MLM-MU-88-72-0002

**CONCEPTUAL DESIGN PLANS
FOR THE
FY 1993 LINE ITEMS**

DECEMBER 22, 1988

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EG&G MOUND APPLIED TECHNOLOGIES

P.O. BOX 3000

MIAMISBURG, OHIO 45343-0987

513-865-4020

operated for the UNITED STATES DEPARTMENT OF ENERGY

Contract No. DE-AC04-88-DP43495

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EG&G MOUND APPLIED TECHNOLOGIES

P.O. BOX 3000 MIAMISBURG, OHIO 45343-0987 • TEL (513) 865-4020

December 22, 1988

Mr. James A. Morley, Area Manager
U. S. Department of Energy
Dayton Area Office
P. O. Box 66
Miamisburg, Ohio 45343

Dear Mr. Morley:

FY 1993 Project Conceptual Design Plans

Conceptual Design Plans for the five proposed Mound FY 1993 Line Items are attached. The plans show the schedule of conceptual design funding and the schedule of the line item work elements. These plans are to augment the information submitted to the Dayton Area Office, via FY 1993 Short Form Construction Project Data Sheets on November 2, 1988, for subsequent transmittal to DOE/AL BRMD.

EG&G acknowledges that support of these projects by DOE/AL will necessitate the budgeting for and the expenditure of Mound operating expense funds in FY89, FY90, FY91, and FY92 to generate conceptual designs for said projects. If all five projects are supported by DOE/AL, the funds to be expended to develop conceptual designs are \$165K in FY89, \$400K in FY90, \$335K in FY91, and \$240K in FY92. All five line items will ultimately have conceptual designs produced via funding that represents between 1.3% and 2.9% of the Project TEC before Design Criteria are initiated.

One specific item to note is the "TEC of Conceptual Design" for the Site Modernization-Reconfiguration of Manufacturing Operations (FCAP) Project has been increased to \$600K from the TEC indicated on the Short Form Construction Project Data Sheet submitted earlier this year. This project was submitted as one \$39 million project rather than the first of three phases and this was not reflected in the "TEC of Conceptual Design" on the Short Forms. This new TEC is 1.5% of the project TEC.

If you have any questions regarding the submission of the Conceptual Design Plans, please contact the undersigned at X3000.

Very truly yours,

C. F. Draut, Manager
Project Management & Planning

Approved:

V. E. Castleberry
Director, Engineering

Attachments

cc: J. A. Morley (3) w/attachment
cd-plans

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CONCEPTUAL DESIGN PLAN

SITE MODERNIZATION - RECONFIGURATION OF MANUFACTURING OPERATIONS

DECEMBER 14, 1988

- A. PROJECT TITLE: Site Modernization - Reconfiguration of Manufacturing Operations

BRIEF DESCRIPTION OF THE PROJECT:

This Facilities Capability Assurance Program (FCAP) project provides for the design and construction of a reconfigured production facility(ies) for Mound's non-nuclear weapons components. Existing building(s) would be rehabilitated in order to locate final production/assembly areas within close proximity and in a facility suitable to operations of this nature. Ancillary operations will be located in nearby buildings, also rehabilitated, in order to provide support to final production with minimal handling and travel-time. Benefits of this reconfiguration include: reduced labor, space requirements, and product cycle time; maximum flexibility to accommodate new mission assignments without new buildings; restores existing manufacturing facilities to a condition that is conducive to state-of-the-art operations. This project is Mound's top priority project for FY93.

