

Total # of pages 15

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Brig. General A. W. Betts, USA
Director of Military Application, AEC HQ
and Those Listed Below

JUL 1 5 1962

DNA1.941213.022

James E. Reeves, Manager
Nevada Operations

MINUTES OF MEETING RE TC-57 TYPE EXPERIMENTS (U)

OPD:WDC-9919

The attached minutes of a meeting held in Las Vegas on July 5, 1962 are forwarded for your information. This meeting was convened pursuant to a request from IMA contained in S&D Memo, Betts/Reeves, Subject: "Tests to Determine the Extent and Hazard of the Inadvertent Scattering of Plutonium," dated June 18, 1962.

In accordance with your request the NPOO convened the working group with the view to developing a general approach to the planned biological and scavenging experiments. In your review of the minutes you may note the group's advice as to the following subjects. My comments with respect to the working groups recommendations are as follows:

a. Organization.

The group's recommendation to divide the program between NTS and Dugway is believed appropriate. Sandia Corporation's acceptance of responsibility for the NTS portion should provide the necessary direction at the NTS and their participation in the Dugway portion would appear to provide an organizational means to satisfy the AEC's objectives at the Dugway Proving Ground.

b. Funding.

Considerable more attention should probably be given to the funding question. The NTSO can absorb something like \$200,000 for support effort at the NTS. Funding for technical programs must be resolved and I assume this will be done by IMA in collaboration with DASA and ALO.

Declassified WITH DELETIONS BY DNA,
Chief, ISIS and DCE, WITH ATTACHMENT.
Date: 8 Dec 1994

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WITH ATTACHMENTS/ENCL

Encl. 19

| DEPARTMENT OF ENERGY - DECLASSIFICATION REVIEW | |
|--|----------------------------------|
| 1ST REVIEW DATE: 11-2-94 | 2. EXTENT OF DECLASSIFICATION |
| AUTHORITY: OAC OADR EAO | 3. CLASSIFICATION CHANGED TO |
| NAME: J.D. Logan | 4. CONTAINS NO UNCLASSIFIED INFO |
| 2ND REVIEW DATE: 11/8/94 | 5. COORDINATE WITH |
| AUTHORITY: A.D. | 6. CLASSIFICATION CANCELED |
| NAME: H.R. de la Cruz | 7. CLASSIFIED INFO BRACKETED |

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HFE-920

c. Management.

The question as to the degree of control to be exercised at the Washington level by either a Program Coordinator or Program Director should, I believe, be determined by AEC, Washington and DASA. Either system would appear workable; however, much may be gained by a scientific directorate as opposed to a committee organization. The group has undertaken to prepare a type organization which appears to be able to execute this operation. I feel that the organization which has been presented can accomplish the job. The assignment of an individual to the Program Coordination slot is an extremely important one, not only in terms of his scientific background but also in terms of his ability to follow through on this job on a long range basis.

A problem of concern to me is that of NTS site selection for conduct of the biological test. The TG-57 location is not acceptable due to both its prior plutonium contamination as well as the fact that this area has been reassigned for other use. WFOO is initiating immediate action to locate and define that area within NTS or its environs which appears to be most suitable.

Our initial guess is that additional land will have to be obtained from the Las Vegas Bombing and Gunnery Range. We believe that negotiations should be started at Headquarters level with USAF for the possible interim use of land areas such as Karich Valley, Papoose Lake, Cold Flat, etc. This program would definitely require closing the TG-57 type experimental area for an appropriate length of time in order to complete the plutonium chronic exposure study; accordingly, use of the area would be denied the Air Force. It is recognized that use of certain areas in the gunnery range could create serious operational problems for Nellis AFB.

Following the proposed meeting of July 16 in Washington, it is assumed that program control will be determined. The NTSO will proceed to plan the Pepper Project.

The nicknames Operation Sugar for the overall program, Project Pepper (NTS) and Project Salt (Dagway) are offered as possible nicknames to facilitate planning.

