

**PROJECT PROPOSAL AND AUTHORIZATION**

1. PROJECT TITLE <b>Actinium Process &amp; Equipment Development</b>		2. DATE PROPOSAL OR REVISION PREPARED <b>April 1, 1952</b>		REVISION NO.
3. BUDGET ACTIVITY NO. <b>3610</b>	4. BUDGET ITEM NO. <b>670</b>	5. CONTRACTOR'S NO.	6. METHOD AND TIME OF REPORTING PROGRESS <b>Quarterly Progress Reports</b>	
7. CONTRACTOR-LABORATORY <b>Monsanto - Mound</b>		8. WORKING LOCATION <b>Miamisburg, Ohio</b>		9. CONTRACT NO. <b>AT-33-1-GEN-53</b>
10. PERSON IN CHARGE (CONTRACTOR'S PROJECT LEADER) <b>Dr. F. C. Mead, Jr.</b>			11. STARTING DATE OF PROJECT <b>FY-1952</b>	

12. PURPOSE AND NEED (GIVE NARRATIVE DESCRIPTION OF PROJECT)

For sometime actinium-227 has been considered as a possible substitute material for polonium-210 in the fabrication of initiators. An actinium-227 initiator has been successfully fabricated at Los Alamos.

A method and equipment have been developed for separating actinium-227 from irradiated radium-226 in order to supply the need for small amounts of actinium for research purposes, to study the present separations process so that an improved process can be obtained for handling large quantities of material, and to supply the amount of material necessary for an initiator pilot plant.

After the separations process the actinium must be fabricated into an initiator. The development of equipment for this operation and its installation for this operation and its installation into hoods being designed by the chemical engineers is necessary to obtain a successfully operating pilot plant.

The development work on the initiator fabrication pilot plant includes development work on the use of bell jar high vacuum equipment for the reduction and volatilization steps, the development of a power source for the Shaw gun to obtain a volatilization temperature of 1600-1800°C., and the testing and integration of equipment from other groups, such as the equipment for remote control, distribution assay, etc.

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13. Related Projects  
**67A, 67B, 67E, 67P1, 67P2**

MOUND DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>11/1/57</u>	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: <u>DAAC DADC DADD</u>	1. CLASSIFICATION RETAINED
NAME: <u>J. M. FLORES</u>	2. CLASSIFICATION CHANGED TO
2ND REVIEW DATE: <u>11/21/62</u>	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>DAAC DADC DADD</u>	4. COORDINATE WITH
NAME: <u>J. M. FLORES</u>	5. DECLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BLACKETTED
	7. OTHER COMMENTS

14. Accomplishments Last Fiscal Year 1952

A pilot plant for the separation of radium and actinium has been installed and the first runs have been made. Development work has continued during this operation.

Development work has been started on equipment for a pilot plant for fabricating initiators.

15. Expected Results This Fiscal Year 1953

Operation of the separations pilot plant will continue and final development of equipment and the process for separating actinium and radium will be achieved.

The initial development of equipment for the initiator pilot plant will be carried out.

~~GROUP~~  
Excluded from automatic  
downgrading and  
declassification

~~Tested Data~~  
The data contained herein is restricted as defined  
in the Atomic Energy Act of 1954. Its transmittal  
or disclosure in any manner to  
an unauthorized person is prohibited.

~~SECRET~~

**16. Anticipated Problems Next Fiscal Year 1954**

Operation of the separations pilot plant will continue.

It is expected that the fabrication of actinium initiators in the pilot plant will begin by August, 1953 and will provide some unscheduled low level production of these items. Some equipment and process development work will continue.

17. OPERATING COSTS	ACTUAL LAST YEAR 19-52	ESTIMATED THIS FISCAL YEAR 1953	ESTIMATED NEXT FISCAL YEAR 19-54
(A) CONTRACT EXPENSE			
(1) DIRECT SALARIES	\$ 74,000	\$ 144,800	\$ 204,800
(2) DIRECT MATERIALS & SERVICES	43,500	85,200	120,500
(3) R & D SUBCONTRACTS			
(4) INDIRECT EXPENSE	100,000	196,000	277,100
(5)			
SUB-TOTAL	217,500	426,000	602,400
(B) NON-CONTRACT EXPENSE*			
(1) SPECIAL REACTOR MATERIALS			
(2) <b>Special raw material</b>	393,812	19,473	19,473
SUB-TOTAL	393,812	19,473	19,473
TOTAL COST	\$ 611,312	\$ 445,473	\$ 621,873

\* MUST BE RECONCILED TO TRANSFER OR OTHER PERTINENT SCHEDULES SHOWING SOURCE OF COST.

18. COST OF PLANT & EQUIPMENT DIRECTLY REQUIRED 1/	ACTUAL LAST YEAR 19-52	ESTIMATED THIS FISCAL YEAR 19-53	ESTIMATED NEXT FISCAL YEAR 19-54
(A) CONSTRUCTION PROJECTS*			
(1)	\$	\$	\$
(2)			
(B) EQUIPMENT PROJECTS*			
(1) 3-242-3002		35,400	20,100
(2) 1720	12,100		
TOTAL	\$ 12,100	\$ 35,400	\$ 20,100

1/ FINANCED IN P & E PROGRAM. SHOWN HERE FOR INFORMATION ONLY

\* IDENTIFY BY PROJECT NUMBER. SUPPORT EACH PROJECT WITH A CONSTRUCTION DATA SHEET, OR EQUIVALENT INFORMATION FOR EQUIPMENT ITEMS.

19. DIRECT MANPOWER (MAN YEARS)	NO. OF MAN YEARS	NO. OF MAN YEARS	NO. OF MAN YEARS
(A) SCIENTISTS & ENGINEERS	12.1	24.2	32.0
(B) OTHER TECHNICAL			
(C)			
TOTAL	12.1	24.2	32.0

20. COMMENTS:

100 per cent chemistry

3-242-3002 will be \$50,500 capital, \$5,000 expense

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