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AEC 597/4

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December 22, 1952

ATOMIC ENERGY COMMISSION

OPERATION CASTLE

Note by the Secretary

The attached report by the Director of Military Application is circulated by request of the General Manager for consideration by the Commission at the meeting scheduled for 2:30 p.m., Monday, December 22, 1952.

ROY B. SNAPP

Secretary

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Curt Wilson 5/22/84

REVIEWED BY *i/schmitt* 7/8/85

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By authority of U. S. Atomic Energy Commission

Per Brig. Gen. K. G. Fields, USA Date 12-22-52

Document No. LXI-2113-18A

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ATOMIC ENERGY COMMISSION

THE THERMONUCLEAR WEAPON TEST PROGRAM

Report by the Director of Military Application

THE PROBLEM

- 1. To consider the timing of Operation CASTLE.

BACKGROUND

2. The annual weapon program submissions of the Los Alamos Scientific Laboratory and the University of California Radiation Laboratory (Livermore) are in process of preparation and review and will be submitted for Commission review and approval early in calendar year 1953. As a result of the extremely successful behavior of the Mike Shot of the IVY operation, from the standpoint of yield, these programs will propose a considerable expansion and a broader research and development in thermonuclear weapons than envisioned six months ago. This comes about because of the important possibilities revealed for employment of the principle of radiation implosion and the practical fact that a cryogenic thermonuclear system works.

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3. In a letter of June 13, 1952, circulated previously as AEC 493/4, the Military Liaison Committee transmitted a Joint Chiefs of Staff requirement for the development of thermonuclear weapons which follows in part:

"a. A military requirement exists for the development of thermonuclear weapons giving yields of [REDACTED] [REDACTED] a military requirement exists for the production of such weapons provided they are compatible in size, shape and weight with delivery systems that will be available in 1954.

"e. The Joint Chiefs of Staff wish to emphasize that prior production of a deliverable thermonuclear weapon by the USSR would serve to reduce the present U.S. preponderance in atomic weapons, and that such a shift in balance might exert strong influence on Soviet policy decisions. This factor, when taken together with the promise of U.S. thermonuclear programs, is considered to provide adequate justification for an approach which may represent considerable technical risk and large expenditure of funds."

4. Because of the urgency of the thermonuclear weapon development as expressed in the above paragraph the reorientation of the thermonuclear program must obviously be related to such policy considerations as well as to technical considerations. Since the production of a proven weapon involves full-scale testing, the date to be set for the CASTLE operation will be an important determinant of the scope and emphasis of the development program and the time at which operational capability will be realized. There is need for the earliest possible decision on this date. This paper discusses the main issues pertinent to timing of Operation CASTLE on the basis that the finally approved programs of LASL and UCRL will include projects indicated in letters from Drs. Bradbury and York circulated in AEC 597/2, and recommends a date for the test program which should satisfy the technical requirements as well as the DOD requirements.

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CONCLUSIONS

12. The LASL proposes development of three possible thermo-nuclear weapon models which should be ready for test by spring 1954. These are [REDACTED]. A successful full-scale test is necessary before any of these models can be accepted as an emergency weapon. Selection and design of these models for test at CASTLE will be critically influenced by the results of UPSHOT in spring 1953.

13. In conformity with these recommendations and in order to permit inclusion of UPSHOT data in the design of CASTLE devices, the Commission should postpone CASTLE until the spring of 1954. This will allow the weapon or weapons selected for test then to be the best from the development point of view, and offers the better possibility of attaining the desired thermo-nuclear capability by 1954.

14. The AEC should propose to the DOD the action outlined in paragraph 13 above, and request their comments.

RECOMMENDATION

15. That the Atomic Energy Commission:

a. Approve holding Operation CASTLE in early 1954;

b. Approve dispatch of a letter such as that in the Appendix to the MLC advising of the proposed schedule for CASTLE, and requesting their comments;

c. Note that possible CASTLE test items included in the LASL and UCRL developmental programs are described in the letters from Drs. Bradbury and York circulated in AEC 597/2 (see paragraph 3a-3d, page 2, Enclosure "A" and paragraph IIb, page 6, Enclosure "B", respectively).

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APPENDIX

DRAFT LETTER TO THE CHAIRMAN, MLC

1. The results of the IVY thermonuclear experiment indicate certain reorientation of the thermonuclear weapons program in order to insure broad and rapid progress in this activity. The revised program and its bearing on the timing of the CASTLE operation are discussed below.

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We believe, however, that at least one, and probably both, of them will emerge as possible for test and emergency capability early in 1954.

5. Based on our understanding of the Department of Defense requirements for thermonuclear weapons, we believe that the CASTLE operation, ~~TOP SECRET~~ should be scheduled to be held as early in 1954 as technical progress permits; that supporting operations should be phased to permit this in January of 1954. We believe that such course is indicated in view of its increased promise for obtaining a capability in thermonuclear weapons in early 1954.

6. We realize that the above suggested plan has a major impact on military planning, as well as on the supporting Task Force. With respect to the latter, it would be desirable from our standpoint if at least the principal staff of the present Task Force could be held intact.

7. In view of the importance of this program, your early comments are requested.