BROOKHAVEN NATIONAL LABORATORY

401812

MEMORANDUM

DATE: 2/11/80

TO: Dr. V. Bond M.D. Ph.D.

FROM: H. Pratt M.D.

SUBJECT: Meeting of 2/7/80 regarding the Marshall Island Study.

During the afternoon of 2/8/80, I spoke with Bruce Wachholz. At that time he indicated that the two current time windows for the ship were:

1. 3/15 - 4/30
2. 6/2 - 6/23

I explained that each research survey would take 6-7 weeks, with a team of 12 professionals (a 30% increase in time due to the reduction in team size from 18+ to 12. As we expected, he was unaware of the need to perform two full Rongelap-Utirik surveys in the remainder of calendar 1980 to examine first, the adult population and then to perform a full pediatric survey.

I gave him the earliest dates we could mount a full adult survey as 14 May to 1 July. I then requested 8 October to 22 November for the pediatric survey. We discussed the question of the need for the March survey. I told him I felt it was necessary from a political and P.R. standpoint and for humanitarian medical reason but not to gather research data. I suggested the Kwajelein group plus a leader (? Dr. Conard) and strongly recommended a DOE representative go along. He seemed to agree.

The final discussion covered the development of the Enewetok Survey. I asked Bruce specifically "what does DOE headquarters expect from this survey?" He replied "Baseline information regarding the current health status of the people". I then commented that the term"baseline" implies a follow-up - he agreed. I then asked if the baseline information should be designed to detect the earliest evidence of radiation-induced pathology. He indicated that information would be valuable. I then pointed out that the development of the data base

research protocol to bring it up to the current state-of-the-art would take about two and a half months to develop. He seemed to accept this as a realistic estimate.

He then asked how soon we would be able to mount the survey after that. I pointed out that the time for the BNL staff was almost fully committed for the rest of this year and suggested that some contract group might be utilized. In addition, I asked for all of the demographic and logistic data we would need to begin to plan such a survey. He stated he would contact P.A.S.O and get the information back to me as soon as possible. All in all, I think Bruce is beginning to understand how this program works, and the operational constraints that make it extremely unwise to respond to the DOE fire-bell. The S & E.P. whole-body counting fiasco at Kili-Jaluit should be a prime example. The Marshallese are still very angry about that ill-conceived and rushed effort.

THE CURRENT STATUS AND FUTURE PLANS FOR THE BROOKHAVEN NATIONAL LABORATORY MARSHALL ISLANDS STUDY (MIS)

Position Paper, 28 January 1980.

It has been my personal impression, over the last two years, while working with the MIS, that a large communications gap exists between the administrative links of the MIS and the policy base at the Department of Energy.

My perceptions of this lack of communication and resultant misunderstanding have rapidly increased over the last year, after assuming the role of Principal Investigator. I have attempted to close this gap repeatedly by a series of "Position Papers", expansion plans, contingency plans, memoranda, phone calls and personal conferences with limited success.

The areas of misunderstanding range from the fundamental philosophy of the program to many of the smallest details. The primary goal of this study is to develop, refine and maintain, a prospective epidemiologic study of the acute and longterm effects (both external and internal) of ionizing radiation on those Marshallese living on Rongelap, Ailinginae and Utirik atolls on 1 March 1954. However, to maintain the cooperation and credibility of the exposed and a comparison population, a number of secondary tasks, relating primarily to an increasing commitment to comprehensive health care, have emerged over the last few years. In addition, Dr. Conard, for understandable reasons, has made a number of exceptions to the rules for patient inclusion in the study. The major exception was the examination of all of the people living on Bikini atoll in March and April of 1978, utilizing the research Physical Examination Protocol.

These "modifications" of the WPAS (189's) statement of goals have apparently generated some confusion in the perceptions of the basic philosophy

of the program are held by the current high level DOE administrators. The most recent and concrete manifestations of this confusion are:

1. The DOE (Headquarters, EV) coordinator was unaware that in the summer of 1978, a "memorandum of agreement" between the Department of Interior officials and the Marshall Island officials (the Bikini Council) had assured future medical care for the Bikinians, after evacuation from their home atoll. The Department of Energy (presumably the BNL/MI medical group) were apparently tasked with that responsibility. I found a copy of that agreement in the Department of Energy/PASO office in the summer of 1979 (a year later). Since the early summer of 1978, I have repeatedly requested both orally and in writing, clarification of "medical responsibilities" of the BNL group in respect to the people of Bikini. I was advised to "play it by ear". This inability to resolve a rapidly escalating problem led to a serious decrement in the research effort, i.e., funds and time were diverted to the care of Bikinians along our examination route. The people of the study group perceived that "their care" was incrementally reduced by the assumption of the responsibility for the Bikini people and they expressed their concerns about the dilutions of our efforts. In summary the DOE/DOI inability, extending over more than a year, to give us clear programmatic guidance made me skeptical of their ability to make important management decisions.

2. The second manifestation of the impact of high level indecision is probably best represented by the procurement, certification, and continued use of an unsuitable ship for the program. I clearly pointed out the unsuitability of this ship more than a year ago, yet the problem remains unresolved and is now controlling the program, with potentially very serious consequences for the program in the coming months. This is fully documented, yet this week I received an inquiry about expanding the program to include

"physical examinations" for the people of Enewetok. Obviously the DOE doesn't perceive how critical the present situation is, or they wouldn't be considering expanding the program. We have provided, in detail, over the last year, what additional resources and staff support would be needed to provide the types of expansion they are projecting. In essence we have already answered their questions and obviously they have either overlooked or ignored those documents. In summary, they have again demonstrated their lack of knowledge of the information we have furnished them to be used as management planning documents. This pattern of management is best categorized as "crisis management" in the management literature. This philosophy of management, on demand or by expediency, is almost certain to fail in light of the complex political, cultural and scientific variables controlling this program. These are only two of many examples of lack of/or poor management techniques. In light of these seemingly unresolvable management problems, I wonder if the Department of Energy is the best available management base?

The answer should be considered in light of the recent National Institutes of Health management study of the Human Effects of Ionizing Radiation Programs and in light of current congressional interests in the assignment of departmental responsibilities for those programs. A number of influential congressmen (please see enclosure 1) feel that such programs should be run by a division of NIH. I agree. The logical home would be either the Center for Disease Control (CDC) or the National Cancer Institute (NCI) with assistance from the Public Health Service. The CDC is currently operating a direct satellite link (please see enclosure 2) with Micronesia to deal with medical education and clinical problems. This facility would dovetail beautifully with the Marshall Islands Study. For over a year we have been actively seeking information on existing telecommunication links to be utilized in the Outer Islands.

A second reason for considering the transfer of the program from the DOE to NIH would be to evaluate the mechanisms of such a transfer. I feel that other BNL programs are facing some of the same types of problems with the scientific management at DOE. This transfer might serve as a "trial balloon" for a dispersion of the management base for scientific programs. It is obvious that some definitive steps should be taken soon by Brookhaven National Laboratory to insure the viability of this program.

On 25 January 1980 Dr. Borg asked me informally, "Should the Marshall Islands Study continue?" I interpreted his question as presenting a matrix of options:

1. Should the study be revised/maintained with the same/different management base?
2. Should the study continue at BNL, or elsewhere, or be discontinued?

I feel the study must be continued because:

1. It is an absolute political necessity. The US government has a moral and a fiscal mandate to continue to follow and care for the people of the Marshall Islands exposed to "above ambient" levels of ionizing radiation from weapons testing in the Marshall Islands. Both the United Nations and independent international interests are focussed on this population and are watching how we proceed with the followup.
2. This is a unique irradiated population with both internal and external contamination with 26 years of continuity of sound data.
3. With refinement, the study could become a sound scientific program.
4. Bill Scott has 22 years of invaluable experience with this program. His continued input into the program is essential for continued success.

With the foregoing as background, what is the current status of the program? As of 28 January 1980, we have no ship. I have been unable to obtain any reasonable estimate of when a ship will become available. When I am given a date by DOE headquarters, it will take from 3-6 months to mount a survey from Majuro. In addition, we have a large and defined amount of work (data acquisition and clinical care) to provide to the study group, this calendar year. That work will be condensed into 6 months or less and will require some degree of modification, but the basic elements must be maintained. During the period while we are awaiting notification of ship availability, we will continue to prepare the 26-year report, develop a system for extensive chart review and revision, attempt to recruit a new principal investigator and resident physician, complete and distribute a newsletter to update our associates and collaborators. We hope to circulate this letter, quarterly, to inform and to seek comments and suggestions from many people interested in the program. The mailing list currently contains about 120 names.

The final question to be addressed in this update is Dr. Wachholz' inquiry regarding "a few physical examinations on Enewetok". The previous comments regarding the potential impact of adding this group to the present study addressed only management policy. If the decision is made to support such an expansion, I would offer the following suggestions:

1. We must have accurate information on the projected population to be studied, i.e., demographic data (in detail), existing examination facilities on Enewetok (need scale plans/drawings) to compute the flow characteristics. This information will determine the team composition, e.g., male/female professional staffing and the examination schedule (number of patients seen/day).

In addition we must know what other logistic support is available (housing, etc.).

