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HEADQUARTERS
TASK GROUP 7.1
JOINT TASK FORCE SEVEN

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9-16535

13 March 1953

TO: J-3, TG 7.1, JTF 7
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FROM: Commander, TU-7
TG 7.1, JTF-7
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Classification changed to ~~RESTRICTED~~
by authority of the U. S. Atomic Energy Commission,
Per *W W Herod* *6/7/54*
(Person authorizing change in classification) (Date)
By *J. L. ...* *5/15/54*
(Signature of person making the change, and date)

SUBJECT: RADIATION LEVELS, ENIWETOK ATOLL

1. Recent radiological surveys and decontamination studies at Eniwetok Atoll have provided the following information as to the radiation levels still existent in the upper islands.

RG 36 US ATOMIC ENERGY COMMISSION	Island	Over-all Reading	Date	BY AUTHORITY OF DOE/DOE <i>W. L. Wilson</i> REVIEWED BY <i>J. R. Schmidt</i> DATE <i>10/16/55</i>
Location: <u><i>LANL CS D-158</i></u> Collection: <u><i>Records Center</i></u> TU-7: <u><i>7.6 TU-7</i></u> <u><i>Rad safe (service)</i></u>	Alice	10 - 100 mr/hr	2/9/53	
	Belle	80 - 90 mr/hr	2/9/53	
	Clara	10 - 90 mr/hr	2/9/53	
	Daisy	10 - 200 mr/hr	2/7/53	
	Edna	100 - 1000 mr/hr	2/7/53	
	Gene	100 - 1000 mr/hr	2/9/53	
	Irene	8 - 80 mr/hr	2/6/53	

All readings are surface readings taken at knee height.

2. Some activity still remains on islands as far south as Tilda.

3. The surface of Gene consists of a finely powdered coral which is almost colloidal in nature and presents a greasy consistency like clay when wet. The areas where this material is deepest is in "sink holes". These sink holes were found to have the highest radiation levels; some of them approaching 1000 mr/hr. These sink holes were not present prior to the shot but apparently developed from fissures opened as a result of the blast.

4. Gross decontamination tests indicated that when 6" of surface material on Irene was removed by bulldozer, readings in the neighborhood of 90 - 140 mr/hr were reduced to around 12 mr/hr. When the surface was

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disked to about 6" in depth, readings of 100 - 120 mr/hr were reduced to only 80 - 100 mr/hr. When 3" of surface material was removed by bulldozer and disked approximately 6", readings ranging from 95 - 125 mr/hr were reduced to around 30 mr/hr.

These facts point out the leaching action of the tropical rains. Radioactive particulate matter is washed into the soil. This radioactive matter, especially the rare earth oxides, tend to agglomerate with the soil particles in the lower levels so that radioactivity will be found to a depth of several feet. This means that decontamination measures will cause the level of radiation to approach background radiation asymptotically. For instance, it would appear to be more costly to reduce the level from 4 mr/hr to 2 mr/hr than it would be to reduce it from 30 mr/hr to 4 mr/hr.

4. Two alternatives for work on Ursula seem feasible. The first possibility would be to allow men to work a short period of time under the extended test operations tolerance of 3.9 roentgens per quarter. This would mean that men would have to work the balance of the quarter in areas where they get no exposure to ionizing radiation once they have exceeded the above limit. Since a general background of 4 mr/hr seems to be the best that can be achieved at Ursula, even after rather complete decontamination, a considerable portion of the allowed exposure would be used up simply living in camp.

The second alternative is to complete decontamination to a general 4 mr/hr level and allow the remaining radioactive contaminant to decay through a period of two half lives, which would be approximately four months. This means that the general radiation background in the camp, as of the middle of June, would be approximately 1 mr/hr, allowing a considerable large portion of the workers' allowed exposure to be used in required work on the more highly contaminated sites instead of being used while sleeping in camp. This second alternative was adopted as most feasible.

5. This letter is prepared as a matter of record of the visit of Mr. Leo Chelius, H-Division, to Eniwetok Atoll in connection with decontamination recommendations for the Ursula and Gene camp sites.

6. Portions of this letter would be of interest to the Technical Operations Branch, J-3, JTF-7.

John D. Servis
John D. Servis
Commander, TU-7

Enc. Procedure for decon. of Ursula

- cc: 1 - J-3 ←
- 1 - J-Div.
- 1 - J-Seq.
- 1 - J-6
- 1 - TU-7

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PROCEDURE FOR DECONTAMINATION OF URSULA

1. Remove a strip of dirt 6" deep and 18" wide wherever indicated. Areas reading 25 mr/hr and above should be completed first. Care should be taken to assure removal of material right up to the concrete. The entire side of the concrete slab should be carefully swept of all loose material.
2. Flood the above ditches with sea water for at least four hours. If possible, there should be sufficient flow to keep ditches full during this entire period. As before, buildings above 25 mr/hr should be done first.
3. After the ditches have been thoroughly flushed with water, they should be backfilled with uncontaminated fill material. Investigation has shown no material on Ursula satisfactory for this purpose.
4. Remove windrows as soon as equipment and labor are available.
5. Finish clearing all areas on the island, which have not previously been bladed. It is recommended that at least 2 inches of the top soil be removed if possible.

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