

Exhibit

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July 23, 1948

A. E. Dyhre, Business Manager

H. O. Whipple, M.D., H-Division

~~REDACTED~~

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SUPPLEMENTARY RADIATION ACCIDENT REPORT

REFERENCE: LAB; H

This report is to supplement the inter-office memorandum sent to your office by Dr. L. H. Hempelmann dated June 7, 1948 in regard to the four University of California employees, and , who received radiation injuries as a result of exposure to radioactive samples.

The clinical courses of these four individuals have justified our initial conclusions that the whole body exposures were small enough to discount possible fatal consequences of the injuries. However, it has become evident in the past four weeks that the injuries sustained by the hands of three of the men (are more serious than originally anticipated. In spite of the fact that the injuries were primarily the result of the beta activity of the samples, there was sufficient penetration into the dermal and vascular layers of the skin of the hands to cause fairly deep injury to these layers on some parts of the hands and fingers. It is quite possible that skin grafting to the hands may be necessary in the cases of Stanley and Lang.

The changes in the blood of all four individuals were compatible with ordinary thermal burns consisting of an increase in the total white blood count, increased sedimentation rate, and several other abnormalities. There has been no hematological evidence of whole body radiation injury.

The following is a short progress report on each of the four injured men:

This man's left hand, which was injured, now appears to be perfectly normal. There was a period of about two weeks after discharge from the hospital during which the hand was slightly tender and more sensitive to heat and cold. This has subsequently disappeared and now no abnormalities can be found. The right hand has never shown any evidence of radiation injury.

was discharged from the hospital May 28, 1948. It is advised that he receive no exposure to radiation until further notice.

~~REDACTED~~

Classification changed to by authority of the U. S. Atomic Energy Commission

For Pat McAndrew (Person authorizing change in classification)

Pat McAndrew

4/11/54 (Date)

10/7/55 (Date)

~~REDACTED~~

CONFIRMED TO BE UNCLASSIFIED BY AUTHORITY OF DOE/AC

RG 326 US ATOMIC ENERGY COMMISSION

Location LANL
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Folder Radiation Injuries -
Operation Sandstone

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July 23, 1948

A. E. Dyhre, Business Manager

~~RESTRICTED~~

H. O. Whipple, M.D., H-Division

SUPPLEMENTARY RADIATION ACCIDENT REPORT - page 2

There was a continuation of the formation of blisters on both the right and left hands with the left hand being the more severe up to about the 7th of June. In view of the drainage from the blisters and the fact that healing was beginning, the hands were surgically debrided on June 23rd and wrapped in burn dressings. New dressings were applied on the 6th of July and at this time healing was continuing. The dressings were changed again on July 20th. The right hand at that time had healed except for the index and middle fingers, which still show unhealed areas. The left hand shows two ulcerated areas which do not appear to be healing and may require skin grafting in the future.

This man's burns began to subside during the second week in June and were surgically debrided and dressed at the same time as Lang's. On July 20th the right hand showed a complete covering of new skin. The left hand was covered with a very thin and sensitive layer of skin except for several very small areas which are still unhealed.

It is probable that there will be complete epithelization of both hands but that the skin of the left hand will be permanently thin and atrophic.

The right hand of this patient has never shown any evidences of injury. The left hand began to improve about the 13th of June after blisters had formed over the palmar surface of all four fingers, the thumb and about one-third of the palm. The burns were surgically debrided and dressed at the same time as and

On July 20th the index and middle finger still showed ulcerated areas and it is felt that skin grafts may be necessary on the index finger.

ORIGINAL SIGNED BY HARRY O. WHIPPLE

Harry O. Whipple, M.D.
Health Division

cc: Dyhre
Clark ←
Medical Records
File

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EXHIBIT D

Los Alamos
1 July 1948

My first knowledge of any injury to [redacted] hand came approximately Tuesday, May 4. The discolored area of Mr. Sattizahn's hand were of a type I had not seen before, and I suggested to [redacted] that he have his hand examined by the Health Division in case he had suffered a radiation burn. [redacted] did have his hand checked and a blood count taken on the same day and another blood count taken on the following day. The doctor in charge I believe was Dr. Knowlton who did not believe that the injury was a radiation burn. So far as I know the doctors did not consider the burn a radiation burn until the arrival of [redacted] with obvious radiation burns. [redacted] entered the hospital for treatment at the request of Dr. Herpelmann on the 16th or 17th of May.

R. W. Spence
R. W. Spence

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EXHIBIT C

Los Alamos, N.M.
1 July 1964

Statement - _____

For purposes of simplification I will assume that the event which may have given rise to the hand injury occurred during the removal of filter samples from the units mounted on the drone planes which operation consisted of setting the top filter units on the ground after the hoist had lowered it from the top of the plane. The second manipulation was the removal of the filter paper from the unit and the placing of the paper in a suitable lead container. The time consumed for each operation was in the range of fifteen seconds and the total number of operations was ten.

Medium weight green cotton gloves were used at all times. Two feet long tongs were available for our use in grasping the filter paper, but the presence of a fairly strong wind made the grasping of the paper somewhat precarious. I chose not to use the tongs for this reason. Later events seemed to have proven this choice injudicious.

