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Major General H. B. Loper
Chief, Armed Forces Special Weapons Project
P. O. Box 2610
Washington, D. C.

This document consists of 6 pages
No. 2 of 5 Copies, Series Draft

Dear General Loper:

Reference is made to letter from Chief, AFSWP, to Director of Military Application, file SWPWT 400.112 dated October 15, 1952, on the subject of troop participation in Operation UPSHOT-KNOTHOLE.

Your letter of October 15 requests Atomic Energy Commission concurrence in two general proposals regarding this participation. The first proposal is a plan for maximum troop participation which will apply to all shots, but with the degree of implementation for each specific shot to be agreed in the field between the Test Manager, Exercise Director, and Director Weapons Effects Tests. The AEC concurs in the general concept of this first proposal but desires to make several amendments to the specific arrangements. These amendments are desired because of our belief that diagnostic experiments must govern at UPSHOT in the same degree that military effects must govern at KNOTHOLE. Thus, though maximum possible freedom of operation will be granted the Exercise Director, the Operations Plan for Operation Desert Rock Five must be coordinated with the Test Manager's overall Operations Plan for UPSHOT. This will necessitate:

1. Joint planning between the Test Manager, Exercise Director, Director Weapons Effects Tests of phases of the Exercise which involve activities outside the assigned maneuver area, and incorporation of these activities in the Test Manager's Operations Plan.

MILITARY RESEARCH & APPL. 7

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	1. CLASSIFICATION RETAINED
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Jose Diaz 4/20/81
REVIEWED BY
Wilbur A. Strauss 4/22/81
By: W. Touch 6/5/87

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2. Transmittal of the Exercise Director's plan for maneuvers within the assigned area to the Test Manager, for information only.

Where further detailed amendments are desired, they appear in Inclosure I to this letter and refer to corresponding sections of Inclosure I to your letter. As thus amended your first proposal is acceptable to the AEC.

Regarding your last proposal, that the Department of Defense assume full responsibility for physical and radiological safety of troops and troop observers within the Nevada Proving Grounds, including establishment of safety criteria for them, the AEC concurs in part. Establishing general safety practices and criteria at the Nevada Proving Grounds is, and must continue to be, the responsibility of the Manager, Santa Fe Operations Office (Test Manager). We do, however, accept the proposal that the DOD assume full responsibility for physical and radiological safety of troops and troop observers within the maneuver areas assigned to Exercise Desert Rock Five, including establishment of suitable safety criteria. The AEC adopts this position in recognition that doctrine on the tactical use of atomic weapons, as well as the hazards which military personnel are required to undergo during their training, must be evaluated and determined by the DOD.

We wish to point out, however, that the AEC has established safety limits for personnel who are to be exposed to the effects of atomic detonations at AEC Proving Grounds. These have been reviewed by our biological and medical staff and are felt to be adequate and realistic. They are outlined in Paragraph 2.e of Inclosure I to this letter.

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The Commission recommends that the DOD accept and observe these limits for tactical maneuvers at the Nevada Proving Grounds. Acceptance of these criteria, we believe, should reduce only slightly, if at all, the realism of the maneuvers. For example, radiological exposure cannot be detected at the time it is received by an individual without using instruments. Thus, a maneuver where individuals are exposed to 3.9r would be no less realistic from a radiological point of view than one where they received greater amounts.

So that the AEC may be kept apprised of the plans for the maneuver, we desire that the Exercise Director transmit to the Test Manager, for information only, a copy of his Safety Plan for the Exercise. This should indicate in which particulars and by how much the AEC safety standards are being exceeded.

We note your undertaking to issue, in case of injury or criticism resulting from the Exercise, a public statement regarding the DOD's responsibility for the exercise. Under the provisions of your Inclosure I this statement would be issued thru the joint AEC-DOD information office. The paragraph which would cover responsibility for the Exercise has been agreed with Office of Public Information, OSD, and is attached hereto for your information as Inclosure II.

It is requested that you inform us of your acceptance, or desire for further discussion of these amendments to your proposals so that the field offices may be given fully agreed instructions to govern their subsequent actions.