2. Concurrently, we must have, in writing, the DOE headquarters policy regarding a) what kind of a program is this? Is it a "one-shot" or is this the initial examination of a longitudinal study of a population which might be analagous to the Bikini population? b) If this is the beginning of an epidemiologic study, a detailed state-of-the-art protocol must be developed outlining exactly what is to be done, how often the population will be examined, and a clear definition of the nonresearch political responsibilities interacting with the Marshall Islands health care delivery system. c) The development of this protocol will require time (I question how much). I doubt that it can be assimilated into our already overcrowded (delayed) schedule. We will be playing "catch up ball" for the rest of this calendar year. It would be very difficult to cover the added responsibilities in 1980. d) As an alternative, the DOE headquarters might contact some contract group (multiphasic screening group/HMO) to do the initial clinical physical evaluation; concurrently we could be developing a long-range plan to be integrated into the program at some time in the future. These same planning constraints should also apply to whole-body counting and ecologic monitoring.

...eived radiation doses 40 to 500 times ...ther than that which triggered the evacuation near Three Mile Island.

At our hearing in Salt Lake City, Ms. ...abeth Catalan who had grown up in ...George, Utah, and whose father had died of leukemia, expressed quite poignantly the feelings of many of those who lived in the affected areas:

I don't feel bitter * * * but I feel used. I feel like we did what we were asked to do by the Government, and the community went all out. And in return, we were used, we were conned. They knew. They knew, and they did not tell us. And I feel that had they told us * * * people would have cooperated, but I feel that we had a right to know.

Mr. President, no legislation can completely rectify the wrongs that have been committed against this group of American citizens. However, the legislation I am introducing today attempts to do all that can be done 20 years after the fact and tries to guarantee that it can never happen again.

First of all, it would establish a just scheme of compensation for those individuals who resided in the affected areas during the period of testing and who died from, have or have had a radiation-related cancer; for those individuals who worked in uranium mines during the period of time when the Atomic Energy Commission was the sole purchaser of uranium and who have died from, have or have had lung cancer or other uranium-related disease; and for those ranchers whose sheep died as a result of exposure to the radiation. If an individual meets these requirements, there would be an irrebutable presumption that the damages alleged were caused by exposure to radiation or uranium. The court would then determine the amount of damages to which the individual is entitled.

Mr. President, I believe it is important to point out the precedent for this legislation. On March 1, 1954, the inhabitants of the Marshall Islands were exposed to radiation fallout from a U.S. thermonuclear detonation at Bikini Atoll. In 1964, Public Law 88-485 was enacted to compensate these people. Subsequently, the inhabitants began to suffer from thyroid cancer and other diseases, and in 1977 Congress enacted Public Law 95-134, which provided additional compensation for the people of the Islands. I believe that we should show that same sense of responsibility and compassion for our own citizens.

I am also concerned about the health implications for the nearly 200,000 uniformed service personnel and the 195,000 employees of the Department of Defense and the Atomic Energy Commission who participated in our atmospheric testing program.

The Department of Defense reports that of those uniformed Service personnel who were issued film badges or carried dosimeters—and we must remember that many times these devices were provided only to a unit rather than to each individual—58 percent received some recorded dose of radiation. Literally hundreds of veterans and their survivors have filed claims with the Veterans' Administration for disability benefits based on their exposure to radiation during these tests.

Mr. President, under the leadership of Senator CRANSTON, the chairman of the Committee on Veterans' Affairs, and also my very able colleague on the Subcommittee on Health and Scientific Research, the Veterans' Affairs Committee held hearings on June 20 which focused on the problems that veterans and their survivors experience in pressing their claims for VA disability benefits based on exposure to radiation during atomic tests. Senator CRANSTON said then—and I concur—that there can be no doubt that the Federal Government today has a compelling moral responsibility to do everything possible to facilitate the presentation of VA disability and death claims related to nuclear weapons testing.

Mr. President, until very recently, the VA has clearly not done enough in the way of systematic efforts to assist veterans and their survivors in the claims process. Nevertheless, some progress has been made toward improvement in the handling of radiation claims by the VA.

First, the VA and DOD have formalized and improved procedures for investigation of Service personnel participation in atomic tests. All nuclear test-related claims which have been previously denied will be re-reviewed and where records are incomplete DOD will reconstruct an estimate of the highest likely exposure. In addition, a reconstructed exposure estimate will be made as promptly as possible, at the VA's request, for each future or pending claim based on alleged atomic test-related radiation exposure. Also, the VA has issued instructions to all of its facilities establishing guidelines for helping veterans develop radiation-related claims. These instructions detail procedures for obtaining relevant information about a veteran's participation in a test and provide for use of credible estimates of radiation exposure in adjudicating a veteran's claim, even if those estimates are higher than actual badge readings.

Second, the VA and the Department of Health, Education, and Welfare have agreed to develop and publish generally accepted medical principles concerning radiation-related illnesses.

Third, DOD has taken steps to notify all test participants whose single-or cumulative exposure records indicate they received in excess of 5-rem—the Federal standard for annual exposure to radiation set forth in the Federal radiation protection guidelines—and urges such individuals to contact DOD for a medical examination at DOD expense. Similar notification and medical follow-up will be employed with respect to any DOD civilian employees and Atomic Energy Commission employees who were test participants and received radiation doses in excess of 5-rem.

Fourth, DOD agreed to make publicly available any document or section of a document that relates to personnel participation or radiation exposure and will declassify all or part of any such document as long as national security is not jeopardized.

Fifth, DOE has agreed to improve the ...ta...der file system where dosimetry readings are recorded for individuals involved during the nuclear testing program.

Finally, Mr. President, on August 3, the Senate passed an amendment (section 501 of H.R. 3222), that would direct that the "NIOSH exemption" in section 6103 (m) (3) of the Internal Revenue Code be used to locate and contact individuals who may have been exposed to radiation or other hazardous substances, such as the chemical dioxin in Agent Orange, as a result of their service in the U.S. Armed Forces in order to facilitate crucial followup studies relating to the long-term health effects of such exposure.

Mr. President, a great deal remains to be done to insure that claims of veteran nuclear test participants are treated equitably by the VA. Lengthy delays in the claims review process must still be eliminated, VA benefits counselors must receive better training to use the procedures necessary to help veterans and their survivors develop their claims as thoroughly as possible, and followup research studies must be completed. In addition, the VA must make sure that its commitment is actually fulfilled to process on a priority basis, radiation-related claims that involve very serious illnesses.

Also, when the legislation that I am introducing today is being considered by the Labor and Human Resources Committee, I believe a thorough examination of the procedures for radiation-related claims under the Federal Employees Compensation Act is warranted to insure that any claims from the 195,000 civilian employees who participated in the testing program are being handled expeditiously and that these individuals have been and will be treated equitably.

The second major provision of the Radiation Exposure Compensation Act of 1979 would authorize the Secretary of HHS to conduct or support a 5-year study of the adverse health effects resulting from the atomic weapons test program conducted at the Nevada test site since 1951. Unfortunately, the circumstances of the last 25 years have created for scientists a clinical laboratory in that part of the country proximate to the test site. As the debate about nuclear energy continues, it is important that we learn as much as we can about the effects on humans of exposure to radiation. Much good work has already been begun, principally at the University of Utah, and the research that would be supported by this legislation ($2 million for the next 5 years) would enhance what has already been started. It is important to remember, Mr. President, that for many years we have supported efforts by the Japanese Government to study the long-term health effects to the populations of Nagasaki and Hiroshima since the bombings at the end of World War II. We currently spend approximately $7 million a year on that endeavor.

The legislation would also transfer to the Department of HHS all functions of the Department of Energy relating to [illegible] of HHS the coordinator of all

7-3 for permanent promotion to the grade of chief warrant officer, W-3 (list beginning with Daniel W. Adcock), 1,643 midshipmen for permanent promotion to that grade (list beginning with Charles Stevenson Abbott) and 21 nominations for promotion to the grade of commander and below (list beginning with Thomas W. Conle); in the Marine Corps, M. Sgt. Timothy W. Foley is appointed to the grade of first lieutenant and in the Marine Corps Reserve there are 130 appointments to the grade of lieutenant colonel (list beginning with Paul J. Albano); and, in the Reserve of the Air Force there are 548 officers for promotion to the grade of lieutenant colonel (list beginning with Victor E. Abraham, Jr.) and in the Air National Guard there are 55 officers for promotion in the Reserve of the Air Force to the grade of lieutenant colonel (list beginning with Maj. Wiley R. Ashley, Jr.); Since these names have already appeared in the CONGRESSIONAL RECORD and to save the expense of printing again, I ask unanimous consent that they be ordered to lie on the Secretary's desk for the information of any Senator.

The PRESIDING OFFICER. Without objection, it is so ordered.

(The nominations ordered to lie on the Secretary's desk were printed in the RECORD of September 21 and September 26, 1979, at the end of the Senate proceedings.)

INTRODUCTION OF BILLS AND JOINT RESOLUTIONS

The following bills and joint resolutions were introduced, read the first and second time by unanimous consent, and referred as indicated:

By Mr. THURMOND:

S. 1864. A bill for the relief of Odalis Beatriz Cardona; to the Committee on the Judiciary.

By Mr. KENNEDY (for himself, Mr. HATCH, Mr. CANNON, Mr. RANDOLPH, Mr. RIEGLE, Mr. METZENBAUM, Mr. SCHWEIKER, Mr. JAVITS, Mr. GARN, Mr. MATHIAS, and Mr. DECONCINI):

S. 1865. A bill to amend title 28 of the United States Code to make the United States liable for damages to certain individuals, to certain uranium miners, and to certain sheep herds, due to certain nuclear tests at the Nevada Test Site or employment in a uranium mine, and for other purposes; to the Committee on the Judiciary and the Committee on Labor and Human Resources, jointly, by unanimous consent.

