Schedule 33b

53-12-48

Construction Project Data Sheet

Dayton Area 12/14/80
Operations Office

THIS DOCUMENT CONSISTS OF 4 PAGES
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9300
Sub-Program

1. Title and Location of Project: THERMONUCLEAR COMPONENT FABRICATION FACILITY MOUND LABORATORY, MIAMISBURG, OHIO

2. Project No.: 3-xxx-xxxx

3. Start Date: 12/10/53

4. Completion Date: 10/10/54 (Part A&B) 4/10/55 (Part C)

5. Previous Cost Estimate Date: $

6. Current Cost Estimate Date: 11/18/53 $2,770,000.

7. Brief Project Description and Justification:

Project includes design, procurement and installation of a facility for thermonuclear component fabrication at Mound Laboratory and is composed of three parts: (A) preparation, (B) fabrication, and (C) recovery. Parts (A) and (B) are based on a pilot plant installation currently being constructed at Los Alamos. It is proposed to install parts (A) and (B) simultaneously on the Technical Building service floor in an area that can be completely segregated from existing operations work, thereby minimizing security and health physics problems common to the respective functions. An area of approximately 3,300 sq. ft. is available for these parts of the work. It is contemplated that part (C) will be housed in the Semi-Works Building, which has the 30 foot head room essential to the recovery equipment. These areas are adequate for the work contemplated, and are so situated that additional floor space can be made available if future needs require it.

For parts (A) and (B) the process line will consist of ten (10) stainless steel drybox type hoods and six (6) modified laboratory hoods and tables, totalling about 106 feet in overall length.

Equipment consists of rotary positive blower, with 7½ H.P. motor; catalyst chamber recombiner to handle 250 cfm of air; exhaust blower with 3 H.P. motor; vacuum pump, positive displacement 46.8 cfm; heat exchanger; vacuum receiver; water cooled condensing unit, capacity 36,000 BTU at 0° F.; surge tank; control equipment such as pressure controllers, regulators, solenoid valves, pneumatic-electric controls, vacuumstats, driers, expansion valves, steam control valves, pressure regulators thermostats, reducing valves; air compressor 175 psi; 200 Ton press; lathe; furnace, electric; balances; miscellaneous special chemical and mechanical process equipment; control panel; switchboard; and miscellaneous transformers, selector switches, circuit breakers, push-button stations, relays, and other electrical equipment and controls essential to the operation and control of the preceding process and mechanical equipment. The foregoing information is based on personal discussions with, and engineering drawings from, Los Alamos technical personnel on their research and pilot plant work.

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7. Brief Project Description and Justification: (Cont'd.)

Part (C) work is based on the process currently employed by DuPont on the SRP project, employing a thermal diffusion method. Equipment for this part cannot be adequately defined in view of conflicting recommendations; however, for the purpose of this writeup, process, equipment, and estimates are based on their experiences and suggestions.

Building alterations necessary for this installation constitute a lesser portion of the project and consist essentially of modification and extension of ventilation, mechanical and electrical services necessary for the installation and operation of the forelisted process line and equipment. Dismantling and structural alterations are negligible.

8. Obligation and Cost Schedule:

Fiscal Year	Obligations	Costs
1954	$1,000,000.	$ 700,000.
1955	$1,770,000.	$2,070,000.

9. Detailed Justification for Project:

Project is an expansion of operations program and is a new field of work for Mound. It embraces hydriside production, both new and rework; shape fabrication, and recovery (decomposition and isotopic separation). Only one line is currently planned for gas handling, preparation and fabrication, although space is available in the adjacent building area for future needs without interruption of normal operation.

The program is based on initial request of A.E.C. dated October 14, 1953, "Thermonuclear Component Fabrication at Mound", and on subsequent correspondence and discussions between A.E.C. and Monsanto. Considerable research on this program has been done and is currently being carried on at Los Alamos where a pilot plant unit is now being constructed. DuPont has likewise been working on the program for the past nine months. Inspection trips and discussions with key personnel working on this program at these two sites followed up by a study of the Technical and Semi-Works Buildings at Mound have shown that the work can be satisfactorily housed and carried out at Mound.

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9. Detailed Justification for Project: (Cont'd.)

Cost data and estimates for the preparation and fabrication of the hydriside (Parts A and B) are based on Los Alamos pilot plant costs and engineering drawings, and further information obtained during inspection trip there. Preliminary estimate for the recovery work (part C) is based on cost data and discussions obtained from DuPont. Due to the conflicting recommendations for this part, this method has been used since it incorporates the same process they are already installing for primary production on the SRP project.

It is planned that the design work would make use of Los Alamos drawings and specifications wherever possible and applicable. The balance of the design work would be done at Mound. Equipment would be procured from and fabricated by outside vendors with a minimum of machine, structural, and shop work at Mound. Due to rigid security requirements, it is planned to do the installation work with Mound forces.

It is estimated that part (A) and (B) work can be completed within ten (10) months after notification to proceed, or approximately October 10, 1954 assuming starting date shown. Due to status of part (C), completion of that phase should require an additional time period of six (6) months, resulting in a completion date of April 10, 1955. Routine production should be started and maintained approximately three months after installation in both cases.

For the period of time between notification to proceed until production startup, it is estimated that an initial staff of twenty-five (25) will be required, fifteen (15) being assigned to preparation and ten (10) to the recovery work. For continuing production, preparation and fabrication will require a staff of eight (8) direct personnel, and recovery a staff of twelve (12) direct people. The thermal diffusion process operates twenty-four hours a day, seven days a week, thus requiring full three shift and relief shift operation.

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10. Details of Cost Estimate and Significant Costs:

1. Status of Construction	Previous Cost Estimate Date:	Current Cost Estimate Date: 11/18/53 Part A&B	Current Cost Estimate Date: 11/18/53 Part C
A. Engineering Design and Inspection..		$150,000.	$100,000.
B. Construction Costs			
1. Land Rights.....			
2. Improvements to Land.....			
3. Buildings (Modifications & Alterations)....		25,000.	40,000.
4. Other Structures.....			
5. Utilities.....			
6. Equipment.....		575,000.	1,400,000.
7. Removal Cost Less Salvage....			
C. Contingencies.....		150,000.	330,000.
		$900,000.	$1,870,000.
D. Total			$2,770,000.

2. Significant Unit Costs

The cost estimate was prepared by Monsanto and is based on costs, engineering drawings, discussion with Los Alamos and Savannah River personnel on their experience to date in connection with the pilot plant installation at Los Alamos and their production installation at SRP respectively.

ENR Index Nov. 1953, 293.7 (1926 = 100)

11. Major Contractor and Intended Type of Contract

Design to be partially by Monsanto and partially by undesignated subcontractor.

Procurement and installation to be by Monsanto.

Monsanto's estimated cost $ 2,650,000.

Design (Undesignated) $ 120,000.