- B. PROJECT TEC: \$39,000,000

C. FUNDING PLAN:					
			(\$K)		
	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>FY96</u>	<u>Total</u>
	5,000	10,000	14,000	10,000	39,000

- D. TEC OF CONCEPTUAL DESIGN REPORT: \$600,000

\$100,000	FY89
200,000	FY90
200,000	FY91
100,000	FY92

- E. APPROXIMATE MILESTONES:

Draft CDR and CPDS for Review: September 5, 1989
Final CDR and CPDS to DAO: October 1, 1989
Initiate Design Criteria: April 1, 1992
Complete Design Criteria: September 30, 1992
Initiate Title I Design: November 20, 1992
Complete Design: October 1, 1994
Award Construction: February 1, 1994
Complete Construction: January 1, 1997

- F. LISTING OF WORK ELEMENTS FOR CONCEPTUAL DESIGN PHASE:

A-E Selection for Conceptual Design
Conceptual Design
Conceptual Design Report (CDR)
Construction Project Data Sheet (CPDS)
CDR and CPDS Review - DAO, DOE/AL, PE, EPM, Safety, Security,
Maintenance Engineering, and QA
Outline Design Criteria
Outline Project Management Plan

G. LISTING OF ANTICIPATED CD PARTICIPANTS:

Project Manager	To Be Named Later
Architect-Engineer	A-E with Industrial Systems Credentials/Experience
Discipline Engineers	R. E. Bertram P. J. Joehnk S. E. Crady L. A. Kapka/Staff
Cost Estimator	G. E. Amos
LP&EC Specialist	F. G. Krach
Quality Assurance	T. E. Prugh
Sponsor	D. J. Gorman

H. SCHEDULE OF WORK ELEMENTS:

	<u>Start Date</u>	<u>Completion Date</u>
* Selection of A/E for CD	01-07-89	03-14-89
* Conceptual Design	03-15-89	03-01-92
* Conceptual Design Report (CDR)	07-01-89	10-01-89
* Construction Project Data Sheet (CPDS)	07-01-89	10-01-89
* Draft CDR and CPDS for Review	09-05-89	09-28-89
* Updated CDR	07-01-90	10-01-90
* Updated CPDS	07-01-90	10-01-90
* Updated CDR	07-01-91	10-01-91
* Updated CPDS	07-01-91	10-01-91
* Design Criteria	04-01-92	09-30-92
* Project Management Plan	04-01-92	09-30-92
* Architect-Engineer Selection	04-01-92	09-30-92
* Title I Design	11-20-92	04-01-94
* Title II Design	05-01-93	10-01-94
* Construction	02-01-94	01-01-97

I. CONCEPTUAL DESIGN (CD) COST (\$K) PER ELEMENT:

Conceptual Design: 460
 CDR: 50
 CPDS: 20
 Outline Design Criteria: 40
 Outline Project Management Plan: 30

J. METHOD OF PERFORMANCE:

Building and equipment design will be performed under a negotiated Architect-Engineer contract which will include review and approval of Title III submittals. Construction will be accomplished by fixed price contracts awarded on the basis of competitive bidding. Project management and inspection during construction will be performed by the operating contractor.

K.
 Director, Engineering, Mound
 (EG&G Approval)

L.
 For D. A. Morley
 Area Office Manager
 (DOE Approval)

CONCEPTUAL DESIGN PLAN

OFF-SITE STORM DRAINAGE CONTAINMENT (ES&H UPGRADES, PHASE V)

DECEMBER 14, 1988

A. PROJECT TITLE: Off-Site Storm Drainage Containment

BRIEF DESCRIPTION OF THE PROJECT:

This Environmental, Safety, and Health Upgrades (ES&H) project will provide an impervious conduit designed to carry storm water and process discharge from Mound property through easements to the Great Miami River, approximately 2,000 feet away. A five by ten foot reinforced concrete box conduit is anticipated which will carry Mound's discharge water across the "sole source" Miami Valley Aquifer and prevent any contaminants or pollutants from being recharged into the aquifer. Presently, discharge water is dumped into existing ditches and stream channels and allowed to find its way to the river. Most of the path follows the abandoned Erie Canal which lies on top of the aquifer. Tests have shown that 20% of the discharge does not reach the river and is believed to be recharging the aquifer. This project is Mound's second priority project for FY93.