By Mr. CHAFEE (for himself and Mr. MAYAKAWA):

S. 1866. A bill to amend the Indochina Migration and Refugee Assistance Act of 1975, as amended, and for other purposes; to the Committee on Foreign Relations.

By Mr. DURENBERGER:

S. 1867. A bill to amend the Internal Revenue Code of 1954 to provide that the amount of the charitable deduction allowable for expenses incurred in the operation of a motor [illegible] will be determined in the same manner as Government employee determines reimbursement for use of their vehicles on Government business; to the Committee on Finance.

By Mr. EAGLETON:

S. 1868. A bill to amend the District of Columbia Self-Government and Governmental Reorganization Act with respect to the membership of the Board of Education; to the Committee on Governmental Affairs.

By Mr. LEAHY (for himself, Mr. WEICKER, Mr. LUGAR, and Mr. RANDOLPH):

S. 1869. A bill to provide for the installation of telecommunications devices for the deaf in agencies of Federal, State, and local governments, in offices of Members of Congress, and in other locations, to amend the Internal Revenue Code of 1954 to provide tax incentives for the purchase of telecommunication devices by the deaf, and for other purposes; to the Committee on Governmental Affairs and the Committee on Finance, jointly, by unanimous consent.

By Mr. WILLIAMS:

S. 1870. A bill to expand access to institutions of higher education by extension of the Federal guaranteed student loan program to students purchasing degrees on less than a half-time basis, increase loan availability and reduce loan defaults; to the Committee on Labor and Human Resources.

By Mr. COCHRAN (for himself, Mr. STAFFORD, Mr. STEVENS, Mr. ARMSTRONG, Mr. GOLDWATER, Mr. DOLE, Mr. HAYDEN, Mr. MATHIAS, Mr. HATCH, Mr. FORD, Mr. STENNIS, Mr. TAYLOR, and Mr. SASSER):

S.J. Res. 109. A joint resolution to authorize the President to proclaim November 16, 1979, as "American Enterprise Day"; to the Committee on the Judiciary.

STATEMENTS ON INTRODUCED BILLS AND JOINT RESOLUTIONS

By Mr. KENNEDY (for himself, Mr. HATCH, Mr. CANNON, Mr. RANDOLPH, Mr. RIEGLE, Mr. METZENBAUM, Mr. SCHWEIKER, Mr. JAVITS, Mr. GARN, Mr. MATHIAS, and Mr. DECONCINI):

S. 1865. A bill to amend title 28 of the United States Code to make the United States liable for damages to certain individuals, to certain uranium miners, and to certain sheep herds, due to certain nuclear tests at the Nevada test site or employment in a uranium mine, and for other purposes; to the Committee on the Judiciary and the Committee on Labor and Human Resources, jointly, by unanimous consent.

RADIATION EXPOSURE COMPENSATION ACT OF 1979

Mr. KENNEDY. Mr. President, I am pleased to join with Senators HATCH, CANNON, RANDOLPH, RIEGLE, METZENBAUM, SCHWEIKER, JAVITS, GARN, MATHIAS, and DECONCINI in introducing the Radiation Exposure Compensation Act of 1979. The major purpose of this legislation is for the Federal Government to accept responsibility for decisions that in hind sight, have resulted in irreparable harm to American citizens.

During that period of time, because of the compelling needs of national security, the U.S. Government conducted an extensive series of atmospheric nuclear tests at a test site in southeastern Nevada. This testing program, considered an integral part of our national security, enjoyed the wide support of the American people.

At hearings held in Washington, Utah, and Nevada over the past several months, more has become known about the atmospheric testing program, its health effects, and the nature of Government deliberations at that time than had been made public in the previous 20 years. And I am sorry to say much of what we have learned is [illegible]

We have learned that the U.S. Government deliberately and consistently minimized the health effects of fallout from the atmospheric tests. We have learned that the American people were not informed of the evidence that was gathered about the uncertainty of the health effects.

We have learned that the Atomic Energy Commission withheld evidence linking radiation from the fallout to higher incidences of leukemia and thyroid cancer and deaths of sheep herds. We have learned of open hostility within the Atomic Energy Commission to medical staff raising health issues. We have learned that Americans were sent down into uranium mines to mine the ore to keep the testing program going despite the fact that it was known that the conditions of the mines were unhealthy and the precautions that could have been taken to minimize the health risks were not taken. And, we have learned that in the face of all these known factors and uncertainties, an all-out public relations campaign was mounted by the Atomic Energy Commission to assure those affected that there was no danger.

Mr. President, we are now just beginning to fully understand the results of the Government's failure to fully protect the health of the citizens who lived near the test site and who mined the uranium. In February of this year, Dr. Joseph Lyon of the University of Utah published in the New England Journal of Medicine his study of childhood leukemias associated with fallout from nuclear testing. He concluded that a significant excess of leukemia deaths occurred in children up to 14 years of age living in Utah between 1959 and 1967. This excess was concentrated in the cohort of children born between 1951 and 1958, and was most pronounced in those residing in counties receiving high fallout.

Dr. Hiroshi Kraga, a scientific analyst for the Atomic Energy Commission from 1960 to 1963, testified that in the downwind areas during the years of heavy testing, the dose of radiation to the thyroid of infants and young children who drank fresh milk could have been in the range of hundreds of rads. On the basis of his investigation, he found "a direct relation between the increase in thyroid cancers and fallout." Dr. Donald Fredericksen, Director of the National Institutes of Health, when asked to explain the reasons for the increase in sheep deaths in areas near the test site, said that it would be "probably impossible to conclude that radiation was not at least a contributory cause to the death of the sheep." An analysis of 3,500 underground uranium miners by the Public Health Service showed that working in these mines significantly increased the incidence of lung cancer.

Mr. President, in order to give you an idea of the magnitude of the injustice, let me cite a comparison to the recent crisis at Three Mile Island. During that incident the Governor of Pennsylvania, after consultation with health and nuclear experts, advised evacuation of pregnant women and children [illegible] within a 5 mile radius of the reactor where the radiation doses were 2 to 25 [illegible]. And yet, to our downwind citizens in Utah, Nevada, and Arizona who [illegible]

THE NEW YORK TIMES, TUESDAY, DECEMBER 11, 1979

U.S. Doctors Use a Satellite Link For Consulting With Micronesia

ATLANTA, Dec. 10 (AP) — One of the most popular programs in that sprawling area of the Pacific called Micronesia is the brainchild of two doctors at the National Center for Disease Control here in Atlanta.

It is a monthly satellite telephone conference set up as a kind of giant party line with the cooperation of the island government, the disease center and the National Aeronautics and Space Administration.

The symposium links the medical resources of Micronesia, which consists of more than 2,200 islands between the Philippines and Honolulu and is now called the Trust Territory. The islands, which were occupied by Japan until the end of World War II, are administered by the United States at the request of the United Nations.

On the first Tuesday of each month at 8 P.M. Eastern standard time, the telephone rings in the home of Dr. Michael Miller and Dr. Lee Moore. For them and a hundred other physicians and laboratory technicians in the Trust Territory, school is in. In the Pacific, because of the international date line, it is noon the next day.

6 Receiving Stations In Pacific

The center says the conferences do not cost the participants anything, because NASA makes the time available on its own satellite network, which includes six receiving stations in the Pacific islands. Dr. Miller and Dr. Moore contribute their time.

About three years ago, the center was getting about 300 reports of amoebic dysentery a month from Micronesia.

"Actually, they were not confirmed by laboratory tests, so we didn't know what it was," Dr. Moore said. "We decided that the doctors out there either didn't know what it was or what else it might be."

Dr. Moore went to Ponape, the capital of the territory, and established a training program. It was found that of those 300 cases a month, only about 30 turned out to be amoebic dysentery. The other dysentery cases were caused by a variety of things, but they were not as serious.

Dr. Moore and Dr. Miller began to realize the real problems of proper diagnosis of disease, and thus proper treatment, in far-flung corners of the world without proper laboratory techniques.

The Pacific island symposiums are an extension of a vast training program available at the disease center designed to keep an estimated 150,000 laboratory technicians in this country informed of the latest research developments.

In the United States, there are 11 networks, many of them designed to reach rural hospitals that have no other training programs.

One hundred and one separate lectures on laboratory procedures are available.

Jean Miller, who is not related to Dr. Miller, keeps track of the lectures and mail material. She said that for the three months that ended last Sept. 30, the center gave 266 presentations to 343 different places and reached more than 33,000 people.

UPDATED BROOKHAVEN NATIONAL LABORATORY

MARSHALL ISLAND MEDICAL SURVEY

POSITION PAPER

NOVEMBER 1979

In December, 1978, I developed a position paper discussing s[illegible] the most pressing problems facing the DOE/BNL Medical Survey. In that [illegible] I attempted to present a spectrum of solutions, ranging from purely a rese[illegible] commitment to total medical care for the Marshallese affected by atomic weapons testing in their islands. Since that time, a number of new problems have arisen and should be addressed in the context of the original systems analysis format. These new problems will not basically change the options presented in the flow sheets but will modify some of the constraints, and require a reassessment and/or restatement of the priority of some of the objectives.

