University of California
Los Alamos Scientific Laboratory
P. O. Box 1663
Los Alamos, New Mexico

410581

12 November 1954

MEMO TO: J-Division Group Leaders

FROM : Gaalen L. Felt

SUBJECT: ON-SITE RAD-SAFE AT NEVADA PROVING GROUND

SYMBOL : J-15G-57

This memorandum results from the airing at a recent Pogo meeting of views and complaints about Rad-Safe at NPG. In every test series we seem to make a little headway and learn a little more about what we might try the next time. In the last few days I have talked the thing over with Carl Lyon and we have arrived at a scheme which we believe is workable and meets at least some of the major complaints.

Before outlining the plan I would like to explain why it is necessary to have Rad-Safe at all, and why at NPG the organization is run by military people.

I think we can all agree that there is such a thing as a radiological hazard to people even though many of the details are not known. We are not certain of the precise physiological effects of each of the active elements but the general effects are at least limned. Many of us have seen or heard of skin burns and radiation sickness. A lot of work on radiation effects has been done at our own laboratory. In addition the laboratory exercises a very tight control over employees whose work exposes them to radiation. We have a whopping lot of Rad-Safe right here, operating according to a set of rules designed to protect our people. Among the rules is the familiar 0.3 r per week γ tolerance.

Those of us who are experimenters I think will all agree that it is also necessary to keep certain types of equipment and materials "clean" in order to do our work. The Health Division keeps a careful watch over the laboratory for this reason too.

It is at least as important at NPG as it is here that the same sort of steps be taken to protect people and equipment. Even if we had NPG to ourselves, as we once fondly hoped, it would be necessary to have some kind of Rad-Safe control.

In the first two operations at NPG Rad-Safe could be and was run by H-Division. The effect at the laboratory was similar to that of the Crossroads exodus and

it became clear that as the operations increased in scope H-Division could not handle Rad-Safe at NPG and also carry out its LASL duties. The main shortage was not and is not supervisory help but rather people to do monitoring, clerical work, vehicle decontamination, laundry, instrument maintenance, film badge processing, etc. We are now doing our own monitoring which helps where the help is needed most, but the tedious and dirty jobs still remain, and to do them we get military help. This is the main reason the Rad-Safe building at NPG is crawling with military people. One thing should be made clear, though, and that is that they run Rad-Safe at NPG only in the sense that they administer themselves. I will agree that in the past there was an apparent tendency for them to believe they administered everyone who came under their eyes, military or not. They are, however, working in this operation as in the past, for us. Unfortunately they do not know all of us and their principal contact is with Jack Clark. Even if they knew us all I don't believe it should seem unusual that they wouldn't always do what we individually might want them to do. H-Division hasn't done it here nor would Servis at Castle. In non-routine situations they quite reasonably wanted Graves or Ogle to back you up. In the same way the NPG people will want Clark to back you up. The idea is similar to our philosophy in doing experiments. We individually make many decisions for our groups but the critical things we talk over together at least with Aamodt and Ogle. We have found that this procedure makes a lot of sense in technical matters. It can be just as fruitful in operational matters.

The elements of the plan we will propose to the Rad-Safe people are designed to provide us as much latitude in using our own judgment and as much freedom from bureaucratic control as are compatible with adequate health safeguards and satisfactory protection of critical materials and equipment. Certain features of the plan will be distasteful, but that is because it must apply to a lot of other people besides ourselves, people who are possibly less well-equipped to take care of themselves. Certain distasteful laboratory regulations apply, astonishingly, even to J-Division, but we live with them.

The things we might propose are listed and elaborated in the following sections:

1. One briefing. Before the first entry of a party into or through a newly contaminated area, the party leader and the monitor must go to the Rad-Safe building to be briefed on conditions in the area they propose to enter and along the access route. Other members of the party or project may be present as desired.

2. Initial clearance. In most cases clearance for the first entry of a party into or through a contaminated area will be granted automatically by the Rad-Safe Officer. Such entries to areas reading less than 100 mr/hr are normally in this category. If the entry will result in the accumulation of a dose in excess of 1 roentgen, whether because of high rates or long exposure, the Rad-Safe Officer will normally not grant clearance without

Clark's authorization. Such authorization may, of course, be obtained in advance. All initial entries to areas reading higher than 1 r/hr require Clark's specific authorization. Since a situation board will be kept at Building 1 as well as at the Rad-Safe building, you can save yourself time, trouble and frustration by seeing Clark first if it seems necessary. In any case you will save your nerves by not arguing with the Rad-Safe people unless you know them and are sure they know you. The argument with Clark may be heated but at least he will know you and you will probably win. In a close race ask Ogle for help. He is on your side this time, maybe.

