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March 30, 1951

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Dr. Herbert Scoville
Armed Forces Special Weapons Project
P.O. Box 2610
Washington, D.C.

Dear Dr. Scoville:

I have gone over the data you sent me relating to the IKT test and I wish to make the following comments:

The assumptions are reasonable and the calculations appear to be correct. (I have not checked them in detail). Therefore, we may conclude that if everything goes according to predictions, the test can be conducted safely in one of the sites mentioned at the meeting. Nevertheless, as you know, "health" physicians and physicists are rather reluctant to approve holding the test in this country. There are two good reasons for this hesitation: In the first place, things do not always go according to plan. Secondly, responsibility for what may happen, in the ultimate analysis, falls on health physicians and physicists.

In connection with the second reason I should like to point out that, through a combination of circumstances and psychological reactions, a higher standard of safety is expected in the case of radiological work than in the case of more familiar human activities. While this is obviously illogical, it does exist and it puts a heavier responsibility on health physicians and physicists.

There is a more important reason for caution on the part of these specialists. Our knowledge of radiation hazards is not sufficient to predict what ultimate harm may result under all possible conditions of exposure. There have been some unfortunate experiences such as the fatalities ("radium poisoning") that occurred about twenty-five years ago in the radium luminous dial industry. At the time that the dial painters were ingesting the radioactive material, reputable physicians were using radium solutions intravenously or by mouth as therapeutic agents - and no long delayed harmful effects from the retention of small amounts of radium, were expected.

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It is obvious from the foregoing that health physicians and physicists cannot be expected to approve the proposed test on the basis of complete radiological safety - no matter whether it is held in this country or elsewhere. Therefore, we must adopt a more practical basis. As a matter of fact this has already been done. For instance, we no longer speak of "tolerance amounts" of radiation or radioactive material because the term "tolerance" implies that no harm would result. We use instead the expression "permissible amounts" which leaves out the implication of complete safety. This philosophy is now generally accepted and it can readily be applied to the test under consideration. Accordingly, there will be no difficulty in obtaining the approval of health physicians and physicists if the radiological hazard can be reduced to an acceptable limit. What constitutes an acceptable limit is largely a matter of opinion and is influenced by many factors. The general feeling is that the hazard should be as low as practicable. It is obvious that radiological hazard would be less and more acceptable if the test were to be held on a deserted island. The advantages of holding the test in this country, therefore, must be sufficiently greater to justify the additional hazard. In my opinion the advantages far outweigh the additional risk, which I consider to be well within acceptable limits.

For better or for worse, atomic energy is with us and we must live with it. The more experience we have with its radiological aspects the sooner we can solve some of the problems. This is particularly important in view of the existing international tension, which may inflict on us major problems at any time. If the test is held in this country it will provide information and experience urgently needed for military and civil defense, under conditions that permit long term study of the radiological hazards. At the same time it will make possible a "full dress rehearsal" of civil defense measures, and the experience gained thereby would be of inestimable value in case of an atomic weapons attack.

The question of radiation hazard arising from the presence of radioactive particles, was raised at the meeting. This is the great unknown and the main objection to holding the test in this country. It is, therefore, important to take all possible precautions in this regard. A large site in an unpopulated region that can be kept under close supervision for a long time, is essential. The two sites discussed at the meeting seem to fulfill these requirements. By proper planning it should be possible to obtain a great deal of valuable information on the particle problem itself. I refer here to information of a physical nature (particle sizes, concentration, radioactivity, etc... subsequent pickup by wind, etc.) and not to biological data which entails the lapse of a long interval of time. The physical and related data alone, however, would be of great value

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in planning defense measures for the immediate future. Better knowledge of the physical aspects of the problem would be useful, also, in planning biological experiments on the radioactive particle problem.

I shall summarize the views expressed above as follows:

1. The test involves radiological hazards no matter where it is held.

2. The hazards are greater if held in this country.

3. By proper planning these hazards can be kept within acceptable limits.

4. There are very definite advantages in making the test in this country.

5. Therefore, I recommend that the 1 KT U^{235} weapon test be made in this country.

6. The test shall include a thorough study of the particle problem and a rehearsal of civil defense measures, both of which could not be carried out satisfactorily on the site originally suggested.

With kindest regards, I am

Yours sincerely,

GF:KR

G. Failla

cc: Dr. Shields Warren
Dr. Walter Claus

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