Historically, this program has had rather a narrow focus, looking for radiation-related pathology, particularly in the thyroid, e.g., thyroid adenomas, carcinomas, and biologic hypothyroidism, and in the hematopoietic system, e.g., blood dyscrasias in the study group. Over the last year a number of new problems have emerged that will probably require a sizeable increase in the scope of the program. They are: 1) New data (previously secret) has revealed that Likiep Atoll received detectable fallout after the 1 March 1954 detonation. Mr. Anton DeBrum, Secretary of State of the new Marshall Islands government, designed and circulated a medical questionnaire to the residents of Likiep. The results of that questionnaire were delivered to the U.S. Covernment and the U.N. with a demand that "something" be done to evaluate the situation on Likiep. We are currently working with an independent epidemiologic consulting group to verify Mr. DeBrum's findings. If, in fact, Likiep shows a significant increase in birth defects or selected cancers, then the DOE feels a full medical survey of the islands in the Likiep Atoll should be undertaken.

An ancillary problem that must be considered is the geographical location of Likiep. If Likiep shows an increased incidence of possibly radiation-related pathology, then a number of atolls lying between Likiep and the

Rongelap-Utirik axis will need to be studied. This would include Ailuk Atoll and Mejit Island. In addition, Wotje should probably also be screened in an attempt to find a base line perimeter with ambient Micronesian radiation background. I understand data exists relating to radiologic surveys made throughout the weapons-testing period for many of the Marshall Islands.

A second, independent but related problem has arisen from recent studies in low-level radiation. The program, up until January 1, 1979, was oriented primarily toward the study of acute radiation effects caused by exposure to external and internal radionuclides in the study population. The comparison population, defined in 1957, consisted of Rongelapese who were not acutely exposed but returned to Rongelap in 1957 with the exposed group. Since Utirik had only received about 14 rads of external gamma, the people were returned to the island four months after contamination and no Utirik control population was selected. Over the ensuing years, the development of thyroid pathology has been impressive.

On Rongelap, four cases of cancer of the thyroid have been detected in the exposed group. Quite unexpectedly, three cancers have been confirmed at Utirik in the exposed group, and there are two additional cancers in people who have spent much of their time on Utirik since 1 March 1954. In addition, one of the Rongelap controls (Edmund), who developed cancer, has been living on Rongelap since 1958.

We know that both Rongelap and Utirik were reinhabited at a time when the background radiation was slightly above ambient for the "unexposed" areas in Micronesia. The problem we now face is that many of the "comparison" group were exposed to this environment and, therefore, constitute a subpopulation of "low level-exposure".

In light of some (John Nicoloff - President, American Thyroid Association) current opinion that a thyroid tissue dose as low as six rads may be carcinogenic,

the delineation of the cumulative dose to the exposed and comparison groups becomes important. We know that the only remaining nuclide of iodine on both islands was I^{129} with a half-life of 1.6×10^7 years (i.e., biologically inactive). The active nuclides have been primarily Ce^{137} and Sr^{90}. Their impact on the thyroid deserves further study.

A third problem concerns the administration of the program. During the last year, the logistic support for the medical program has been marginal to unsatisfactory. (Please see enclosures 1 through 16 for details.)

The problems may be divided into:

(1) Logistic (see enclosures).

(2) Administrative, i.e., responsibility vs authority for making substantive changes in the medical program. (See enclosures 17-19).

(3) Fiscal - the budget is now divided between BNL and the PASO fiscal officers. Very little exchange of information is provided. We would strongly recommend that central funding control and authority be centralized at BNL. (See enclosure 20).

(4) Interagency (DOI) commitments of DOE resources and policy. (Please see enclosure 21).

These problems, developing over the last year, have greatly hampered the growth of the program. In light of the rapidly-evolving political situation in the Marshall Islands and its impact on the U.S. Congress, the enclosed documents are presented for consideration of future plans.

DEPARTMENT OF ENERGY

POSITION PAPER

FOR

MARSHALL ISLAND STUDY

FROM

BROOKHAVEN NATIONAL LABORATORY

DECEMBER 1, 1978

REVISED AUGUST 6, 1979

(REVISIONS INDICATED BY SPACING AND ASTERISK)

INTRODUCTION AND STATEMENT OF PROBLEMS

On October 3, 1978, a meeting was held at the Department of Energy (DOE) Headquarters in Germantown, Maryland, to discuss a number of problems related to the DOE position in relation to several different programs in the Marshall Islands.

The Medical Program, under the auspices of Brookhaven National Laboratory (BNL), generated a great deal of discussion, concerned primarily with the following problems:

1. The research mandate of BNL for the study and care of radiation-related diseases in the exposed populations is clear. However, over a period of twenty-five years, that mandate has been expanded to include care for non-radiation-related diseases. This evolution has been necessitated by the virtual absence of adequate primary care in the Marshall Islands. The BNL medical team has responded in a humanitarian manner to diagnose, treat, and follow-up a number of pathologic conditions which, if untreated, would have led to increased morbidity and mortality in the exposed and comparison groups.

A. Basically, the BNL Medical Program is a medical research program. Its original goal was to "screen" for and detect the earliest changes suggestive of radiation-related pathology, and to treat those lesions as indicated. (The World Health Organization (WHO) states the primary responsibility of any screening effort is the ability to resolve all "abnormal" findings and to assure the patient of referral to an adequate primary care center.)

B. The difficulties are compounded by the fact that valid pre-exposure health care statistics are difficult or impossible to obtain. The Medical Program is in the untenable position of having to deal often with the probability that a specific pathologic condition is or is not related to

radiation exposure, since a cause-effect relationship is impossible to establish definitely for any given case.

C. The people are intellectually and emotionally unable to deal with the concept of "probability" without an intensive, highly-sophisticated educational program designed not only to transfer the information intellectually regarding the role of radiation in their lives, but to concomittantly incorporate that new understanding into their behavior, i.e., the ability to place radiation in its proper perspective for the present and the future. Such a program has already been initiated by Jan Naidu, Ph.D., BNL, with promising results.

* (Please see "Health Education" Addendum II) *

2. The Marshall Islands medical "system" under the Trust Territories is underfinanced. The professional staff is undertrained and overloaded. Critical supplies are usually not available.

A. In the absence of a satisfactory primary care referral base, the BNL Medical Program has expanded its mandate to include such things as a "diabetic study" (which has revealed a high incidence of "maturity onset diabetes") but has set up no mechanism for treatment and follow-up of this disease.

B. In addition, at the request of the people, a large number of Marshallese who were not in the exposed or comparison groups have gone through the screening examination with the detection of a variety of pathologic conditions. An attempt has been made in each case to provide immediate treatment if possible, and to refer the patients to the Trust Territories health care system. Unfortunately, little has been done to treat and to follow-up these patients.

Consequently, the BNL medical team has become the de facto primary health care provider to an ever-expanding group of Marshallese. The rationale of the Marshallese in the BNL program for their claim to the "right for all medical care" is their association of practically all illness with radiation.

3. The BNL medical team, because of its frequent surveys has, in the eyes of the Marshallese, come to represent the U.S. "presence" in the islands. The BNL Medical Program has, therefore, become the target of many attacks directed towards the United States agencies responsible for other programs in the Marshall Islands. These unwarranted attacks have, on several occasions, seriously compromised the goals of the Medical Program. Two major problems of health care delivery for all of the Marshallese involve: (a) communications, and (b) transportation. To the best of our knowledge, these problems have not been addressed independently as health care problems.

DISCUSSION

With the rapid growth of the medical program and the development of this matrix of compounding variables, Dr. Burr and Dr. Wyzen requested a position paper that would outline for DOE the alternatives for the support of a study of radiation-related injuries in the Marshall Islands. These options should include a wide spectrum of alternative programs, keeping in mind the inextricable interrelationship between BNL screening and the health of the people of the Marshall Islands. We feel a failure to deal effectively, in some way, with the primary care requirements of the people will lead to further ill will, failure to comply with the research protocol (e.g., thyroid therapy), and, finally, litigation and a call to foreign and national antinuclear groups to witness the "mistreatment" of the Marshallese by the U.S. government. Since primary medical care is clearly not the mandate of the DOE, perhaps some

interdepartmental agreement could be reached with the Department of Interior and/or the Department of Defense to answer this very pressing problem. U.S. monies are already going to the Trust Territories to provide health care but the utilization of those funds leaves much to be desired.

The analysis of options open to DOE-BNL has been approached in a system analysis format, utilizing an outline as developed by Gordon A. Friesen, of the General Electric Company, Re-Entry Systems Department (Figure 1, page 5).

