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THE NUCLEAR NOMADS OF BIKINI ATOLL

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by Jonathan M. Weisgall

On July 16, 1945, the United States detonated the world's first atomic bomb at Alamogordo, New Mexico. Three weeks later it detonated the second over Hiroshima, killing 60,175 people within 120 seconds. Three days later, on August 9, 40,000 people died in the explosion of the third bomb over Nagasaki. Horrified by the power of the atomic bomb, Japan announced its surrender to the United States five days later. The atomic age had begun.

The United States enjoyed a brief monopoly on atomic weapons technology after World War II, but it had little knowledge of the force and effect of these weapons. To acquire that knowledge, the United States conducted 66 nuclear tests over the next two decades on Bikini and Enewetak atolls, circular chains of islands located in the Marshall Islands region of Micronesia, 2,400 miles southwest of Hawaii. The U.S. military administration moved the Bikinians off their atoll in 1946, and the government promised to take care of them until they could return. One year later the United States signed the U.N. Trusteeship Agreement for Micronesia, under which it agreed to "protect the inhabitants against the loss of their land and resources [and] protect the health of the inhabitants."

Thirty-three years later most of the Bikinians are still living temporarily on a tiny island 400 miles away. During these years American scientists have surveyed Bikini at least 16 times, and in 1968 President Johnson declared Bikini Island—the principal island in the atoll—safe for resettlement. Some Bikinians were moved back in the early

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1970s, but they were moved off again in 1978 when tests showed that they had been exposed to dangerously high levels of radiation. U.S. scientists have now concluded that radiation levels on Bikini Island are so high that it will be uninhabitable for at least 60 to 80 years.

The Bikinians' bizarre odyssey has taken a new turn in light of President Carter's declaration that the United States intends to end its U.N. trusteeship administration of Micronesia in 1981. Although they are geographically and culturally Marshallese, the Bikinians effectively have become wards of the United States, and the long-range problems they face are monumental. Where can they resettle until Bikini Island is safe? What risks were they exposed to while living on Bikini from 1970 to 1978, and what kinds of specialized health care will they continue to need? What will happen to them if the Marshall Islands become independent?

Time is running out on the U.S. administration of Micronesia, and the Bikinians are fearful that the United States will walk away from its responsibility toward them and its promise to return them to their homeland. They have presented the Carter administration with a proposal to resettle on a radiologically safe island in Bikini Atoll, and they have sought the help of Congress to insure that they are not forgotten. The islanders' fears are justified, for the history of their relations with the U.S. government is one of neglect, thwarted hopes, and unkept promises.

Bikini Was It

At the close of World War II, the United States needed to assess the full potential of its new atomic weapon that so dramatically and spectacularly had ended the war with Japan. As the Atomic Energy Commission (AEC) stated in its 1948 report to Congress: "America's pre-eminence in the field of atomic weapons is not static. It depends upon achievement fully proved through tests and upon the observation by scientists of nuclear phenomena that can only adequately be

Accordingly, five weeks after the end of World War II, the Joint Chiefs of Staff began to plan a series of atomic tests, and it ordered a joint task force to select "a suitable site which will permit accomplishment of the tests with acceptable risk and minimum hazard." The project was code named Operation Crossroads.

The site for the tests had to meet numerous conditions: It had to be in an area controlled by the United States, in a climatic zone free from storms and cold temperatures, with a large, sheltered area for anchoring target vessels and measuring the effects of radiation. It had to be uninhabited or have a small population that could be relocated easily. Naturally, the site had to be far away from population centers in the United States: as the AEC told the Congress in 1953: "The Commission felt that tests should be held overseas until it could be established more definitely that continental detonations would not endanger the public health and safety."