Sincerely yours,

M. W. Boyer
General Manager

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1. GENERAL

d. Coordination

The Atomic Energy Commission recognizes the desirability of including the Director Weapons Effects Tests in planning for the exercise. We desire, however, that direct communication between the Test Manager and the Exercise Director when necessary shall be authorized.

e. Plan

Although the movement of troops within the assigned exercise area is to be determined by the Exercise Director, specific provision must be made in the exercise plan to assure non-interference with scientific experiments, and equipment for collection of data within that area. It is desired that the Exercise Director furnish a copy of the exercise plan in advance to the Test Manager for information. On the other hand, all movements of military personnel and vehicles outside that area of the Nevada Proving Grounds assigned to the Exercise will be incorporated in the Test Director's Operation Plan. All aircraft over the area whatsoever, including helicopters, drones, and TAC and SAC aircraft, will be under the control of the Test Director prior to, and immediately after, H-hour. Their participation must be included in the overall air plan prepared by Hdqs., Special Weapons Center.

2. PROPOSED WORKING AGREEMENTS

b. Change in Plan

Any change in the original plan which involves AEC

support may, although otherwise acceptable under these provisions, become unacceptable to the Test Manager if submitted so late as to require excessive effort to effect its inclusion.

c. Maneuver Area

The area assigned the exercise on any one shot is a matter for solution between the field representatives. It can be determined only after consideration of the final requirements of all agencies for area at that particular shot and cannot reasonably be decided away from the site. The Commission will not place any restrictions before the fact on the decision of the Test Manager in this regard. It is anticipated, however, that a suitable and acceptable sector will ordinarily be available for troop maneuvers.

e. Safety

AEC maximum limits for exposure of personnel to the effects of atomic detonations are:

1. Ionizing Radiation: A total exposure to not over 3.9 Roentgens of gamma radiation per 13 weeks.
2. Thermal Radiation: Exposure to not over 1 calorie per square centimeter for a fully clothed individual. In addition, the eyes of a person so exposed must be protected either by approved goggles or by assuring that they are facing away from the blast and not facing any nearby highly reflecting surfaces.

3. Blast: Exposure to not over a static overpressure of 2 pounds per square inch, including direct, reflected, and reinforced effects. This does not take into account possible injury from g. displacement, or h. flying debris. It is known that flying debris can be a real hazard at a position where the overpressure in free air is 2 psi.

f. Admittance of Military Personnel to the Nevada Proving Grounds.

Access of personnel to the Nevada Proving Grounds is, and must continue to be, solely the responsibility of the Test Manager. Only in this way can he execute his responsibility for safeguarding Atomic Energy Commission classified matter therein. He will, however, make satisfactory arrangements with the Director Weapons Effects Tests and the Exercise Director to admit participating troops and troop observers.

4. ADDITIONAL DETAILS ARE AS FOLLOWS:

c. Indoctrination

It is the opinion of the Commission that very few, if any, troops or troop observers will have a need to know the purpose or the details of construction of Atomic Energy Commission experimental devices being detonated in this series.

6. PUBLIC INFORMATION

Paragraph 6 should read:

"All public information, including releases, statements, interviews and backgrounding relating to the Exercise will be issued through or approved by the joint AEC-DOD Public Information Office."

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ATOMIC ENERGY COMMISSION

Report by the Director of Military Application

PROBLEM

1. To consider the Department of Defense's request for troop participation in Continental tests.

BACKGROUND

2. Military troops and troop observers participated in Atomic Energy Commission atomic tests for the first time at Operation BUSTER-JANGLE. In connection with Operation TUMBLER-SNAPPER, the next operation where they participated, the Atomic Energy Commission was informed that the Department of the Army had a vital requirement for "participation to the maximum extent possible in all future atomic tests conducted in the continental United States where such participation is feasible." Atomic Energy Commission approval in principle of the concept of limited troop participation in atomic tests at the Nevada Proving Grounds was requested.

The Atomic Energy Commission did approve this concept, requesting that the scope and objectives of such participation be outlined in advance to the Commission to permit integration of such operations into our development test programs. Early notification of the Department of Defense desires for participation in TUMBLER-SNAPPER was indeed provided the Atomic Energy Commission, but many requests for changes in scope were subsequently made by the Department of Defense, all of which had to be referred to the Commission for approval.

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In an attempt to obtain a firm program for troop participation early in the planning for UPSHOT-KNOTHOLE the Director of Military Application on August 20, 1952 asked the Chief, Armed Forces Special Weapons Project, who has been designated to act for the Department of Defense on these matters, to provide such a plan. Interim correspondence was exchanged thereafter during which the Armed Forces Special Weapons Project was advised of the tentative shot schedule and the Atomic Energy Commission received copies of intra-Department of Defense correspondence establishing a Department of Defense position on exposure limits (on file in Division of Military Application).

