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AEC 952/31

February 21, 1958

COPY NO. 23

ATOMIC ENERGY COMMISSION

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U.N. OBSERVER PROGRAM FOR HARDTACK

Note by the Secretary

The General Manager has requested that the attached report by the Director of Military Application be circulated for consideration by the Commission during the week of February 24, 1958.

REPOSITORY NARA/Colby Park  
COLLECTION RG 326 51-58 Secretary  
BOX No. 182 (WN3-326-93-010)  
FOLDER MRA 7 Hardtack, v. 2

W. B. McCool  
Secretary

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| 1ST REVIEW DATE: 03/10/02                    | DETERMINATION (CIRCLE NUMBER(S))   |
| AUTHORITY: EAC, EACD, CADD                   | 1. CLASSIFICATION RETAINED         |
| NAME: Betty A. Hannon                        | 2. CLASSIFICATION CHANGED TO       |
| 2ND REVIEW DATE: 10/1/02                     | 3. CONTAINS NO DOE CLASSIFIED INFO |
| AUTHORITY: ADD                               | 4. COORDINATE WITH:                |
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|  | (SPECIFY): 20320-348               |

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ATOMIC ENERGY COMMISSION

U.N. OBSERVER PROGRAM FOR HARDTACK

Report to the General Manager by the  
Director of Military Application

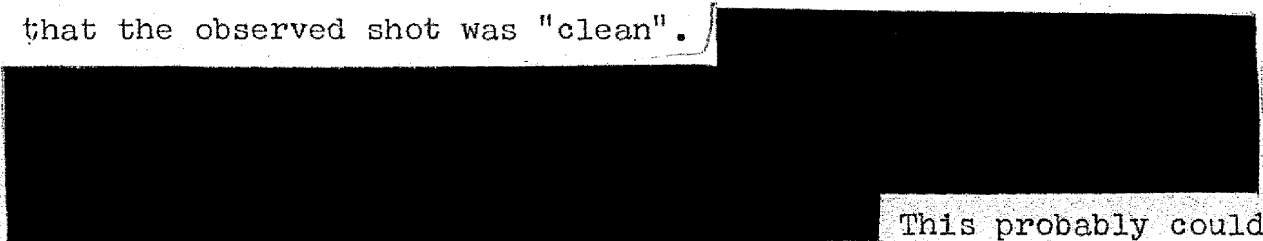
PROBLEM

1. To consider again the possibility of conducting a U.N. observation program.

SUMMARY

2. AEC 952/17 dated October 17, 1957 discussed the background of a possible U.N. demonstration shot for Operation HARDTACK and the possible methods for demonstrating reduced fallout. It further pointed out that the Bethe Panel had been asked to comment on a certain plan for demonstrating that a HARDTACK shot was clean.

3. AEC 952/20 dated November 5, 1957 further discussed the pros and cons of a U.N. demonstration and analyzed various methods which had been investigated to prove, within security requirements, that the observed shot was "clean".



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This probably could be accomplished without revealing to the Soviets important design information not already known to them. However, it would be necessary to declassify for the purpose the total yield and total

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WITH ATTACHMENTS/ENCL

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|  | 7. OTHER (SPECIFY): 10-3-11-348    |

