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This document consists of 8 pages.  
No. 33 of 48 copies. Series A.

ADWD-176

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VERSION

FAMILY COMMITTEE  
Minutes of Twentieth Meeting  
August 11, 1950

LAMD-379

SAA 300069850000

A. Attendance.

The twentieth meeting of the Family Committee was held Thursday August 10, 1950 at 1:15 PM in Room B-117. Those present were:

- |                |                     |
|----------------|---------------------|
| F. de Hoffmann | D. P. MacDougall    |
| E. Fermi       | J. C. Mark          |
| D. K. Froman   | H. Mayer            |
| R. Garwin      | F. Reines           |
| D. B. Hall     | R. F. Taschek       |
| M. G. Holloway | E. Teller, Chairman |
| E. R. Jette    |                     |

B. Minutes of the Nineteenth Meeting.

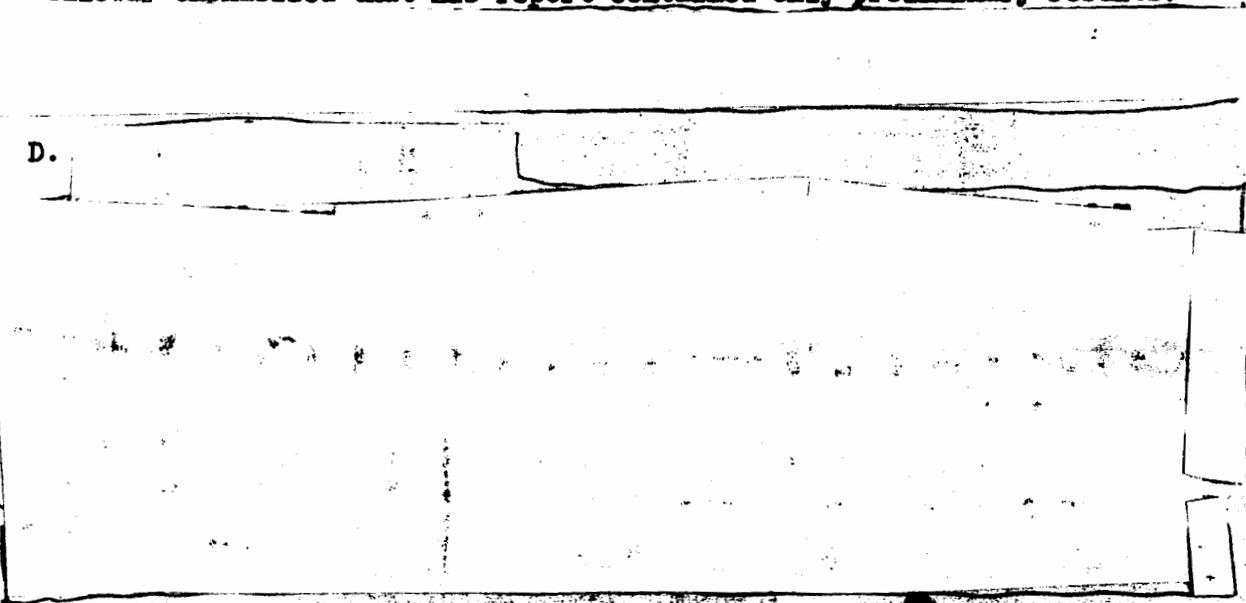
The Committee unanimously adopted the minutes of the Nineteenth meeting reported in ADWD-174 with the following correction:

On page 1, under A. Attendance, substitute the word "Saturday" for the word "Thursday" in the first line.

C. Detonator Initiator.

Holloway reported that the time dependent shot anticipated at the Tenth meeting of the Family Committee (see Tenth minutes, Item D) had now been shot. The results have not as yet been analyzed in detail and Holloway emphasized that his report contained only preliminary results.

D.



DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW

1ST REVIEW DATE: 8-18-97  
 AUTHORITY: EAO/CLAD/CLM  
 NAME: [Signature]  
 2ND REVIEW DATE: 9/18/91  
 AUTHORITY: ADP

1. DETERMINATION (CIRCLE NUMBER(S))  
 2. CLASSIFICATION RETAINED  
 3. CLASSIFICATION CHANGED TO:  
 4. COORDINATE WITH:  
 5. CLASSIFICATION CANCELLED

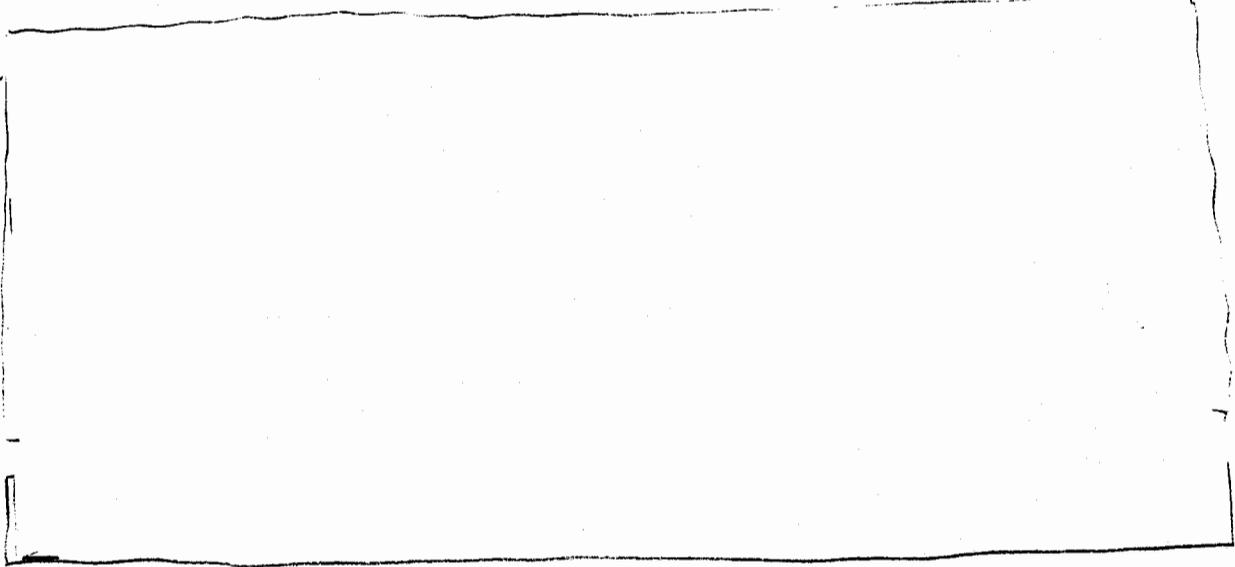
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This document contains restricted data as defined in the Atomic Energy Act of 1954 and the Administrative and Criminal Sanctions Act of 1950.

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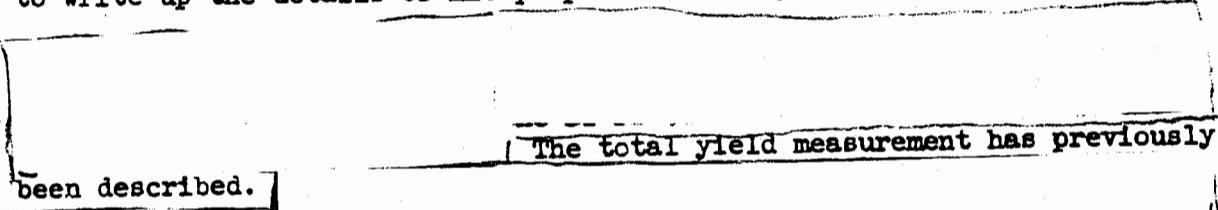


