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CLEANUP GUIDES AND TIME SCHEDULES FOR ENIWETOK ATOLL REHABILITATION

We have been asked to outline a proposed format of how the cleanup guides for Eniwetok may look and to consider what is feasible as to the time at which the various actions on rehabilitation may occur. This will require some speculation, but is, I think, a worthwhile exercise.

The Bikini experience is having a considerable impact on the radiological survey and dose assessment efforts for Eniwetok. I think it likely that the guidance regarding Bikini cleanup (things to be done to minimize exposure) will also have a major impact on Eniwetok guides, with possibly one major exception. This exception is the need to provide guidance for plutonium cleanup, a problem for which there was no precedent at Bikini.

Using the Bikini experience, the following generalized recommendations can be expected to come from the group that reviews the survey results and dose assessments and makes the final judgements related to whether, from a health standpoint, Eniwetok can be reinhabited (this group has not been clearly identified):

Land Use

1. Identification of islands for which permanent residence is allowed.
2. Identification of islands that may be visited but not suitable for permanent occupancy.
3. Islands that are off limits with specifics for assuring people do not use these areas, if this is required.

Dietary Precautions/Limitations

1. Recommendations regarding precautions to be taken in food production.
2. Identification of islands for which coconut replanting, and replanting of other food crops, may be conducted.

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3. Any needed restrictions on locations for fishing and food gathering.
4. Specific recommendations directed at minimizing intake and uptake of radionuclide in foods.

Housing and Facilities Construction

1. Limitations on use of local materials, such as sand and coral aggregate.
2. Any needed remedial measures around housing on islands for which permanent occupancy is approved.

Removal of Contaminated Debris and Other Hazards

1. General recommendations on remedial measures including removal and disposal of radioactive debris (including soil) and non-radioactive debris.
2. Specific recommendations on actions that may be needed against hot spots, such as those on Runit and Enjebi.
3. Specific recommendations on actions against certain non-radiological hazards and undesirable features in the atoll, such as towers, concrete objects, and derelict materials.

Followup Requirements

1. Recommendations regarding studies of health status of returning natives.
2. Recommendations regarding periodic radiological survey of Eniwetok.
3. Provision for removing restrictions at some future time, should this be feasible.

It is important to recognize that the above recommendations will be developed considering the health risks associated with the total exposure of the returning natives, and with the benefit that comes from determining by what pathway or mechanism the major contributions to this exposure are delivered. The objective will be to keep exposures as low as is feasible. The guidance will be based upon consideration of both short term exposures (within the first few years after return) and longer term exposures (for 30 to 70 years). Exposures to infants will be determined

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as well as for adults. The dose assessment group will use input material from Jack Tobin as to where the returning natives will want to place their homes and how they will live in the atoll. Information on their habits and dietary practices will be fed into the dose predictions. The key judgement on whether Eniwetok can be rehabilitated at this time will revolve around whether the total exposures developed from the dose assessment efforts are acceptable. While we cannot unilaterally say what is acceptable, there is reason to believe that exposures to individuals that exceed the Federal Radiation Council Radiation Protection Guides would not be acceptable.

Once recommendations have been made by the group that performs the function equivalent to the Bikini Ad Hoc Committee, specific cleanup guides for use in field operations can be specified. This is the task for which OS is to provide leadership. Specific guides will be developed for use in the field to perform cleanup operations. These guides and requirements will likely address the following items:

Disposal of Scrap Metal, Concrete, and Other Materials

1. Surface gamma and beta-gamma guides.
2. Surface alpha guide.
3. Types of instruments to be used.
4. Preparation, packaging, transporting materials.
5. Disposal methods and sites for disposal.
6. Any acceptable alternatives to the above.

Cleanup of Soils and Hot Spots

1. Guide for remedial measures against large areas of contaminated soil (external radiation criterion for gamma emitters and soil concentration criterion for plutonium contamination).
2. Guides for remedial measures against hot spots of limited area (external radiation criterion for gamma emitters and soil concentration criterion for plutonium contamination).

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Contaminated Facilities

1. Guides for gamma and beta-gamma levels at the surface of man-made structures, such as bunkers.
2. Guides for gamma levels in interior of bunkers or other existing structures.