In late January 1946 the Joint Chiefs selected Bikini Atoll for atomic testing. Bikini is one of 29 atolls and five islands comprising the Marshall Islands, which are scattered over 357,000 square miles just north of the equator in the central Pacific Ocean. The Marshall Islands, along with the rest of Micronesia, were seized during World War II by the United States from Japan, which had earlier taken them from Germany after World War I and held them under a League of Nations mandate. Micronesia was the site of many of the bloodiest battles of World War II. More than 6,000 U.S. soldiers were killed and nearly 23,000 wounded during operations in these islands. The United States placed them under U.S. military control until July 1947, when the area became a U.N. strategic trust territory administered by the United States.

Bikini met all the requirements for Operation Crossroads. One of the northernmost atolls in the Marshall Islands, it receives much less rainfall than the atolls to the south,

and therefore supported only a small community. (In 1946 the population numbered 167.) It is remote, and the Bikinians had never had much contact with other Marshallese or foreigners. In fact, no foreigners lived on Bikini until World War II, when a unit of five Japanese soldiers established a weather station there.

On Sunday, February 10, 1946, the American military governor of the Marshalls, Commodore Ben Wyatt, arrived in Bikini by seaplane and told the people at the conclusion of their church services that they would have to leave their homes so the United States could test nuclear weapons there. According to official Navy records, Wyatt "compared the Bikinians to the Children of Israel whom the Lord had saved from their enemy and led into the Promised Land." He described the power of the atomic bomb, "the destruction it had wrought upon the enemy," and he told the people that American scientists "are trying to learn how to use it for the good of mankind and to end all world wars." The Navy had searched the entire world for the best place to test these powerful weapons, and Bikini was it. Wyatt then asked the Bikinians: "Would you be willing to sacrifice your island for the welfare of all men?"

The Bikinians deliberated, and Chief Juda Kessibuki reported their decision: "If the United States government and the scientists of the world want to use our island and atoll for furthering development, which with God's blessing will result in kindness and benefit to all mankind, my people will be pleased to go elsewhere."

"One Hell of a Good Sales Job"

Official Navy accounts notwithstanding, the Bikinians' decision to leave their atoll was not based solely on a naive desire to see mankind benefit from atomic testing. The Bikinians were awed by America's defeat of Japan and by the fact that the five Japanese soldiers stationed on Bikini committed suicide when American troops landed on the atoll in 1944. Following the establishment of U.S.

military control in the Marshalls. American ships visited Bikini on a regular basis, bringing food, supplies, and medical officers who provided free treatment for the people. By the end of 1945 the Americans had built a store, an elementary school, and a medical dispensary on the atoll.

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— The persuasive power of the Americans went beyond material largess. The Bikinians had been converted to Christianity a half century earlier by New England missionaries: Wyatt's arrival on a Sunday after church services and his comparison of the Bikinians to the Children of Israel undoubtedly had considerable emotional impact. His description of the awesome capabilities of nuclear weapons, moreover, led the people to believe they were powerless to resist the wishes of the United States. The option of staying on Bikini and telling the United States to look elsewhere was simply not a realistic alternative.

Navy records do not disclose whether the Bikinians were told when—and if—they could move back to their atoll. It seems that the topic was never directly confronted by either side: the people were simply promised the return of their atoll when it was no longer needed for a testing site. As for the problems of displacement and relocation, Navy records show only that Wyatt, before flying to Bikini, "asked the Navy what commitments concerning reparations he could make to the people, and he was told that he could promise them no more than the opportunity to submit claims for damages."

The U.S. government offered the Bikinians the choice of moving to one of three other atolls in the Marshall Islands. Two of them—Ujae and Lae—were inhabited; the third, Rongerik, 140 miles east of Bikini,

was not. The people chose Rongerik. As they prepared to leave their atoll, the first of the 250 vessels, 150 aircraft, and 42,000 military and scientific personnel involved in Operation Crossroads began to arrive.