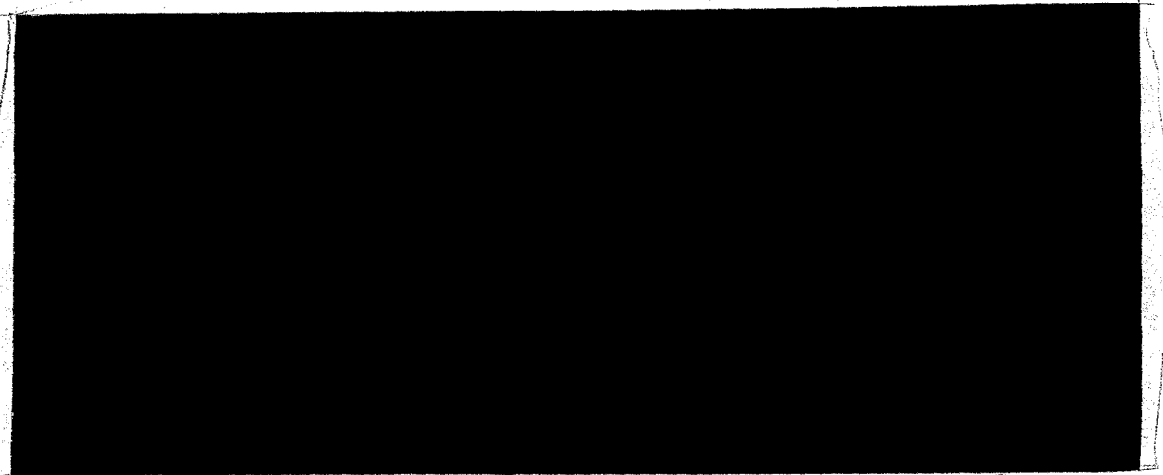
| DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW   |                                     |
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| SINGLE REVIEW AUTHORIZED BY: DOE ORDER 5650.2B | 1. DETERMINATION (CIRCLE NUMBER(S)) |
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fission yield of the shot. To determine the fission yield at all convincingly the radio-chemical analysis of samples should be the method used.



e. Observers would be allowed to determine the total yield by some simple method such as fireball or bhangmeter;

f. Samples would be collected by aircraft and analyzed to determine the total fission yield; and

g. The analysis would be accomplished under direct observation of, or by, the observers.

5. AEC 952/20 also pointed out that there were certain dangers in this operation. The yield of the device would be large and might unduly awe rather than mollify the observers. There was always the chance (though slight) that the weapon would not work satisfactorily and that, therefore, the major portion of the reduced yield would be from fission. The demonstration probably would not convince all who observed.

6. AEC 952/20 requested Commission guidance as to the further approach to be taken. At Meeting 1313 on November 6, 1957, the Commission agreed that the Commission's position regarding the security hazards of a demonstration shot be presented to the President and his further guidance requested. In his conversation with the Chairman, the President indicated that cancellation might be

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accomplished if there were a graceful way of withdrawing. On re-examination, however, no graceful way out could be established. AEC 952/25 was prepared, therefore, recommending public announcement of withdrawal. The Commission has not acted on AEC 952/25.

7. On February 12, 1958, the Chairman again asked the Director of Military Application to reinvestigate the feasibility of the test in the light of discussions that Captain Morse had had with Dr. Mills. Dr. Mills was queried again and asked to provide the answers to five questions, which he did by the teletype attached as the Appendix. The brief, he stated he believed it was still possible to conduct the test using the method described in paragraph 4. above.

8. On the evening of February 14, Drs. Lawrence, Teller and Mills telephoned General Starbird saying that they still believed the observation program should be arranged. Dr. Teller suggested that the observers be given samples to take home for their own analyses. General Starbird indicated that he did not believe this a satisfactory solution because it would permit them to determine information we did not desire to reveal, and would give the Soviets the ability to say that their analysis had indicated the samples to be dirty. Dr. Teller asked if there was any objection to his contacting Dr. Libby directly, and General Starbird indicated that, of course, there was none. General Starbird asked whether Berkeley could arrange (if the observers were sent back by air with the samples) to accomplish the analyses of samples under observation. Drs. Lawrence and Street indicated that this could be done. Such a solution would obviate the necessity for setting up a laboratory in the test area, or the giving to the observers of samples.

