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AEC 129/77

May 29, 1957

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ATOMIC ENERGY COMMISSION

PART III - WEAPONS

QUARTERLY PROGRESS REPORT TO THE
JOINT COMMITTEE ON ATOMIC ENERGY
JANUARY-MARCH 1957

Note by the Secretary

Attached for your consideration by the Commission during the week of June 3, 1957, in connection with AEC 129/75, is the attached draft of Part III - Weapons of the Quarterly Progress Report. Part II - Special Nuclear Materials is being circulated separately as AEC 129/76.

W. B. McCool
Secretary

[redacted]

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PART III

WEAPONS

WEAPONS PRODUCTION

1. Seventy percent of the weapons scheduled for production during fiscal year 1957 were produced and delivered to stockpile as of March 31. DELETED

DELETED Tritium production is sufficient to meet gas boosting requirements for weapons during this period.

2. Initial units of the improved, light-weight version of the Class C thermonuclear bomb (Mark 39) were produced in February, and production requirements for the Class C thermonuclear bomb (Mark 15) were completed in February.

3. Production requirements for emergency capability units of the sealed-pit implosion warhead DELETED XW-25, for use with the Air Force MB-1 air-to-air rocket, were met in December 1956, and deliveries were made to the Department of Defense in January and February. DELETED

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DELETED Production of XW-25 warheads of stockpile quality is scheduled to begin in the April-June quarter.

4. Retirement of the Class A thermonuclear weapon (Mark 17) began in January.

WEAPONS DESIGN AND DEVELOPMENT

New Development Programs

5. A feasibility study was completed and a development program was established for the new Class B thermonuclear weapon (TX-41). DELETED

DELETED

DELETED DOE ARCHIVES

6. A joint program with the Navy was authorized for the development of a laydown weapon DELETED using the Lulu warhead (XW-34), 17 inches in diameter, weighing 330 pounds DELETED

DELETED

7. A development program was established for a modification of the Class D thermonuclear bomb (TX-28), 20 inches in diameter,

DELETED

DELETED The modified version (TX-28-X1) will be parachute stabilized for low-level delivery and will provide a capability of in-flight selection for either free-fall or drogue-parachute retardation.

8. All other development programs included in Table 1 of Part III of the December 31, 1956, Program Status Report were continuing in the development phase on March 31. A requirement was received in March from DOD for the development of a DELETED class B thermonuclear bomb included as TX-36Y_2-X2 in Table 1 of the December report. This bomb will not be gas boosted and the designation is changed to TX-36Y_2-X1.

TEST OPERATIONS

Operation PLUMBBOB

9. The operational period began March 15 rather than April 1 as formerly planned, in order to give the Test Manager operational control at least fifteen days before the first safety test.

10. Twenty-two test shots, included in the following schedule, were planned for Operation PLUMBBOB, to begin May 16 and continue through September 10. Mr. James E. Reeves of the Albuquerque Operations Office was appointed Test Manager.

Operational safety criteria are basically the same as those for Operation TEAPOT held in 1955. Particular effort is being made to reduce the fallout hazard. A reduction in expected fallout is to be accomplished by maximum utilization of balloons for shots (about ten) in lieu of towers, increase in tower height, and lowering of the maximum design yield. The total close-in off-site fallout estimated for PLUMBBOB is less than for any previous operation. About 2,500 megacuries are expected. This is approximately half the total fallout of the highest previous operation in Nevada, and 32 percent less than for TEAPOT.

11. Feasibility tests of the balloon suspension system have been successfully carried out at the Nevada Test Site and these tests will continue until the test series begins in order that operational techniques may be refined.

Table 1. OPERATION PLUMBBOB - NEVADA TEST SITE

Shot name and ready date	Device	Estimated yield (In kilotons)	Shot placement	Objective
BOLTZMAN 5/16/57	DELETED		500 ft. Tower	DELETED
FRANKLIN 5/20/57	DELETED	DELETED	300 ft. Tower	DELETED
LASSEN 6/2/57	DELETED		500 ft. Balloon	DELETED
WILSON 6/8/57	DELETED		500 ft. Balloon	DELETED
PRISCILLA 6/15/57	DELETED		700 ft. Balloon	DELETED
DIABLO 6/25/57	DELETED		500 ft. Tower	DELETED

