

[REDACTED]

AUG 1958

SWPET 960

Brigadier General Alfred D. Startbird  
Director, Division of Military Application  
U. S. Atomic Energy Commission  
Washington 25, D. C.

Dear General Startbird:

The tentative shot schedule, prepared as a result of our meetings on 21 August, has been studied by members of my staff with a view to determining what DOE effects programs could profitably participate in these shots. In general, the effects measurements of interest fall into three categories:

a. A biological experiment in conjunction with firing the [REDACTED] designed to determine lethality or immediate incapacitation resulting from the high neutron fluxes and other radiations from the weapon.

b. Basic effects phenomena measurements on the [REDACTED] in support of this biological experiment: neutron fluxes, neutron and gamma dosimetry, thermal intensity, and blast overpressure and dynamic pressure measurements.

c. Essentially, the same underground effects measurements as were planned with the University of California Radiation Laboratory for MILLRACE, to be conducted on a non-interference basis on those shots which offer the most interesting input conditions.

In regard to [REDACTED] experiment, it is requested that the device be fired in Frenchman's Flat, with an earliest readiness date of 15 September. In this way, maximum flexibility can be provided for readying the effects program for participation, and absorbing the impact of delays caused by unforeseen circumstances.

DECLASSIFIED WITH DELETIONS  
BY DNA (ISTS)

DATE: 26 July 1984

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meaning of the Espionage Laws, Title 18, USC  
Sections 793 and 794, and the transmission or  
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person is prohibited by law.

[REDACTED]



[REDACTED]

PROPOSED BIOLOGICAL EXPERIMENT [REDACTED]

1. The proposed biological experiment has as its objective the evaluation of the effect of nuclear weapon radiation on biological specimens, specifically to:

a. Determine the immediate lethality response of swine in a protected (from blast and thermal) environment.

b. To obtain an RBE for weapon neutrons through determination of the LD 50/30 in a biological specimen from both gamma and neutrons and gamma and fractional neutrons.

2. Basically, this objective is to be accomplished by exposing approximately 500 swine to the HARTACK [REDACTED]

3. Part 1.a. above will involve placement of 100 to 250 swine in a protected environment of military vehicles, as available, and such field fortifications as can be constructed within the time available, such as foxholes, machine-gun emplacements, etc. Any presently existing structures located within the area of interest will also be used in a similar manner. All animals for this portion of the experiment will be located within 200 yards of ground zero.

4. Part 1.b. above will be accomplished by exposing approximately 260 swine on two axes from the weapon:

a. One azimuth of exposure for mixed gamma and neutron dosages.

b. Second azimuth (90° from the first) shielded in such a way as to significantly decrease the neutron flux.

The clinical response of lethality, LD 50/30, of the swine will be observed by careful clinical follow-up. The number of animals will cover the dose range 150-1500 rad in such a manner as to give statistically valid results.

The Relative Biological Effectiveness (RBE) of the weapon neutrons versus gamma can be calculated from these data.

5. To provide further data on Part 1.b. above the response of small animals (mice) to gamma ray and neutrons from a nuclear device will be made. Approximately 100 mice will be exposed at each point that swine are exposed. Groups of mice from each point will be selected as controls, for sacrifice at periodic intervals post-exposure for spleen-thymus weight ratios.

Proposed Biological Experiment [REDACTED] (Contd)

6. Gamma and neutron dosimetry will be performed. Internal gamma and neutron dosimetry will be inserted intraperitoneally in certain animals prior to exposure. Parallel environmental neutron foil system dosimetry will be carried out in addition to biological internal and external parameters.

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PROPOSED EFFECTS MEASUREMENTS ~~CONFIDENTIAL~~

1. The radiation effects portions of the ~~CONFIDENTIAL~~ event are designed as support projects for the bio-medical experiment. It is planned that two neutron lines (foils) will be installed: one along the major axis and one along the minor axis of the weapon. Gamma dosimetry (film packs) will also be inserted along the same lines.

2. A line of thermal detectors will be installed on one radial line from the weapon. The exact placement of the thermal line has not yet been determined.

3. In addition, neutron, gamma, and thermal support will be provided for specific pig and mouse placements.

4. Dosimetry will be coordinated with the Walter Reed Army Medical Center to insure the maximum measurement of radiation dosage in the geometries required by the Medical Corps.

5. It is planned that the Chemical Warfare Laboratory will make soil induced activity measurements and attempt to calibrate some of their chemical dosimeters. These latter efforts are to be on a non-interference basis with the primary experiment and are included because of their simplicity and the fact that they were programmed for Operation THORPENT.

6. The shot as tentatively planned will be a 50' tower event to minimize fallout and allow maximum probability of determining lethal dose on the ground.

7. Funding for the effects support program has not been determined due to the flexibility of requirements under this short time scale.