In summary, the limits decided within the Department of Defense to be desirable as maxima were reported as being:

a. Ionizing Radiation

3 roentgens prompt whole-body nuclear radiation, plus an additional 3 roentgens in post-detonation maneuvering. (AEC: 3.9 roentgens per 13 weeks).

b. Thermal Radiation

1 calorie per square centimeter of exposed body surface. (AEC: 1 calorie per sq. cm. of exposed body surface, plus goggles, or face away from blast)

c. Overpressure

5 pounds per square inch. (AEC: 2 pounds per square inch)

Charts were prepared on the above premises by AFSWP for use by field commanders in positioning troops (on file in Division of Military Application).

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A reconsideration of the recommendations of the Division of Biology and Medicine as to exposure limits was asked by the Division of Military Application (Annex "A") and received (Annex "B").

A final proposal was received from AFSWP on October 15, 1952 (Annex "C") to which was attached, as Enclosure I, the AFSWP plan for troop participation in UPSHOT-KNOTHOLE.

DISCUSSION

3. The plan outlined in Enclosure I to the AFSWP letter appears to be a very sound one. It is that AEC approve an AFSWP "maximum participation" plan, with the provision that its implementation in any specific case will be on an equal or lesser basis as determined by the field situation and agreement between the Test Manager, Exercise Director, and Director Weapons Effects Tests. This procedure will give the Commission a chance to rule on the maximum scope of participation without necessitating a subsequent series of letters to and from the Commission requesting and approving inevitable changes, as was the case during TUMBLER-SHAPPER. Similarly it will give the field ruling on maximum allowable participation.

4. The proposed reply to AFSWP (Annex "D") concurs in general with their overall proposal but amends several details. The purpose of these amendments is to make sure that the areas are positively outlined where the Test Manager and Exercise Director, respectively, control. In addition, we do not concur with their request to be assigned outright a sector of between 90° and 180° at each shot. We do this so as to give the Test Manager freedom to decide this matter on the ground on the basis of requests from all agencies at the time. Similarly, we reserve to the Test Manager

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the right to regulate admissions to the Nevada Proving Grounds as an inseparable part of his overall responsibility for the area.

5. The controversial point arises in the last part of the proposal where AFSWP requests AEC concurrence in the policy that the DOD assume full responsibility for physical and radiological safety of troops and troop observers while in the Nevada Proving Grounds. If the AEC should concur as requested, it would obviously be possible that the DOD might set less conservative limits for exposure than the AEC, that military personnel might be injured, and that the fault might be attributed to the AEC's "failure to control the maneuver". A reaction somewhat similar to the one here envisioned followed the recent breaches of security by members of JTF-132 at IVY. To avoid putting the AEC in this undesirable position three alternative procedures are possible. There are;

Alternative (a) To require the DOD to observe AEC safety limits at the Nevada Proving Grounds. A safety plan acceptable to the Test Manager would be required in this case. Responsibility for injury would then lie with the AEC if someone were injured due to faulty plan but with the DOD if it were due to faulty execution of the plan.

Alternative (b) To advise the DOD of our safety limits, recommend they observe them, but allow them to set their own safety limits within the exercise area. In this case a safety plan would still be required which outlined the method by which observation of these limits would be enforced. We would require that the plan indicate in which particulars the AEC limits were being exceeded. The plan would,

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however, be only "for information" of the AEC. In this case responsibility for injury due either to faulty plan or faulty execution of the plan would lie with the DOD, but the AEC, having prior knowledge of the proposed plan, might still be subject to criticism in case of injury unless it had taken separate and additional exception to the DOD plan when received. In this situation, however, the DOD still stands ready to make a public announcement of their responsibility in case of accident or criticism.

Alternative (c) To advise the DOD of our safety limits and recommend they observe them, but to turn over to them complete responsibility for safety of troops and troop observers within the exercise area. If this were done, the AEC would have two further alternatives regarding publication of this change of responsibility. We could

- (a) Note that the DOD is ready and willing to make a public announcement of their responsibility if accident or criticism results, but not require it in advance, or
- (b) Require, as a preliminary to our relinquishing to them this responsibility, a public announcement of their assumption of responsibility prior to the operation.