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9. DMA's re-analysis (checked with Los Alamos, who would furnish the device; with Livermore, who would do the radiochemical analysis; and with the JTF Commander, who would handle all arrangements in the forward area) indicates the following:

a. It would still be possible to arrange for the observation in a manner as stated in paragraph 4. above. / 1008/6.1(10)

The shot should be the last of the series so as to reduce to a minimum interference with other activities and give maximum time for preparation; the shot could then be fired during July.

b. Costs to the AEC would be moderate and, in view of the fact that most would fall in FY 1959, allocation of additional funds in FY 1958 would not be required. Cost to the DOD would be primarily that of retaining ships, aircraft and crews in the operation up to an additional two weeks.

c. We would plan on assembling the observers (in numbers say of 15 for the U.N. delegation and approximately 15 of the press) in Honolulu several days before the shot. They would be called to the forward area by the JTF Commander two or three days before firing and there they would have explained to them the instrumentation set up for measuring total yield, the procedures to be followed for securing samples, and the methods to be followed in analyzing samples. They would be given the weight of the lead box and the weight of the tracer and the lead box and the tracer would be shown to them. They would stay in the area long enough to observe the return of the sample aircraft and the placing of the filter paper in containers for shipment home and then would fly back to Berkeley with the samples. The analyses, requiring approximately two days, would be conducted at Berkeley with continual observation allowed to the observers.

d. The possible dangers in this observation are unchanged from those described in AEC 952/20 and summarized in paragraph 5. above.

e. The duration of the firing and operational period of HARDTACK would be prolonged by some 7 to 10 days to accomplish this shot. One added large yield device would be fired.

#### CONCLUSIONS

10. If international and propaganda considerations require a demonstration, from a technical viewpoint, a demonstration can still be arranged. If arranged it should be capable of proving to an unbiased observer that the device was clean. The

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procedure cannot be made so foolproof that Soviet Bloc powers could not argue that the test was rigged.

8. If we are to proceed with the observation, decision to this effect must be made immediately.

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LIST OF ENCLOSURE

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| APPENDIX - Teletype to Starbird from Mills dated<br>February 14, 1958..... | 6           |

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APPENDIX

TELETYPE

FEBRUARY 14, 1958

FM UNIV OF CALIF RADIATION LAB LIVERMORE CALIF  
TO DMA USAEC WASHDC  
ATTN B/GEN A. D. STARBIRD

FROM MARK M. MILLS. SUBJECT: REPLY TO YOUR QUESTIONS ON  
DEMONSTRATION OF A CLEAN SHOT TO FOREIGN OBSERVERS.

THE QUESTIONS, AS UNDERSTOOD HERE, ARE LISTED IN ORDER AND THEN  
THE REPLY THEN GIVEN. I THINK SUCH A DEMONSTRATION SHOULD BE  
MADE AT THE EARLIEST FEASIBLE DATE, BUT IT APPEARS DIFFICULT TO  
DO SO BY HARDTACK.

QUESTION 1. IS IT POSSIBLE IN THE TIME AVAILABLE TO CARRY THROUGH  
SUCH A DEMONSTRATION IN HARDTACK QUERY

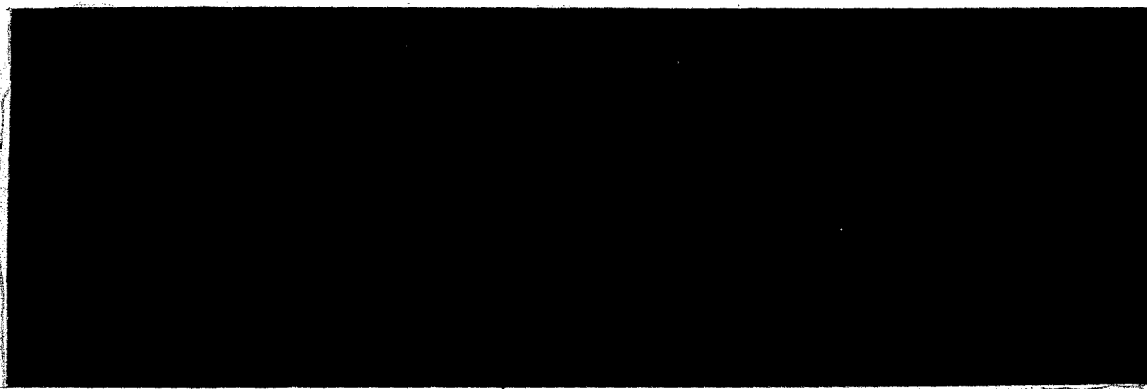
ANSWER 1. IN SEPARATE PARTS A, B, C, D, E, F

/A/ IT IS SIX MONTHS TOO LATE TO DO SO BY THE ROCKET TECHNIQUE.