~~CONFIDENTIAL~~

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2-162

PROPOSED UNDERGROUND PROGRAM

1. In the event that MILLRACE is run on an accelerated schedule, the following participation could reasonably be accomplished. This would be on a non-interference basis with the diagnostic programs of the University of California Radiation Laboratory:

a. For [redacted] in UL2b.01: It is assumed that this device will be removed from the tunnel and fired aboveground. No ground motion effort is desired.

b. For Tamalpais [redacted] in UL2b.02: NRI plans to make measurements of accelerations and strains in the tunnel. Even if this event is accelerated up to two weeks, essentially, all of the planned NRI effort could be accomplished. NRI can proceed to NIS immediately to obtain early start on program.

c. For Buzsare [redacted] in UL2b.03: No measurements were planned on this event.

d. For Evans [redacted] in UL2b.04: Effort should be made to concentrate on this event. Measurements of accelerations and strains on mesa and slope and 1/2 vertical holes would not interfere with UCR effort. As many channels of accelerations and strains should be put in tunnel as can be accomplished without undue interference with UCR. Gages need not have deep holes as planned but can be attached to walls and floor of tunnel. Some data of this kind is important to obtain even if only a few stations can be developed.

e. Consider possible exchange of Blanca [redacted] 20 KT for Evans in UL2b.04: This is desirable and plan proposed in paragraph 4 above becomes more important.

2. SUMMARY: A considerable capability to measure ground motion can be put into field immediately from NRI, ERRL and SRI. These agencies can measure accelerations and strains on the mesa surface over tunnel UL2.b, and on a reasonable non-interference basis can get considerable free field data in the tunnels, preferably from Blanca, Evans, or Tamalpais, in that priority, assuming these are fired between 1 October and 31 October 1958.

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31 JUL 1958

MEMORANDUM FOR: ASSISTANT SECRETARY OF DEFENSE (RESEARCH AND ENGINEERING)

SUBJECT: Department of Defense Participation in Nuclear Tests

1. As you are aware, a well-established procedure exists for the development of Department of Defense programs in nuclear tests. Briefly the procedure is as follows:

a. In accordance with the mission assigned by the Service chiefs, the Armed Forces Special Weapons Project solicits proposals for weapons effects projects from the Service research and development staffs.

b. These proposals are reviewed by AFSWP as to scientific value, feasibility, and economy. The projects are then irgrated into test programs for participation on Atomic Energy Commission development shots and special EOD effects shots.

c. The AFSWP recommended program is submitted to you for technical and funding approval.

d. When approved, it is implemented by personnel of Field Command, AFSWP either within the Nevada Test Site organization or under the operational control of Joint Task Force SEVEN, and in coordination with the AEC.

e. Concurrently, the appropriate budgetary estimates are made and processed by the AFSWP, first in broad outline, and later in careful detail, under the purview of the EOD Comptroller. Although the money amounts are large, the tight liaison arrangements permit expeditious, meticulous processing of the necessary funds.

2. Recent events have caused a change in the character and an increase in the magnitude and scope of these tests. The complexity of the experiments, the extent of the instrumentation, and the range of altitudes involved have all increased. The maximum yields are greater

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*Handwritten signature*  
Date: 16 July 1994

OFFICE SYMBOL	1.	2.	3.	4.	5.
GRADE AND SURNAME OF COORDINATING OFFICERS					

DRAFTER IDENTIFICATION:

Rank        Grade        Surname        Initials of Typist        Rm No        Tel Ext       

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**SWPPT 960**

**SUBJECT: Department of Defense Participation in Nuclear Tests**

and the effects were far-reaching. Especially in the electromagnetic area, the extensive effects require that test coordination be effective over long distances from the test site and include analysis of all electromagnetic emissions which could interfere with the test. A typical test is so expensive that it is essential that the maximum possible benefit to the developmental requirements of all three Services be paramount, rather than designing separate tests to meet the individual needs of a single Service. The coordination required to achieve this result is best effected by AFSEP at the time of early concept rather than left to the time of detailed design of an experiment.

3. Since Sputnik and the increased emphasis on missiles and on a defense against ballistic missiles, several changes have been noted in the research and development activities of the Office of the Secretary of Defense--specifically, the establishment of Advanced Research Projects Agency and the employment of additional scientific personnel by the Director of Guided Missiles. These changes have resulted in increased direct participation by OSD personnel in research and development activities, including the initiation of research projects. This has been accompanied by the expression of detailed interest in the planning and conduct of nuclear effects tests.

4. The Chief, AFSEP, considers it appropriate that ideas for nuclear effects tests originating at the OSD level be considered along with those of the Services in the formulation of test programs. These should, of course, be introduced in such a way as to preclude the simultaneous development of duplicating programs. It is also considered appropriate for scientific skills available at the OSD level to be utilized in the review of nuclear effects test programs as desired by the Assistant Secretary of Defense (Research and Engineering). However, this review should take place after the AFSEP has coordinated the individual proposals into an integrated program.

5. Therefore, it is recommended that:

a. The established procedures for the development and funding of R&D programs in nuclear tests be continued.

b. Plans or proposals for investigating the effects of nuclear weapons by means of field tests which may originate in the OSD or be

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SUBJECT: Department of Defense Participation in Nuclear Tests

submitted to OSD staff agencies be forwarded to the Chief, AFSWP, at the earliest possible date, in order to insure their inclusion in the technical review and budgetary planning.

