

15. REVIEWER DATE: 6/16/94
 AUTHORITY: OAC, OAD, OAD, OAD
 NAME: [Redacted]
 2ND REVIEWER DATE: 6/16/94
 AUTHORITY: ADD
 NAME: D.P. [Redacted]

DETERMINATION (CIRCLE NUMBER(S))
 1. CLASSIFICATION RETAINED
 2. CLASSIFICATION CHANGED TO: *SFRD*
 3. CONTAINS NO OOE CLASSIFIED INFO
 4. COORDINATE WITH: DNA
 5. CLASSIFICATION CANCELED
 6. CLASSIFIED INFO BRACKETED

Unauthorized disclosure subject to
 [Redacted]
 Handle [Redacted] in Foreign
 Disinformation Section [Redacted] Atomic
 Energy Act 1954.

Declassified by DNA, Chief, ISTS
 [Signature]
 DATE: 10/18/94



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404194

THIS DOCUMENT CONSISTS OF 5
 COPY NO. [Redacted] OR S [Redacted] SERIES [Redacted]

Copy for Gen. [Redacted]
 DOCUMENT NUMBER 38916

12 February 1951

BEST COPY AVAILABLE

UNIQUE DOCUMENT # SFS2000249422

Subject: Plans for Atomic Tests Subsequent to Windstorm.

To: Chief of Staff, U. S. Army, Washington, D. C.

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1. The Los Alamos Scientific Laboratory technical program for the calendar year 1951 and the fiscal year 1952, as approved by the Atomic Energy Commission on 5 December 1950, provides for tests of atomic devices in the fall of 1951 and the spring of 1952. This Headquarters informed the Services on 7 December 1950 of the tests scheduled for the fall of 1951 and requested information as to the specific tests which the Services desired to be undertaken at that time. Replies have been received from the three Services indicating the general areas in which additional experimentation or measurements are considered necessary. More details will be requested and, when received, will be put into proper form for presentation to the Research and Development Board for approval.

2. The consolidated military test program for the fall of 1951 cannot be established with finality at this time for the reason that the need for some tests and the scope of others are dependent on the outcome of the Greenhouse program, the results of which will not be known until June or July, 1951. Also, the success which Joint Task Force 131 may have in preparing for Operation Windstorm will have some bearing on military interests in the AEC tests scheduled for about the same time. The geographical location of the AEC 1951 tests also will affect the scope of Armed Forces participation. If these tests are conducted at the Las Vegas Proving Ground, it will be practicable to include some experiments which, because of time and logistic factors, would not be practicable at an off-continent location. The following general outline, however, represents the scope of Service interest in the AEC tests for the fall of 1951. In view of the short time remaining for preparations, it is considered advisable to proceed on the basis of this outline and to provide for such adjustments as may be indicated by the results of Greenhouse and the completion of preparations for Windstorm.

From NMB-1

- I. Effects on Materiel and Equipment.
 - a. Thermal effects on man and materiel, utilizing animals.
 - b. Integrated effects on man and equipment in combat dispositions.
 - c. Integrated effects on vehicles, parked aircraft and other materiel.

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II. Tests of Service Equipment and Techniques.

- a. Radiation detection equipment (ground and airborne).
- b. Indirect bomb damage assessment techniques.
- c. Decontamination techniques.
- d. Protective clothing and equipment.

III. Supporting Measurements.

- a. Gamma dosage (rate and energy).
- b. Gamma dosage versus time.
- c. Free air pressures.
- d. Air pressure versus time.
- e. Peak pressures.
- f. Thermal radiation as a function of time and distance.
- g. Technical photography.
- h. Meteorological documentation.

IV. Long-Range Detection.

- a. Monitoring and tracking cloud.
- b. Determination of yield.

Arrangements would be made to repeat any measurements now scheduled for Greenhouse or Windstorm if observations are not obtained due to faulty design or manipulation of instruments.