The islanders were overwhelmed by all the fanfare. Geologists, botanists, biologists, and oceanographers categorized the flora and fauna of the atoll, and engineers blasted a deep-water channel through the reef to the beach on the main island of Bikini. Meanwhile, the Bikinians, who had never before seen motion pictures, were entertained with Mickey Mouse cartoons, Roy Rogers westerns, and Hollywood bedroom farces. —

The removal of the Bikinians became a major media event. The islanders had never received such attention, and they seemed to thrive on it. Cameramen photographing the last church service on the atoll were not satisfied with their angles, so the Bikinians obliged by repeating the service three times. Publicity was so intense that the demands of news agencies and Navy photographers forced a one-day postponement of the Bikinians' departure.

Finally, on the morning of March 7, 1946, cameramen recorded a re-enactment of Wyatt's visit and negotiations with the Bikinians. The Bikinians then decorated the community cemetery with flowers and held a ceremony to bid farewell to their ancestors. The ceremony was restaged as the delighted islanders vied with one another for positions in front of the cameras. That afternoon the last of the Bikinians left their atoll aboard a Navy landing craft. A few of them lining the rails sang songs of farewell; some wept. Most were silent.

The United States acted with extraordinary speed and admirable logistical planning in removing the Bikinians. In just one month it implemented its decision to use Bikini Atoll as an atomic weapons testing ground. One U.S. military official, quoted in *Time* magazine, referred to the removal of the Bikinians as "one hell of a good sales job." The *New York Times*, in an article entitled "The

Strange People from Bikini," stated: "Primitive they are, but they love one another and the American visitors who took their home."

"Two Idaho Potatoes"

Unfortunately, the removal of the Bikinians from their home in 1946 was the only time the United States ever executed an action involving them with such swiftness, energy, or commitment. The Bikinians were left on Rongerik with only a few weeks' supply of food and water. The Navy, meanwhile, assured the media that the Bikinians were pleased with their move. One Navy press release reported that the "natives are delighted, enthusiastic about the atomic bomb, which has already brought them prosperity and a new promising future." An Associated Press story, quoting a Navy spokesman, indicated that the move was a blessing in disguise: "Rongerik is much more beautiful and is a richer island than Bikini. Rongerik is about three times larger than Bikini. . . . Coconuts here are three or four times as large as those on Bikini and food is plentiful."

In fact, the move to Rongerik was ill conceived and poorly planned. The land area of Rongerik Atoll is actually much smaller than Bikini—its 17 islands comprise 0.63 square miles, compared to Bikini's 36 islands and 2.3 square miles—and its lagoon is less than one-fourth the size of Bikini's. The life-sustaining coconut palms and pandanus trees on Rongerik were considerably less productive than those on Bikini, and many of the fish in Rongerik's lagoon proved to be poisonous. Moreover, because the Bikinians thought they would be living on Rongerik for only a short time, they did not bother to tell the Navy that according to their mythology the atoll was inhabited by an evil spirit that contaminated the fish in the lagoon.

By May 1946, less than two months after they arrived, the Bikinians asked the Navy's permission to leave Rongerik and return home, but their request was denied. There were severe food shortages during the winter of 1946-1947; a U.S. doctor who visited the

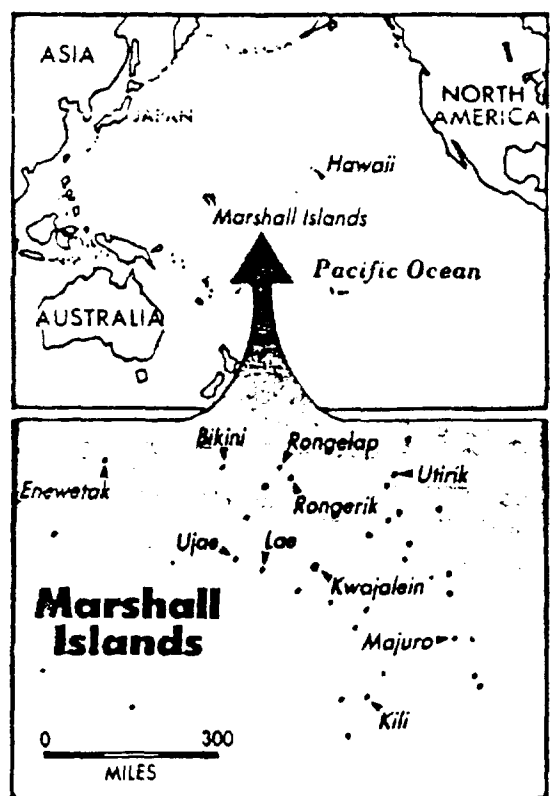
Bikinians in July 1947 reported that they were "visibly suffering from malnutrition." Six months later another medical officer examined them and reported that they were starving. The people were rationing themselves to one bucketful of water per household a day and were cutting down young palm trees in order to eat the heart of the palm because there was nothing else to eat.