/B/ IT IS PROBABLY TOO LATE, BUT MAY BE BARELY POSSIBLE TO  
DO SO BY THE RADIOCHEMICAL METHOD AS OUTLINED IN AFOAT-1-  
30789, OF OCTOBER 24, 1957 BY BETHE.

/C/ THERE MAY BE AN EASIER RADIOCHEMICAL METHOD THAN THE ONE  
OUTLINED BY BETHE, BUT THERE IS NOT NOW TIME TO CAREFULLY  
AND PROPERLY CONSIDER ALTERNATIVE METHODS.

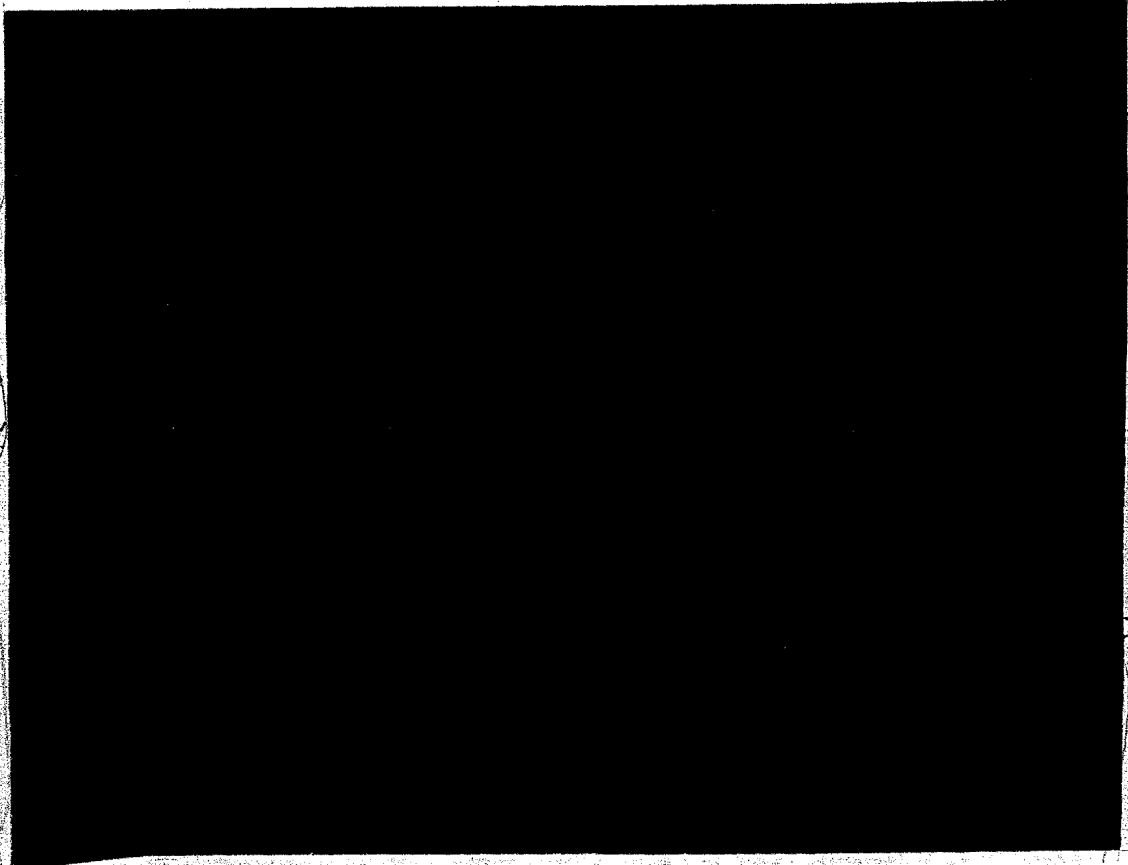
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/E/