As in any general systems analysis format, some of the elements will be indeterminant on the basis of available information. In the analysis of "constraints" to the various options, two important facts should be kept in mind. First, there will be a common group of constraints applicable to most options. These constraints will be listed at the end of this section. Pertinent general constraints will be listed by number in Column II (labelled constraints) on the flow sheets for each option. Secondly, constraints should be considered in two categories:

1. Absolute - by definition, an absolute constraint offers no alternatives; in effect, it totally blocks an objective or element of an objective (e.g., no funds);

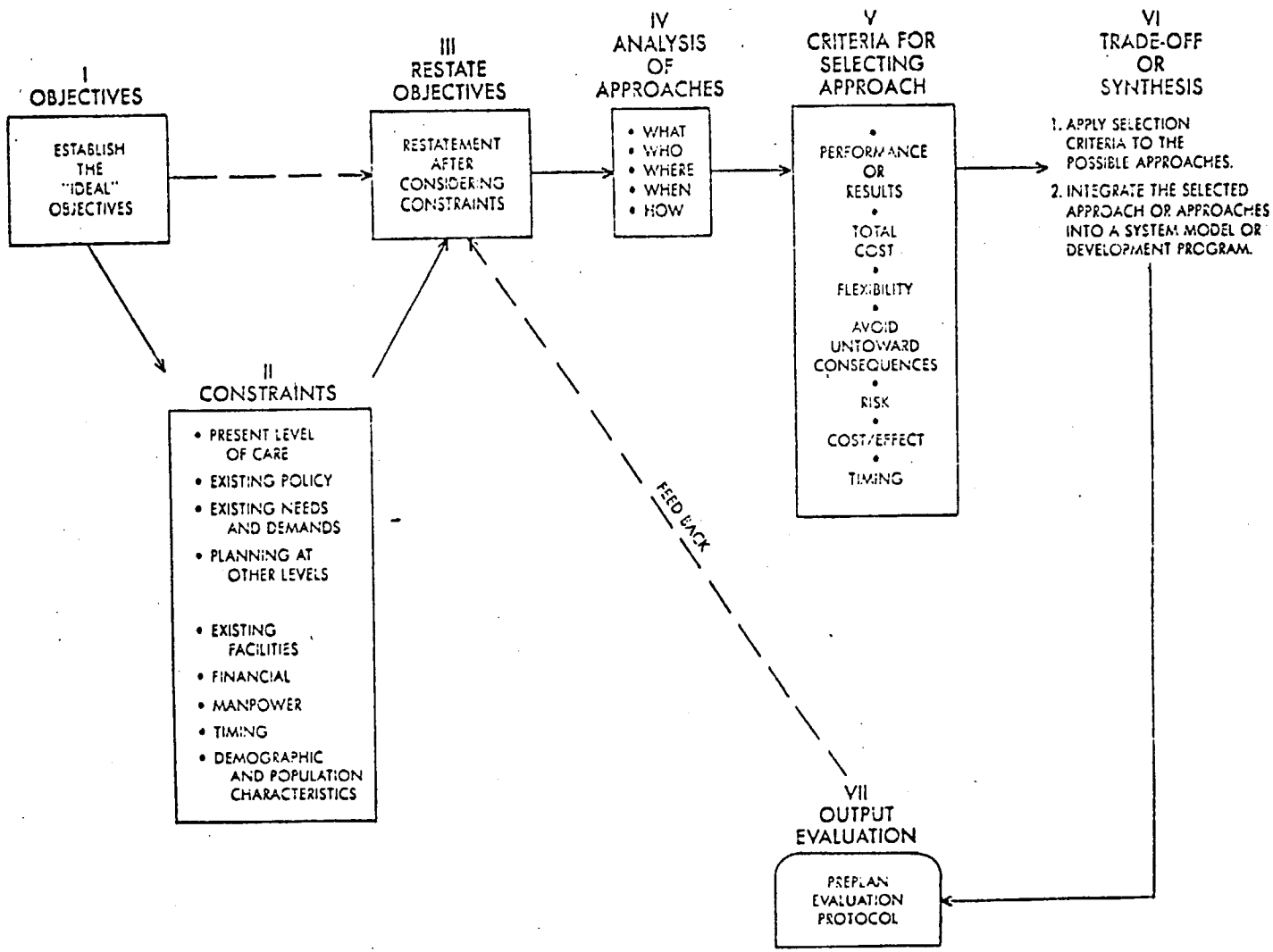
2. Relative - these constraints impose a varying degree of modification on the objective, proportional to the power of the constraint (e.g., 20% of the funds necessary to reach the objective).

Using this format, we will examine

* five *

options relating to the detection and treatment of:

FLOW DIAGRAM FOR AN ANALYSIS OF THE OPTIONS



A. Thyroid and other radiation-related diseases in the exposed and comparison populations.

B. All of A plus other patients already taken into the study with non-radiation related diseases (e.g., diabetes). This would include exposed and comparison group patients only.

C. All of A and B plus all low level radiation exposed patients who have gone through full screening, irrespective of findings of disease (e.g., the Bikini group).

D. All of A, B, and C plus full screening of all inhabitants living on, or scheduled to be repatriated to, the Marshall Islands contaminated by atomic fallout; i.e., background radiation higher than median for all Micronesian islands.

* E. Discontinue the study under DOE mandate and turn the care over to the new Marshall Island Health Care System. *

With these five options in mind, we must first consider the common constraints impinging on the subheadings listed under Column II of the flow sheet (see Figure 1). The unique constraints for each option will be listed as appropriate. The common constraints are:

1. Under current operating policies, DOE responsibilities do not include health care for non-irradiation related pathologic conditions.

2. The definition of "radiation-related" pathologic conditions is not clear. There is uncertainty among radiation experts as to the biologic effects of long-term "low-level" radiation. The status of acute and long-term effects of higher levels of radiation offers a greater consensus by the experts.

In light of the possible change in ICRP maximum permissible dose for the individual, the size of the study group may change in the future.

3. The dosimetry of the islands involved in the March 1, 1954 accident is uncertain. It has been restudied and revised repeatedly as new technology and new data become available. Under the circumstances, only population dosimetry is possible. It would appear from the pathologic results, at least to the thyroids of some of the children of Rongelap, that the individual variations might be considerably higher than was previously estimated (private communication with J. E. Rall, M.D., Director of the Institute of Metabolic and Allied Diseases, National Institutes of Health).

4. Irrespective of the calculated doses to the exposed population, the development of radiation-related disease for which the DOE/BNL/DOI has accepted moral and fiscal responsibility has fixed in the minds of the Marshallese the fact that they and their land have been "poisoned" (synonymous with the Marshallese word for radiation). This intellectual, psychological, and emotional set is deep-rooted and probably cannot be erased.

5. The Marshallese consider themselves a "unique" subpopulation of Micronesia. Their documented "injury" by the U.S., supported by anti-nuclear world opinion, gives them great political and economic leverage. Their recent movement for "free association" will probably not progress to independence, without firm guarantees, in writing, by the United States, that we will continue to compensate the people for injury and damage to their land. Their current concept includes the descendants of those people who have been identified as "injured" through property and/or physical loss.

6. Conversely, the U.S. would like to resolve these claims equitably and to place some reasonable time limit on U.S. liability.

7. The current Trust Territory health care delivery "system" is totally inadequate to serve as the primary care referral base for the BNL team. The reasons for this include:

a) very poor administration (fiscal, personnel, planning, etc.);

b) poor liaison with their source of funds, i.e., Trust Territory;

c) under-trained professionals;

d) heavy patient load (high incidence of a wide spectrum of diseases).

e) very poor facilities and upkeep.

8. The current "power base" in the Marshall Islands lies in the hereditary leaders and their appointed followers. They have assimilated themselves into the modern (free association) government and exert considerable influence over the territory. They have vested interest in protecting their own wealth and positions and the people have little voice in the actual process of "self-determination". These leaders are the people with whom we must deal to resolve our problems, but we must understand their orientation and goals. One of these followers recently advised his constituents to refuse U.S. compensation payments because he interpreted the payments to be a final settlement for all future claims. We feel the leaders realize the possibility of the potential closing or significant reduction in the government investment in Kwajalein, which is their major financial base. Therefore, they will probably demand continued reparations for their land and people.

9. Due to the wide dispersion of the islands (atolls) and people, transportation for the medical team, as well as for the economy, becomes of primary importance. Little is being done to solve this problem.

10. Communications among the widely-scattered islands is non-existent or poor at best. This results in a fractionation of the people, poor flow of information, reliance on rumor, and little or no health care in emergency situations. The solutions to these problems are technologically very simple and relatively inexpensive. Yet somehow they have not been implemented.

11. High volume screening of patients for specific data has become a highly-specialized area. Improvements can be made in screening facilities and methodologies, and these are outlined.

12. The recent repatriation of the people of Bikini, who were noted to be accumulating an increased body burden of ^{137}Cesium, has compromised, in the eyes of the Marshallese, the safety of living on "contaminated" islands. They ignore or reject the concept of "relative risk" based upon carefully-calculated background and ecologic measurements of radiation. The same reasoning will probably apply to the people on Eniwetok and Ujelang.

13. Personnel ceilings, currently in effect at BNL, prohibit any significant expansion of the program, e.g., the addition of the people of Bikini and Eniwetok (please see Option C - IV Analysis-How - p.13).

These constraints are put into context and dissected, in detail, in the following five flow sheets where the significance of their impact on the objectives can be related to the various approaches open to us. The flow sheets are detachable so that they can be placed in vertical sequence for comparison of each facet under each option.

VI. Trade-off or Synthesis

We realize that options A and B would, in fact, represent a reduction in the level of health care delivery currently available. A review of the most recent "189" for FY'79 and FY'80 reveals that in February 1977, DOE agreed "to assist the TT in an expanded health care program for the people living at Rongelap and Utirik. This included complete medical and laboratory examinations of ...all Marshallese living on these atolls." The problems inherent in that agreement were the inability of the TT to follow-up on the diseases discovered in this expanded screening. The BNL field team has limited resources to adequately diagnose and treat primary medical problems. As a result of intensified screening, a large number of "abnormal" findings have been identified. These demand further study and resolution if we are to meet the basic tenets of screening: Do NOT screen unless:

1. You are prepared to follow-up and resolve false positive and false negative findings.

2. The screening process will result in some benefit for the patient.

From a moral and medicolegal standpoint, we should insure adequate follow-up and treatment of all treatable conditions. To identify disease, inform the patient of the disease and then fail to treat it, would run the risk of a serious loss of credibility for the medical team; and more importantly, a disservice to the patient. For example, if a patient is told he is hypertnesive (e.g., diastolic over 105 mmHg), and is not treated, he can assume that:

1. the findings are of little importance because... "the doctors did nothing about it.";

2. "the doctors don't care enough about the patients to try to treat the condition."

Either result is undesirable.

