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Weapon Data - Family

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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW

1ST REVIEW DATE: 5/3/12

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DETERMINATION(S) (CIRCLE NUMBER(S))

1. CLASSIFICATION RETAINED
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2ND REVIEW DATE:

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NAME:

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Symbol: ADWD-3-18

Group Ref: TMG-M1

October 12, 1951

MINUTES OF THE FIRST MEETING OF THE THEORETICAL MEGATON GROUP

5 October 1951

1. The first meeting of the TMG was held on October 5, 1951 at 10:00 AM in Room T-251. Those present were:

W. Bouricius	F. C. Hoyt
*N. E. Bradbury	R. M. Landshoff
A. A. Broyles	C. L. Longmire
*B. G. Carlson	J. C. Mark, Chairman
B. E. Freeman	L. W. Nordheim
*D. K. Froman	L. G. Peck
R. L. Garwin	R. D. Richtmyer
R. W. Goranson	P. R. Stein
*M. G. Holloway	J. L. Tuck

2. Mark opened the meeting with a brief outline of the various recent directives issued by Bradbury in respect to setting up an efficient operating mechanism leading to an early large-scale thermonuclear test.

The organizational scheme includes (a) a theoretical group under Mark, which will be responsible for the constructional criteria (schematic design) determined by the nuclear and hydrodynamic requirements, (b) an engineering group from the American Car and Foundry for preparing engineering design drawings and for construction of the device to be tested, (c) Holloway, who will be responsible for coordinating the various activities involved, for allocating time schedules, and for the constructional phase, (d) J-Division, which will be responsible for test facilities and for the experimental program as determined by (a), and (e) CMR, GMX, and P-Divisions, which will have certain assigned responsibilities.

Those present at this meeting (except names marked with an asterisk) are to comprise the present theoretical working group under the leadership of Mark. Tuck will maintain close contact with J and P Divisions in connection with experimental problems. Goranson will maintain close contact with Holloway and act as secretary for the group.

3. The second topic referred to a possible future shift in operational emphasis. Present directives refer specifically to the test of a large-scale thermonuclear explosion and not to design of a weapon model. A future request for a reinterpretation may arise as to when weapon considerations

should or should not be ignored. [redacted] DoE b(3)

[redacted] The theoretical group will assemble and present the various arguments for each as a basis for discussion but, because choice of which to test will be governed also by other considerations, final decision will not be entirely the responsibility of the theoretical group.

[redacted] DoE b(3)

[redacted] This feature could be tested separately at some other time.

4. The next topic concerned time schedules and what one might hopefully anticipate. This involved discussion of problems still awaiting solution and their probable completion dates.

Holloway said that a small section of the ACF would be here by the middle of October; that he anticipated a six weeks induction period after which (some time in December) they would be prepared to work on certain more realistic design features which might become definite by then; and that by January 1952 they would be prepared to move fast on the engineering design at which time he thought a reasonably complete schematic design might be available. At this time ideas involving any major change in design might be expected to have a half-life of a month.

5. [redacted] DoE b(3)

Peck thought that, if one started now, the two dimensional burning-hydrodynamic problem could be completely coded in a month. More than 40 but probably less than 200 zones would be needed.

It was decided not to gamble on having the Maniac working in time but to try and obtain sufficient SEAC operational time. Bradbury and Mark were to look into this situation in Washington next week (October 8-12).

[redacted]

Holloway felt that parallel programs could be continued for a month or six weeks pending a final decision.

6. Burning calculations for DD are to use cross-sections of LA-1190 reduced by 22% as recently determined by Tuck. The reduced σv enhances interest in Li^6.

[redacted]

7. SEAC Calculations.

[redacted]

The kind of change necessary for such a calculation is easily made, requiring only change in the constants of the equation of state.

8. In calculating radiation flow from H.E. to H no consideration has been made for a time varying heat source (non-linear flow problem).

Battelle has accepted the job of fabricating Be plates for radiation windows in the bottom of the dewar but without guarantee of success. It was therefore proposed that other materials such as Al and Mg be looked into from the point of view of acceptability as windows.

R. W. Goranson

R. W. Goranson

Distribution:

1A - H. H. Barschall
2A - W. Bouricius
3A - N. E. Bradbury
4A - A. A. Broyles
5A - B. G. Carlson
6A - B. E. Freeman
7A - D. K. Froman
8A - R. L. Garwin
9A - R. W. Goranson
10A - M. G. Holloway
11A - F. C. Hoyt
12A - E. R. Jette
13A - R. M Landshoff
14A - C. L. Longmire
15A - J. C. Mark
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