B. PROJECT TEC: \$3,400,000

FUNDING PLAN:	(\$K)			
	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>Total</u>
	500	2,900	-0-	3,400

D. TEC OF CONCEPTUAL DESIGN: \$100,000

\$50,000	FY89
15,000	FY90
15,000	FY91
20,000	FY92

E. APPROPRIATE MILESTONES:

Draft CDR and CPDS for Review: September 5, 1989
Final CDR and CPDS to DAO: October 1, 1989
Initiate Design Criteria: June 1, 1992
Complete Design Criteria: October 1, 1992
Initiate Title I Design: November 1, 1992
Complete Design: July 1, 1993
Award Construction: November 1, 1993
Complete Construction: November 1, 1995

F. LISTING OF WORK ELEMENTS FOR CONCEPTUAL DESIGN PHASE:

A-E Selection for Conceptual Design
Conceptual Design
Conceptual Design Report (CDR)
Construction Project Data Sheet (CPDS)
CDR and CPDS Review - DAO, DOE/AL, PE, EPM, Safety, Security,
Maintenance Engineering, and QA
Outline Design Criteria
Outline Project Management Plan

G. LISTING OF ANTICIPATED CD PARTICIPANTS:

Project Manager	M. R. Hunter
Architect-Engineer	A-E with Civil Hydrology Design Credentials/Experience
Discipline Engineers	R. E. Bertram
Cost Estimator	G. E. Amos
LP&EC Specialist	F. G. Krach
Quality Assurance	T. E. Prugh
Sponsor	R. A. Neff

H. SCHEDULE OF WORK ELEMENTS:

	<u>Start Date</u>	<u>Completion Date</u>
* Selection of A/E for CD	01-07-89	01-29-89
* Conceptual Design	02-01-89	05-01-92
* Conceptual Design Report (CDR)	07-01-89	10-01-89
* Construction Project Data Sheet (CPDS)	07-01-89	10-01-89
* Draft CDR and CPDS for Review	09-05-89	09-28-89
* Updated CDR	07-01-90	10-01-90
* Updated CPDS	07-01-90	10-01-90
* Updated CDR	07-01-91	10-01-91
* Updated CPDS	07-01-91	10-01-91
* Design Criteria	06-01-92	10-01-92
* Project Management Plan	06-01-92	09-30-92
* Architect-Engineer Selection	06-01-92	09-30-92
* Title I Design	11-01-92	02-01-93
* Title II Design	02-01-93	07-01-93
* Construction	11-01-93	11-01-95

I. CONCEPTUAL DESIGN (CD) COST (\$K) PER ELEMENT:

Conceptual Design: 80
CDR: 10
CPDS: 4
Outline Design Criteria: 3
Outline Project Management Plan: 3

J. METHOD OF PERFORMANCE:

Design will be performed under a negotiated Architect-Engineer contract which will include review and approval of Title III submittals. Construction will be accomplished by fixed price contracts awarded on the basis of competitive bidding. Project management and inspection during construction will be performed by the operating contractor.

K.
Director, Engineering, Mound
(EG&G Approval)

L.
Area Office Manager
(DOE Approval)

CONCEPTUAL DESIGN PLAN

TELEPHONE SYSTEM REPLACEMENT

DECEMBER 14, 1988

A. PROJECT TITLE: Telephone System Replacement

BRIEF DESCRIPTION OF THE PROJECT:

This Facilities Capability Assurance Program (FCAP) project provides for the replacement of the plant telephone switching system and portions of its supporting cable plant. The system is technically outdated and is incapable of being upgraded to provide current communications support requirements. Portions of the cable plant have been installed for over 35 years and are failing due to water damage and aging. This need is becoming critical because AT&T will soon drop spare parts support for this older product line as they evolve to their newer products. This project is Mound's third prioritized project for FY93.