3. Continuing clearance. At Castle some of us had what amounted to continuing clearance to certain areas between shots. Newall and I did, for example, after each initial entry to our Aomoen buildings. We were not permitted to go back until Bill agreed to it, but once he released the boats from the Enyu anchorage we were in effect cleared to enter as we chose and took on ourselves the responsibility for controlling exposures. Technically we were not free to picnic at Bikini or anyplace else away from Aomoen. We could not, for example, go ashore on Bokobyaada without Bill's authorization. We hope to set up a similar system for NPG but it has complications there which will make it a little more restrictive.

Specifically we will propose that continuing clearance can be authorized by Clark for any or all people in a project at the request of the project officer. The clearance will be good for areas where conditions are known from ground survey readings made previously by monitors of the same project. Each individual will have his own clearance slip for use at Rad-Safe check points.

If the project officer has not himself been briefed by Rad-Safe he will be briefed when he gets continuing clearance for his people.

Continuing clearance will be authorized for any period between shots but must be renewed after each shot except HADR and possibly HA. Continuing clearance will also expire when the accumulated dose for an individual reaches 3.0 roentgens. The purpose here is to be sure that everyone -- the individual, the project officer, and Clark -- knows the 3.9 limit is close. On the other hand if there is real necessity or if the daily accumulated dose from the pertinent area is low, the individual may still be authorized continuing clearance in lieu of specific entry clearance. The matter must be negotiated with Clark, though, and not with the Rad-Safe people.

In a few cases it may be desirable to get continuing clearances for non-project people, particularly Reynolds employees. In such cases, advise Newman when you arrange for the help. He will ask Reynolds and if it's all right will so inform Clark. Generally speaking, Clark will not authorize continuing clearances for persons not on a project's roster without concurrence of the appropriate supervisor whether he is another

project officer or someone outside the Test Director's organization.

4. Film badges. We propose to simplify the film badge business for the user by setting up a system in which the clerical work need not be done at the time of issue or return of the badge. At the issue counter there will be three boxes. The first will contain unused badges. The second will contain small forms with blanks for film badge number, name, security badge number, issue date, processing date and dose. The third box will be for the partially completed forms. The user will pick up a badge and a form, write on the form the film badge number, his name, his security badge number and the date, and put the form in a third box.

Anyone who wants or needs a film badge may get one in this way and in fact may pick up badges for other people. A separate card must be filled out for each badge.

The cards will be placed in a live file when the clerks get around to it and will be kept there until the badge is turned in. Badges may be turned in at the Rad-Safe building or at the contamination check-point on the main highway. The badges will be matched with the cards in the live file and sent for processing. The processing date and dose will be recorded on the card. After the dose is recorded on an individual's accumulated dose record the card will be placed in a dead file or destroyed. In any case it will not again appear in the live file.

Conceivably the Rad-Safe people will be able to simplify the procedure even more by attaching a correctly numbered and dated file card to a film badge ahead of time. The user would then have to fill in only his name and security badge number.

Where badges are picked up for others the person who picks them up must see that the right badge gets to the right person.

Project officers will be responsible for seeing that their people who have continuing clearance turn in used film badges reasonably often. In most cases this need not be every day. New badges will always be required when any type of clearance is granted, initial entry, specific entry, or continuing. Badges must be turned in after initial and specific entries and the termination of continuing clearance.

Carrying more than one badge into a contaminated area will cause trouble all the way around unless Rad-Safe is advised ahead of time. If someone else picked up a badge for you be sure you have turned your old one in or at least don't carry both of them.

5. Decontamination. The general principle to be followed is that decontamination of vehicles, clothing and people themselves is required before each entry to a "clean" area. At present the only "clean" areas are Mercury

and the CP compound. Other parts of NPG will of course be cold but we are concerned with keeping "clean" only the camp and the compound.

To advise people when decontamination is needed Rad-Safe will operate contamination check points in places which inconvenience as few people as possible. At present vehicles are considered contaminated at 7 mr/hr γ outside and 7 mr/hr γ and β inside. This ruling is now under consideration by the AEC and may be revised upwards. Clothing is considered contaminated at 2 mr/hr γ. The measurement of these levels with moderate precision requires that check points be located in regions of quite low background.

We will propose that a vehicle leaving a contaminated area but not destined for either the CP compound or the camp may be checked or not as desired by the driver when he reaches the check-point. If he does not want his vehicle checked at that time he may have his car marked. Before the vehicle will be passed by the Security guards at either the CP gate or the Frenchman's Pass gate it must be checked and cleared by Rad-Safe. When it is checked the driver will be told whether or not the vehicles must be washed. If the vehicle is contaminated the driver may elect to have it washed or leave it outside the "clean" areas, to be washed at a more convenient time. This scheme removes the necessity for checking a vehicle each time it leaves a contaminated area.