But U.S. military authorities understood neither the deplorable conditions on Rongerik nor the Bikinians' deeply felt ties to their home. A 1946 *New York Times* article on the future of Bikini after Operation Crossroads reported that "Juda of Bikini and his people, now living on Rongerik Atoll, will probably be repatriated if they insist on it, though the United States military authorities say they can't see why they should want to: Bikini and Rongerik look as alike as two Idaho potatoes."

The near starvation of the Bikinians on Rongerik could not be ignored indefinitely, however, and in March 1948 they were moved to a temporary camp on Kwajalein, an atoll in the Marshalls that was being developed as a U.S. military base. That summer Bikinian leaders again were taken to explore possible relocation sites. They selected Kili, a fertile island 400 miles south of Bikini that had been used as a copra plantation by the Germans and Japanese. (Copra, or dried coconut meat, is the cash crop of the Marshalls; when processed, it yields coconut oil.)

The Bikinians chose Kili partly out of frustration and anger at their plight. In the Marshalls almost all land is owned by paramount chiefs, or *iroijes*, who historically functioned much like feudal lords, receiving a form of tithe from the subjects who worked their land and providing them protection in times of danger. The deprivation and psychological stress the Bikinians experienced on Rongerik led them to question their traditional belief in the power of their *iroij*, whose role as protector had begun to diminish by the twentieth century. One of the strong attractions of Kili was that it was not con-

trolled by an *iroij*; the island had passed to the United States as public domain land after World War II. By moving to Kili the Bikinians effectively rejected their own paramount chief, who had been unable to help them return home, and adopted the United States as their surrogate *iroij*. To this day the people refuse to recognize the *iroij* who claims dominion over Bikini.



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The majority of the Bikinians, who now number more than 900, continue to live on Kili. Life is difficult there. Kili is an island, not an atoll, and a small island at that—0.36 square miles (230 acres) or less than one-sixth the land area of Bikini Atoll. It has neither a lagoon nor sheltered fishing grounds, so the skills the people developed for lagoon and ocean life at Bikini are useless on Kili. Moreover, since Kili runs parallel to the northeast trade winds it has no leeward side, and the

island is virtually inaccessible from November to May, when the trade winds cause heavy surf to pound it.

Since visits by trust territory ships to Kili are infrequent and irregular, the Bikinians have lost their incentive to produce copra, which is frequently left to spoil or is eaten by rats before the ships arrive. At times, food supplies on Kili have run critically short. In 1952 supplies were so low that the U.S. government airdropped emergency rations onto the island (without the aid of parachutes, so that most of the food was smashed and rendered inedible).

The drastic change from an atoll existence, with its abundant fish and islands as far as the eye could see, to an isolated island with no lagoon and inaccessible marine resources, took a severe psychological and physical toll on the people. Kili's soil is richer than Bikini's, but the Bikinians are not skilled in the intensive agricultural techniques needed to make the island productive. They are fishermen, not farmers.