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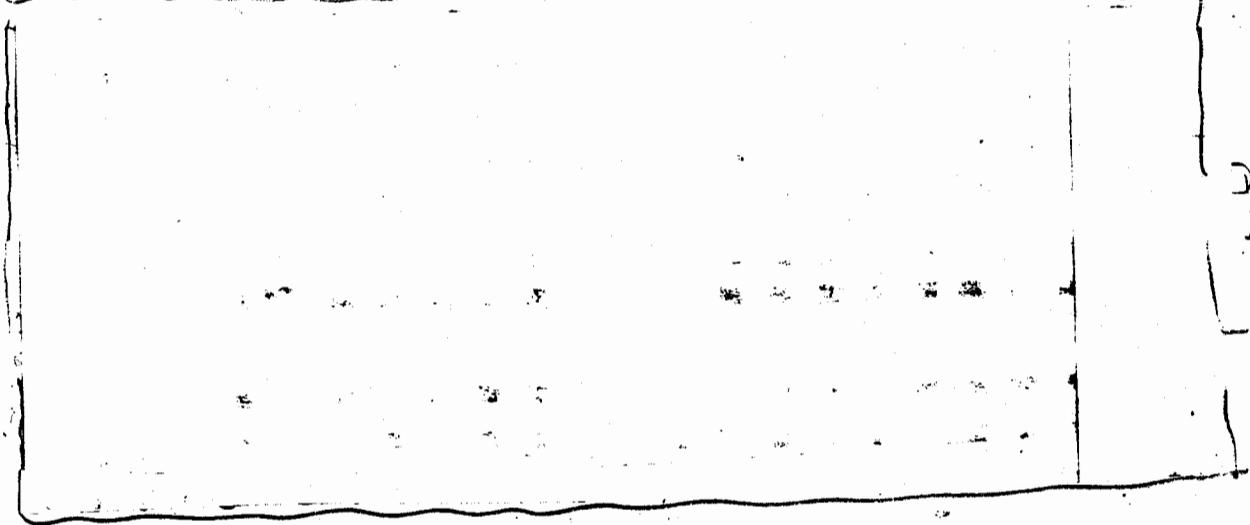
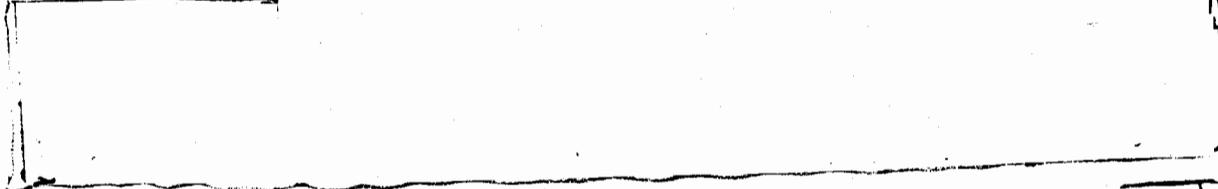
E. (n,2n) Experiment.

Garwin discussed the (n,2n) experiment reported on at the Seventeenth meeting (see Seventeenth meeting, Item D). Garwin expects to write up the details of his proposal as a report within the next week.