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Brig. Gen. A. W. Betts -3-

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This office suggests that the information contained in the minutes generally satisfies the DMA request in terms of the information available at this time.

Enclosure:

FRD Minutes of Meeting, TG-57 Type Test Experiments, dated July 5, 1942.

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- 17/41A - Dr. G. M. Dunning, AEC/Washington, w/cy 17/41A Encl.
- 18/41A - J. D. Shreve, Jr., Sandia Corp., w/cy 18/41A Encl.
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Brig. Gen. A. W. Betts

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41/41A - Programs & Plans Div., Reading File, HWOO
w/cy 41/41A Encl.

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MINUTES OF MEETING
RE TG-57 TYPE TEST EXPERIMENTS

5 July 1962

The meeting convened at 0900 hours to consider the following subjects as they relate to proposed plutonium scavenging tests at Dugway Proving Ground, Utah and a biological non-nuclear test (TG-57 type) at the Nevada Test Site:

1. Proposed AEC Program - Dugway and NTS.
 - a. Basic elements of program and support requirements.
 - b. Proposed organization and contractor responsibilities.
 - c. Estimated costs (ballpark) and funding sources.
2. Proposed DOD Programs - Dugway and NTS.
 - a. Basic elements of program (including UK) and support requirements.
 - b. Proposed organization and contractor responsibilities.
 - c. Estimated costs (ballpark) and funding sources.
3. Capabilities for Scientific Management of Project (Sandia Corporation, AFSWC, and AEC-Hqtrs.)
 - a. Capability for overall scientific management.
 - b. Capability for management of NTS project.
 - c. Capability for laboratory analysis and data reduction.
 - d. Recommendations.

The following persons were present:

Brig. Gen. H. L. Ash, USA
Col. J. A. Barton, USAF
B. C. Benjamin
Lt. Col. J. C. Bentley, USAF
Dr. H. D. Bruner, MD

FC/DASA
FC/DASA
Sandia Corporation
CH/DASA
DBM/AEC

DASA 82144

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|-----------------------------|--------------------|
| J. E. Carothers | LEL |
| J. S. Coogan | USPHS |
| G. M. Dunning | DOS/AEC |
| D. R. Fowler | AEC/NVOO |
| J. D. French | FPG (REECo) |
| W. E. Gries | AEC/NVOO |
| Capt. H. R. Griesmer, USAF | HQ/USAF |
| R. A. Hamlin | AEC/NVOO |
| W. R. Hickey | AEC/NVOO |
| Lt. Cdr. W. L. Hough, USN | HQ/DASA |
| Lt. Col. J. S. Howell, USA | FC/DASA |
| Lt. Col. S. E. Lifton, USAF | HQ/AFSC |
| E. R. Mathews | AEC/ALOO |
| R. E. Miller | AEC/NVOO |
| T. S. Mobley | AFSWC |
| W. J. Otting, Jr. | HQ/DASA |
| D. G. Palmer | Sandia Corporation |
| O. H. Roehlk | AEC/NVOO |
| Col. I. J. Russell, USAF | AFSWC |
| M. S. Seal | USPHS |
| J. D. Shreve, Jr. | Sandia Corporation |
| Cdr. H. E. Stephens, USN | DMA/AEC |
| C. G. Taylor | REECo |
| Maj. J. L. Terry, USAF | AFSWC |
| R. H. Wilson | Univ. of Rochester |

The meeting began with Cdr. Stephens' review of the background to the TG-57 type biological experiment that DMA has requested NVOO to coordinate. In addition, the general concept of the scavenging tests was discussed along with a brief analysis by Cdr. Stephens of DMA's proposed plan of action for consummating these tests.

Dr. Dunning highlighted the disagreements between the US and UK relative to plutonium-bearing weapon storage criteria and proposed that the scavenging tests be considered as DOD's area of responsibility for resolution, and, that conduct of the biological tests be AEC's area of responsibility. There were no objections, however, note was made by Dr. Otting that there is a definite intermeshing of DOD/AEC interests as to the results of these studies.