EDWARD N. PARKER  
Rear Admiral, USN  
Chief, AFSWP

ET-2015

M/R

1. Recent changes in research and development management at DOD level (such as the establishment of ARPA and the employment of additional personnel by the Director of Guided Missiles) have resulted in not only increased direct participation by OSD personnel in research and development management but also the initiation of research projs. A corollary phenomenon is the increased expression of detailed interest by DOD in the planning and conduct of full scale wpsn effs tests. Accordingly, we are concerned lest the orderly progress of AFSWP work be impeded by the relatively uncoordinated efforts of such highly placed, dedicated and scientifically competent advisors unless their ideas are incorporated into our planning (and vice versa) early enough in the planning cycle to preclude costly redirection of effort.

2. In order to assure a proper relationship between AFSWP management activity and the increased DOD activity described above, this ltr recommends:

a. Continuation of established procedures for development and funding of DOD programs in nuclear tests.

b. Timely forwarding of OSD generated or collected plans or proposals to Chief, AFSWP, in order to assure their inclusion in AFSWP technical review and budgetary planning.

K. K.

OFFICE SYMBOL	1. SWPET	2. SWPLR	3. SWPEF	4. SWPAG	5. SWPCS
GRADE AND SURNAME OF COORDINATING OFFICERS	<i>L. Lambert</i>	<i>W. Herbert</i>	<i>W. Gifford</i>	<i>P. ...</i>	<i>T. ...</i>
				<i>...</i>	

DRAFTER IDENTIFICATION: CAPT LAMBERT mpg 1B695 52625  
Wrtn: 30 Jul 58 Rank on Grade Surname Initials of Typist Rm No Tel Ext

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SJPT/960

22 JUL 1950

Director  
University of California Radiation Laboratory  
Information Division  
P. O. Box 808  
Livermore, California

ATTN: C. G. Craig  
FOR: Dr. G. W. Johnson

Declassified by DNA, Chief, ISTS

*[Handwritten signature]*  
DATE: 26 July 1994

Dear Sir:

Reference Confidential letter, UCRL, 23 June 1950, with two inclosures which requests funds in support of proposals submitted by Edgerton, Gershenhausen and Grier, Inc., and the Naval Research Laboratory for preliminary work on JX (ICM).

Funds in the amount of \$72,500 are being transferred to the Atomic Energy Commission and will be made available to the Manager, Albuquerque Operations Office to cover the cost of the above proposals as follows:

NRAG \$34,500

NRL \$38,000

It is requested that any contracts negotiated contain the following requirements insofar as acquisition of assets with Armed Forces Special Weapons Project (AFSWP) funds is concerned:

a. Equipment within AFSWP assets and potentially available to project agencies is listed in the "Catalog of Test Equipment and Related Items" published by Commander, Field Command, AFSWP. In the interest of economy, this catalog must be screened against requirements to establish the non-availability of required items prior to initiating new procurement.

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GRADE AND SURNAME OF COORDINATING OFFICERS					

DRAFTER IDENTIFICATION: [REDACTED] Rank or Grade [REDACTED] Initials of Typist Rm No [REDACTED] Tel Ext [REDACTED]

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 Director, UCRL

b. Title to capital property (original unit cost of \$100 or more) which is furnished by the AFSWP or purchased with AFSWP furnished funds is reserved by the AFMS. Such property will be marked, maintained, and accounted for under the provisions of appropriate accounting procedures. At the conclusion of the project, a final inventory listing of capital assets acquired with AFSWP R&D funds, and having a unit acquisition value of \$100 or more, will be furnished the AFSWP.

Budget and Fiscal Reports of the obligation of funds which are provided by the AFSWP for the project are required in accordance with the directives contained in the AFSWP Manual for Budgeting and Administration of Funds in Support of Nuclear Tests, dated 1 April 1957. Such reports should be submitted to Chief, AFSWP until otherwise directed.

**Copy furnished:**

EG&G  
 ELL  
 ALO

EDWARD N. PARKER  
 Rear Admiral, USN  
 Chief, AFSWP

M/R: Incoming CN 59557 requests funds for EG&G and NRL work on JERICHO. This advises that funds are being made available to ALO for further distribution to EG&G and NRL. Including these funds the following amounts have been furnished to date for JERICHO.

NRL \$32,000  
 AFSWP 50,000  
 ALO 72,500- / EG&G \$34,500  
 NRL 38,000

OFFICE SYMBOL	1. SWPWT	2. SWPRA	3. SWPET	4. SWPER	5. SWPAG
GRADE AND SURNAME OF COORDINATING OFFICERS	<i>[Signature]</i>	<i>Major Walker</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
	<i>[Signature]</i>	<i>B. Ouzang</i>	<i>[Signature]</i>	<i>[Signature]</i>	6. SWPAG
	<i>[Signature]</i>	<i>[Signature]</i>	3. SWPDR	7. SWPCS	<i>[Signature]</i>

DRAFTER IDENTIFICATION: MAJOR JENSEN dpw 10 Jul 58 1B680 56681  
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