3. On the basis of present information, it may be anticipated that these tests will be conducted at the Las Vegas Proving Ground. A firm decision is not expected, however, until the results of the Ranger tests, particularly as to radiological hazards incurred, have been analyzed and the devices to be tested are finally selected. At the present, it must be accepted as possible that Eriketok will be used for further tests in 1951 following Greenhouse.

4. The AEC-approved program provides also for full-scale tests in the spring of 1952, to include, tentatively, at least one detonation of a very high-yield device which could be accomplished at an off-continent site only. The Department of Defense should take advantage of both scheduled tests to fill any important gaps in weapons effects information which may remain at the conclusion

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of Greenhouse and Windtunnels. Since the field of at least one of the devices to be tested in the spring of 1952 and possibly in the fall of 1951 is limited to be of a much higher order than any previously tested, it is probable that basic measurements of air pressure, thermal radiation and gamma radiation will be desirable to verify the accuracy of existing formulas as applied to higher yield weapons. It appears questionable whether any extensive tests involving airials, material or structures will be necessary. In any case, it is not likely that the results of preceding tests will be analyzed and collated in sufficient detail to justify the formulation of a realistic test program for 1952 until late this fall.

5. The establishment of Riksvetok as a permanent AEC Proving Ground, and of an additional proving ground at Las Vegas, Nevada for the testing of atomic devices leading to the design of weapons or of weapons themselves, raises questions of future relationships and responsibilities between the Atomic Energy Commission and the Department of Defense in the conduct of such tests. It is believed that future tests at the Las Vegas Proving Ground will range in scope from minor experiments in expansion of laboratory programs to full-scale weapons tests of new stockpile models of low or medium yields where-as off-containment tests will be required for high-yield devices, including possibly the thermonuclear weapon. In the past, the Atomic Energy Commission has been interested primarily in experiments bearing on the design of atomic weapons and the Department of Defense on effects of atomic weapons. In view of the scope of the phenomenological program undertaken in the past, and the extensive programs set up for Greenhouse and Windtunnels, it appears that tests in the near future will be conducted primarily as experiments necessary to the development of weapons, with weapons effects in an incidental or secondary role. Regardless of the scope of the program desired by the Department of Defense for inclusion in the tests in the fall of 1951 and the spring of 1952, it is apparent that considerable assistance and direct participation by the Department will be required in support of the AEC objectives. The conduct of tests at Riksvetok in 1952 and, possibly, in the fall of 1951, will require local and area security forces, weather coverage air and sea transport support, communications services and probably the use of manned or drone aircraft for cloud sampling.

6. If the tests set up for the fall of 1951 are conducted in the United States, the magnitude of military support to the Atomic Energy Commission will be of a lower order. As evidenced in the Hanger tests, however, military participation for local security, weather services, cloud sampling and cloud tracking will be required regardless of the scope of the military effects program. It is advisable, therefore, that the organizational structure for Armed Forces participation be designated as early as practicable.

7. Apart from the matter of direct military interest, the conduct of off-containment tests at locations to which the USSR may have access for operations, clandestine operations or overt attack necessitates the establishment of a military command for the security of the area and for the control of the personnel and forces involved. The exercise of this command carries with it a degree of responsibility for the technical phases of the test programs and for personnel safety precautions, despite the specific responsibility of the

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Atomic Energy Commission for research and development in the field of atomic weapons as prescribed by Public Law 505. In the case of Greenhouse, this same situation has been solved by making the test force commander an agent of the Atomic Energy Commission for certain aspects of the test program and providing him with an Atomic Energy Commission Technical Group for immediate direction of the technical program. That pattern should be continued for future tests beyond the continental limits of the United States when such tests are conducted primarily in connection with weapons development. The designation of a military commander to conduct tests within the United States does not appear necessary nor advisable. General area defense will be provided as a normal function of the continental defense forces and, as a rule, only technical and logistic support will be required. Assumption of control over continental tests would imply acceptance of responsibility for any hazards or damages that might occur and for the settlement of claims resulting therefrom. As evidenced by the Ranger tests, however, and as will be of greater significance in future tests involving weapons effects, a single line of contact between the field test group of the Atomic Energy Commission and the Department of Defense is highly desirable. For the conduct of tests in the United States, therefore, military participation should be in an assisting, rather than a directing or controlling, role.

