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AEC 483/22

October 3, 1952

COPY NO. 1

ATOMIC ENERGY COMMISSION

DETECTION AND IDENTIFICATION OF WEAPONS TEST

Note by the Secretary

1. The attached letter from Dr. Bradbury to Mr. Northrup and memorandum from Dr. Spence to Dr. Bradbury have been submitted by the Division of Military Application for the information of the Commission.

2. A previous memorandum on this subject, referred to in the attachments was circulated as AEC 483/15.

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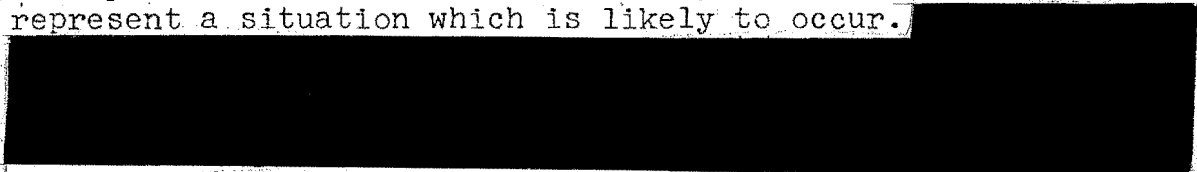
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ABSTRACT

DETECTION AND IDENTIFICATION OF WEAPONS TEST

1. After study of the AFOAT memorandum on the above subject, Dr. Spence and his associates feel that Case II does not represent a situation which is likely to occur.



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*6.1 (A)*

2. The detection of tritium is questionable.
3. Dr. Bradbury feels that the AFOAT memorandum implies more certainty regarding the distant identification and interpretation of the MIKE device than may be the case. Our observations of our own devices have been difficult to interpret, and greater difficulties would be encountered with weak samples obtained at great distances.

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UNIVERSITY OF CALIFORNIA  
LOS ALAMOS SCIENTIFIC LABORATORY  
(CONTRACT W-7405-ENG-36)  
P. O. BOX 1663  
LOS ALAMOS, NEW MEXICO

September 5, 1952

Dr. D. L. Northrup  
Technical Director, AFOAT-1  
Headquarters United States Air Force  
Washington 25, D. C.

Dear Dr. Northrup:

Enclosed herewith are comments by Dr. R. W. Spence regarding the AFOAT-1 study by Colonel Douthett (Tech. Memo. No. 74) concerning the detection of the MIKE shot.

It is my own impression that the phraseology of this memorandum may be generally such as to imply considerable more certainty regarding the distant identification and interpretation of this device than may be the case. The statements which have to do with relative amounts of materials which may be formed are correct with the modifications noted in Dr. Spence's comments. However, those which deal with absolute quantities or the detection of gases or which imply a simultaneous knowledge of the yield appear to me to be highly unlikely criteria.

I am also struck by the fact that the radiochemical observations on our own devices with large samples and a knowledge of the yield and make-up of the weapon have frequently been far less easy to interpret than one would wish. With weak samples obtained at great distances I would suspect far greater difficulties. Our own lack of success in interpreting what has gone on in Russian explosions seems to me to indicate that Russia must experience at least as much difficulty in trying to understand ours.

Very truly yours,

/s/

N. E. Bradbury  
Director

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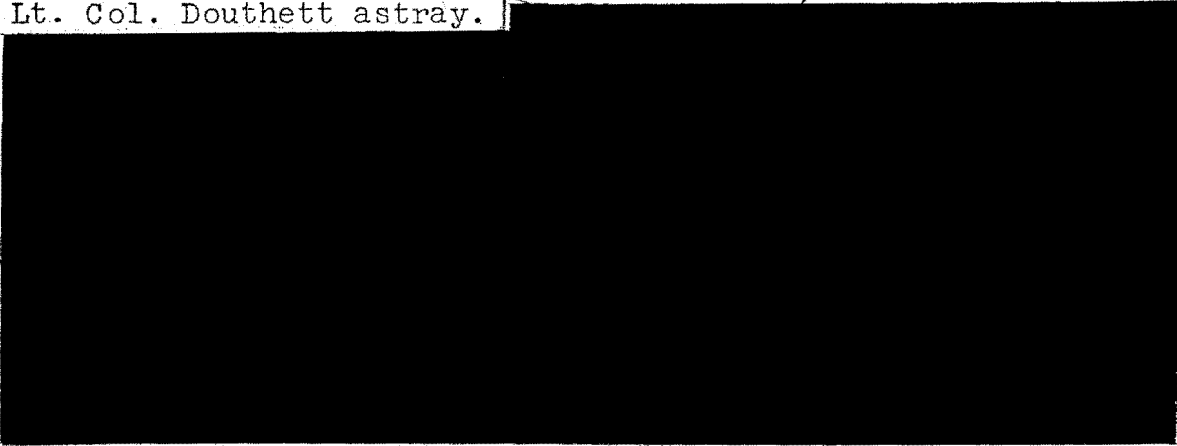
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September 5, 1952

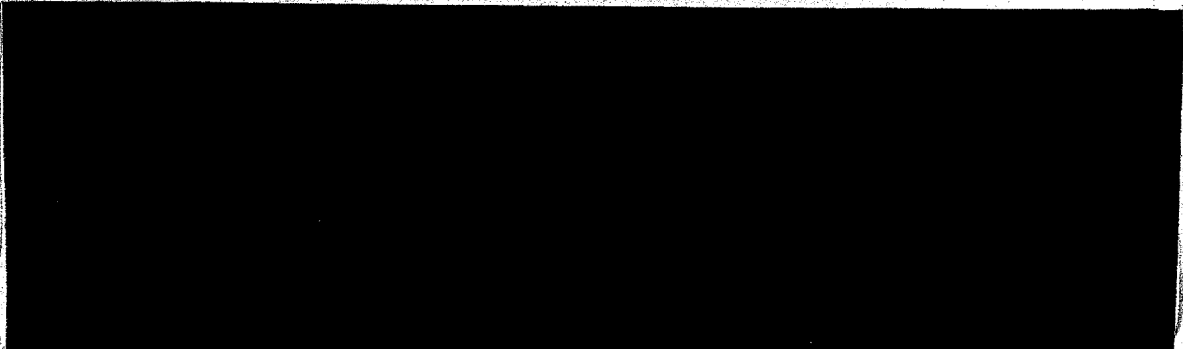
MEMORANDUM

TO : N. E. Bradbury, Director  
FROM : R. W. Spence, Associate Division Leader-J  
SUBJECT: Detection and Identification of IVY (MIKE)  
SYMBOL : J-13963

George Cowan, Jere Knight and I have studied the memorandum entitled "Detection and Identification of IVY (MIKE)" and we have discussed the subject with Professor Hans Bethe. We agree with most of the points covered in the memorandum. However, on one point I am afraid we led Walter Singlevich and Lt. Col. Douthett astray.



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Statements d, e, f, and g will not be affected.

Some people here have questioned the detection of tritium. I suspect that the chances of success of such detection will be clarified by experimental work. The variation in tritium content of the atmosphere (as elementary hydrogen and as water vapor) will be a favor.

/s/ J. D. Knight, for R. W. Spence

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