STANDARD FORM NO. 64

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Office Memorandum • UNITED STATES GOVERNMENT

TO: Mr. Charles T. Cooper, AEC Resident Engr. DATE: 11 May 1950

FROM: Jack Aeby and Tom White

404407

SUBJECT: Gamma Radiation Survey of Eniwetok Atoll

In accordance with the recommendation contained in the report on a recent survey (Reference "Gamma Ray Activity on Shot Islands", to Curtis from Cooney and Aeby, dtd. 22 March 1950), subject survey was conducted to confirm the removal of all radiation hazards in the Eniwetok atoll after completion of recent grading operations.

In addition to the Shot Islands and neighboring islands on which significant radiation intensities had previously been observed, the survey was extended to cover certain other islands, unsurveyed or infrequently surveyed in the past, where there was a possibility of work being done, in order to confirm the absence of radiation risk on these islands also.

Immediately prior to the survey, the two instruments to be used, Mod. 263A, Ser. No. 1094 and Mod. MX-6, No. 805, were checked using a Radio-Cobalt gamma ray source which had previously been calibrated by means of a radium gamma ray source certified by the National Bureau of Standards. The MX-6 was found to read accurately within 10%; the Mod. 263A read high by 50 to 100%. Most of the values reported below are uncorrected, and therefore conservative, readings obtained with the more sensitive instrument, the Mod. 263A. The MX-6 was used to confirm the conservatism of the Mod. 263A in those few cases where intensities were observed that were not far below the maximum permissible radiation intensity. The maximum permissible radiation intensity for continuous whole-body radiation exposure during the 54-hour week currently worked by Holmes & Narver employees is 5.5 mr/hr.

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No detectable radiation (i.e. intensity was certainly less than 0.2 mr/hr.) was found on the following islands:

5 May 1950: Bogallua, Bogombogo, Ruchi, unnamed island just east of Ruchi and Elugelab.

6 May 1950: Muzinbaarikka, Kirinian, Bokonaarappu, Atisu, Rujoru,

8 May 1950: Biijiri, Rojoa, Aaraanbiru, Piiraai.

10 May 1950: Anyaanii

11 May 1950: Japtan

Very weak activity, ranging up to about 0.2 mr/hr., was found as follows: 6 May 1950: Teiteiripucchi, Bogairikk, Bogen.

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TO : Mr. C. T. Cooper DATE: 11 May 1950

FROM : Jack Aeby and Tom White

SUBJECT: Gamma Radiation Survey of Eniwetok Atoll (Cont'd)

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Engebi - 5 May 1950. Average over zero point area was less than 0.5 mr/hr. Maximum, about 1000 ft. from zero, was about 1.0 mr/hr.

Eberiru - 6 May 1950. On the end of the island nearest to Aomon, there was an active region showing an average reading of about 2 mr/hr; the maximum, around the periphery of a small depression that had recently been filled with a bull-dozer, was 5 mr/hr.

Aomon - 8 May 1950. Average over zero point area was 0.2 - 0.3 mr/hr., maximum 0.5 mr/hr. Several excavation holes, 4 ft. or more in depth (filled with water below this level) near the zero point were monitored. In most places the intensity dropped to practically zero at a depth of 3 ft. On one side of one hole which was very close to the zero point, a maximum intensity of 1 mr/hr. was found at a depth about 1 ft. below the present surface, which appeared to be the level of the surface before grading.

Runit - 8 May 1950. Average over zero point area was 0.2 - 0.3 mr/hr., maximum 0.5 mr/hr. No detectable activity was found to the south of the graded area.

Active Scrap Metal In a few places, particularly on a coral reef which is exposed at low tide on the northern end of Runit, there were found radioactive pieces of metal. The activity of the metal, as measured at contact with the probe of the Mod. 263A, was in the great majority of cases less than 0.5 mr/hr., and much less a few inches away. A few pieces (less than 6) were found to give readings of 20 mr/hr., or somewhat higher. All of these more active pieces were thrown into the ocean. All of the active metal pieces that were found were badly corroded, twisted pieces with rough edges, that would not invite salvage. There is no possibility that such objects would be collected by anyone and kept in prolonged close contact with his body.

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Jeanne Johnson 11-2-55
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Conclusions:

It is concluded that there is no possibility of over exposure to gamma radiation on any of the islands of Eniwetok Atoll where work is now being done or where work may have to be done, and that this condition will hold true up to the time of the next atomic bomb tests at Eniwetok.

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TO : Mr. C. T. Cooper DATE: 11 May 1950

FROM : Jack Aeby and Tom White

SUBJECT: Gamma Radiation Survey of Eniwetok Atoll (Cont'd)

Conclusions: (Cont'd)

It follows that further radiologic safety work for the protection of workers from over-exposure is unnecessary during this intervening period.

With regard to the protection of responsible parties from law suits on account of fancied radiation injury, the following may be said. Neither the use of film badges nor any other method can provide absolute proof that an over-exposure could not have occurred. A man can always claim that he had forgotten to wear his film badge when his presumed over-exposure occurred. The evidence that has already been accumulated provides a strong practical defense against a claim of over-exposure. The collection of additional data would add little to the strength of the defense, and could in no way provide an absolute proof. It is believed that the slight advantage of gathering additional data is far outweighed by the psychological disadvantage associated with the issue of film badges, as mentioned in the preceding report by Cooney and Aeby.

It has, therefore, been decided to terminate the use of film badges and to terminate the full time position of Eniwetok Radiologic Safety Representative of the Los Alamos Scientific Laboratory.

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JACK AEBY

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