These problems in the "philosophy" of screening are not minor. They should not be ignored in planning this program. A close examination of the actual field conditions reveals that the unavailability of adequate treatment and follow-up is the critical preliminary determinant of exactly what should be done in planning the details of medical and biochemical screening for primary care. Screening for research operates under different constraints, usually protected by a committee to inform and protect the research subject (A Human Studies Review Committee). Failure to comply with either the research or primary care requisites of screening is to invite patient dissatisfaction, litigation, loss of credibility and poor medical practice.

We have emphasized the problems inherent in "expanded" screening because the research goals of the radiation-related diseases are clearly defined in the "189" in Option A and the spectrum of "expanded health care programs" in Options B through D.

The synthesis we are attempting to achieve is the full mandate of Option A, plus as much of Option D as is feasible under present jurisdictional and funding constraints. DOE clearly has responsibility for Options A and B and the Trust Territories (under DOI) the remainder of primary and secondary care under Options C and D. However, with the new movement to "free association" the responsibility will shift to the administration and people of the Marshall Islands.

* Under Option E, the Marshall Islands health care system would assume full responsibility for detection, Rx and follow-up of radiation-related diseases, as well as primary care.*

We would suggest some initial interdepartmental funding to support whichever option DOE/DOI desires until the status of the "free association" is clarified. After a responsible governing body is identified in the Marshalls, a new "sharing" of primary and secondary health costs might be negotiated with the Marshalls, that would direct an adequate percentage of their budget into health care. We feel the medical administrative expertise does not currently exist in the Marshalls to implement and man this new system and would strongly urge the interested parties to obtain the best available health care system analyst to develop realistic cost/effective short and long-term plans for adequate health care with existing and expected resources.

This is the optimum time to perform this type of study and planning and the outcome will greatly influence the scope of the BNL medical effort. Serious consideration should be directed toward the utilization of existing expertise in developing health care systems for the South Pacific. The University of

* Southern California, Loma Linda, and UCLA have *

developed well-recognized and highly-effective programs to deal with many of the basic problems confronted by the Marshall Islands. Those problems are basically a maze of anthropolgic and sociologic characteristics determining the health status of the society and each individual. We feel a multidisciplinary approach to restructuring the health care system will be the most cost/effective method in the long run. The University of Southern California has expressed an interest

in discussing this concept with the BNL team. We feel a coordinated effort by BNL and the University of

* Southern California, Loma Linda *

working with the existing Trust Territory medical program could achieve most of the goals of Option D. Such a program could be developed incrementally, under contract, as specific problems were identified.

Option E - Would be the ultimate answer to the Marshallese demands that they have the final say as to who performs the examinations. They could attempt to do it with existing resources or contract any or all of the elements to outside "impartial" consultants.

ADDENDUM I

TO

POSITION PAPER ON THE

BNL MARSHALL ISLAND PROGRAM

(DATED DECEMBER 1st, 1978)

Dr. Wyzen of the DOE has asked for amplification of the role of the BNL resident physician under each of the options listed in the basic position paper.

Dr. Conard and I feel the role of the resident physician under Option A (the detection and treatment of radiation-related pathology in exposed and control populations) should be outlined as follows:

1. The resident physician's (RP) primary responsibility is to function as the on-site coordinator of the BNL program. He is responsible, in addition, for the supervision of the daily follow-up and treatment of the exposed and control groups in the basic research protocol for radiation-related diseases.

Additional responsibilities under Option B: (A-plus the care and follow-up of patients in the exposed and control groups found to have non-radiation related diseases, e.g., diabetes) would include:

1. As in A - plus the medical follow-up and treatment as indicated for those specific conditions found in ancillary studies as part of the BNL field surveys, e.g., diabetes.

Additional responsibilities under Option C: (A and B - plus medical care for all low-level radiation exposed patients who have already gone through full screening - irrespective of findings of disease, e.g., people living on Bikini - April 1978) would include:

1. As in A and B - plus screening, follow-up and treatment for the 137 people examined on Bikini (April 1978).

Finally, the additional responsibilities under Option D: (A, B and C plus full screening and follow-up) of all inhabitants now living on (or scheduled to be repatriated to) Marshall Islands contaminated by atomic fall-out):

1. As in A, B and C - plus the medical care, i.e., screening, follow-up, treatment and primary preventive medicine of this enlarged study group (maximum about 2000 patients).

The term "medical care" in each of these options has been purposely left undefined. The spectrum of medical care could range from a very narrow interpretation of the research mandate related solely to the detection and treatment of pathologic conditions thought to be related, with a high probability, to radiation exposure, to a widely-expanded concept of "medical care" covering primary prevention, 1°-2° care and comprehensive health care - similar to the defined role of the family practice physician, as defined by the Academy of Family Practice.

OPTION A

The detection and treatment of radiation related pathology in exposed and control populations

*Note: Numbers under constraints refer to common constraints, text p.4-4

I. Establish the ideal objectives

1. Screening:
What pathologic findings are sought?
(A) Thyroid - Hypofunction and/or neoplasia - adenoma or carcinoma
(B) Breast CA (C) Skin CA
(D) Hematologic-leukemia, myelofibrosis, aplastic anemia, (E) GI tract CA (F) Genetic abnormalities (sample size too small to establish a cause - effect relationship to genetic abnormalities) (per Dr. J. Neel).

2. Treatment:
(A) Short-term whatever treatment is indicated to stabilize the patient until he can be safely transported to a designated tertiary care center for definitive therapy.
(B) Long-term therapy directed towards the pathologic condition(s) found at screening or by tertiary care.

3. Follow up:
(A) Short-term periodic re-evaluation of any detected abnormalities to determine their status, e.g., progression vs remission.
(B) Long-term: fixed protocol to follow tertiary/post operative cases for the rest of their lives.

II. Constraints

Present levels of care
Screening: (1)(7)(9)(10)(11)*
Treatment: (4) - BNL currently treats radiation induced problems at BNL and Cleveland with good results.
Follow-up: (2)(4)(8)(9)(10)(11)(12)*
Our resident MD can easily follow up the treated cases but not general primary care.

Existing Policy
(1)(4)(5)(6)(7)(8)(9)(10)* A common point of contact does not exist for all of the agencies effecting or effected by the BNL medical program.

Existing needs and demands
(4)(5)(6)(7)(8)(9)(10)(11)* No unique constraints for Option A.

Projected needs and demands
(2)(3)(4)(5)(6)(7)(8)(9)(10)(11)* - Option A offers the minimum needs and demands but will not meet the Marshallese expectations.

Planning at other levels
(1)(2)(3)(5)(6)(7)(8)* - The lack of coordination/liaison among the many laboratories and governmental agencies involved in the care of the Marshallese has resulted in conflicting information from some concerned U.S. officials. The resulting confusion has placed the U.S. in a vulnerable position - ? credibility.

Existing Facilities
(7)(8)(9)(10)(11)* - The lack of a viable primary referral system is almost an absolute constraint.

Financial
(1)(5)(6)(7)(8)* - option A will require the lowest operating budget, initially. However, the costs of litigation brought by the Marshallese for compensation could result in significant increase in U.S. payments.

Manpower - (1)(3)(4)(5)(7)(11)* - Option A offers lowest requirements. However, a cutback in the level of care provided will provoke lack of cooperation by the Marshallese resulting in poor cooperation, compliance - wasted time, poor data.

Timing - (2)(3)(4)(7)* - Marshallese claim injury due to long-term exposure to "low level" radiation. Recent U.S. "low level" studies and fear of long term effects has strengthened Marshallese position. Bikini episode - media.

Demographic Population Characteristics (4)(7)(8)(9)(10)* - The culture prohibits direct expression of hostility toward another. A mediator must be used. U.S. efforts to clarify grievances unsuccessful to date.

III. Translation

Reinstatement of refined objectives in consideration of restraints.

The relative constraints would not materially change the basic objectives of Option A. An additional objective has been generated by the identification of a lack of coordination among the various agencies and labs involved in the total care of the Marshallese

An additional objective would be to establish a single contact point in DOE to coordinate all these programs and to establish close liaison with DOE & DOI. In addition, since the logistics, e.g., transportation is a common problem to all users, there should be at least one annual users meeting with additional meetings as necessary.

Timing
The timing of the BNL field surveys is of great importance for the following reasons: 1) Long lead time must be included to insure proper notification of the study group - (especially on the outer islands - we must always keep in mind the poor communications); 2) Long lead time and a fixed schedule will do much to counter the charges that BNL has planned its trips to the outer islands to coincide with the absence of many of the leaders; 3) Evenly spaced visits, about 2½ months apart will assist the BNL field staff in the follow-up of the pathologic conditions, i.e., a relatively fixed time base line will remove another variable in data analysis.

IV. Analysis

Develop possible approaches to attaining the objectives, with each approach being stated in terms of:

What: Screening(primary detection), Treatment-short-term, Follow-up,short & long-term, Single contact point for efficient coordination of above.

Who: BNL medical team has 25 years of experience in Option A for screening, treatment and follow-up. DOE best suited to identify single contact point.

Where: Screening of exposed and control populations wherever we can locate them.

When: Timing should be based upon the best available knowledge regarding the time interval for the detection of radiation abnormalities.

How: The BNL medical team is currently doing considerably more than studying radiation related pathology. A well-planned, high intensity educational program would be necessary to explain why the medical program was being reduced at this time. The movement to "free association" will probably compromise the already inadequate health care funding by the Trust Territory.

