonne National Laboratory
Argonne, Illinois

2a. Project No: 95-E-307
2b. Construction Funded

8. Brief Physical Description of Project

a. General

This project encompasses the third phase of site wide fire safety modifications at Argonne National Laboratory (ANL).

This project will provide new exit routes and upgrade existing exit routes in various facilities. Typical improvements will vary with each facility and will include the following:

- a. Widen existing corridors
- b. Provide required stairwell and corridor fire ratings
- c. Upgrade fire rating of doors
- d. Provide new corridors and aisles
- e. Provide new building exits
- f. Provide new stairwells
- g. Replace obsolete fire alarm system components and add to fire sprinkler protection.

Preliminary building surveys are in progress to ascertain specific building component deficiencies. These surveys are directed in two areas of review: 1) means of egress; and 2) fire separation/fire protection of building elements. This phase, Phase III, will address building means of egress life safety deficiencies. (i.e., those building exit components not in compliance with the NFPA 101 "Life Safety Code"). Phase IV and V will address the upgrading of the site fire alarm communications system and building fire separation/fire protection deficiencies as defined during the 1992 and 1993 fire protection surveys.

b. Means of Egress

ANL has completed the 1991 multiple building surveys of "means of egress" deficiencies. The deficiencies, in general, cover lack of required exit routes for building occupants.

1. Title and Location of Project: Fire Safety Improvements - Phase III
Argonne National Laboratory
Argonne, Illinois

2a. Project No: 95-E-307
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project

The ANL Fire Safety Improvements project is a multi-year multiple phase project being implemented to correct building fire protection and life safety deficiencies. The first two phases will address Factory Mutual survey recommendations, replace obsolete fire alarm system components and provide fire sprinkler protection to areas presently unprotected.

- a. This project is proposed as part of ANL's 1991 Action Plan #AP165, which was developed in response to DOE Tiger Team findings. Finding #FP.2-1 "Life Safety Code NFPA 101" and #WS.4-6 "Non-Compliance-Means of Egress" identified that ANL's building exit routes were not in compliance with 29 CFR 1910.36(b)(6), and NFPA 101.
- b. This project is required to comply with the following DOE Orders and national codes.

DOE Order 5480.7 "Fire Protection"

Section 5480.7 (10)(b)(5) - requiring limitations of fire spread with appropriate fire barriers.

Section 5480.7 (10)(b)(7) - requiring adequate fire resistive construction of enclosures such as stairwells.

DOE Order 5480.4 "Environmental Protection, Safety and Health Protection Standards" Appendix 2 - listing NFPA Fire Codes as mandatory standards.

Alternatives to the Proposed Actions

There appear to be two alternatives to Phase III of the Fire Safety Improvements Projects. These are: (1) take no action; and (2) make only minimal repairs and renovate only progressively when absolutely necessary.

No Action, Alternative No. 1

This alternative would allow existing fire and life safety deficiencies to continue in their present condition. The existing buildings covered in this report are not in compliance with the Life Safety Code, NFPA 101, which is a mandatory DOE code. If no action is taken, employees working within these buildings would be subject to high risk of injury or death resulting from fire. This action would be in violation of ANL's Tiger Team Assessment Plan items as approved by DOE. This action is not recommended.

1. Title and Location of Project: Fire Safety Improvements - Phase III
 Argonne National Laboratory
 Argonne, Illinois

2a. Project No: 95-E-307
 2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

Alternative No. 2

This alternative is more expensive over a long period and allows existing fire and life safety violations to continue until renovation occurs. This piecemeal rectification approach over a long period of time increases the number of times that buildings and research projects must be disturbed for renovation. This action would be in violation of ANL's Tiger Team Assessment Action Plan as approved by DOE. This action is not recommended.

Recommendation

The renovation work as described herein is the recommended approach to expediently correct the fire and life safety deficiencies in the existing buildings.

10. Details of Cost Estimate a/

	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and management costs.....		\$ 430
1. Engineering design and inspection at approximately 16 percent of construction costs	\$ 305	
2. Construction management at approximately 4 percent of construction costs.....	76	
3. Project management costs at approximately 3 percent of construction costs	49	
b. Construction costs		<u>1,950</u>
Subtotal		\$ 2,380
c. Contingencies at approximately 15 percent of above costs		360
d. Laboratory overhead assessment.....		140
Total line item cost		<u>\$ 2,880 b/</u>

a/ Estimates are based on a completed conceptual design and current cost data.

b/ All costs have been escalated from January 1992 to the midpoint of construction at the rate of 17.3%. Escalation rate methodology is based upon DOE FY 1993 Guidance dated August 1991: FY 1992 - 2.5%, FY 1993 - 3.9%, FY 1994 - 4.7%, FY 1995 - 4.8%, and FY 1996 - 4.9%.