Exposure of Cleanup Personnel

1. Guides for internal and external exposure of workers in the cleanup project.
2. Recommended precautions for work in plutonium contaminated areas.
3. Requirement for rad-safe support.

Monitoring and Reporting

1. Requirement for Rad-Safe plan for cleanup operations.
2. Requirement for periodic reports of field effort.
3. Requirement for final report on cleanup operations.
4. Requirement for certification that cleanup has been completed.

A review of the timing for the Bikini actions will show how long it has taken for various steps to be accomplished, and will show about how long it will take to do the same kinds of things for Eniwetok.

Schedule of Events

1. April-May 1967 - Radiological survey of Bikini Atoll.
2. April, 1968 - Date of report "Radiological Report on Bikini Atoll" by Phillip Gustufson.
3. April 8, 1968 - Letter, Totter (DBER) to Distribution, with request for participation as consultants to formulate judgements and make a recommendation with regard to feasibility for resettlement of Bikini Atoll. First meeting May 13-15, 1968. Distribution to Shields Warren, John Bugher, Robert Conard, John Storer, Paul Tompkins, John Harley, Charles Dunham. This was the Ad Hoc Committee.

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4. August 12, 1968 - Press release L-191 stating Bikinians to be returned to their home atoll and including Ad Hoc Committee recommendations.
5. Feb. 3, 1969 - Letter Seaborg to Hickel saying AEC will cooperate in Bikini rehabilitation and assist in funding cleanup.
6. April 2, 1969 - Memo, McCraw to Distribution, requesting comments on draft guidance on "Disposal of Scrap Material at Bikini Atoll."
7. May 13, 1969 - Memo, Biles (OS) to Cluff (NV), with guidance for the Bikini cleanup operation.
8. Sept. 16, 1969 - Letter, Smith (HEW) to Cluff (NV), stating radiological cleanup of Bilini Atoll complete.
9. Sept. 22, 1969 - Letter, Miller (NV) to DeSaussure (DASA), certifying satisfactory completion of scrap removal.
10. Oct. 13, 1969 - TWX, Giller (AEC) to Mustin (DASA), giving AEC certification that radiological cleanup is complete. Note: JTF-8 cleanup group arrived at Bikini Atoll in Feb. 1969.

Summary

1. From the time of completion of the field work to survey Bikini Atoll, May 1967, until Gustafson's dose estimates were available, April 1968, there was about 12 months. During this time, the laboratory analysis of samples was performed, results were provided to Gustafson, and he made the dose estimates.
2. Concurrent with the availability of Gustafson's estimates, Totter established the Ad Hoc Committee (April 8, 1968) and they met the next month, May 13-15, 1968).
3. From the time of the first meeting of the Ad Hoc Committee, May 13-15, 1968, until their report was made and the results announced, Aug. 12, 1968, there was three months.
4. From the time of the press release, Aug. 12, 1968, until agreements were completed on funding and agency responsibilities, Feb. 3, 1969 (approximately), six months passed.

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5. JTF-8 began mid-February 1969 to build the camp on Eneu Island, rehabilitate the runway, and make preparation for cleanup to begin. At about this same time, the draft cleanup guidance was circulated for comment, April 2, 1969, and was provided in final form about one month later, May 13, 1969.
6. Statements were made on completion of cleanup operations on Sept. 16, 1969, seven months after JTF-8 went into the atoll, and certification was given by AEC of completion of cleanup Sept. 22, 1969, and Oct. 13, 1969. The Task Force began rollback from the atoll in Oct. 1969.

Forecast Schedule for Eniwetok

As stated before, these are speculative, but based on some experience with Bikini:

1. Completion of field survey - Feb., 1973.
2. Completion of laboratory analysis of samples and dose assessments - July, 1973.
3. Availability of equivalent of Ad Hoc Committee recommendations - Oct. - Dec., 1973.
4. Availability of cleanup guides - Jan. - April, 1974.

The above are the earliest times these events could occur and represents more work done in a shorter time compared to Bikini. Eniwetok is a bigger problem. The schedule is based on one assumption and one requirement. The assumption is that from the time of completion of the field survey it will take just as long to get judgements and recommendations for Eniwetok as for Bikini. It could take much longer. The requirement is that guidance on cleanup must be developed after judgements and recommendations are made on whether rehabilitation is feasible.

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