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INTER OFFICE MEMORANDUM

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SANDSTONE
REF: D.3

TO: MEMO FOR RECORD
FROM: Frank W. McMullan *FWM*
DATE: March 30, 1982
SUBJECT: INTERVIEW WITH JOHN BALAGNA, LASL

403015

At 1430 hours this date, I talked with J. Balagna about the beta radiation burn incident which occurred during filter paper removal operations from drone B-17s after ZEBRA shot. The information herein is to be used in conjunction with more detailed records and interviews taken at the time of the incident which are available at LASL and which have been synopsized by the undersigned and is attached.

The team stayed on-board ship for several days before ZEBRA, but were given very nice quarters on Enewetak Island the night before the shot. They were waiting at the runway when the drones returned. They were concerned that there might be problems during operations because [redacted] complained of itching hands and changed his gloves couple of times. The lead pigs which the filter paper was placed in were flat shallow boxes with removable lids. Each held several papers. There were at least two pigs used per shot. After the operation was finished, two of them who were billeted together returned to the bungalow and showered thoroughly because they knew they were contaminated. Only two C-54s returned to Kirtland AFB with samples, no soil sample from the tank operation was sent. They changed planes in Oahu accompanying the samples all the way.

He was hospitalized at LASL through late August 1948. He then began a skin graft program for his hands with Dr. James Barrett Brown which lasted 4 to 5 years. This required continued trip to St. Louis.

FWM:bc1

Attachment

Radiation Burns - SANDSTONE

Reference: Folder C2D91, TR338, 19 Radiation Injuries, Operation SANDSTONE, LANL RECORDS CENTER.

Teams to pull filter paper from B-17 drones were as follows:

X-RAY

YOKE

ZEBRA

ZEBRA. was slightly burned. were burned on

accompanied samples' from YOKE back to LASL. On 4 May he went to LASL Health Division complaining of burns on his hands. His injury was misdiagnosed as bruises. After ZEBRA (and serious burns to the other 3 people) his hands were re-diagnosed as receiving radiation burns. All 4 were hospitalized on 16 May. was released 28 May as his burns were minor.

According to documentation prepared at the time, the gamma readings from their film badges for ZEBRA showed the following:

- 17 r	- 2 r
5.5 r	- 2.1 r
- 4.2 r	- 1.7 r*

(*YOKE shot.)

Calculations were done at LASL to estimate the beta dose received by those on ZEBRA shot. They indicated that for a 90 minute exposure period the dose to the hands was roughly 500 R beta, penetrating 2-3 mm.

Procedures to remove the filters were as follows:

1. The filter paper was located in two filter boxes, one on top of the B-17 drone and one on the bottom. Inside each box was one filter paper holder (wire mesh) containing two pieces of filter paper.

2. The filter boxes were designed so that quick - release pins could be removed and the boxes would be free from the aircraft. These pins were pulled remotely for the top box but were pulled by hand for the bottom box (which promptly fell to the ground). The top box was removed from the A/C by a forklift with a long fork extension. The forklift was operated from the bed of a truck which drove up to the nose of the A/C (this provided the right height).
3. The top box was then moved about 50 feet from the A/C by the forklift/truck. Two people then had to physically lift the box off the forklift tines on to the ground. The forklift then proceeded to the next drone.
4. A team of 2 people then pulled the filter holders from the filter boxes. (Evidently the bottom filter box was not moved away from the A/C.)
5. On ZEBRA shot the bottom filter boxes were never removed from the aircraft. The filter holders were pulled from the bottom boxes on all eight drones while they were still mounted to the belly of the B-17 drones. This change was instituted to reduce exposure time near the drones and the filter boxes.
6. The filter paper holders were moved to an area away from the drones and filter boxes (several feet). The holders were opened and the two papers per holder removed. Each filter paper had to be identified by aircraft number. This was done by stapling a numbered tag to the paper.
7. The papers were then placed in lead pigs which were located in the back of a jeep. The pigs were flat shallow lead boxes which held several filter papers. A lead lid was then placed over the top of each box.
8. From all available evidence there was only TG 7.6 monitor for the entire operation.
9. Four foot long tongs were available to handle the filter paper; however, they were rarely used. They were unweildy and difficult to handle. The wind always blew pretty hard at Enewetak making use of the tongs next to impossible. The paper just couldn't be controlled in the wind with tongs. (However, they were supposed to use the tongs.)
10. Therefore, the men usually held the paper by hand. They all wore gloves. Some had rubber gloves under the cotton gloves and some did not.

During paper removal on ZEBRA, Lang complained of itching hands and changed his gloves at least once.

Gloves were regular cotton issue and were brought from the ship by members of the team on their own volition.

on ZEBRA, team members stayed on a ship until the night before the shot. They stayed in very comfortable quarters on Enewetak Island the last night so they could be ready when the drones landed. remembers returning to the quarters after pulling filters and taking a thorough shower because he knew he was "hot". did the same. Presumably the entire crew did this.

Most, if not all, the team accompanied the samples back to LASL. and knew they had trouble even before they arrived at LASL. Their hands were red, swollen and itching. All 3 were hospitalized on arrival (,). was called back to the hospital the same day, the 16th of May.

statement (taken in May 1948) indicates that everyone had a dosimetry badge, a 200 mr dosimeter and a 10 r dosimeter. No one had much faith in the dosimeters. His 10 r dosimeter went off scale during sample pulling operations.

statement indicates that his 10 r dosimeter went off scale on YOKE shot.

statement indicates that his 10 r dosimeter read 8.5 r. Also he stated that the background gamma reading at one point where they were working near the drones was 500 mr/hr.

statement indicates that his 10 r dosimeter read 7 r.

Records indicate that were hospitalized through late August 1948.

In December 1948, all three were sent to Dr. James Barrett Brown in St. Louis, a plastic surgeon, for skin grafts on their hands. The entire process took 4-5 years and numerous trips to St. Louis.

had grafts done up through 1958 and through 1955.