/F/ JUST AS SERIOUS ALTHOUGH NOT A LABORATORY TYPE OF QUESTION IS THE LIMITED TIME AVAILABLE TO INVITE OBSERVERS AND CONDUCT AN ADEQUATE TECHNICAL EDUCATIONAL PROGRAM NEEDED TO MAKE THE MEANING OF THE DEMONSTRATION CLEAR AND CONVINCING TO THEM.

QUESTION 2. SHOULD TWO DEVICES BE COMPARED OR A QUANTITATIVE SINGLE SHOT BE USED QUERY

ANSWER 2. TWO DEVICES ARE MOST IMPORTANT FOR THE ROCKET TECHNIQUE FOR WHICH THERE IS NOT TIME. A SINGLE QUANTITATIVE SHOT IS ADEQUATE FOR THE RADIOCHEMICAL TECHNIQUE, AND LESS TROUBLE THAN TWO SHOTS.

QUESTION 3. SHOULD WE JUST PROVIDE THE SHOT AND LET OTHERS MEASURE IT QUERY

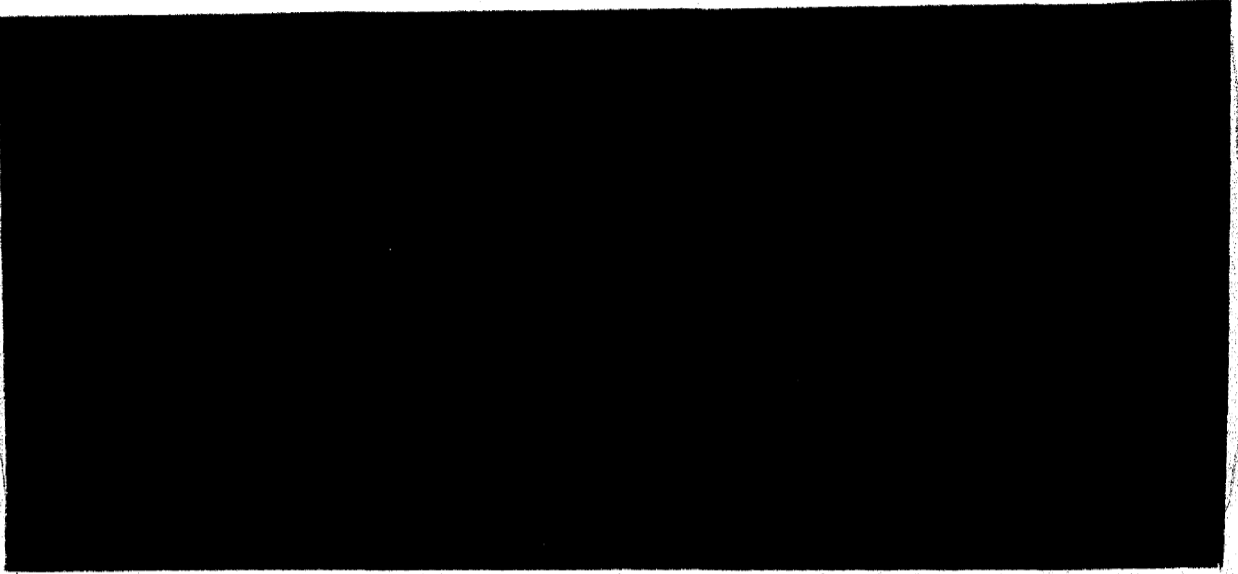
ANSWER 3. I DOUBT IF MOST OF THE OBSERVERS WILL IN GENERAL BE FAMILIAR WITH THE TECHNIQUES SO WE MUST BE PREPARED TO HELP THEM AND EDUCATE THEM.



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NW 97-0009A  
By D.M. HA Date 7/28/05

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Appendix