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August 6, 1957

AEC 129/80

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ATOMIC ENERGY COMMISSION

PART III - WEAPONS

QUARTERLY PROGRESS REPORT
TO THE JOINT COMMITTEE ON ATOMIC ENERGY
APRIL-JUNE 1957

Attached for consideration by the Commission during the week of August 12, 1957, in connection with AEC 129/78, is the attached draft of Part III - Weapons, Quarterly Progress Report. Part II - Special Nuclear Materials, is being circulated separately as AEC 129/79.

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Department of U. S. Atomic Energy

Commission

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PART III

WEAPONS

GROWTH OF WEAPONS STOCKPILE

1. Growth of the weapons stockpile during fiscal year 1957
was in accordance with the projected number shown on an index
basis in Chart III-A of the December 1956 Program Status Report.
The projections for fiscal years 1958 and 1959 have not been
revised inasmuch as further guidance had not yet been received
from the Department of Defense.

WEAPONS PRODUCTION

2. Weapons produced during fiscal year 1957 met production
schedules.

3. Production of stockpile-quality sealed-pit implosion
warheads ~~SECRETED~~ for use with the Air Force
air-to-air rocket, the Genie, formerly termed the MB-1, began in

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4. Initial safety criteria for the storage and handling of sealed-pit weapons containing plutonium were developed by the Joint Board on Future Storage of Atomic Weapons, approved by the Military Liaison Committee, and concurred in by the AEC. The Commission informed the MLC that it desires to have nuclear safety criteria reviewed annually.

5. The weapons Quality Assurance Program, which was designed to ensure satisfactory quality and conformance with design criteria for weapons and weapons components, is being modified to include the new sealed-pit concept. An AEC-Armed Forces Special Weapons Project agreement was signed providing military liaison with the Quality Assurance Program.

6. By the end of June the Mark 8 gun-assembly type weapon and the Mark 9 280-millimeter atomic projectile had been retired from stockpile, and had been replaced by the improved Mark 11 and Mark 19 weapons, respectively.

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WEAPONS DESIGN AND DEVELOPMENT

7. During the April-June quarter, the following feasibility studies were completed and development programs established:

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b. A warhead for the Navy Sparrow-X air-to-air guided missile. The weapon will be 11.75 inches in

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diameter, with a maximum length of 22 inches and a desired length of 16 inches. It is to weigh 85 to 110 pounds

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c. A warhead for the Navy ASTOR antisubmarine torpedo. The weapon (XW-34) will have a diameter of 17 inches, weigh 330 pounds,

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8. Internal initiator versions of the primary for the

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are

being fired in Operation PLUMBBOB. A decision on the type of initiators to be used in the stockpile versions of these weapons and the XW-31 will be made after these tests are completed.

9. Developments of other weapons cited in Table 1 of the December 1956 Program Status Report resulted in the following changes:

a. The weight of the XW-44 has been changed from 290 to 150 pounds.

b. The weight of the XW-45 has been changed from 120 to 150 pounds.

c. The estimated yield of the XW-35 has been changed ~~in accordance with the Department of Defense request to obtain the maximum practicable yield.~~ in accordance with the Department of Defense request to obtain the maximum practicable yield.

d. The Navaho (Air Force) is an additional carrier of the XW-39-XI Class C warhead.

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e. The Hustler (Air Force) will not be used to carry the XW-27 Class D warhead.

f. The weight of the XW-28 Class D warhead has been changed from 1,427 to 1,725 pounds. The DCD requested development of the heavier weapon in order to obtain the higher yield.

10. Feasibility studies were initiated for an all-oralloy (uranium enriched to 93.5 percent uranium 235) warhead for an air-to-air missile; a 2,600-pound warhead for a later Intercontinental Ballistic Missile; and a warhead for the Army Nike/Zeus antimissile system.

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TEST OPERATIONS

Operation PLUMBBOB

11. The first test in the current series of continental nuclear tests in Nevada was conducted on May 28 as the BOLTZMAN shot ~~DELETED~~ Preliminary analysis of the results indicated that the yield was 11 to 12 kilotons and that expected results in all aspects were obtained.

12. The FRANKLIN shot, ~~DELETED~~
~~DELETED~~ was fired on June 2 with a yield of .15 kilotons ~~DELETED~~

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13. The LASSEN shot, ~~DELETED~~
fired on June 5 with a yield of .55 tons

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14. The WILSON shot ~~DELETED~~
~~DELETED~~ was fired on June 18 with a yield of 10 kilotons.

