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submission represents PNL's recommended plan for part 3 of the congressional charge.

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Reviewed by OJ Kruskew Date 5/11/97

REPOSITORY P.N.N.L.

COLLECTION Marshall Islands

BOX No. 5687

FOLDER Trip to Majuro & Kili

MARSHALL ISLANDS RADIATION EDUCATION AND INFORMATION PLAN

Summary

The basic plan is to provide special training in the U.S. and teaching aids for a small group of selected Marshallese who will then provide teaching and information on radiation and radiation effects to the Marshall Island population, as deemed appropriate by the Marshall Island government. The Marshallese government will designate a coordinator to be the official contact for the U.S. in developing and providing assistance during the program.

DOE proposes a three-part educational plan to help the Marshall Islanders better understand the significance of radiation and radioactive materials.

- First, the Marshallese government shall select government officials, educators, and public leaders who will receive a specially designed, four weeks of training and education on radiation and its effects on people. This training will be provided at PNL, BNL, and LLL in the United States.
- Second, a layman language book explaining radiation effects will be prepared in both English and Marshallese (possibly other languages) for distribution to the Marshall Island population as designated by their government. The book will use simple language and will be well illustrated.
- Third, a grade school classroom text (about 5th-6th grade) explaining radiation and radiation effects on people will be prepared for use in special educational programs. The details and content of each of these programs is presented below.

Group Meetings

Selected Marshallese individuals (Marshallese government will select government officials, educators, and public leaders) will be brought to the U.S. for a four-week training course on radiation effects. This course will be presented at three DOE laboratories providing two weeks of initial training at PNL followed by

one week each at BNL and LLL. Each of these training periods will begin with an illustrated discussion of the topic for the day followed by tours and simple laboratory experiments where the Marshallese can observe firsthand radiation control procedures and radiation research and participate in some radiation measurements. A notebook will be prepared for each Marshall Island visitor. The notebook will contain:

a) schedule and outline of each day's activities

b) summary paragraphs of what was seen and visited, supplemented with pictures and illustrations

c) a basic question with answers section on each day's topics

d) pages for the visitors' notes.

The two week course at PNL will present:

- Use of counting equipment on an experimental basis to measure background radiation
- Demonstration of shielding properties of various materials for various types of radiation
- Effects of distance and time on total radiation received.
- Discussion of and visit to radiation instrument calibration facilities where radiation measuring instruments are calibrated
- Discussion of and visit to a whole body counter and participation (voluntary) in the whole body counter program
- Discussion of the use of personnel dosimeters
- Visit to personnel dosimeter processing facilites
- Demonstrations and participation in contamination control procedures.
- Visits to biological experimental facilities where radiation effects experiments with animals such as dogs, rats, and fish, and uptake experiments with various plants will be viewed

- Visit radiation monitoring group observing air sample counting and evaluation and radiation monitoring practices.

The third week, which will be at Brookhaven National Laboratory will provide:

- Review of biological experiments
- Briefing and visits to medical x-ray facilities
- General laboratory tours and visits.

The final week at LLL will concentrate on environmental monitoring and evaluation of radioactive materials in soil, air, and water. The LLL laboratories performing this work in the Marshall Islands will be visited. The visit will provide:

- Laboratory experiments at monitoring soil, vegetation and water radiation levels
- General laboratory tours and visits
- Summary of the various programs discussed and visited during the U.S. tour.

All of these programs will be designed for individuals with no prior radiation or radiation effects knowledge and without previous college level training in chemistry, physics, or math. A basic understanding of English will be required. The intent is to present an understandable and firsthand experience in applied radiation protection, research work and measurement techniques for evaluating radiation levels and radiation effects. The visits will be designed to support understanding of radiation and radiation effects material contained in the second phase of the educational plan--the illustrated, informational book on radiation and radiation effects.

Informational Book

The book will be in factual, simple language and will be well illustrated, approximately 50 pages describing radiation and its effects. It will discuss, in a straightforward, simple language, both English and Marshallese, the basic kinds

effects as they are currently understood and will comment on the diversity of opinions currently being expressed in the U.S. About 10,000 copies of this book will be printed. It will have full color illustrations and water-resistant paper will be used for good durability.

Those Marshallese who participated in the United States educational visit will hold public meetings for small groups on the various Marshall Islands and will present a summary of radiation and radiation effects knowledge they have learned. They will use the book as a guide for presenting this material. A series of some 20 to 30 charts suitable to use as teaching aids will be provided. These charts will be in color and use both English and Marshallese to help improve their value as illustrative and informational aids. Each teacher or discussion group leader will be supplied with a set of these charts. It is estimated that 50 to 100 sets will be prepared. Based on their training and their U.S. experience, they will attempt to answer questions. Questions that cannot be answered will be forwarded to PNL where a detailed response will be prepared and returned for subsequent presentation.

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this book will have an opportunity to have participated in the U.S. visit or to learn from those who did visit the U.S. This book will, of course, be written in both English and Marshallese and perhaps other Marshall Island languages. It might be used as a reader instruction book also. The scope of the book will be straightforward so that teachers can read, learn, and then teach directly from the book.

Schedule

The three parts of this program can begin immediately upon authorization to proceed. A suggested schedule is shown below. To meet this schedule, authorization to proceed will be needed by 2/1/81.

1) Marshallese government designate coordinator---------- 2/1/81

2) Initiate work all phases of program---------- 3/1/81

3) Visit to U.S.---------- 5/1/81 - 6/1/81

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presentation of radiation and radiation effects information. The viewing of a movie may have high educational potential in that it could attract and hold attention.

2) Television Movie Format - A television cassette movie presentation could, of course, also be developed and presented. This presentation might have more attention-attracting potential than conventional movie presentations and could cover the same material. The durability and overall maintenance for the equipment necessary for this type of program in the Marshall Islands climate would need to be evaluated.

3) A Series of News Articles - A series of rather short but carefully developed and programmed news articles could be provided for those newspaper publications available in the islands. This would appear to be a technique for presenting small amounts of information at a time over a relatively long time period to build up a good knowledge of radiation and radiation effects. The disadvantages are the limited distribution of the newspapers and the unknown attention such a series of articles would command among the population.

4) Handout Bulletins - A series of 4-8 page handout bulletins could be prepared along the same lines as would be used for the newspaper articles. By printing the bulletin independent of any other publication, they could be made available at various public gathering places and a large distribution could be attained. Delivering the bulletins to the widely dispersed distribution points would require good coordination and planning. If the bulletins are well illustrated and carefully prepared, they could provide an important mechanism for information transfer and could be repeated occasionally to provide reinforcement of critical radiation and radiation effects knowledge. Perhaps some 10 separate bulletins could be developed to cover the same material as intended for the informational book. The distribution of one bulletin every 2 to 3 weeks could set a good pace for learning among the population. Discussion group meetings could be considered for each distribution or at some other interval. Some frequency of discussion groups would probably be necessary for this program to be effective.