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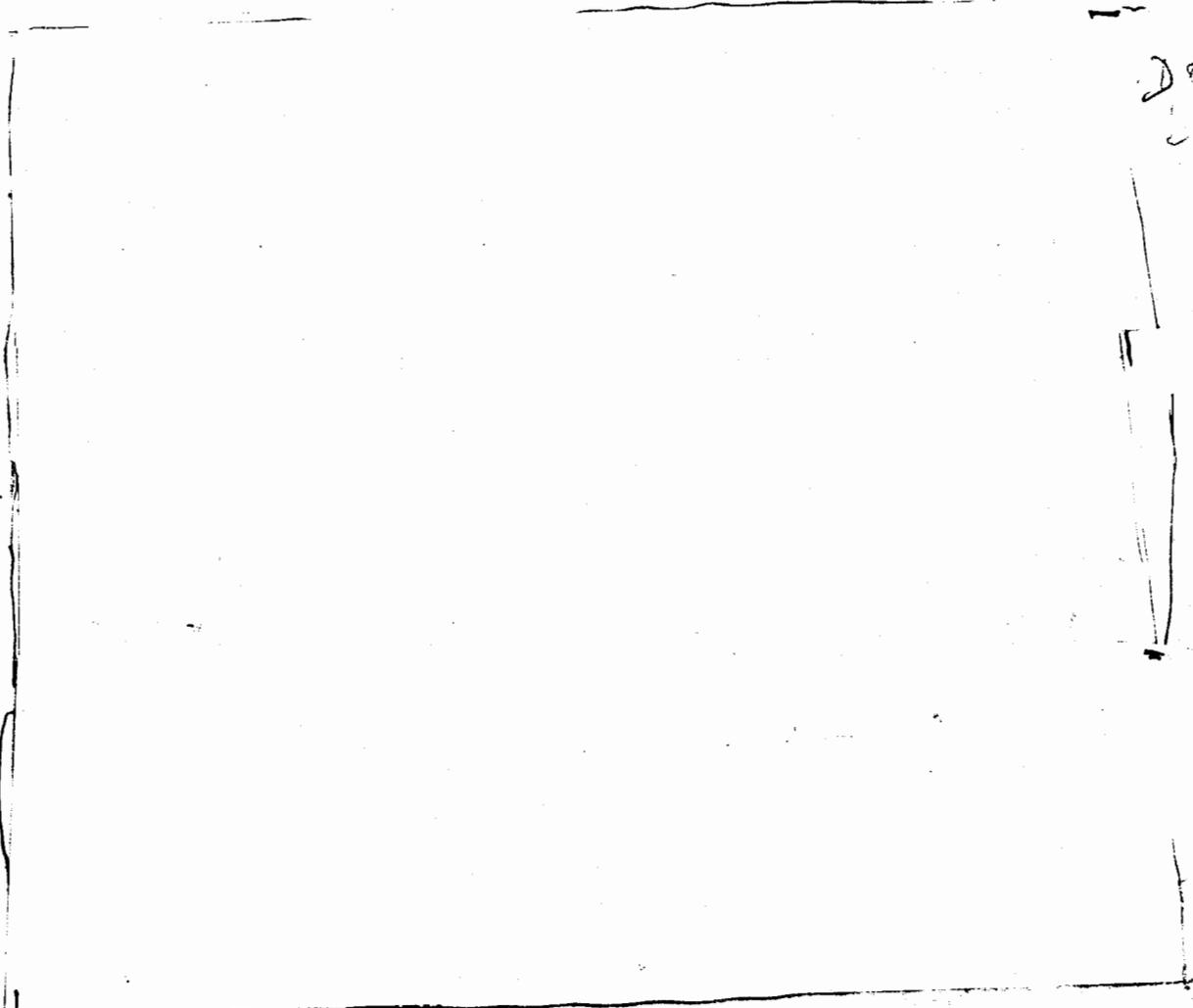
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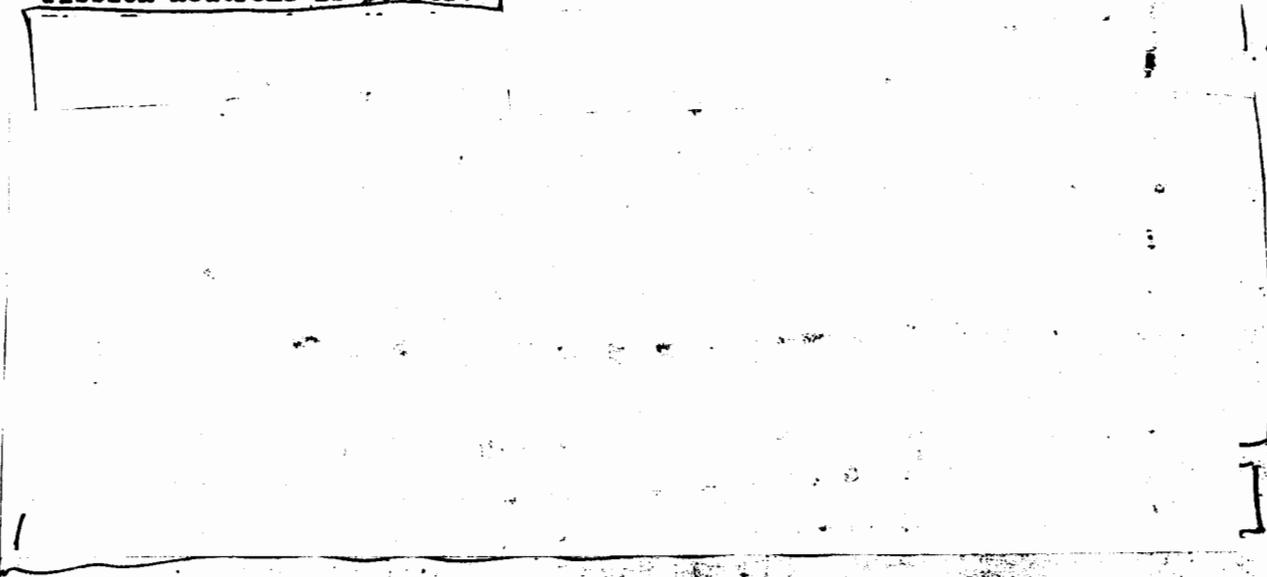