Everett Mathews presented ALCO's suggestions for the conduct of the biological field test as outlined below:

1. The basis for planning is that one detonation of a plutonium-bearing device will be held at the NTS in the spring of 1963.

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2. The primary objective of this test is to obtain information on which to base the biological hazard that would be created by the accidental detonation of one, or several, plutonium bearing weapons. This information would expand the knowledge gained in TG-57 and give a more firm basis for limitations on the manufacture, transportation and storage of Pu weapons.

It is believed that another test, conducted under somewhat different meteorological conditions and with other factors varied as indicated desirable by the first test, would add much valuable information upon which to base plutonium weapons limitations. It is possible that other programs could be conducted in conjunction with this test. However, they would be of a secondary nature and would not interfere with the primary objective.

3. Organizations to participate in the test should be AEC, DASA, AFSWC, and United Kingdom. AEC contractors will be asked to conduct or assist in all or part of the test. These include Sandia Corporation, AEP/Rochester, and possibly others. REECO will be asked to furnish support for all participants. AEC organizations that may wish to participate in planning the test are: IMA; Division of Operational Safety, Headquarters; Operational Safety Division, ALOO; and NVOO.
4. Means of obtaining the desired information will be:

- a. Air samples. These should include cascade impactors or other methods for obtaining particle size. A recording constant air monitor or other means of determining fallout concentration versus time should also be included.

A well instrumented area should extend 8,000 to 10,000 feet down wind. It is noted that the highest air sample for the acute-exposure period in TG-57 was at a 5,000 foot station. It is also suggested that an air sampling station be located near each animal experimental station.

- b. Fallout collectors. Sticky pan fallout trays were basic to the TG-57 instrumentation. Valuable data were obtained from this source and it is suggested that the same general type of fallout collector be used in the 1963 test.
- c. Area monitoring with portable alpha instruments. Monitoring stations should be established throughout the down wind area with particular attention to the vicinity of animal experimental stations.
- d. Exposure of animals. This should include at least two types of

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animals, such as dogs and sheep or possibly pigs. The type of animals should be selected after consultation with the contractor who will conduct this phase of the operation.

- e. Tests should be made to determine acute exposure. It is believed that the most hazardous part of an accidental explosion involving plutonium is exposure to the direct cloud resulting from the explosion.

ALOO did not propose that a chronic exposure study be included in the tests, but subsequent discussion ascertained the chronic study to be of much concern to both Dr. Dunning and Col. Lifton. The consensus of the group was that the chronic exposure study should be incorporated in the scope of the test experiment.

ALOO's suggested outline for the scavenging tests at Dugway was presented by Mr. Mathews as follows:

1. The basic ALO requirement is to obtain information which will permit the AEC to compute scavenging factors for Standard Igloos and Modified Richmond Magazines.
2. It is not contemplated that any animal experiments will be required and no biological data, as such, will be obtained. However, the fallout data and the air concentration data must be such that it can be interpreted in terms of biological hazard. This will require information on particle size, solubility, dispersal, and concentration versus time.
3. A well instrumented air sampling program should be undertaken. This should include impactor samplers or other means of determining particle size. Recording constant air monitors or other methods for determining air concentration versus time should also be included. Scrubber samplers could be used to determine solubility.

Fallout collectors should be placed in stations that are well distributed throughout the expected fallout pattern extending for approximately 10,000 feet downwind. These trays or sticky pans should be collected as soon as feasible after the detonation.

Monitoring stations should be established throughout the fallout area. As soon as practical after the detonation, portable alpha monitoring instruments should be used to establish contamination levels at these stations.

