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DISCUSSION OF REHABILITATION ON ENIWETOK ATOLL

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Since the President approved Eniwetok Atoll as a central Pacific test site in 1947, there were a total of 43 nuclear test shots; 35 of which were announced. The first tests were in April '48, followed by tests in 1951, 1952, 1954, 1956 and 1958. From 1958 to 1969 the Eniwetok Atoll was used as an impact and scoring area for ICBM's launched from Vandenberg AFB. In 1966 and 1969 two beryllium fuel rocket engine tests were conducted. Currently the Defense Nuclear Agency is preparing a series of high explosive cratering experiments. This program, known as PACE, is part of a series of experiments designed to provide blast and shock environmental data, for assessing and upgrading the hardness of strategic systems.

Diplomatic and administrative actions by the Department of Interior and Trust Territory have resulted in a joint announcement - April 18, 1972, that Eniwetok Atoll will be returned to the administrative control of the Trust Territory at the end of 1973, to commence rehabilitation. Also, there has been correspondence between the Department of Interior and Department of Defense on return of the atoll to the Trust Territory. Ultimately it appears that the atoll is to be returned to its native inhabitants. These diplomatic and administrative actions appear to be predicated on the assumption that like Bikini Atoll, cleanup of Eniwetok could be accomplished. The action raises significant policy and practical administrative and budgetary questions which will undoubtedly impact on the AEC.

Recent radiological surveys, and studies of the records of test operations have shown that the radiological situation at Eniwetok is much more complex than existed at Bikini. There were more tests conducted at Eniwetok than Bikini (43 compared to 23) resulting in more contaminated debris, there are contaminated waste burial sites at Eniwetok, and there were safety tests at Eniwetok producing areas of high plutonium contamination. Particularly for these last two conditions, there were no parallel problems at Bikini. The only problem unique to Bikini, and this is yet to be treated, is the presence of eleven ships sitting on the lagoon bottom some of which may show measurable levels of fission product and induced activity and for which there is interest in salvage.

There is a policy question whether the Bikini cleanup pattern should or could be followed. There will be questions concerning whether it will be acceptable in light of the public attitude toward environmental matters today to allow a rehabilitation of the island if restriction on movement and items of food are required.

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There is considerable political activity in the Micronesian Congress concerning the status of the Pacific islands. This has resulted in unrest, and statements in the Micronesian Congress accusing the U. S. of deliberately exposing the natives on Rongelap in 1954 to radioactive fallout in order to have human radiation exposure subjects for study. Despite the extensive followup medical program AEC has through BNL, the charges are being made that the natives are not being given proper medical treatment but merely being observed for radiation effects. The unrest created by these charges resulted recently in the interruption of the followup medical program of the natives. Questions are being raised about the appropriateness of AEC rather than DHEW - USPHS conducting such a program. Assuming that there would be no acceptance of these political charges by the natives, there is still the question of what restrictions will be required of the inhabitants living on the atoll, and the more practical problems of assuring that the consequences of not following the restriction are understood, and whether there is any assurance that the restriction will be observed. There is the question of whether followup programs, such as radiological survey, medical program, etc., should be continued. Finally, there will be the question of who performs these.

By letter of December 7, 1966, the Secretary of the Interior asked the Commission to advise him whether Bikini Atoll and its lagoon are now safe for continued habitation and whether the Bikinians could have hazard-free use of the resources of the atoll and its adjacent water areas. As an outgrowth of this request, an Ad Hoc committee of eight scientists having medical and radiobiology backgrounds was appointed by the Division of Biology and Medicine to review available data. Additional information was obtained for their consideration in a radiological survey conducted April-May 1967. These consultants reached the unanimous conclusion that it would be radiologically safe to allow the Bikini people to return home. The consultants also made recommendations for actions to be taken to reduce exposures that guided the cleanup and agricultural rehabilitation programs. Key items were removal of contaminated scrap, precautions regarding use of local foods and food production, and periodic surveys to check the radiation status of the people and the environment. President Johnson announced the decision to return the Bikinians to their atoll on August 12, 1968.