The Bikinians were completely self-sufficient before 1946, but after years of living on free U.S. food programs on Kili, they have virtually lost the will to provide for themselves. Moreover, since they refuse to accept the move to Kili as anything but a temporary resettlement, they have been reluctant to adjust fully to life on the island. They miss the diversions available on the islands of Bikini Atoll. As one Kili resident lamented: "At Bikini, one could always go to another island, but here it's always the same. Sleep, wake up, Kili. Sleep, wake up, Kili. Again, sleep, wake up, Kili. Kili is a prison."

Baker and Bravo

While the people of Bikini were all but neglected by the United States, the nuclear testing program at Bikini Atoll received top government priority. The United States detonated 23 nuclear devices there between 1946 and 1958, and the testing formed a crucial part of the U.S. nuclear weapons development program. Bikini suffered severe damage

during the testing program. The 1946 Baker shot alone left 500,000 tons of radioactive mud in the lagoon. Nevertheless, official Navy pronouncements remained optimistic concerning Bikini's condition. A 1947 release is typical: "Scientists now engaged in an intensive six-week survey of the Bikini Atoll can find few visible effects of [the atomic tests]." The atoll, the release continued, is "the same placid palm-ringed lagoon on which King Juda and his subjects sailed in outrigger canoes."

Among the U.S. tests was the 1954 Bravo shot, the second of the hydrogen bomb tests, 750 times more powerful than the Hiroshima bomb. Bravo, the largest single nuclear explosion detonated by the United States, was so powerful that it vaporized several small islands and parts of others in Bikini Atoll and left a one-mile circular hole in the reef. Moreover, what was described at the time as an unprecedented shift in wind direction sent the 20-mile-high cloud of radioactive particles from the blast drifting 240 miles eastward across Bikini and several inhabited atolls in the Marshalls. In fact, U.S. officials had received an incomplete and alarming report concerning possible changes in the wind direction.

Rongelap and Utrik atolls were in the path of the fallout, which fluttered down like snowflakes. Ninety per cent of the Rongelapese people suffered skin lesions and loss of hair. Today, 19 of 21 Rongelapese who were under 12 years old at the time of the ironically code-named Bravo shot have developed thyroid tumors or other radiation-related illnesses. The people of Utrik, who were not removed from their atoll until more than three days after the blast, have recently experienced a sudden increase in thyroid diseases and cancers.

The United States has paid several thousand dollars in compensation to the two peoples, and it will provide them with medical care in the post-trusteeship period. But they, like the Bikinians, are living legacies of the double standard the United States applied

to the Marshallese people in its role as U.N. trustee. One can only wonder where the American nuclear energy industry would be today if the accident at Three Mile Island in 1979 had perceptibly injured several hundred U.S. citizens.

In 1958 President Eisenhower declared a moratorium on U.S. atmospheric nuclear testing, ending the 12-year testing program in the Marshall Islands and raising the Bikinians' hopes for resettlement. It was not until 1967, however, that a blue-ribbon ad hoc committee appointed by the AEC reviewed the results of a radiological survey of Bikini and declared the atoll "once again safe for human habitation." The committee, which according to the AEC's chairman consisted of "eight of the most highly qualified experts available," concluded that "the exposures to radiation that would result from the repatriation of the Bikini people do not offer a significant threat to their health and safety." A year later Johnson announced that "the major islands of the atoll are now safe for human habitation," and he ordered the atoll rehabilitated and resettled "with all possible dispatch."

One Navy press release reported that the "natives are delighted, enthusiastic about the atomic bomb."

The Bikinians on Kili were jubilant at the news, and nine of them were taken on a reconnaissance of Bikini. Their elation soon turned to shock and sorrow. The idyllic homeland of their memories had disappeared: the coconut trees were gone, and only scrub vegetation remained. One journalist reported that "areas closer to the bomb sites have the look of African desert country, with scrub trees and brush in command of parched land." On seeing the site of the Bravo shot, where blue water and sand bars were all that remained of three or four islands, the Bikinians declared that their islands had lost their bones. One of the leaders was so overcome that he wept openly.

