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Personnel Radiation Dosage

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Alvin C. Graves, J-Division Leader May 13, 1953

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PROPOSED CHANGES IN PERMISSIBLE EXPOSURE AT NPG

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I have given considerable thought to the TWX from Tyler to Fields (11 May) on this subject and I would like to present to you my own feelings as they have crystallized after considerable discussion with Tom White, Bill Kennedy, Payne Harris, and John Servis.

I cannot feel that the proposed change in permissible dosage to a full year's tolerance per operation really will provide the solution we are seeking. Furthermore, I believe that this is an example of establishing a permissible dose purely on the basis of expediency, a practice which can be justified only with considerable difficulty. As a final solution to our main problem, furthermore, this proposition may be no more than a stopgap.

At Operation Crossroads an attempt was made to keep all personnel under an exposure limit of 100 mr per day. For Operations Ranger and Buster-Jangle we established for our own purposes permissible limits of 3 r for the operations, although we did not actually consider anything under 3.9 r as an overexposure. In our experience these limits seemed to be fairly realistic and workable. It was realized at the time that certain projects or procedures of considerable value and importance to the operation might be impossible to carry out under these limits and it was our feeling that there was no objection to additional exposures in cases where the necessity could be justified. Using this philosophy, overexposures were held pretty much to a minimum.

We are now faced with a situation where a considerable number of the test personnel and also persons in the nearby communities are assumed to have received exposures significantly in excess of the established limit. I cannot feel it is proper in this situation simply to establish a new limit which is greater than the dose these people got. Is it not more realistic to admit that a mistake was made and to attempt not to repeat the same error? If we increase the limit because of this case, may we not have to increase it again to cover some other case? Furthermore, if the permissible limit is increased, we will have an amazingly difficult task of bookkeeping and regulating the exposures of individuals in their home laboratories or perhaps at tests at Eniwetok. We have already stretched existing AEC regulations for permissible exposure to use the 3.9 r figure. Are we justified in giving it another pull hoping that it won't break?

As you know, a committee which met during the winter in Albuquerque recommended a maximum figure for yield of tower shots at NPG. I believe that had that recommendation been adhered to, this particular situation which now faces us might never have arisen. I believe that policies, procedures, and regulations can be established so that the needs of the Laboratory at

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MPC can be met, for the most part, without exceeding exposures of 3.9 r. I would like to mention the following points in this connection:

1. Limitation of the yield at tower shots to the figure previously decided upon.

2. Limitation of the number of tower shots per test.

3. Limitation of the yield of air drops to a figure which would be proportional to the height of burst.

4. Careful planning of the order in which various target areas are to be utilized in order to avoid contamination of sites to be fired subsequently.

5. Possible duplication of instruments to permit detonation of either of two gadgets.

6. A strong attempt to substitute air drops for tower shots wherever possible even at the risk of delaying a particular experiment six months or more.

7. Exclusion of all but the most vital effects tests unless such tests can be incorporated in a single air drop designed for this work alone.

8. A searching review of rad-safe procedures and policies designed to reduce the exposures to monitors. This might involve an extensive development program for remote control and telemetering instruments.

9. Insistance on experienced supervision and administration of rad-safe operations.

There are two points which we must face squarely. The first is that no set of rules and regulations will ever prevent a possible misfire or some other accident of detonation. In the second place, we will never be able to depend on the accuracy of weather forecasts. I foresee no possibility that additional effort or experience will make these forecasts much more accurate than they are now. Both of these uncertainties require that we should maintain all possible prudence in establishing permissible levels.

I, personally, am opposed to an increase in the existing limit of 3.9 r per operation although I would have no qualms about approving additional exposure if it can be justified. I do not believe that the proposal to utilize a year's tolerance will result in having someone get hurt. I believe, however, that this policy would produce more problems than it would solve. I also know that there will be many people who would strongly oppose this change purely on biomedical grounds, people whose opinions are not to be

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taken lightly. At the recent Tri-Partite Conference on permissible exposures, the British and Canadians strongly opposed any relaxation whatsoever beyond 300 mr per week. While the Americans attending this Conference did not agree, the theory has considerable support in this country.

Please feel free to make whatever use of these comments you may wish. For the present, I am not distributing copies to anyone except Morris.

ORIGINAL SIGNED BY THOMAS L. SHIPMAN, M. D.

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Health Division Leader

cc: Bradbury
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