1. Title and Location of Project: Fire Safety Improvements - Phase III
Argonne National Laboratory
Argonne, Illinois

2a. Project No: 95-E-307
2b. Construction Funded

11. Method of Performance

Engineering and design will be performed under a negotiated A/E contract with guidance, review and monitoring by laboratory personnel. Inspection will be performed by laboratory personnel aided by the A/E firm. Construction management and project management will be performed by laboratory personnel. Construction will be accomplished by fixed-price lump sum contract(s) awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Conceptual design completed at a cost of \$62,000. No other data required on projects with a TEC of less than \$5,000,000.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST

(Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - Environment, Safety and Health Support

- | | |
|---|---|
| 1. Title and Location of Project: Hazardous Materials Safeguards, Phase I
Lawrence Berkeley Laboratory
Berkeley, California | 2a. Project No. 93-E-324
2b. Construction Funded |
| ----- | |
| 3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1993 | 5. Previous Cost Estimate: None
Total Estimated Cost (TEC) -- \$4,720
Total Project Cost (TPC) -- \$4,780 |
| 3b. A-E Work (Titles I & II) Duration: 15 Months | |
| ----- | |
| 4a. Date Physical Construction Starts: 3rd Qtr. FY 1994 | 6. Current Cost Estimate:
TEC -- \$4,720
TPC -- \$4,780 |
| 4b. Date Construction Ends: 2nd Qtr. FY 1996 | |

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
FY 1993	\$ 1,500	-1,000 a/	\$ 500	\$ 70
FY 1994	1,000	- 30 b/	970	426
FY 1995	1,962	0	1,962	1,970
FY 1996	1,288	0	1,288	1,900
FY 1997	0	0	0	354

a/ Application of a portion (-\$1,000,000) of the FY 1993 programmatic general reduction of \$40,000,000.
 b/ Reduction of \$-30,000 for rescission.

1. Title and location of project: Hazardous Materials Safeguards, Phase I
Lawrence Berkeley Laboratory
Berkeley, California

2a. Project No. 93-E-324
2b. Construction Funded

8. Brief Physical Description of Project

The project scope has been modified due to the reduction of hazardous materials stored at Building 70. This reduction was achieved through use of off-site storage and administrative controls. The Building's current B-2 Occupancy classification can now be maintained. Modifications include: the deletion of the chemical delivery system; ventilation system upgrades; and the central monitoring and alarm system.

This project will upgrade Building 70 to add safety, health and environmental protection safeguards to meet or exceed current standards of public health and safety. When completed the building will meet the requirements of the 1991 editions of the Uniform Fire Code (UBC and UFC) and safety standards for the storage, dispensing and use of hazardous materials required for research facilities using hazardous materials, as well as state and Federal regulations and best business practices.

Building 70 contains 62,237 gross square feet (GSF) of space, of which approximately 38,000 net square feet (NSF) is research laboratory area. Building modifications will include the separation of various types of research activities which require individualized control areas and safeguards, as well as improved separations of normal laboratory-office occupancies. The separations will include new walls, doors, door frames and proper penetration seals. Also, vertical shafts will be upgraded to meet required separations for wall penetrations.

Additional exits will be provided from laboratories which do not currently have a second means of egress.

Electrical systems will also be upgraded to mitigate health and safety hazards throughout the building. The emergency power system will be upgraded to meet the requirements of NFPA 110, Level 1 operations. Emergency egress lighting will be provided in laboratories and corridors as required by ANSI Standard 446-1987.

These improvements to existing government-owned facilities will be located on land owned by the University of California and will serve or be operated in conjunction with other government-owned facilities at Lawrence Berkeley Laboratory (LBL)

1. Name and location of project: Hazardous Materials Safeguards, Phase I
 Lawrence Berkeley Laboratory
 Berkeley, California

2a. Project No. 62-324
 2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project

The existing Building 70 is an aged laboratory facility used for materials sciences and semi-conductor research which are pertinent to the programs of Materials and Chemical Sciences, Nuclear Science, High Energy Physics, and Health and Environmental Research. These operations employ a wide variation of chemicals and gases which are flammable and/or toxic. The current configuration and distribution of research activities in Building 70 makes it impractical to apply operational and passive safeguards recently incorporated in the 1988 Uniform Building and Fire Codes and various new state and Federal regulations governing the use of hazardous materials in research activities. Major building and building systems renovations are required to meet new standards for safeguarding health, safety and the environment.