B. PROJECT TEC: \$7,600,000

FUNDING PLAN: (\$K)			
<u>FY 93</u>	<u>FY 94</u>	<u>FY 95</u>	<u>TOTAL</u>
1,000	4,000	2,600	7,600

D. TEC OF CONCEPTUAL DESIGN: \$115,000

\$ 5,000	FY89
45,000	FY90
30,000	FY91
35,000	FY92

E. APPROPRIATE MILESTONES:

Draft CDR and CPDS for Review: September 5, 1989
Final CDR and CPDS to DAO: October 1, 1989
Initiate Design Criteria: April 1, 1992
Complete Design Criteria: September 1, 1992
Initiate Title I Design: November 20, 1992
Complete Design: August 1, 1993
Award Construction: November 20, 1993
Complete Purchase of Equipment: January 15, 1994
Complete Construction: June 1, 1994
Complete Installation: June 1, 1994

F. LISTING OF WORK ELEMENTS FOR CONCEPTUAL DESIGN PHASE:

A-E Selection for Conceptual Design
Conceptual Design
Conceptual Design Report (CDR)
Construction Project Data Sheet (CPDS)
CDR and CPDS Review - DAO, DOE/AL, PE, EPM, Safety, Security,
Maintenance Engineering, and QA
Outline Design Criteria
Outline Project Management Plan

G. LISTING OF ANTICIPATED CD PARTICIPANTS:

Project Manager	To Be Named Later
Architect-Engineer	A-E with Communications Design Credentials/ Experience
Discipline Engineers	R. E. Bertram P. J. Joehnk S. E. Crady
Cost Estimator	G. E. Amos
LP&EC Specialist	F. G. Krach
Quality Assurance	T. E. Prugh
Sponsor	R. K. Gwinn

H. SCHEDULE OF WORK ELEMENTS:

	<u>Start Date</u>	<u>Completion Date</u>
* Selection of A/E for CD	01-07-89	01-29-89
* Conceptual Design	02-01-89	03-01-92
* Conceptual Design Report (CDR)	07-01-89	10-01-89
* Construction Project Data Sheet (CPDS)	07-01-89	10-01-89
* Draft CDR and CPDS for Review	09-05-89	09-28-89
* Updated CDR	07-01-90	10-01-90
* Updated CPDS	07-01-90	10-01-90
* Telecommunications Proposal	04-01-91	12-01-91
* Updated CDR	07-01-91	10-01-91
* Updated CPDS	07-01-91	10-01-91
* Design Criteria	04-01-92	09-01-92
* Project Management Plan	04-01-92	09-30-92
* Title I Design	11-20-92	03-01-93
* Title II Design	04-01-93	08-01-93
* Purchase Equipment	04-01-93	01-15-94
* Construction	11-20-93	06-01-94
* Installation	02-01-94	06-01-94

I. CONCEPTUAL DESIGN (CD) COST (\$K) PER ELEMENT:

Conceptual Design: 95
 CDR: 10
 CPDS: 4
 Outline Design Criteria: 3
 Outline Project Management Plan: 3

J. METHOD OF PERFORMANCE:

Equipment design will be performed under a negotiated Architect-Engineer contract which will include review and approval of Title III submittals. Construction will be accomplished by fixed price contracts awarded on the basis of competitive bidding. Project management and inspection during construction will be performed by the operating contractor.

K. V. E. Caruth
 Director, Engineering, Mound
 (EG&G Approval)

L. David A. Monley
 Area Office Manager
 (DOE Approval)

CONCEPTUAL DESIGN PLAN

COOLING SYSTEMS REPLACEMENTS

DECEMBER 14, 1988

A. PROJECT TITLE: Cooling Systems Replacements

BRIEF DESCRIPTION OF THE PROJECT:

This Facilities Capability Assurance Program (FCAP) project provides for the replacement of deteriorated, functionally inadequate cooling equipment in numerous production facilities at Mound. Included are two subprojects: HVAC System Replacements and Central Plant Replacements. This project is required to ensure that critical ventilation and temperature control requirements can continue to be met in the Mound facilities required for the performance of the mission assigned by the Department of Energy. These system replacements are required due to normal deterioration of existing equipment that is approaching 25 years (or more) in age. The two subprojects address both central plant needs (replacement of overhead brine distribution lines installed in the late 1940's), improvements in plant central pumping operation, and replacement of air handlers in such critical facilities as the Research Building (which now houses production labs) and the older of the two machine shops. This project is Mound's fourth highest prioritized project for FY93.

