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ADWD-1-129 Redacted Version LAMD-306

FAMILY COMMITTEE
Minutes of Seventh Meeting
April 27, 1950

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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW
1ST REVIEW DATE: 030696
AUTHORITY: CLASSIFICATION CHANGE
NAME:
2ND REVIEW DATE: 7-28-97
AUTHORITY: ADD
NAME: [illegible]
1. CLASSIFICATION CHANGED TO:
2. CONTAINS NO DOE CLASSIFIED INFO
3. COORDINATE WITH:
4. CLASSIFICATION CANCELLED
5. CLASSIFIED INFO BRACKETED
6. OTHER (SPECIFY):

A. Attendance.

The seventh meeting of the Family Committee was held Thursday, April 27, 1950 at 1:15 PM in Room B-117. Those present were

| | |
|---|---|
| J. C. Clark | G. B. Sabine |
| F. de Hoffmann | R. L. Spaulding |
| D. K. Froman | R. F. Taschek |
| R. W. Goranson | E. Teller, Chairman |
| M. G. Holloway | D. T. Vier |
| D. P. MacDougall | F. M. Walters |
| D. P. MacMillan | J. A. Wheeler |
| J. C. Mark | |

B. Minutes of the Sixth Meeting.

The Committee unanimously adopted the minutes of the Sixth Meeting, reported in ADWD-2-124, with the following corrections:

(1) Page 3, third paragraph, line 3, "200 tons" should read "200 kT".

(2) Page 7, line 2, delete sentence starting "It is expected that such a program would be kept up until Christmas".

(3) Page 7, paragraph 2, it should be noted that the word "hot" is used to designate very high multiplication in the setup.

C. [redacted]

DOE b(3)

Mark discussed the predetonation probabilities. The principle factors are

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This document contains information affecting the National Defense of the United States. Its transmission or the disclosure of its contents in any manner to an unauthorized person is prohibited and may result in severe criminal penalties under applicable Federal laws.

(1) [redacted]

DOE b(3)

(2) The neutron background

due to

(a) [redacted]

DOE b(3)

(b) Background due to the initiator. This point is discussed below.

D. [redacted]

DOE b(3)

One requirement upon the initiator is that its background should be as low as possible in comparison with the natural background. A further requirement upon the initiator is that it detonate at the correct time.

DOE b(3)

DOE b(3)

Table I, column IA lists the predetonation properties obtained. These were obtained as follows:

It should be noted that in calculating predetonation probabilities, the background neutrons from both natural and initiator causes were multiplied by a factor of 1.1 in order to correct for delays.

DOE b(3)

In order to see numerically what advantage a low background initiation would have with respect to predetonation a special case was discussed.

DOE b(3)

E. Probability of Failure.

DOE b(3)

It was agreed that it was difficult to assign definite lower limit for this figure above which one would hesitate to perform the test.

DOE b(3)

Errors other than predetonation were evaluated

Hence it is evident that it would be desirable to design an initiator with a low neutron background. There are discussed below two possible schemes of achieving such an initiator.

DOE b(3)

F.

(1) Detonator Initiator.

Figure 1 shows the schematic arrangement.

DOE b(3)

(2)

The schematic sketch of this scheme is shown in Figure 2, suggested by J. A. Wheeler.

DOE b(3)

DOE b(3)

In general, it seemed indicated that initiator 2 would require considerably more development than initiator 1, particularly with reference to fabrication of the wire. If, therefore, it is possible by means of initiator 1 to reduce the background sufficiently, it would not seem worthwhile to begin work on scheme 2. Consequently, the Committee requested that immediate work proceed on the detonator type initiator. A committee of MacMillan, Spaulding and Vier was formed and it was hoped that they could report to the Family Committee within about 6 weeks on the feasibility of such an initiator. No pit experiments are contemplated since Spaulding intends to fabricate a box sufficiently strong to contain the explosive. Early tests are to be slow neutron counting tests and only toward July is it contemplated

to request MacMillan to make detailed time dependent studies. Such a schedule seemed acceptable to W Division in view of the present work load on Group W-3.

DOE b(3)

DOE b(3)

Thus, present handling equipment within GMX Division could easily handle such loads.

DOE b(3)

However, an increase up to 10 tons would present disagreeable handling although it would not be impossible to do so at Los Alamos.

DOE b(3)

The group felt that indeed the chance that the weight would be larger was very small and agreed that nothing should be done for the present to increase handling capacity at Los Alamos.

H. Eniwetok Towers.

Clark reported that discussions with Fermi at Chicago seemed to indicate that the experimentalists still believe that the 14 mev neutron time dependent measurement experiment will require of the order of 200 tons shielding.

DOE b(3)

This tower should be shorter than the 300' tower and design has been requested such that only an inch sway be permitted.

DOE b(3)

It is recognized that the larger amount of explosive in How' would give rise to trouble but it should also be recalled that the total neutron production of How' will be larger.

Clark reported that a mockup of the 300', 20 ton, three-legged tower was on its way to Los Alamos and about to be erected. It was agreed that this mockup would not be of any use to W Division if the towers for the thermonuclear tests are to be four-legged 200 ton towers. Consequently, all work on the three-legged mockup has been cancelled. In order to provide W with a suitable mockup, J Division has initiated plans to provide a four-legged mockup at the earliest time.

I. Next Meeting.

The next meeting is to include a brief discussion concerning questions of scheduling for the immediate future. The largest part of this meeting is to be devoted to a discussion of X-ray and 14 mev neutron experiments. It was suggested that Dave Hall, Leslie Seely, Jerry Suydam and H. F. York be invited to this meeting.

Frederic de Hoffmann

Executive Secretary

Distribution:

| | |
|---|---|
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| 28A | " " |
| 29A | " " |
| 30A | J. von Neumann |
| 31A | J. A. Wheeler |
| 32A | Document Room |
| 33A | " " |
| 34A | " " |
| 35A | " " |
| 36A | " " |
| 37A | " " |
| 38A | " " |
| 39A | J. M. Keller |
| 40A | R. Spence |

TABLE I

DOE
b(3)

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DOE
b(3)

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FIG. 2