We do not propose to mark people on the forehead in a similar way, but the same rule will apply. There never has been a sure way to keep contaminated clothing out of "clean" areas. About all we can do is to ask people to have themselves checked either at the highway check-point or the Rad-Safe building before they go to camp or the compound.

The success or failure of this system will depend on whether people will live with it. The major complaints in the past have come about because most of the traffic was not contaminated. By relaxing the rules we hope to reduce the inconvenience to most of the people. On the other hand there will be cases where contamination is heavy and should be removed promptly if only because film badge readings are unnecessarily increased. People who have good reason to believe their vehicles and clothing are contaminated should not abuse the system. Particularly, if hot cars show up in the camp motor pool or in the CP compound Clark will probably revert to the old system.

6. Protective clothing. Protective clothing may be obtained at the Rad-Safe building. Whether it is worn or not can be left up to the individual with the understanding that contaminated personal clothing is just as taboo as contaminated Rad-Safe clothing in "clean" areas. We will try to make protective clothing easier to get than it has been before.

It has always been theoretically possible for a monitor to draw clothing for a party the night before a shot and this has often been done. We will

S

propose that clothing may be drawn in the same way for all entries to contaminated areas and that anyone may draw it for any number of people the afternoon before a work party goes in. Clothing drawn from Rad-Safe is recorded on an issue slip. The man who draws it is responsible for its return unless he makes out separate slips for each member of the party. In either case Rad-Safe keeps a record. They really want the stuff back so that there will always be enough clothing for people who need it.

Rad-Safe clothing which has been monitored and found clean does not have to be turned in and may be worn again. Contaminated clothing may be turned in at a contamination check-point or at the Rad-Safe building. At check-points the monitor will make out a credit slip for the items he receives. The credit slip, with whatever clothing is not given to the monitor, will clear the issue record at the Rad-Safe building.

Clean clothing no longer needed may also be turned in at check-points.

There is no rule against having or wearing Rad-Safe clothing in "clean" areas so long as the clothing is not contaminated.

7. Meters and dosimeters. Meters and dosimeters may be drawn from the Rad-Safe building. The presumption is that meters will be drawn by or for people who know how to use them whether or not they have been certified as monitors. Most of the people who use meters undoubtedly will be monitors but it will not be necessary.

Meters are delicate and expensive. Also, there will not be enough of them for projects to keep them for the duration of the operation. Whenever they are not being used regularly they should be returned to Rad-Safe. It's a good idea, too, to turn meters in often for maintenance and calibration.

Anyone who wants to bring his own meters is welcome to do so. They must, however, be checked on the Rad-Safe calibration course before Rad-Safe will accept their readings.

Calibrated and properly zeroed dosimeters may be drawn from Rad-Safe as desired but neither Rad-Safe nor the wearer should put much trust in them. They are useful in estimating a short-time accumulation and they err on the safe side. We will propose that Rad-Safe stop the practice of recording dosimeter readings since the only thing that really matters is the film badge.

8. Night work. Rad-Safe operations just about have to shut down during the night except for laboratory work. This procedure seems inconsistent with the rigmarole of daytime operations but really is not. Very few people actually do work in the area at night and those who have to are usually fairly experienced. If it happens that they must work at night in a contaminated area they will almost certainly have continuing clearance anyway, and consequently their activities in the area will already be pretty free of Rad-Safe control.

We will propose that in these few cases Rad-Safe relax and let us take care of ourselves. The main thing that we cannot do is determine vehicle and clothing contamination and wash cars. I suggest that those of us who get into this fix regard cars, clothes and people as contaminated at the end of a night's work, that we leave the cars and clothes outside the CP compound or any place else in the area, that we provide ourselves with clean transportation by leaving an extra car or two at a suitable transfer point (extra transportation for night use is easy to get from J-3) and that we ask everyone who works in these circumstances to take a good shower when he comes in. Cars and clothing can be checked the next day.

The next time we get together we can talk about the problem again. I would like to get agreement amongst ourselves as soon as possible so that we can start to negotiate with the Rad-Safe people. Write me a memo if you feel like it.

Also, J-15 will be in the middle of this as much as any group in the Division.

Gaelen

Gaelen L. Felt
Group J-15

GLF:lee

Distribution:
A. Graves
W. Ogle
J. Clark
L. Aamodt
A. Kelly, J-1
D. Curry, J-3
R. Campbell, J-6
T. Blechar, J-7
H. Hoerlin, J-10
R. Spence, J-11
L. Brown, J-12
N. Smith, J-13
G. Felt, J-15
B. Watt, J-16
file