As to the role of AEC in the Bikini resettlement program, by letter of February 3, 1969, the Secretary of the Interior was informed that the AEC would cooperate with the Departments of Interior and Defense in the cleanup of Bikini Atoll and would provide \$300,000 in fiscal year 1969 for this purpose. Also, AEC would be responsible for the radiological health and safety aspects of the program. Accordingly, AEC is now conducting and committed to periodic

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followup radiological surveys and routine medical surveillance at Bikini Atoll.

The role of DOD was to direct and conduct the cleanup effort and also to provide funds (\$300,000) for a portion of the costs. Vice-Admiral L. M. Mustin, Director of the Defense Atomic Support Agency (DASA) was named project manager. Most of the men and equipment were provided by DASA's Joint Task Force 8. Cleanup began in February 1969 and was completed in October of that year. AEC provided monitoring and health physics support for the cleanup project and criteria and advice on disposal of contaminated debris. Scrap metal containing induced radioactivity, mostly cobalt-60, was dropped into deep water in one of three disposal sites in the lagoon and ocean.

The role of Department of the Interior was to plan, conduct, and fund the agricultural rehabilitation and housing construction programs. Planting of coconut trees has been finished and 40 housing units are nearing completion. The first Bikini families will be returned when housing is available. Interior budgeted \$1.7 million for the rehabilitation program.

Problems with plutonium contamination at Eniwetok Atoll are shown by the following:

Radiological surveys in 1971, conducted by AEC at the request of Defense Nuclear Agency and in support of PACE, identified plutonium contamination on Runit Island where PACE tests are scheduled. This was further confirmed by a later AEC survey conducted in May 1972. A piece of bomb material weighing about 700 mg and containing 40 mg of plutonium was collected and analyzed. Studies of the records of test operations showed that this piece of material resulted from detonation of one of two safety related shots that scattered kilogram amounts of plutonium over the island and adjacent shore, ocean and lagoon areas. The exact area and extent of contamination over this island have not been fully determined and work to define levels of contamination in nearby shoreline and shallow water areas has not yet started. Subsequent earth and debris moving activities have spread and mixed the contaminated soil through much of the island.

Assuming that cleanup of the island is feasible at all, it is impossible to estimate the exact magnitude of the job until more extensive radiological surveys have been conducted. Some surveys are planned for the fall in anticipation of cleanup and rehabilitation of the atoll.

There are no funds budgeted in FY '73 for any cleanup activities or for the radiological survey at Eniwetok. The Nevada Operations Office has estimated that a complete survey of Eniwetok would cost \$225 thousand.

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A portion of the cleanup operation for Eniwetok will be similar to that for Bikini and Bikini experience will be an applicable precedent as will be the Ad Hoc committee recommendations for reducing exposures. Other aspects of cleanup such as removal of plutonium contaminated soil and waste and disposal of a considerable quantity of contaminated metal scrap will require additional consideration and expert advice. The cost and difficulty of disposing of plutonium contamination will be a critical function of this advice. Recent guidance for Federal agencies concerning ocean disposal of hazardous materials places restrictions on such actions. Again the cost and difficulty of disposing of this debris will depend on whether ocean disposal is approved.

Cleanup of the atoll may be an order of magnitude more expensive than the Bikini cleanup, assuming that the Bikini pattern were followed and that an acceptable and economically feasible method for disposal of Pu contaminated soil, Pu contaminated waste materials from burial sites, and scrap metal containing induced radioactivity can be found. However, given the current concern for tolerating as little radiation as possible in the environment, it is questionable whether the same approach and assumption would be acceptable. Certainly there will be public scrutiny of the program and there is a high probability that AEC will be subjected to considerable unfavorable publicity.

AEC staff met with Ambassador Franklin Haydn Williams, Office of Micronesian Status Negotiations, Department of the Interior, prior to the visit to the islands in May 1972 for the survey of Bikini and Eniwetok. It was agreed at that time that we would review with Ambassador Williams the results of our survey. A meeting is planned at an early date and at that time we plan to inform Ambassador Williams of what would be involved in cleanup of Eniwetok, the possible large funding level required and the absence of any AEC funds in our budget projections for such an effort. We would also advise Ambassador Williams that AEC's part in activities for cleanup of Eniwetok would be in providing radiological surveys and health physics support during the field operations and similar activities in followup surveillance following return of Eniwetok to the Trust Territory.

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