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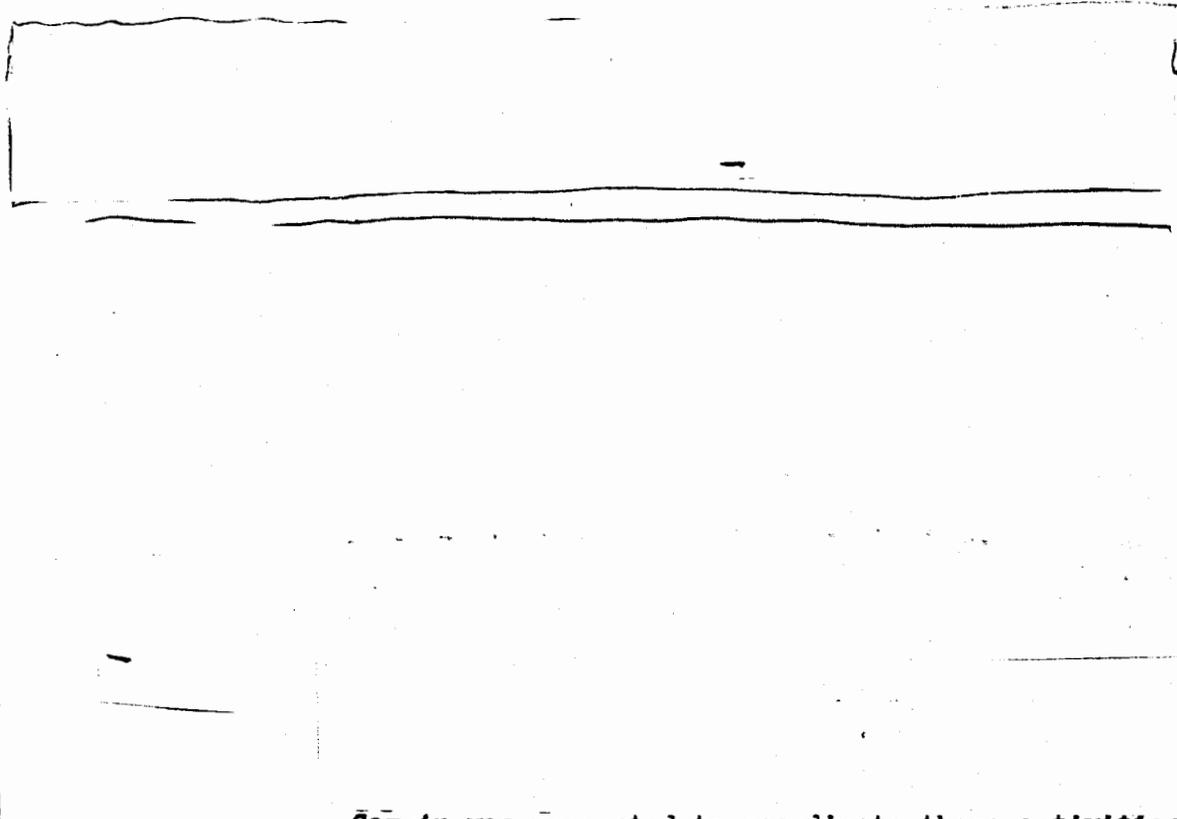
Because of the lowered threshold the discrimination against fission neutrons is poorer.