V. Selection Criteria

Set forth the criteria for the selection of an approach:

Performance or results
A detailed research protocol will be developed to specify the medical criteria and algorithms for the detection of radiation related pathologic conditions (e.g, disease specific items in the history, physical exam and laboratory profile to detect the earliest deviation from "normal function" - TSH (to document thyroid hypofunction.) Each identified pathologic condition (listed under objectives) will be screened by the appropriate methodologies. Treatment and follow-up will be assured by appropriate algorithms and check lists.

Total cost(s)
The total cost will be very close to our 1978 expenditures. The reduction in the patient population will be offset by the cost of the educational program to explain the reason for our cut-back in services and by inflation.

Flexibility
This option offers us little flexibility. The pathologic conditions related to radiation exposure in the range determined for the Marshall Islands is rather limited. Our program under this option would be constrained to this limited area.

Avoidance of untoward consequences
With strictly limited goals the probability of obtaining valid data and early detection of disease is enhanced by concentration of funds on limited objectives - i.e., minimum dilution of effort. However, the public outcry against the reduction in the program could have serious political/sociologic consequences.

Risk
The risks to DOE/BNL are: The public reaction to reduced medical care. We are unable to quantify the risks to the program offered by this option but they would probably include: lack of patient cooperation (resulting in ? data), vigorous public protest (locally and internationally) and a vigorous program for DOE/BNL to,at least,return to the previous level of care. Risks to the Marshallese are: 1) Failure to detect other than radiation related diseases - with increased morbidity and mortality among the exposed & control groups. 2) Possible alienation of the Marshallese by DOE/BNL resulting in a breakdown in vital communication.

Cost/effectiveness - No data format now exists to compute cost/effectiveness or cost/benefit. The diffuse funding mechanisms make it very difficult for the principal investigator to obtain an accurate current accounting of monies expended on the medical program. If such data were available and all screening, treatment and follow-up goals clearly defined, some rough estimation of cost/patient could be derived.

OPTION B

The detection and treatment of radiation-related diseases plus the care and follow-up of patients in the Exposed and Control Groups found to have non-radiation related diseases

I. Establish the ideal objectives.

A. Screening for radiation-related pathologic conditions as in Option A - plus additional screening for age and sex correlated high risk diseases.

B. Treatment as in Option A for radiation-related diseases. For all other diseases change "tertiary" care center to primary or secondary care center, as available.

C. Follow-up (as in Option A) - Change tertiary care to primary or secondary care, as available.

II Constraints

Present levels of care

Screening: as in Option A - plus, need to develop "risk tables" (age and sex specific) to expand the screening data base. The relative improvement in recent health "statistics" should be of some assistance. Treatment: (1)(7)(9)(10)(11) plus increased logistic requirements of added care. Follow-up: As in Option A - plus increased logistic and manpower required for care.

Existing Policy

As in Option A - plus current operating procedures already includes this added group and others.

Existing needs and demands

As in Option A - The need for better primary care is evident to many Marshallese. They are currently and have historically, demanded better care.

Projected needs and demands

As in Option A - plus an ever increasing base population - crude growth rate 3% - better primary medical care will probably reduce mortality resulting in increasing population. Many Marshallese are asking for birth control education.

Planning at other levels

As in Option A - Plus significant decrease in already meager T.T. support of medical care due to vote for "free association".

Existing Facilities

As in Option A - plus the increased load of further patient care would strain the existing facilities resulting in severely diminishing returns for each health dollar (below minimum "critical Mass").

Financial: (1)(5)(6)(7)(8) The added screening costs will be a small increment in the existing screening program. The added primary and secondary care and follow-up - both short/long term may be a significant amount (dependent upon the diseases selected and their prevlance). (See facilities cost as well).

Manpower: (13) As in Option A - but better cooperation will hopefully improve compliance (and quality of data). The increased screening requirements can be handled by better utilization of manpower, adding one Physician Asst. or nurse practitioner.

Timing: As in Option A - However, increased coverage should raise credibility of DOE/DOI. This option is still below current operating procedures!

Demographic Population Characteristics: As in Option A - but with a reduction in covert hostility - increased cooperation. Population under care, still below, current operating policies.

III. Translation

Restatement of refined objectives in consideration of restraints.

As in Option A - The increased patient care demanded by Option B will require a slight increase in manpower and logistics (funding). Since the increase is directly related to primary patient care and is, therefore, not DOE's responsibility, perhaps some inter-agency agreement with DOI could be reached to provide this supplement. In addition, it, under the "free association" agreement the DOD-Kwajalein taxes are to paid directly to the Marshall Islands, some fixed portion might be diverted to primary medical care under a DOD/Kwaj-Marshall Island Government agreement.

IV. Analysis

Develop possible approaches to attaining the objectives, with each approach being stated in terms of:

What: As in Option A - plus selected "risk hazard appraisal" screening, care and follow-up.

Who: As in Option A - BNL is currently exceeding Option B in its active commitment.

Where: Screening, care and follow-up of exposed and control groups wherever we can locate them.

When: As in Option A - plus regular intermittent visits (every 2½ months) for follow-up of non-radiation related problems (already being done).

How: We would, actually, need to cut back on our present commitments to comply with Option B, e.g., we have already put almost all of the people formerly on Bikini through the entire screening procedure.

V. Selection Criteria

Set forth the criteria for the selection of an approach:

Performance or results

As in Option A - However, the section on radiation related diseases will need to be expanded to include those age and sex specific general medical problems not currently associated with radiation. The methodology of Robbins and Hall will be used to determine what specific historical, physical, and laboratory findings would be most sensitive and specific to detect the most prevalent diseases (age and sex-determined, e.g., we will not look for coronary atherosclerosis in young females, evidence for alcoholism will be sought in young and old males, etc.).

Total Cost

As in Option A -but we can cancel out the specific education program (explaining the cut in services). The various cost trade-offs have been discussed in the previous sections of this option. We must keep in mind that this option is still below our present commitment.

Flexibility

There is increased flexibility with this option. We feel the BNL team stationed at Ebeye could handle this additional load without problems - in fact, it would enrich their practice and provide some welcome variety.

Avoidance of untoward consequences

The added flexibility and commitment of the DOE/BNL team should enhance our shaky credibility and generate true gratitude among some of the Marshallese. The critical point is never to promise more than you can deliver. The credibility gap may be partially patched by saying "I don't know" more frequently and by forwarding all pertinent data on to interested Marshalle as soon as it is available.

Risk

The risks to DOE/BNL are less than with Option A - However, this level o. effort is below the current program and will cause some adverse reaction (publicity, cooperation, etc.).

The risks to the Marshallese are that a great deal of potentially treatabl disease will be excluded from our attention by this option.

Cost/effectiveness

As in Option A

Timing

As in Option A - The increased population would not appreciably change our existing schedule.

C

OPTION C

All radiation related diseases in the exposed and control groups on Rongelap and Utrirk plus all low level radiation exposed patients who have already gone through full screening - irrespective of findings of disease

I. Establish the broad objectives	II. Constraints	III. Translations	IV. Analysis	V. Selection Criteria
As in Options A and B but adding all patients, exposed to low level radiation, who have already gone through the BNL screening procedures. This represents the current level of operation. In the future, the screening will be modified as detailed for the "directed data base - risk hazard appraisal" approach of Robbins and Hall.	Present levels of care As in Options A and B. Existing Policy As in Options A and B. This option reflects existing de facto field policy. Existing needs and demands As in Option A and B. Adding a portion of the Bikini population will probably not fulfill the Marshallese demands or needs. Projected needs and demands As in Option A and B. It seems probable that we will be unable to separate, for medical purposes, the Bikini people who returned to Bikini from the remainder on Kili. The Eniwetok people will probably also demand equal treatment. Planning at other levels As in Option A and B. Powerful U.S. congressional groups (Yates Committee - on appropriations, etc.) are interested in and investigating the well-being of the Marshallese. Existing facilities As in Option A and B. A redesign and construction of a flexible, mobile screening and treatment support facility - would in the long run increase efficiency and reduce cost/patient. Financial As in option A and B. The significant variable will be the (?) addition of the people of Bikini and Eniwetok. Manpower As in Option A and B. Again the addition of Bikini and Eniwetok would more than double the outpatient load. However, the staff could probably handle the increased load with the addition of a Physician Assistant and a nurse practitioner. Timing As in Option A and B. No further constraints (optimum timing). Demographic Population Characteristics As in Option A & B. Plus all patients (exposed to low level radiation) previously screened. Adding Bikini (450) + Eniwetok (450).	Restatement of refined objectives in consideration of restraints. As in Options A and B - Since this is our present level of operation with existing funds - no significant translation of objectives is needed.	Develop possible approaches to attaining the objectives, with each approach being stated in terms of: What: As in Options A and B. Who: As in Options A and B. - plus all patients, exposed to low level radiation who have already gone through BNL screening procedure - again status of Bikini and Eniwetok will change requirements. Where: As in Options A and B - plus Kili, Jaluit, ? Eniwetok ? Ujelang. When: As in Options A and B. How: If the patient load is doubled and increased, primary care is expected. There will need to be approximately a doubling of the operating budget with a 66% increase in personnel and a ship assigned specifically to the medical program. It would be prudent to separate the identify of the Bikini-Eniwetok group from BNL - We could retain administrative control and function as advisors, but a subcontractor might alleviate some of the anxiety of the new study group that would arise from the "radiation" oriented BNL group. We would suggest the University of Hawaii as the most suitable and interested party. Funding for this increase in primary care might be obtained by pass-through funding from DOI.	Set forth the criteria for the selection of an approach: Performance or results As in Options A and B. Total cost As in Options A and B. See column IV. - How: for discussion of costs. Flexibility As in Options A and B - Increasing flexibility due to larger responsibility for care and better support (logistic and manpower) - permits better scheduling. Avoidance of untoward consequences As in Options A and B - plus added credit for more comprehensive care. Risk As in Options A and B - With increasing volume of patient care the possibility of suboptimal or poor performance may increase - ? Overcommitment - this can be offset by adequate planning and logistic support - Expanded operations without these elements should not be attempted. Cost/effectiveness As in Options A and B. Timing As in Options A and B. This is the optimum time, in light of the political and sociologic situation in the Marshalls to enlarge the program and to make a positive effort to change the image of the study.