B. PROJECT TEC: \$9,700,000

FUNDING PLAN: (\$K)			
<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>TOTAL</u>
2,000	4,000	3,700	9,700

D. TEC OF CONCEPTUAL DESIGN: \$125,000

\$ 5,000	FY89
40,000	FY90
40,000	FY91
40,000	FY92

E. APPROPRIATE MILESTONES:

Draft CDR and CPDS for Review: September 5, 1989
Final CDR and CPDS to DAO: October 1, 1989
Initiate Design Criteria: April 1, 1992
Complete Design Criteria: September 30, 1992
Initiate Title I Design: November 20, 1992
Complete Design: September 1, 1993
Award Construction: November 15, 1993
Complete Construction: September 15, 1995

F. LISTING OF WORK ELEMENTS FOR CONCEPTUAL DESIGN PHASE:

A-E Selection for Conceptual Design
Conceptual Design
Conceptual Design Report (CDR)
Construction Project Data Sheet (CPDS)

F. LISTING OF WORK ELEMENTS FOR CONCEPTUAL DESIGN PHASE (Cont'd):

CDR and CPDS Review - DAO, DOE/AL, PE, EPM, Safety, Security,
Maintenance Engineering, and QA
Outline Design Criteria
Outline Project Management Plan

G. LISTING OF ANTICIPATED CD PARTICIPANTS:

Project Manager	To Be Named Later
Architect-Engineer	A-E with HVAC Design Credentials/Experience
Discipline Engineers	R. E. Bertram P. J. Joehnk S. E. Crady L. A. Kapka/Staff
Cost Estimator	G. E. Amos
LP&EC Specialist	F. G. Krach
Quality Assurance	T. E. Prugh
Sponsor	L. A. Kapka

H. SCHEDULE OF WORK ELEMENTS:

	<u>Start Date</u>	<u>Completion Date</u>
* Selection of A/E for CD	01-07-89	01-29-89
* Conceptual Design	02-01-89	03-01-92
* Conceptual Design Report (CDR)	07-01-89	10-01-89
* Construction Project Data Sheet (CPDS)	07-01-89	10-01-89
* Draft CDR and CPDS for Review	09-05-89	09-28-89
* Updated CDR	07-01-90	10-01-90
* Updated CPDS	07-01-90	10-01-90
* Updated CDR	07-01-91	10-01-91
* Updated CPDS	07-01-91	10-01-91
* Design Criteria	04-01-92	09-30-92
* Project Management Plan	04-01-92	09-30-92
* Architect-Engineer Selection	04-01-92	09-30-92
* Title I Design	11-20-92	03-01-93
* Title II Design	04-01-93	09-01-93
* Construction	11-15-93	09-15-95

I. CONCEPTUAL DESIGN (CD) COST (\$K) PER ELEMENT:

Conceptual Design: 105
CDR: 10
CPDS: 4
Outline Design Criteria: 3
Outline Project Management Plan: 3

J. METHOD OF PERFORMANCE:

Building and equipment design will be performed under a negotiated Architect-Engineer contract which will include review and approval of Title III submittals. Construction will be accomplished by fixed price contracts awarded on the basis of competitive bidding. Project management and inspection during construction will be performed by the operating contractor.

K.

Director, Engineering, Mound
(EG&G Approval)

L.