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Garwin was requested to coordinate these activities till his departure from the laboratory on about September 15th and that he attempt to train a successor for this job.

F. DINEX and GANEX.

In view of the recent events with respect to Eniwetok and the forthcoming visit of Krause, Fermi was requested to report on recent conferences in which he had explored some of the questions concerned with DINEX. Fermi emphasized that his report was not in the nature of a recommendation but just a preliminary report on fact finding.

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a. The total yield of 14 Mev neutrons. (Probably the most important piece of information which can be measured concerning the functioning of the DT).

b. The time dependence of the burning of the DT (including the energy level of the fission bomb at the time the DT is burning).

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c. The temperature of the DT which it is burning.

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The main objection to DINEX which Fermi voiced is the large amount of money and effort required by the experiment. Teller reminded the group that the logistic problem due to physically heavy experiments should also be considered. Reines emphasized that logistic considerations should not influence the discussion in the Family Committee. Fermi then outlined a possible alternate to DINEX nicknamed GANEX (Gamma-neutron experiment), first proposed by M. Johnson of NRL and since elaborated upon at Los Alamos. A highly schematic view of the experiment is shown in Figure 1.)

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These fissions give rise to instantaneous gamma rays which are recorded by a gamma-ray detector at the foot of the tower from where cables transmit the signal to the recording shelter.

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Two methods were suggested to cut down this effect.

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There was considerable discussion regarding how promptly the "prompt" gammas would be emitted. It was agreed that it would be valuable to perform a Baker type experiment for gammas emitted from U238 fission to clarify this point. The detecting problem at the foot of the tower raises some question. Intensity considerations do not permit the direct use of electron collection and one will have to make use of a fluorescent material possibly leading to time resolution difficulties. Garwin noted that one could add a quencher to the fluorescent material, thus in effect sacrificing intensity (of which there would be plenty to spare in the case of the fluorescent crystal method) for time resolution.

Presumably one would get some idea from the change of the  $\alpha$  curve with time but it would be a rather inaccurate value. This lack of data would be a distinct disadvantage of GANEX.

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An inference concerning the same thing can be obtained from the X-ray experiment. However, the inferential nature of both these approaches makes it desirable that both lines be pursued. In addition, no absolute certainty exists that the X-ray experiment will function.

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2. Booster.

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In the case of the booster, the determination of the energy level of the fission gadget when the DT starts to react could be obtained from a combination of GANEX and Ni activation. In particular this could be done as follows: The jump in the gamma intensity curve will tell you the relative increase in the fission rate due to 14 Mev neutrons, therefore, one can calculate the ratio of densities of 14 Mev DT neutrons to fission neutrons. Since, furthermore, Ogle measures the total 14 Mev neutron integral, we can get an absolute rate for the fission. (This is all based on the assumption that the DT burns rapidly enough to show a sudden boosting). It was agreed that it would be valuable to have the absolute energy level well determined in the case of the booster (as previously stated at the Ninth meeting, Item D, page 3) but that further discussion between J Division, Fermi and Krause would have to establish what effort this warrants.

The opinion was voiced by Teller that the decision on DINEX may properly be made outside the Family Committee by Fermi, Krause, J Division and the Laboratory Director. The Family Committee cannot evaluate the logistic situation. DINEX may give the only reliable and accurate determination of absolute timing. This determination is of considerable importance but does not have, in the opinion of the Family Committee, overriding priority.