OPTION D

All radiation related diseases in the exposed and control populations plus full screening of all inhabitants now living (or scheduled to be repatriated to) Marshall Islands contaminated by atomic fallout

I. Establish the broad objectives

As in Options A, B and C but with added emphasis on early detection and treatment of all significant diseases. This option offers unequivocable evidence of the true concern of the U.S. for the comprehensive health care of the peoples of the islands contaminated by the testing program.

In addition, such a program would allow us to develop a much more significant "health profile" of the Marshallese to assist in the determination of potential radiation related pathological conditions.

II. Constraints

Present levels of care
As in Options A, B and C - This option exceeds the mandates of our present program and would be impossible without an appreciable increase in funding.

Existing Policy
As in Options A, B and C - In addition, in light of the recent (Oct. 12, 1978) DOE/DOI/DOD meeting on the status of the peoples of Eniwetok and Bikini, it appears that this option is the one favored by the Under Secretary of the Interior, Mr. Joseph.

Existing needs and demands
This option most closely meets the needs and demands of the Marshallese people and their leaders.

Projected needs and demands
Since this option provides adequate health care for all currently and potentially involved Marshallese, it should meet all projected needs and demands

Planning at other levels
As in Options A, B and C

Existing facilities
As in Options A, B and C - A major expansion of existing facilities would be necessary to support a medical program more than twice the present effort.

Financial
A cost study would need to be instituted as soon as possible to determine the current and future costs of such a program (please see Section V Selection Criteria) - under "Total cost".

Manpower (13)
As in Options A, B and C. - Please see Section IV Analysis of "How" for manpower requirements.

Timing
The time is now optimum for DOE in light of recent Marshallese statements of needs.

Geographic Population Characteristics
As in Options A, B and C - The area to be covered will be much more than doubled by this option - i.e., Majuro to Ujelang.

III. Translation

Restatement of refined objectives in consideration of restraints.

As in Options A, B and C, the restatement of objectives will be dependent upon:

1. The definitions of the role (moral/fiscal) of the administrators of DOI and DOE to carry through on the statements of principal made at the Oct. 12, 1978 - DOI/DOE/DOD meeting in Washington, D.C. concerning the status of the peoples of Bikini and Eniwetok.
2. If full health care responsibility is assumed - Option D needs no restatement.
3. If limited health care responsibility is the choice - some compromise between Options C and D is indicated.

IV. Analysis

Develop possible approaches to attaining the objectives, with each approach being stated in terms of:

What: Full directed data base, screening and follow-up of pertinent findings in population defined under "Objectives"

Who: With the expansion of the patient population, it would be wise to set up (2) field medical teams; (A) the BNL-acute exposure study team (covering peoples of Rongelap - Utirik) and (B) the "low level" study group - under contract - both supported by adequate-10^{o}-2^{o} care at Ebeye and Majuro.

Where: As in Option C.

When: As in Options A, B and C.

How: As in Option C - plus added manpower to support 2 field teams plus at least 2 U.S. trained physicians at Majuro and Ebeye - supported by para-medical personnel, Physician Assistants and nurse practitioners.

V. Selection Criteria

Set forth the criteria for the selection of an approach:

Performance or results
Research based upon a sound primary - secondary care delivery system will provide optimum care for each patient. The total population of the Marshall Islands is about 22,000 people - of these only about 2,000 would be completely covered by Option D. The remaining 20,000 would benefit greatly by the general improvement in the quality of care at the primary centers, - but that would be a secondary goal of the medical staff - working with the existing Marshallese medical officers and their staffs.

Total cost
Really impossible to develop a reasonably accurate figure. However, based upon our present operating expenses (Option C) with a cumulative budget of about 1 million the expansion to Option D should cost about 1 to 1½ million extra.

Flexibility
This option gives us the greatest flexibility in scheduling examinations in the field, due to the increased on-site medical and transportation resources.

Avoidance of untoward consequences
This option offers the best proof of a sincere U.S. commitment to the people. This should help greatly in improving the image of U.S. in all of the media - U.S. as well as international. In addition, with the new "free association", the Marshallese might decide to fill the primary medical care vacuum with Japanese physicians (with the good possibility that left wing - anti-nuclear MD's might become entrenched in the Marshalls).

Risk
Least risk of all options - unless commitment was made and then not honored.

Cost/effectiveness
As in Options A,B and C.

Timing
This is the optimum time for implementing Option D - for two reasons: A) The movement toward "free association" has placed the Marshall Islands in a state of transition. The revisions in the health care delivery systems could move along most smoothly in this period of general and economic transition. B) The people of Bikini and Eniwetok are demanding quick and decisive answers to their very legitimate requests.

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OPTION E

All screening, diagnosis and treatment for radiation-related diseases, as well as all other primary care problems shall become the responsibility of the new Marshall Islands Health Care Delivery System.

The population concerned shall be all Marshallese exposed to radiation levels above those ambient for Micronesia.

We would anticipate that such a program would be subcontraced to specialists in this area, since the Marshallese do not possess the required.expertise.

The new Marshallese government would, undoubtedly, insist that the U.S. government fund such a program - at a cost greatly exceeding our present annual investment.

In addition, there is a very good possibility that the subcontractors would include some of the strongly anti-nuclear groups from Japan and the U.S. that have been trying to get access to those islands for years.

Their biased reports would probably result in severe world criticism and an escalation in litigation.

MARSHALL ISLANDS STUDY

HEALTH EDUCATION PROGRAM

Hugh S. Pratt, M.D.

INTRODUCTION

At this time, there is no health education effort associated with the Marshall Islands Study. Dr. Jan Naidu (Safety and Environmental Protection, Brookhaven National Laboratory) has begun a well-received program to explain the effects of radiation in man. A companion effort mounted by the Medical Program will be directed towards education for the most common pathologic conditions (diabetes, high blood pressure, malnutrition, and dental problems). This will help the Marshallese understand the relationship of exposure to radioactive material in perspective with their overall health.

To be successful, the program must involve Marshallese, as much as possible, from the beginning. In fact, the program should eventually be run entirely by Marshallese, with BNL personnel serving only in an advisory capacity. Competent indigenous health facilitators can be developed more easily than almost any other allied health profession with a minimum dollar investment.

There is considerable interest now in expanding the Marshall Islands Study. This is an ideal time to begin an entirely new thrust. It has been shown in the past that the people do not understand BNL's role and responsibility without ongoing meetings and explanations. This would assure that need is met in a structured, responsible manner.

HEALTH EDUCATION PROGRAM REQUIREMENTS

This program will have two areas of responsibility which need to be closely related for maximum effectiveness:

1. Personnel development and inservice education.
2. Consumer/patient education.

In order to achieve lasting results, the people receiving the educational programs must be actively involved at all levels, from the beginning. In addition, they should have more direct involvement in the ongoing physical examination and screening portion. To accomplish this, more Marshallese need to be brought into the program. Men and women from each island will be recruited to assist MD's during physical examinations. They will serve as assistants/translators, as well as, in the case of females, chaperones. By training people on each island we are:

1. not so dependent on TT manpower;
2. more likely to head off ill will on each island because people who live there will see, first hand, what we are doing, what constraints we have and the mechanics of the program;
3. we develop people who can become indigenous health facilitators in our absence;
4. we cut costs because we do not have to pay for transportation and salaries on sailing days when no work is done.

The initial training can be done by the MD's and RN's now available to the program, plus two interpreters and the island's health aide, while the other BNL staff are setting up. (Initially, these local assistants would not be expected to perform procedures such as blood pressure measurement or dip stick urinalysis. That would be taught on subsequent surveys.)

It is important that the MD's participate in the training program so they will know what to expect from their assistants and they can begin establishing a working relationship immediately. These training programs always provide a forum for discussion of concerns regarding personal and family health problems. The BNL team can begin to ascertain what each island perceives its biggest health problem to be from this kind of exchange.

With the exception of the TT M.O.'s who accompany the survey, the majority of the BNL collaborators are unfamiliar with Marshallese customs and the TT health care delivery system. By assisting with the training and working with the local health aide and the TT medical interpreters, they will become more deeply involved with the community than they have in the past. The result should be a better understanding of one another's strengths and weaknesses.

As soon as the local people are trained and used on one survey, they should be contacted and used again as soon as possible. Those who drop out should be interviewed to determine why. The interview should be conducted by the BNL Marshallese nurse-practitioner to avoid any cultural bias. It is important that she be involved with all phases of the program, since her presence will lend credibility when plans for "Marshallization" of the program are discussed.

Based on information generated through village meetings and individual discussions with the newly-trained assistants, a pilot program will be developed to be given on the following survey visit. It will be relatively short, and simple hand-out materials will be devised that can be upgraded by the people who receive the first programs, demonstrating that they retain some control. The new assistants (facilitators) will be encouraged to assist in setting up and carrying out the program, if it is culturally appropriate.