If this project is not funded, research operations at the existing facility must be restricted, thus either seriously curtailing and/or eliminating LBL operations in these fields of research.

10. Details of Cost Estimate a/

	<u>Item Costs</u>	<u>Total Cost</u>
a. Design and management costs.....e.....		\$ 736
1. Engineering design and inspection at approximately 16 percent of construction costs, Item e.....e.....	\$ 536	
2. Project management at approximately 6 percent of construction costs.....	200	
b. Construction costs.....		3,350
1. Buildings.....e.....e.....	3,350	
Subtotal.....e.....e.....e.....e.....		<u>4,086</u>
c. Contingencies at approximately 15 percent of above costs.....		634
Total line item coste.....e.....e.....		<u>\$ 4,720</u>

a/ Costs have been escalated at 3.6% for FY 1991, 4.5% for FY 1992, 5.1% for FY 1993, and 5.6% for FY 1994; compounded to the midpoint of construction, August 1994 for a total of 18.5%.

Conceptual design is complete.
 PED requirements: None.

11. Method of Performance

Engineering design will be performed under a negotiated architect-engineer subcontract after a Pre-Title I survey and report for the facility has been prepared by a qualified chemical consultant. Inspection and some engineering may be done by LBL personnel. Construction and procurement will be accomplished by fixed price subcontracts awarded on the basis of competitive bids. Minor construction work may be done using LBL forces.

1. Title and location of project:	Hazardous Materials Safeguards, Phase I Lawrence Berkeley Laboratory Berkeley, California	2a. Project No. 93-E-324
		2b. Construction Funded

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

DEPARTMENT OF ENERGY
 FY 1996 CONGRESSIONAL BUDGET REQUEST
 (Changes from FY 1995 Congressional Budget Request are denoted with a vertical line in left margin.)

ENERGY SUPPLY, RESEARCH AND DEVELOPMENT - PLANT AND CAPITAL EQUIPMENT
 (Tabular dollars in thousands. Narrative material in whole dollars.)

Multiprogram Energy Laboratories - Facilities Support
 Multiprogram Energy Laboratories - Environment, Safety and Health Support

1. Title and location of project: Fire and Safety Systems Upgrade, Phase I
 Lawrence Berkeley Laboratory
 Berkeley, California

2a. Project No. 93-E-323
 2b. Construction Funded

3a. Date A-E Work Initiated, (Title I Design Start Scheduled): 2nd Qtr. FY 1993

3b. A-E Work (Titles I & II) Duration: 28 Months

5. Previous Cost Estimate:
 Total Estimated Cost (TEC) -- \$4,600
 Total Project Cost (TPC) -- \$4,600

4a. Date Physical Construction Starts: 2nd Qtr. FY 1994

4b. Date Construction Ends: 3rd Qtr. FY 1997

6. Current Cost Estimate:
 TEC -- \$4,600
 TPC -- \$4,630

7. Financial Schedule:

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
FY 1993	\$ 1,500	-1,000 a/	\$ 500	\$ 80
FY 1994	1,000	- 30 b/	970	378
FY 1995	2,000	0	2,000	1,200
FY 1996	1,130	0	1,130	1,600
FY 1997	0	0	0	1,342

a/ Application of a portion (-\$1,000,000) of the FY 1993 programmatic general reduction of \$40,000,000.

b/ Reflects \$-30,000 for rescission.

1.	Title and location of project: Fire and Safety Systems Upgrade, Phase I Lawrence Berkeley Laboratory Berkeley, California	2a. Project No. 93-E-323 2b. Construction Funded
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8. Brief Physical Description of Project

The 1989 Technical Safety Appraisal (TSA) identified Lawrence Berkeley Laboratory (LBL) facilities that were not in compliance with the Uniform Building Code, Uniform Fire Code, NFPA 101 Life Safety Code, NFPA 80 Fire Doors and Windows, NFPA 13 Installation of Sprinkler Systems, NFPA 14 Standpipe and Hose System, NFPA 72 Installation Maintenance and Use of Protective Signaling Systems, and DOE Order 5480.7 Fire Protection Improved Risk Program. This project is the first of several projects which will bring LBL facilities in compliance with recent building, fire and life safety codes. Corrective measures resulting from a facility-wide fire protection engineering survey will be prioritized and incorporated in the project. In general, some or all of the following modifications will be made where deficiencies exist:

- o Repair or replace fire-rated assemblies which include: fire rated doors; fire/smoke dampers; fire stopping at through-wall penetrations; and patching of openings in walls and floors to provide integrity to the fire rated barriers.
- o Provide fire-rated wall assemblies for occupancy separation as a result of change in use from the original building design.
- o Provide required number of exits per NFPA 101, the Uniform Building Code, and the Uniform Fire Code.
- o Retrofit exit doors with proper hardware.
- o Replace door latches which will not open in the event of a fire due to the pressure differences on both sides of the door.
- o Provide additional exit signs in areas per the requirements of NFPA 101 where the exits are not obvious.
- o Provide adequate exit lighting and emergency lighting per the requirements of NFPA 101.
- o Relocate and add automatic sprinklers in areas where the existing systems do not conform to the requirements of NFPA 13, e.g., under wood structures in Building 51B and the platform in Building 52.

1. Title and location of project: Fire and Safety Systems Upgrade, Phase I 2a. Project No. e 93-E-523
Lawrence Berkeley Laboratory 2b. Construction Funded
Berkeley, California

8. Brief Physical Description of Project (Continued)

- o Provide heat detectors and/or smoke detectors in addition to automatic sprinklers in areas where redundant systems are warranted due to the high replacement values and mission criticality of the facilities.
- o Repair and upgrade fire alarm systems to ensure the audibility is adequate to warn occupants in the event of fire, including workers on the roof.
- o Remove and replace excess combustible construction in exit corridors, e.g., non-fire retardant treated wood used as pipe supports and abandoned nonplenum rated telephone/electrical cables in the spaces above the corridor ceiling.
- o Provide flammable/combustible liquid storage cabinets.
- o In buildings where existing deficiencies cannot be upgraded in a practical and/or cost-effective manner, upgrade air supply and exhaust systems to make provisions for incorporation of smoke control systems in the future.

e These improvements to existing government-owned facilities will be located on land owned by the University of California and will serve or be operated in conjunction with other government-owned facilities at LBL.

9. Purpose, Justification of Need For, and Scope of Project

Facilities at LBL were largely constructed from the 1940s to the mid 1960s and provided national scientific leadership during a historically significant period of high energy and nuclear physics research. e Building design, including installation of fire protection systems, was based upon the applicable building and fire codes and intended occupancy at the time of construction. During this period, major changes occurred in the building, fire, and life safety codes. Furthermore, the conversion of LBL to a multiprogram research facility necessitated reassignment of space for different occupancies than originally intended. While sprinklers have been installed in most facilities, modifications are required to meet new codes and correct noncompliance conditions. Adequate e compartmentalization (fire barriers) to prevent fire spread in some facilities does not exist. Fire alarm systems are inadequate in providing early warning signals to occupants in parts of these buildings. Fire resistive ratings of the exit corridors have been comprised by through-wall penetrations and nonrated fire assemblies.

1. Title and location of project: Fire and Safety Systems Upgrade, Phase I Lawrence Berkeley Laboratory Berkeley, California	2a. Project No. 93-E-323 2b. Construction Funded
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9. Purpose, Justification of Need For, and Scope of Project (Continued)

Dead end corridors exceed the long distance permitted by applicable codes, creating life safety hazards. Exit doors are not provided or have been replaced with hardware which does not conform to applicable codes.

10. Details of Cost Estimate a/

	<u>Item Costs</u>	<u>Total Cost</u>
a. Design and management costs.....		\$ 730
1. Engineering design and inspection at approximately 17 percent of construction costs, Items b.....	\$ 540	
2. Project management at approximately 6 percent of construction costs.....	190	
b. Construction costs.....		3,200
1. Improvements to land.....	3,200	
Subtotal.....		<u>3,930</u>
c. Contingencies at approximately 17 percent of above costs.....		670
Total line item cost		<u>\$ 4,600</u>

a/ Costs have been escalated at 3.6% for FY 1991, 4.5% for FY 1992, 5.1% for FY 1993, and 5.6% for FY 1994, 5.7% for FY 1995; compounded to the midpoint of construction, September 1994 for a subcontract A, for a total of 19%, and November, 1995 for subcontract B for a total of 27.2%.

