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August 19, 1952

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MINUTES OF THE THIRTY-FIFTH MEETING OF THE THEORETICAL MEGATON GROUP

13 August 1952

1. The thirty-fifth meeting of the TMG convened at 9:00 AM on Wednesday, 13 August 1952, in the W-Division Conference Room. Those present were:

A. Broyles	W. E. Ogle
J. Calkin	F. Reines
G. Cowan	J. R. Reitz
C. Evans	R. D. Richtmyer
F. Evans	A. Rosenbluth
B. Freeman	M. Rosenbluth
R. Landshoff	B. R. Suydam
C. L. Longmire	T. B. Taylor
J. C. Mark, Chairman	J. L. Tuck
H. L. Mayer	S. M. Ulam
L. W. Nordheim	E. J. Zadina

Topics

2. Radiochemical Detectors.

3. Neutron Flux and Spectrum.

4. Growth of Ball of Fire.

5. Upshot Calculations.

2. Radiochemical Detectors

J-11 has requested theoretical help on its internal detector program. G. A. Cowan mentioned specifically the following points.*

2.1 Total neutrons (Ivy)

[redacted] DOE b(3)

2.2 (n-2n) detectors

[redacted] DOE b(3) DOE b(3)

Neutrons which have collided are slowed below the threshold.

2.3 (D-2n) detectors

The activity depends on the range of the fast deuterons, which is related to temperature and mixing.

[redacted] DO b(

2.4 [redacted] DOE b(3)

2.5 [redacted] DOE b(3)

The neutron

*For a description of radiochemical detectors at Ivy, see memo appended to these minutes.

spectrum is fairly well known from Pajarito measurements on air-tamped assemblies for different U^{235} concentrations (TMG M-27, Section 3).

[redacted] DOE 6(3)

= 6(3)

2.8 Upshot;

(n-2n) detectors to detect 14 mev neutrons from DT pellets might be placed to obtain the compression of the LiH. (See also TMG M-33, Section 9.)

3. Neutron Flux and Spectrum

Ogle would like to see calculations of these to aid in estimating gamma ray signals in DINEX experiments. There was some discussion of chances to make a TENEX experiment. This depends possibly on the spread of the energy of the 14 mev neutrons due to scattering on light elements in H.E. If this spread is too large, TENEX does not seem to be useful.

4. Growth of Ball of Fire

C. Mark reported a suggestion of B. Watt to undertake radiation hydrodynamic calculations for some bombs covering the stage of the growth of the ball of fire to about 10 m during which it is dim and following it the stage of brightness lasting 10 to 30 μsec.

5. Upshot Calculations

5.1 [redacted] DOE b(3)

Fig. 1 is a tentative drawing made from Broyles' numbers. Calculations such as radiation flow and implosion will be made on the basis of this design.

5.2 [redacted]

DDE b(3)

Rolf Landshoff
Rolf Landshoff

Distribution:

1A - H. H. Barschall
2A - G. Bell
3A - H. A. Bethe
4A - W. Bouricius
5A - N. E. Bradbury
6A - S. W. Burriss
7A - J. Calkin
8A - B. G. Carlson
9A - E. D. Cashwell
10A - F. de Hoffmann
11A - F. Evans
12A - B. E. Freeman
13A - D. K. Froman
14A - R. B. Gibney
15A - A. C. Graves
16A - L. E. Hightower
17A - M. G. Holloway
18A - F. C. Hoty
19A - E. R. Jette
20A - R. M. Landshoff
21A - C. L. Longmire
22A - J. C. Mark
23A - H. L. Mayer
24A - N Metropolis
25A - L. W. Nordheim
26A - W. E. Ogle
27A - J. Pasta
28A - F. Reines
29A - J. R. Reitz
30A - R. D. Richtmyer
31A - M. Rosenbluth
32A - R. W. Spence
33A - P. R. Stein
34A - E. Teller
35A - J. L. Tuck
36A - S. M. Ulam
37A - J. von Neumann
38A - M. C. Walske
39A - B. E. Watt
40A - J. A. Wheeler
41A - H. F. York
42A - E. J. Zadina
43A - Report Library
44A- Report Library

APPENDIX

August 15, 1952

To: Rolf Landshoff, Group Leader T-3

From: G. A. Cowan, J-11

Subject: Radiochemical Detectors, Operation Ivy

Symbol: J-13590

PROPAGATION

1. [redacted] DOE b(3)

2. [redacted] DOE b(3)

3. [redacted] DOE b(3)

4. [redacted] DOE b(3)

YIELD

1. [redacted] DOE b(3)

2. [redacted]

COPY

APPENDIX (concl.)

To: R. Landshoff -2- August 15, 1952

3. [redacted]

DOE b(

4. Neutron Economy

[redacted]

DOE b(3

/s/ G. A. Cowan

G. A. Cowan

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