Shot name and ready date	Device	Estimated Yield (In kilotons)	Shot placement	Objective
HOOD 6/27/57	DELETED		1500 ft Balloon	DELETED
OWENS 7/5/57	DELETED		500 ft. Balloon	DELETED
SHASTA 7/9/57	DELETED	DELETED	500 ft. Tower	DELETED
DOPPLER 7/15/57	DELETED		1500 ft. Balloon	DELETED
KEPLER 7/15/57	DELETED		500 ft. Tower	DELETED

Shot name and ready date	Device	Estimated Yield (In Kilotons)	Shot placement	Objective
JOHN 7/19/57	DELETED		20,000 ft.	DELETED
NEWTON 7/25/57	DELETED		1500 ft. Balloon	DELETED
VENUS 8/1/57	DELETED		Underground	DELETED
HUYGENS 8/1/57	DELETED		Surface (20 ft. platform)	DELETED

Shot name and ready date	Device	Estimated Yield (In Kilotons)	Shot placement	Objective
WHITNEY 8/8/57	DELETED	DELETED	500 ft. Tower	DELETED
SMOKEY 8/19/57	DELETED		700 ft. Tower	DELETED
EVEREST 8/26/57	DELETED		500 ft. Balloon	DELETED
GALILEO 9/1/57	DELETED		500 ft. Tower	DELETED
RAINER 9/3/57	DELETED		Underground	DELETED
FIZEAU 9/8/57	DELETED		500 ft. Tower	DELETED
MORGAN 9/10/57	DELETED		500 ft. Balloon	DELETED

12. About seven safety tests (not listed in Table 1) are planned:

> Five one-point safety tests, in which a device will be detonated by use of only one detonator in order to simulate a "one-point" detonation of the type which could occur in an accidental crash, fire, or similar accident. The purpose of these tests is to determine whether any nuclear yield would result from accidental detonation.
>
> Two safety tests for determining plutonium hazards resulting from (1) one-point non-nuclear detonation of the sealed-pit implosion warhead DELETED and (2) burning of plutonium.

Operation HARDTACK

13. Preliminary plans are being made for Operation HARDTACK, scheduled for the spring of 1958, at the Eniwetok Proving Ground. The Eniwetok Proving Ground Technical Planning Board was established, and Dr. Alvin C. Graves of the Los Alamos Scientific Laboratory was appointed Chairman.

WEAPONS FACILITIES

Research and Development Facilities

14. Construction was started on initial phases of the weaponization facilities expansion in the Livermore, California, area.

Production Facilities

15. In general, satisfactory progress was made in the January-March quarter in the construction of weapons facilities for the manufacture and assembly of DELETED nuclear units.

16. The construction of facilities at Oak Ridge for the production of uranium 235 DELETED was 31 percent complete at the end of March as compared with 26 percent scheduled.

*This test was successfully conducted on April 24, 1957.

17. All facilities at Rocky Flats for the production of plutonium 239 and uranium 235 DELETED were completed for beneficial occupancy at the end of March except the final shell fabrication building. This building is expected to be completed by the middle of June and the only remaining major piece of equipment, a large rolling and forming mill, is expected to be installed before September.

18. The tritium-deuterium gas packaging plant at Savannah River was 52 percent complete versus 62 percent scheduled at the end of March. Plant operations are expected to begin in the September-December quarter.

19. The Burlington-Pantex expansion, being built for the final assembly of DELETED components, was 39 percent complete versus 41 percent scheduled at the end of March. Adverse weather conditions slowed progress on the project somewhat and the target date for completion of the first unit was postponed from April 6 to May 1.

20. Full-scale production facilities for the manufacture of external initiators (XR units) at the General Electric Panellas Plant in Florida were completed in January. This plant was designed and constructed and is being operated by the General Electric Company under subcontract from the Sandia Corporation. The original Letter of Intent authorized the company to finance about $3,000,000, which would pay for site acquisition and the construction of facilities necessary for a normal light manufacturing plant, and stated that the AEC would finance an equal amount, which would provide for the construction of special facilities such as oversized air conditioning and utilities necessary for production of the XR units. The Letter also provided for the Commission's option to purchase the plant and facilities from the company.

21. The Commission decided to exercise its option to purchase, and at the end of March steps were being taken to acquire the land for the AEC by the U. S. Army Corps of Engineers, and the AEC audit of the Company's plant expenditures was under way. Completion of the audit and AEC inspection and acceptance of the plant facilities will permit the actual transfer to be finalized. It is believed that the costs of the plant and site will be approximately $5,735,000.