Area Office Manager
(DOE Approval)

CONCEPTUAL DESIGN PLAN

EFFLUENT RECOVERY SYSTEM (ERS) REPLACEMENT

DECEMBER 14, 1988

A. PROJECT TITLE: Effluent Recovery System (ERS) Replacement

BRIEF DESCRIPTION OF THE PROJECT:

This Facilities Capability Assurance Program (FCAP) project will provide about 50 CFM of tritium process effluent capture capacity to replace that presently provided by the ERS located in SW Bldg., Room 8. This will be accomplished either by direct replacement of the unit in SW-8 or by adding to the Tritium Emissions Reduction Facility (TERF) presently being installed in T Bldg. The ERS is essential to Mound's system to capture and control process effluents from all our tritium operations and thereby providing environmental protection. The ERS also reduces operating costs through the recovery and reuse of tritium. The current ERS, now on average approximately 16 years old, contains parts that cannot be repaired or replaced, and suffers from corrosion and inadequate materials. This project will sustain the required level of efficiency and reliability and provide the capacity and redundancy required to meet Mound's environmental protection obligation in the mid-1990's. This project is Mound's fifth highest priority project for FY93.

B. PROJECT TEC: \$10,500,000

C. FUNDING PLAN: (\$K)			
<u>FY93</u>	<u>FY94</u>	<u>FY95</u>	<u>Total</u>
2,000	6,000	2,500	10,500

D. TEC OF CONCEPTUAL DESIGN: \$200,000

\$5,000	FY89
100,000	FY90
50,000	FY91
45,000	FY92

E. APPROXIMATE MILESTONES:

Draft CDR and CPDS for Review: September 5, 1989
Final CDR and CPDS to DAO: September 29, 1989
Initiate Design Criteria: April 1, 1992
Complete Design Criteria: September 30, 1992
Initiate Title I Design: November 15, 1992
Complete Design: September 1, 1994
Award Construction: November 15, 1993
Complete Construction: December 1, 1996

F. LISTING OF WORK ELEMENTS FOR CONCEPTUAL DESIGN PHASE:

A-E Selection for Conceptual Design
 Conceptual Design
 Conceptual Design Report (CDR)
 Construction Project Data Sheet (CPDS)
 CDR and CPDS Review - DAO, DOE/AL, PE, EPM, Safety, Security
 Maintenance Engineering, and QA
 Outline Design Criteria
 Outline Project Management Plan

G. LISTING OF ANTICIPATED CD PARTICIPANTS:

Project Manager	To Be Named Later
Architect-Engineer	A-E with Nuclear Process Credentials/Experience
Process Engineer	To Be Named Later
Discipline Engineers	R. E. Bertram P. J. Joehnk S. E. Crady L. A. Kapka/Staff
Cost Estimator	G. E. Amos
LP&EC Specialist	F. G. Krach
Quality Assurance	T. E. Prugh
Sponsor	P. H. Lamberger

H. SCHEDULE OF WORK ELEMENTS:

	<u>Start Date</u>	<u>Completion Date</u>
* Selection of A/E for CD	01-07-89	01-29-89
* Conceptual Design	02-01-89	03-01-92
* Conceptual Design Report (CDR)	07-01-89	10-01-89
* Construction Project Data Sheet (CPDS)	07-01-89	10-01-89
* Draft CDR and CPDS for Review	09-05-89	09-29-89
* Updated CDR	07-01-90	10-01-90
* Updated CPDS	07-01-90	10-01-90
* Updated CDR	07-01-91	10-01-91
* Updated CPDS	07-01-91	10-01-91
* Design Criteria	04-01-92	09-30-92
* Project Management Plan	04-01-92	09-30-92
* Architect-Engineer Selection	04-01-92	09-30-92
* Title I Design	11-15-92	07-01-93
* Title II Design	05-01-93	09-01-94
* Construction	11-15-93	12-01-96

I. CONCEPTUAL DESIGN (CD) COST (\$K) PER ELEMENT:

Conceptual Design: 160
 CDR: 20
 CPDS: 10
 Outline Design Criteria: 5
 Outline Project Management Plan: 5

J. METHOD OF PERFORMANCE:

Design will be performed under a negotiated Architect-Engineer contract which will include review and approval of Title III submittals. Construction will be accomplished by fixed price contracts awarded on the basis of competitive bidding. Project management and inspection during construction will be performed by the operating contractor.

K.

V. E. Partridge
Director, Engineering, Mound
(EG&G Approval)

L.

Daniel O. Eckman
for D. A. Morley
Area Office Manager
(DOE Approval)