G. Next Meeting.

There will be no meeting on August 17, 1950.

*Fredric de Hoffmann*

Executive Secretary

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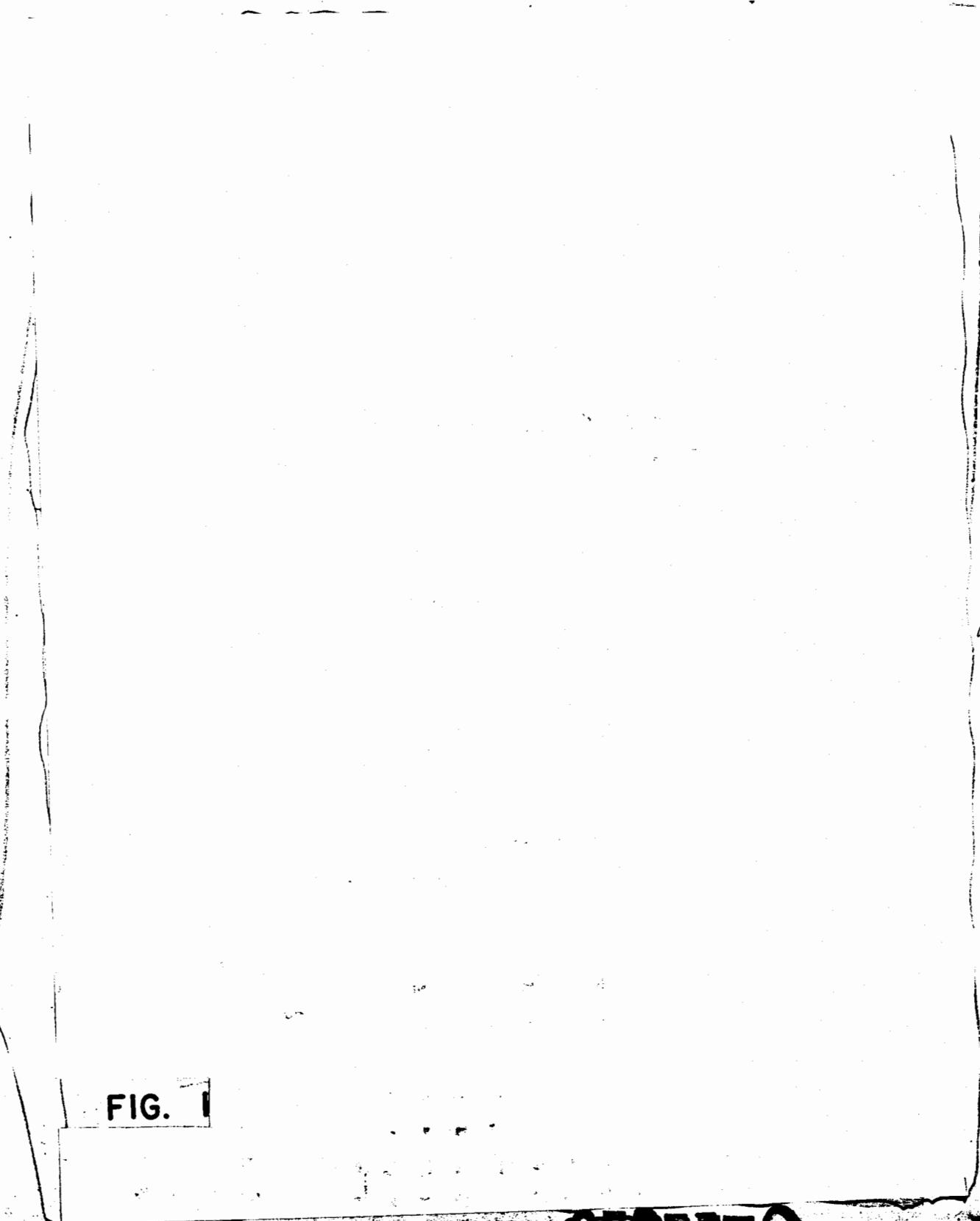


FIG. 1

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