8. Recognition has been given to the facts that, following the conclusion of Greenhouse (about 15 June 1951), Joint Test Phase 3 will be engaged in the roll-up at Entwhetok, the preparation of reports and the settlement of accounts for Greenhouse, that the Department of Defense will continue to be responsible for the general security of Entwhetok itself and for communications and the maintenance of military equipment and supplies; and that these functions will be expanded to meet the requirements of future test programs as they arise. In the summer of 1951, JTF-3 will be in the process of releasing attached units and personnel. Trained scientific personnel, both civilian and military, will be available for release to other detachments and large numbers of instruments will be available for storage or re-use just prior to the time when they will be needed for the tests in the fall of 1951. It would be unwise to discharge personnel and expensive equipment of JTF-3 just at the time a similar, but smaller group, is needed for another test.

9. It is estimated that the military portion of the scientific program as outlined in paragraph 2 can be accomplished for the fall tests of 1951 for \$1,500,000 of Research and Development funds. This early estimate is based on the assumption that the tests will be conducted at the Nevada site and that military participation in the scientific program will not extend beyond the fields enumerated in paragraph 2. Under the same assumptions, approximately \$1,300,000 will be required for extra-military expenses. No estimates can be made of funds which will be required for the conduct of the tests planned for 1952 until the scope of the tests and the degree of military participation in these tests have been determined.

10. Since considerable semi-permanent construction has been completed at Entwhetok and since the anticipated military programs will be much less than is being done at Greenhouse, it is estimated that the accomplishment of the

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tests at Windsor in the spring of 1952 can be accomplished by a task force considerably smaller than JTF-3. It is believed that for future tests at this site the operation would be simplified and lines of responsibility more clearly defined if the Joint Task Force commander reported for military control to the Area Commander and if the Area Commander retained responsibility for military security for the area.

11. It is recommended that:

a. The test program outlined in paragraph 2, above, be approved subject to such adjustments as may be indicated by the review of the Research and Development Board and by the results of Greenhouse.

b. The Joint Chiefs of Staff be requested to establish a general policy for military participation in field tests of atomic devices and weapons substantially as follows, and to submit such a proposal for the consideration of the Atomic Energy Commission:

(1) For the conduct of tests at the Las Vegas, Nevada Proving Grounds, military participation and assistance shall be coordinated by a small, permanent, joint test group established by the Chief of Staff, U. S. Air Force. Individuals and organizations from the three Services and from the AFSSP shall be assigned as required for administration, local security and the conduct of military test programs; and for logistics and technical assistance to the Atomic Energy Commission.

(2) For the conduct of tests beyond the Continental Limits of the United States, Joint Task Forces will be established by the Joint Chiefs of Staff; and that for the conduct of such tests in which the AEC has primary interest, the Task Force Commander will be an agent of the Atomic Energy Commission for the exercise of such functions on behalf of the Commission as the latter may deem necessary.

c. The Chief of Staff, U. S. Air Force, be designated as the Executive Agent for the Joint Chiefs of Staff for the presently-scheduled tests in the fall of 1951 (excepte Windsor) and the spring of 1952; and that the support of these tests be provided by utilizing the personnel and material resources of JTF-3 and organized and assigned responsibilities in accordance with the general policies stated in subparagraph b above.

12. Identical letters are being forwarded to the Chief of Staff, U.S. Air Force and the Chief of Naval Operations. You are requested to forward this letter, together with your comments thereon, to the Joint Chiefs of Staff for their consideration and action.

HERBERT B. LOPEL
Brig. General, USA
Chief, AFSSP