Conceptual design is complete.

11. Method of Performance

Design will be accomplished on the basis of a negotiated architect-engineer contract. Construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bidding.

12. Schedule of Project Funding and Other Related Funding Requirements

Not required on projects with a TEC of less than \$5,000,000.

1. Title and location of project: Fire and Safety Systems Upgrade, Phase I 2a. Project No. 93-E-323
Lawrence Berkeley Laboratory 2b. Construction Funded
Berkeley, California

13. Narrative Explanation of Total Project Funding and Other Related Funding Requirements

Conceptual design completed at a cost of \$30,000. Other data not required on projects with a TEC of less than \$5,000,000.

1. Title and Location of Project: Fire and Safety Improvements, Phase II
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 93-E-320
2b. Construction Funded

8. Brief Physical Description of Project

a. General Description

ANL management began current review of fire protection systems in 1985 with a Factory Mutual study which recommended improvements in the most critical areas. These recommendations formed the basis for the first phase of ANL's Fire Safety Upgrade program, the 1992 line item funding request "Fire Safety Improvements," which was included in the FY 1992 budget. This project, Phase II, is a continuation of those improvements.

The Phase II of the Fire Safety Improvements project will encompass fire protection system extensions, new installations, and system replacement in 80 existing ANL-E buildings. The project can be grouped into three areas:

1. Fire suppression system improvement
2. Fire detection and fire alarm system improvements
3. Construction for fire protection

This project will complete the upgrading of existing fire alarm and suppression systems and expand fire suppression systems to cover areas requiring protection per current DOE orders.

b. Fire Suppression System Improvements

Of the 80 buildings identified for improvements, 26 require installation or modification of fire suppression systems. Eighteen of the 26 buildings will require both alarm/detection, as stated in Item 8.c., and suppression system installations.

Sixty-six carbon dioxide fire suppression systems with radioactive exhaust fume hoods will be replaced.

The antifreeze solution fire suppression systems for protection of cooling towers or other unheated areas will be converted to dry-pipe sprinkler systems.

1. Title and Location of Project:	Fire and Safety Improvements, Phase II Argonne National Laboratory Argonne, Illinois	2a. Project No. 93-E-320
		2b. Construction Funded

8. Brief Physical Description of Project (Continued)

c. Fire Detection and Fire Alarm System Improvements

Sixty-three buildings require fire detection and alarm systems replacement.

d. Construction for Fire Protection

A new 8-inch underground water main will be installed east of Building 202 to provide a loop around the building.

Fire separation construction will be improved to meet required fire separation ratings for computer rooms per DOE/EP-0108 in three buildings.

9. Purpose, Justification of Need For, and Scope of Project

a. General

This project's funding request timetable, originally scheduled to begin in the mid 1990s, has been accelerated due to the recent DOE Tiger Team Assessment.

This project was approved as part of ANL's 1990 Action Plan developed in response to DOE Tiger Team findings.

1. Finding No. FP.2-2 of the Tiger Team Assessment Section 4.5.18 "Fire Protection" states that the requirements for emergency alarms, as detailed in NFPA 72 and mandated by DOE 5480.4, are not met at ANL Facilities. Action Plan Item AP294 responding to this finding, states that line item funding will be requested for site-wide building fire alarm system upgrading.
2. Finding No. FP.4-1 of the Tiger Team Assessment Section 4.5.18 "Fire Protection" states that automatic fire suppression systems are not provided throughout ANL facilities as required by DOE 5480.7A. Action Plan Item AP25 responding to this finding, states that ANL will request funding to upgrade those areas not in compliance.

1. Title and Location of Project:	Fire and Safety Improvements, Phase II Argonne National Laboratory Argonne, Illinois	2a. Project No. 93-E-320
		2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

The action plan milestones dictate complete implementation of the fire alarm upgrades by 1996 and fire suppression upgrades by 1997. This project's schedule, as proposed, will meet these milestones.

b. Fire Detection and Alarm System Improvements

The existing systems in the 63 identified buildings are 25-30 years old. These systems have numerous shortcomings:

1. They are at or near capacity, thereby prohibiting expansion for occupancy changes or building additions.
2. The components are no longer manufactured or sold.
3. Smoke detectors cannot be installed, where preferred over the use of heat detectors, since some systems will not accommodate smoke detectors. This can result in slower detection in areas with high value electronics and computer systems.
4. Many of the systems do not meet current National Fire Protection Association Standards. e
5. The existing and aging fire alarm systems are 220V DC. The existing fire alarm panels have unprotected, hot 220V terminals, exposed to personnel contact during routine maintenance or inspection. This poses a threat of minor to serious injury. The new systems proposed are of reduced voltage, 24 V DC, significantly reducing any chance of personal injury to very low or rare levels.
6. Reliability of the existing systems has decreased which results in an increased number of false alarms and failures to report alarms.