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4. It is assumed that the Air Force or other military organization will conduct the tests with limited support from selected AEC contractors. The Sandia Corporation, REECO, and Holmes and Narver, Inc., should be considered for specific support missions. It is possible that outside contractors could be used for sample analysis and data reduction. The United Kingdom may desire to participate in interpretation of test results. The USPHS off-site monitoring group should be responsible for assuring the public safety in areas adjacent to the test site.

With regard to funding, ALOO made the following suggestions:

1. The determination as to the funding sources should be undertaken by AEC-Washington. AEC organizations responsible for providing funds should be specified. AEC-Washington should make the required funds available to the organizations assigned the funding responsibilities.
2. It is proposed that costs for the project be specified as follows:
 - a. Biological Test (NTS).

The AEC should provide for the costs of the test device and all other test activities. The single exception would be additional costs incurred due to special requirements in the project as proposed by the Military.

- b. Scavenging Tests (Dugway).

The AEC should provide for the costs of the modifications to the test devices; the arming, timing and firing, and any additional sampling programs requested by the AEC. It is understood that the military will furnish the unmodified devices. ALO manufacturing requirements, based on desired device modifications, must be established soon, be simple and without high tolerances.

The military should assume all costs for the remainder of the project. Subsequent discussions essentially endorsed the ALOO proposals. For the biological experiment, costs are anticipated as being shared between DBM (10%) and DMA (90%). (D. B. Anthony, Assistant Director for Program Analysis and Budget, DMA, has also been alerted to this probable funding requirement). Associated NTS site safety costs were identified as clearly NVOO's responsibility as well as other costs

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such as those associated with egress to the test area, execution of the biological test event, etc.

Dr. Otting reviewed the DOD program objectives for the scavenging tests and acknowledged DASA's funding responsibilities to include all but, arming, timing and firing costs. Dr. Otting further reported that \$16 million had already been allocated for DOD tests. AEC costs were estimated by R. E. Miller to accumulate to roughly \$200,000 to \$300,000, which would be funded by NVOO.

Col. Barton, FC/DASA and Col. Bentley, HQ/DASA, reviewed the administrative and technical aspects, respectively, of DOD's interests in the TG-57 type experiments. The scavenging tests as envisioned by

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The scavenging test is primarily a DOD interest and has tentatively been planned for execution in September 1962 at the Arming Proving Ground, Dugway, Utah. Criteria for the construction of the test structures was also outlined to the group by Col. Bentley along with a general description of the high explosive requirements.

J. D. Shreve acknowledged Sandia Corporation's willingness to assume responsibility for the technical direction of the NTS program. Considerable discussion followed in an attempt to identify the organizational structure required for maintaining control of all of the program projects. It was generally agreed that Washington guidance is required to coordinate the program objectives, however, general concurrence was expressed that all operational aspects (field projects) are the responsibility of the NTSO and FC/DASA.

A factor in favor of conducting the entire series of tests at the NTS is the existence of the NTSO test organization. Another favorable factor would be that test measurement equipment, etc. would require minimum transfer and handling if all tests were performed at the same location. However, it was also determined that there is a serious real estate shortage at the NTS and only a few areas within the facility might be capable of sustaining a chronic exposure study. For these and other reasons it was determined that Dugway Proving Ground should continue to be the prime choice for the

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scavenging tests, but that this subject may be considered further at the planning meeting tentatively scheduled for Washington, D. C. on July 16.

It was further concluded that DOD has the responsibility for resolving the time frames for construction work and execution of the tests at Dugway in the light of local meteorological conditions. If this time frame cannot be met, an alternate site may have to be considered in order to avoid an automatic delay in the DOD tests until the Spring of 1963.

The UK has been officially invited to participate in all of these tests. As planned UK representatives will also attend the Washington planning meeting, and may wish to visit Dugway soon thereafter. (Regardless of where the scavenging tests are conducted, there will be unique geographical and climatological conditions which will make it impossible to meet both the US and UK desired criteria, i.e. the variances between the dry Western US desert and the moist UK, etc.).