Preliminary analysis indicated that the test gave expected results in all respects. ~~TOP SECRET~~

15. The PRISCILLA shot was fired on June 24 with a yield of 39 kilotons.

~~DELETED~~ Preliminary results indicate that all experiments were successful.

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16. The DIABLO shot

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was rescheduled for July 15. 17

17. Observer programs in Operation PLUMBBOB include:

a. A Joint AEC-DOD official observer program for Congressional and other Government officials, and Department of Defense invitees from all foreign countries with whom the United States has formal defense agreements and from Spain;

b. A Federal Civil Defense Administration Observer Program for Civil Defense personnel, including representatives from the North Atlantic Treaty Organization Civil Defense Committee and from Sweden;

c. A news media program, including a small number of foreign press representatives;

d. A DOD exercise "Desert Rock" for troop training and material tests with Canadian and United Kingdom participants;

e. An employee observer program for AEC and contractor employees in activities under the jurisdiction of the Albuquerque and San Francisco Operations Offices;

f. An observer program of AEC invitees from related industries such as mining.

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18. The Commission and the DOD determined that the yield and certain associated effects data of the SMCKY and PRISCILLA shots could be transmitted to the United Kingdom by the Department of Defense under provisions of Section 144b of the Atomic Energy Act in connection with United Kingdom participation in the DOD weapons effects program. The yield and effects data of these shots do not reveal important design or fabrication information.

19. Arrangements were made for the exchange of balloon suspension information and for the physical exchange of balloons with the United Kingdom. Sandia Corporation was authorized to

1/ A successful detonation was achieved on this date.

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communicate directly on an unclassified basis with the British Joint Services Mission.

Operation HARDTACK

20. Preliminary plans are continuing for Operation HARDTACK, tentatively scheduled for the spring of 1958, at the Eniwetok Proving Ground.

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WEAPONS FACILITIES

Research and Development Facilities

21. Los Alamos, New Mexico. Bids were received for construction of the Sigma building. The low bid was in excess of the authorization and an increase in authorization was requested. The estimated total cost of the building is \$5.1 million. When completed this building will replace the inadequate and temporary facilities now being used for weapons research and development work.

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22. Livermore, California. Planning continued on the expansion of facilities in the Livermore area.

23. At the end of June design was 70 percent complete and construction started on the weaponization facilities to be used by the Sandia Corporation.

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24. The status of construction activities for operations of the University of California Radiation Laboratory at the end of June was as follows: A contract for the design of the plutonium-metallurgy laboratory was being negotiated. Construction was 35 percent complete on the programming building, which is a part of the computer complex. The design of the high explosive test facilities at Site 300, authorized in fiscal year 1957, was substantially completed. Contracts for the construction of minor facilities at Site 300 had been awarded, and the remaining construction under fiscal year 1957 authorization at the site was to be started within the next three months. Design of the mechanical shops addition was completed and the construction contract had been awarded.

Production Facilities

25. Construction of the weapons facilities for the manufacture and assembly of ~~DELETED~~ nuclear units progressed satisfactorily during the April-June period.

26. Oak Ridge facilities for the production of uranium 235 ~~DELETED~~ were 47 percent complete at the end of June and ahead of schedule. Rocky Flats facilities for the production of plutonium 239 and uranium 235 ~~DELETED~~ were complete with the exception of delivery of a large rolling and forming mill which was expected to be installed before September. DOE ARCHIVES

27. The Burlington-Pantex expansion for the final assembly of ~~DELETED~~ components was 79 percent complete on June 30 and on schedule.

28. The tritium-deuterium gas-packaging plant at Savannah River was 75 percent complete versus 83 percent scheduled on June 30.

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29. Expansion of facilities at Kansas City for the increased production of nonnuclear weapons components was 15 percent complete at the end of June as compared with 22 percent scheduled. This lag was entirely due to a strike of construction workers on the project, and a virtual cessation of progress during the month of June.^{1/}

30. Land was acquired for the planned expansion of facilities at South Albuquerque Works. Construction bids were received and construction was expected to begin in the July-September quarter. ACF Industries, Incorporated, at this site is engaged primarily in the production of thermonuclear weapons cases.

31. The Pinellas Peninsula Plant located near St. Petersburg, Florida, was purchased from the General Electric Company in June at a cost of about \$5,435,000. This is the plant built and operated by General Electric Company for the manufacture of external initiators.

Storage Facilities

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32. The acceptance inspection for Operational Storage Site Yoke

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was made in June. It was expected that storage operations would begin about the middle of August.

^{1/} On July 8 all crafts returned to work.