6. The staff analysis of these three possible lines of action is as follows:

- a. Alternative (a) places the AEC in the position of restricting the maneuver, on the one hand, while being responsible for injury in case the plan proves faulty on the other. If someone were injured, the DOD could not be expected to announce their responsibility in this case. This alternative does not recognize sufficiently the DOD need to develop its own criteria and doctrine for the use of atomic weapons in the same way as for any other weapons. It is the staff opinion that the AEC should cooperate to the extent of allowing the DOD maximum freedom of action in these maneuvers short of unacceptable interference with AEC experiments or of jeopardizing through unwarranted criticism, the AEC's ability to perform its own mission.

- b. Alternative (b) appears to be the most acceptable alternative in that it gives the DOD essentially complete control over its own maneuvers but keeps us advised of what they intend to do. It is a more liberal policy than that established for TUMBLER-SNAPPER, where a plan similar to that of alternative (a) was used. Receiving the Exercise Director's safety plan "for information" will allow the AEC to advise the DOD if, in its opinion the exercise is unsafe in any way. The safety plan must be carefully considered from this point of view. Once the precedent of complete release of control to the DOD is set, the DOD will never consent to any lesser degree. Thus, it is desirable to go very slowly, making



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sure that the results each time are acceptable. The draft reply to AFSWP is written on the basis of this alternative.

- a. Alternative (c) does not yet appear necessary or desirable. It should be considered for use at Operation DOMINO if results from UPSHOT-KNOTHOLE are satisfactory.

7. The Deputy Manager, Santa Fe Operations Office, has stated (Annex "E") that he has no doubt troop participation acceptable to both the DOD and the scientific test organization can be worked out in the field.

8. Experience of the test organization at past tests indicates that, once any troop participation program is approved in conjunction with an AEC test, an initial amount of AEC Test Organization staff effort must be made to integrate it. Increasing the number of troops, the amount of equipment, or the complexity of the maneuver causes much less than a proportional increase in AEC effort since all military activities are separate and self-supporting. Accordingly, as long as the numbers of participating troops and troop observers, the amount of equipment displayed, and the complexity of the maneuver stay in the orders of magnitude here discussed, there should be no objection from the AEC's point of view to changes in the scope of the exercise.

9. It is concluded that:

- a. Troop participation at all shots of Operation UPSHOT-KNOTHOLE is permissible, subject to limitations imposed by scientific requirements.

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- b. The amount of troop participation here proposed is acceptable as a maximum.
- c. The limitations imposed by scientific requirements, which will cause reduction in troop participation and the area assigned the exercise from the maximum here approved, can only be determined in the field between the Test Manager, the Director Weapons Effects Tests, and the Exercise Director.
- d. Responsibility for physical and radiological safety for troops and troop observers within the assigned exercise area can and should be delegated to the DOD to be exercised by the Exercise Director. A safety plan should, however, be required of the Exercise Director for the information of the AEC. The Test Manager should be instructed to consider this plan carefully for possible danger to military participants, consulting with the Washington Office in case of doubt. Should a truly dangerous situation be apparent, the DOD should so be advised by letter from the Commission. Should accident or criticism result from the exercise, the AEC should act as outlined in the draft letter to have the DOD make the public announcement through the joint information office for which they are prepared under the provisions of paragraph 2.e of Inclosure I to the AFSWP letter of October 15, including the statement on responsibility agreed with OEI, OSD and outlined in Inclosure II to Annex "D".

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STAFF JUDGMENTS

10. The Divisions of Biology and Medicine, and Security and Information Services, concur in the conclusions of this paper. The Office of General Counsel has no legal objections.

RECOMMENDATIONS

11. It is recommended that the Commission:
- a. Approve the DOD's plan for troop and troop observer participation in UPSHOT-KNOTHOLE, contingent upon inclusion of AEC amendments in that plan.
 - b. Approve delegation of responsibility for physical and radiological safety of troops and troop observers in the exercise area to the DOD, contingent upon transmittal of the Exercise Director's safety plan to the Test Manager for information, including a statement as to which particular limits, if any, of the AEC's safety limits are being exceeded and by how much.
 - c. Approve the issuance by DOD, in any case where accident or criticism results from the exercise under the conditions herein accepted, of a coordinated public statement as to the DOD's responsibility for the exercise, including the paragraph on responsibility outlined in Inclosure II to Annex "D".

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- d. Approve dispatch of a letter similar to the draft attached as Annex "D" to AFSWP for the DOD.
- e. Note that copies of this letter will also be transmitted to the Military Liaison Committee and to the Manager, Santa Fe Operations Office, the latter to be accompanied by suitable implementing instructions.

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