Dr. Dunning reviewed the alternatives that may be of concern between the US and UK re the biological test, i.e., should the test be rigged so as to maximize plutonium concentrations or conversely so as to minimize plutonium concentrations per unit area. On this point, there was much conjecture but no firm resolution.

The meeting concluded with the development of an organizational plan that acknowledges the following points:

1. DOD funded programs will follow the normal FC/DASA staff plan.
2. AEC funded programs will follow NVOO's normal staff plan wherein work orders will be utilized to obtain A-E support from Holmes and Narver, and operational support from REECO.

Under this concept, all agencies will be expected to fund for their own programs on a full cost reimbursement basis.

3. UK funding for costs should be through the DASA-FC/DASA channel.
4. U. S. Army, Corps. of Engineers will provide program support at Dugway. Accordingly it is not anticipated that AEC support contractors will be required at Dugway.
5. Sandia will provide arming and assembly support to the DOD. At NTS these costs to be absorbed by the NTSO (Sandia Corporation; at Dugway, Sandia Corporation is to be reimbursed by the DOD.

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6. EG&G technical support for timing, firing and high speed photography, etc., will be made available to the DOD on a not to interfere basis with normal AEC operations. (DOD's requirements are to be identified as soon as possible).
7. UK support at the field level is to be coordinated through the FC/DASA staff.
8. Classification guidance is required. AEC Headquarters Division of Classification is requested to develop an overall program in conjunction with CH/DASA.
9. Program Organization and Management.

The biophysical and scavenging operation will be guided from a policy standpoint by representatives from the Division of Military Application, FC/DASA and United Kingdom at the Washington level. These organizations will provide overall program guidance and specify in general terms the objectives which are to be attained.

Working directly for these policy organizations, the Nuclear Safety Working Group will provide technical requirements for the operation. Reporting directly to the Nuclear Safety Working Group will be a Program Coordinator appointed by Chief/DASA.

The Program Coordinator will be responsible for implementing the policy direction and program definitions furnished by the Nuclear Safety Working Group; the Program Coordinator will assure dissemination of this information to the Test Group Directors located at the Dugway Proving Ground and NTS.

Responsibility for the detailed program definition and execution is the responsibility of the Test Group Directors within the two project organizations.

In those matters where agreement cannot be reached on technical matters within the Test Group Director's organization such problems will be referred to the Program Coordinator for decision. It is anticipated there will be very few such occurrences.

There is attached a chart which illustrates the suggested lines of communication, coordination and direction. It should be noted that the establishment of the Program Coordinator at the Washington level and the Nuclear Safety Working Group results in a more flexible system of programmatic direction than had been originally

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anticipated by both DASA and IMA. This flexibility stems from a desire by the field technical directors to be able to deal with programmatic authority at the Washington level somewhat independently and thus avoid the establishment of an autonomous scientific program director.

As an alternative, the working group agreed that the program director type of organization was acceptable should the program coordinator concept be considered undesirable by Chief/DASA.

In summary, the organization provides for the execution of the biophysical experiment at the NTS within the normal NTS organization with Sandia Corporation providing the Test Group Director and the FC/DASA providing a Deputy Test Group Director.

Technical programs would be developed by the office of the Test Group Director into three basic programs. An AEC program which has been outlined supra a DOD program and a UK program.

At the Dugway Proving Ground the group agreed to a proposal which provided for project management to be obtained from the FC/DASA with the technical direction provided from the DOD, possibly FC/DASA. A Deputy Technical Director would be provided by the Sandia Corporation. At the scientific execution level three programmatic organizations would be involved, UK, AEC and DOD. These organizations would develop and execute scientific projects under the overall scientific control of the Test Group Director and his Deputy.

The need for a separate data analysis and a reporting organization was discussed and determined as being unnecessary.

Enclosure:

C/DI Chart on Organizational Plan for Conduct of TG-57 Type Experiments.

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