1. Title and Location of Project: Fire and Safety Improvements, Phase II 2a. Project No. 93-E-320
Argonne National Laboratory 2b. Construction Funded
Argonne, Illinois

9. Purpose, Justification of Need For, and Scope of Project (Continued)

7. A number of existing smoke detectors installed in several buildings at ANL contain detector elements fabricated from Radium Sulfate (Radium 226). Although these sources produce less than 1 Rem/year exposure levels, ANL's "ALARA" program dictates the removal of these detectors. Proposed smoke detectors use Americium 241 and have an emittance level several orders of magnitude lower than Radium 226. This significantly reduces possible exposure levels to building occupants and alarm system maintenance personnel.
8. This project will allow ANL to utilize new and improved technologies in fire protection. New low voltage addressable fire alarm systems will allow more accurate communication of a fire condition to building occupants and the ANL Fire Department. This will reduce Fire Department response time, improve reliability, and improve the Fire Department's ability to locate the actual fire area.

c. Fire Suppression System Improvements

1. The purpose of this part of Phase II of the Fire Safety Improvements Project is to complete the progress of selected buildings towards the "Improved Risk" concept as defined in DOE Order 5480.7A Fire Protection. That Order established objectives for an "improved risk" level of fire protection which are applicable throughout its facilities. Objectives are as follows:
 - a. No threats to the public health or welfare will result from fire.
 - b. There are no undue hazards to employees from fire.
 - c. Vital Department of Energy programs will not suffer unacceptable delays as a result of fire.
 - d. Property damage will be held to manageable levels as defined in DOE Order 5480.7A.

2. Automatic Sprinkler Systems

Automatic fire protection systems shall be provided in Buildings 24, 40, 108, 129, 368, 377 and 583 as the maximum possible fire loss is in the range of 1 to 25 million dollars, so that property damage is limited to \$1 million or less in either case.

Automatic fire protection systems shall be provided in 19 buildings to keep property damage at manageable levels, and eliminate any hazards to life from fire. A number of these 19 buildings have some portions of the buildings protected with suppression systems at this time.

1. Title and Location of Project: Fire and Safety Improvements, Phase II
Argonne National Laboratory
Argonne, Illinois

2a. Project No. 93-E-320
2b. Construction Funded

9. Purpose, Justification of Need For, and Scope of Project (Continued)

2. Automatic Sprinkler Systems (Continued)

As programmatic needs change with time, facility fire alarm systems and fire suppression systems must provide adequate protection for the research and scientific programs. Major DOE initiatives could be affected due to facility shutdowns resulting from lack of required fire sprinkler and alarm systems. National fire protection codes mandate that all facilities modified for new programs must also have their fire protection systems upgraded to meet current code requirements for existing facilities.

The modifications proposed herein will remedy the identified risks to the laboratory's program, personnel, and physical plant.

3. Antifreeze Suppression Systems

Existing antifreeze filled fire suppression systems pose a concern to the environment and increase waste management costs. Maintenance of these systems requires draining the antifreeze and using appropriate waste management procedures to dispose of the solution. Leaks, activation of an antifreeze system or breaks in a system pose potential environmental hazards from the discharged antifreeze. Replacement of these systems with dry pipe type suppression systems will remove this potential hazard.

3. Antifreeze Suppression Systems

The antifreeze solution sprinkler systems protecting cooling towers and unheated storage buildings are required to have reduced pressure zone backflow preventers to comply with Section 890.1540 of the State of Illinois Plumbing Code. The reduced pressure zone backflow preventers are required to prevent the antifreeze solution from contaminating the potable water supply. Installation of reduced pressure zone backflow preventers on these systems is undesirable because of the pressure loss (approximately 10 psi) encountered through the device, rendering the system ineffective against fires. In addition, water from the relief valves on these devices cannot be readily discharged to drain in these areas. To eliminate the need for reduced pressure zone backflow preventers, the antifreeze systems will be converted to dry-pipe sprinkler systems.