After returning to Los Alamos no immediate injury to the hand was noticed. Approximately one week later the index finger and the middle finger of the left hand showed a slight reddening. On May 11, twelve days after exposure, I had my hand examined by the medical group. Blood counts were taken on May 14 and 15. On May 16 along with the men from the third test I was admitted to the hospital. On May 28 the hand was sufficiently healed to warrant my release. On June 3 I returned to work.



TO WHOM IT MAY CONCERN:

On the afternoon of Zebra test I received word that the drone planes were unusually active and that one of the men who removed filters had received 17 r units of radiation. I requested a conference on the USS BAIROKO with Commander Winant's staff and Lt. Commander Vandergrift who was the Head Monitor at Eniwetok for this test.

Vandergrift informed me that the planes were unusually active and that he realize that the participants were reaching their tolerances before their work was completed. He stated that he so informed who was in charge of the group and they both decided that the blood dosimeters which they were using were leaking because this particular instrument had done so in the past. Upon developing the film badges it was found that had received a total of 17 r units. However, the other members of the party had received much less

1.5 r

3.8 r

5.6 r

Two days later we received a wire from Dr. Louis Hempelmann at Los Alamos informing us that had arrived back at Los Alamos with swollen hands, also that from Yoke test was also showing some reaction. I immediately sent for and and other members of their groups - blood counts were made on the entire group and were normal. There was no evidence of any lesions on their hands. I questioned who had participated in all three tests and he informed me that he had observed tearing off the filter papers with his gloved hands instead of using the wire clippers that were supplied for this



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[REDACTED]

purpose. He told me that he tossed him a pair of clippers and told him to use them.

I have recently returned from a trip to Los Alamos where I made a complete study of the four men mentioned above. [REDACTED] informed me that he received his injuries while clipping identification tags on the filter papers. His injuries included only his left hand. He held a paper with his left bare hand and clipped the identifying numbers with a clipping device which he held in his right hand. His right hand showed no injury. This demonstrates to me that the injury was due to beta radiation and could have been avoided by using the instruments supplied.

These men have received excellent medical care and are making very satisfactory recovery. It is anticipated at this time that recovery will be complete in all four cases. It is recommended that they be examined at least every six months for a period of years, and that they should not be allowed to use their hands in contact with radiation in the future.

James P. Cooney
JAMES P. COONEY
Colonel, MC

[REDACTED]

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17 AUG 1948

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INTERROGATION OF LTCDR VANDERGRIFT

BY COMMANDER WINANT

Removal of Filter Samples from Drones - Test Zebra

It was necessary for the man accomplishing the mission to run in, release the filter quickly and get out. The blue 10 r dosimeter was checked after each entry and as the operation progressed, it gradually built up to a total of 8 r in the case of . This reading would have given cause for alarm except for the fact that this particular dosimeter (intermediate range) has a consistent history of reading high by a factor of about three. We do not rate this blue pencil dosimeter type very highly, but for this particular operation it was the only instrument available because the ion chamber cannot be read "on the run." On this occasion the dosimeter read low.

Film badge exposures were as follows:

- 1.5 r
- 17. r
- 3.8 r
- 5.6 r

Methods used

Drones landed, long checked tail and ok'd hook on. Drones towed to parking revetment. Vandergrift checked nose for top filter box removal. Mason kept running record of dosimeter readings, logging and recharging 200 mr dosimeters as necessary. Drones were found to be exceptionally hot.

Interrogation of LtCdr Vandergrift by Cdr Winant (Cont'd)

LAJ 2 personnel were kept constantly informed as to the general intensities of radiation and of their dosimeter reading. Island survey was commenced at Z minus 1 day and continued through Z plus 3 day. Slight fall out noted on Z day as shown on enclosed curves. Top filter boxes removed with lift on truck. tripped 4, tripped 4. Top filter boxes taken from lift (two men required for each). removed six, re-
 moved six and removed six. (This was accomplished by shifting relative positions during this phase). each pulled 4 of the filter holders from the top filter boxes. Without removing lower filter boxes from drones, and pulled filter paper holders from all lower filter boxes. (This was a departure from the method used at Yoke and is considered to have been more efficient).

Now, with all filter paper holders pulled clear of drones and filter boxes, removed all papers, took readings and placed papers in lead containers. assisted in this during the removal of six filter papers from lower boxes. Gloves and 18" tongs were provided for this operation though a stapling machine was used to mark each paper. An accurate intensity reading of each paper was not taken by the RadSafe personnel, but a quick reading was made and the handling personnel advised of the intensities involved. At this point, during the collection of filter papers, it was realized that all personnel were near tolerance, but no relief personnel were available. To stop this operation would have resulted in a serious delay. The operation was continued to completion

Interrogation of LtCdr Vandergrift by Cdr Winant (Cont'd)

and the two sets of papers, in their lead containers, were loaded on two C-54's and, accompanied by _____ took off for the U.S. Film badges of _____ were sent immediately to the BAIROKO by helicopter.

The entire operation went smoothly and except for the faulty handling technique, is believed to have been efficient. It is obvious now that more remote handling of filters should have been used. The success of the technique on the previous tests gave a false value of the technique for Z day.

Explanation

Because of the difficult conditions and extreme urgency of the work, no written record was developed during this operation. The foregoing contains the essential facts presented to me verbally by Lt. Cdr. Vandergrift at the earliest possible time after the operation.



FRANK I. WINANT, JR.
Commander, U.S. Navy