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1st REVIEW DATE	DETERMINATION (CIRCLE NUMBER)
AUTHORITY APPROVING: <i>John</i>	CLASSIFICATION RETAINED <input checked="" type="radio"/>
NAME:	CLASSIFICATION CHANGED TO:
2nd REVIEW DATE: 7-10-97	CONTAINS NO DOE CLASSIFIED INFO
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Group Ref: TMG-M8

December 3, 1951

SAZ200069490000  
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MINUTES OF THE EIGHTH MEETING OF THE THEORETICAL MEGATON GROUP

- This is the minutes of the eighth meeting of the Theoretical Megaton Group held on the 28 November 1951 at 9:00 AM in the W-Conference Room and later moved into the Rhines Raum. Those present were:

W. Bouricius	J. C. Mark, Chairman
A. A. Broyles	H. L. Mayer
E. D. Cashwell	L. W. Nordheim
B. E. Freeman	J. C. Potts
R. W. Goranson	O. W. Rechard
H. Hall	J. R. Reitz
F. C. Hoyt	R. D. Richtmyer
R. M. Landshoff	A. Rosenbluth
R. B. Lazarus	M. Rosenbluth
E. Long	J. L. Tuck
C. L. Longmire	M. C. Walske

2. The first topic was concerned with the status on procurement of lithium and lithium compounds.

2.1

The purity required is specified as 95 weight per cent for either Li or LiD with no restrictions on the kinds of impurity.

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1ST REVIEW DATE:	2-26-99
AUTHORITY:	DOE BASIC CARD
NAME:	SAZ200069490000
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NAME:	SAZ200069490000

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2.2

This recommended purity can be obtained for Li metal but appears to be difficult for LiH. Most of the impurities are introduced in the hydriding process. In addition, protective coatings for LiH are unknown at present.

It was decided to retract this official request for LiH.

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The possibility of other "explosive" substitutes does exist but it cannot be said at the present time that these are or are not more attractive.

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3.

4. In the surface Jangle test a steel plate was set up 50 inches from the center of the bomb. This plate contained a series of holes, some of which were left open and the others covered with various thicknesses of Mg plates.

The light flash from these areas was picked up by a smear camera located 2 miles from the test site via a series of mirrors located on telephone poles. The bomb flare was blocked off by a steel shield with collimating pipes.

The result was discouraging in that the time of break-through was not sharply defined and so could not be determined with any reasonable accuracy.

In view of the results obtained it is proposed to

- (a) Make a study at LAHL on proper mirror size, mounting, alignment and camera speed.
- (b) To make a test shot at Nevada with a standard bomb surrounded in whole or in part by a spherical iron case.

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Photographic observations of this case are to be made in  
order to study shock arrival times and general behavior.

This is a simplified version of a previously proposed experiment  
in that no attempt will be made to mock-up radiation flow or hydrodynamics.

It is proposed to discuss this further after Ogle returns to the  
Hill.

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Because these suggestions were based on insufficient knowledge and are therefore irrelevant they are not included in these minutes. Further informal discussions were held Thursday (29 November); Long stated that he would also discuss certain of these design features in Chicago with Teller.

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R. W. Goranson

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TM-21 - TMG-M9

This document consists of 6 pages.

December 8, 1951

MINUTES OF THE NINTH MEETING OF THE THEORETICAL MEGATON GROUP

5 December 1951

1. The ninth meeting of the TMG was held on 5 December 1951 at 9:00 AM in the W-Conference Room. Those present were:

W. Bouricius  
N. E. Bradbury  
A. N. Carson  
B. E. Freeman  
D. K. Froman  
R. W. Goranson  
F. C. Hoyt  
R. M. Landshoff

R. B. Lazarus  
C. L. Longmire  
H. L. Mayer  
N. Metropolis  
L. W. Nordheim  
R. D. Richtmyer  
J. L. Tuck  
M. C. Walske

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1. REVENGE	2. CLASSIFICATION RETAINED
AUTHORITY: DODC TRADE SPADD	3. CLASSIFICATION CHANGED TO: TWO
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2ND REVIEW-DATE: <i>9/2/97</i>	5. CLASSIFICATION CANCELLED
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It is proposed to put in the temperature effect as a perturbation.

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The density is assumed to be constant in each of the four regions; the average temperature and pressure is obtained from the energy which very soon becomes constant.

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-3-

In the third stage, which occurs after the radiation wave hits the H.E., there is a discontinuity in the derivatives because of the difference in opacities.

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4. Hoyt reported on the status of calculations which are being carried out by him and Carson on radiation penetration effects.

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The following figures were supplied by Carson.

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$P_H$  - hydrogen pressure, mb.

$P_S$  - Serber shock pressure, mb.

5.

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6. Goranson outlined certain design features on which ACF would like to have an answer as soon as possible. Some of these were the following:

(a) Sound proofing. Landshoff's calculations were not yet out far enough to permit definite specifications on this point. The ACF have been advised that this may be required and where; the design problem should not be difficult.

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7.

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Roughly the  $\alpha$  vs. time curve will be as illustrated. At high compressions the simple infinite medium theory should give reliable values of alpha; this will be the case over the most important part of the curve, say 20 generations worth. Over the earlier part the calculations will be more difficult.

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The results of the simple infinite medium theory, modified for leakage from a fundamental mode, are as follows:

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