Nevertheless, the AEC declared that Bikini was safe. "There is virtually no radiation left," one AEC official stated in 1969, "and we can find no discernible effect on plant or animal life."

A Complete Failure

In 1969 the first Bikinians returned to their atoll to assist in the resettlement project. The Department of the Interior (DOI) began construction on 40 homes. Bikini Island and Eneu, a nearby island, were bulldozed, and the topsoil was turned over to reduce radiation. By the end of the year, 50,000 new trees were planted on the islands.

All signs pointed to a happy ending for the Bikinians. In 1971 the director of the AEC's Division of Operational Safety reported that numerous well water samples had been taken from several locations on Bikini Island and that, "from a radiological viewpoint, the water is safe to drink." In late 1973 the United States announced that construction on Bikini was nearly complete, and that "if all is acceptable to the people, the trust territory government is prepared to allow them to return to Bikini Atoll permanently by Christmas this year."

As the Bikinians began to return to their atoll, however, DOI recognized that a new, more thorough, radiological survey of Bikini was needed. In 1972 the AEC had made such a survey of Enewetak, a Marshallese atoll also used as a nuclear test site. Instruments used in the Enewetak survey, such as airborne sensors, were far more sensitive and accurate than the equipment used to conduct the 1967 survey of Bikini. The Enewetak survey was the starting point of a massive cleanup by the U.S. government, and most of the Enewetakese now are being resettled in the southern part of their atoll, which was left relatively free of contamination by the tests. A debate simmers, however, over whether to permit resettlement of Enjebi, an island in the north whose radiation levels exceed federal standards.

In late 1974, Secretary of the Interior

Rogers C. B. Morton, alarmed by the findings of routine, unsophisticated radiological surveys, halted construction on Bikini Island. He wrote to Defense Secretary James R. Schlesinger several months later, in March 1975, to request that a thorough survey be conducted on Bikini, warning that "despite assurances that the atoll is safe, the attitudes and fears of the people are being influenced by various outside groups, many of whom are critics of the nuclear program." In order to "avoid . . . the loss of our credibility" with the Bikinians, Morton concluded, "we must answer the critics."

The Interior Department needed the Defense Department's (DOD) logistical support for the survey, for neither Interior nor the Energy Research and Development Administration (ERDA)—successor to the AEC and precursor to the Department of Energy (DOE)—had the logistical capability or the money to conduct the survey. But although Morton's letter said that ERDA was prepared to conduct a radiological survey in April, DOD did not even respond until the end of May, when it stated that it could conduct the survey at a "reimbursable cost" of \$609,000. Since Interior had no funds for reimbursement, Defense declined to take on the task.

DOI tried again in June. Interior bluntly stated in a letter that it was "deeply concerned that a quality radiological survey such as that performed on Enewetak, whose people will not be coming back for some time, cannot be made available in a timely fashion for the Bikinians whose return is imminent." Warning that "none of the involved departments has budgeted adequately for this needed and highly warranted effort in order to meet our statutory and moral commitments to the people of this area," the letter concluded that the United States required "a strong reaffirmation by all concerned agencies to work together in carrying out a comprehensive program." But no survey was conducted.

Meanwhile, some Bikinians had expressed a desire to build homes in the interior of the

island away from the lagoon. A routine radiological survey of Bikini Island conducted in June 1975 yielded ominous results. It revealed that the island's interior was too radioactive for housing and that some wells there were contaminated with radioactive plutonium. Furthermore, it showed that while coconuts were safe, breadfruit and pandanus, two staples of the Bikinian diet, contained unacceptably high levels of radiation. The survey report concluded that if the Bikini resettlement program proceeded as planned, the people would receive external gamma radiation in excess of federally prescribed limits.

The Bikinians, frustrated and confused by the contradictory information they were receiving, brought suit in federal court in October 1975 to force the United States to stop the resettlement program until it conducted the much-discussed comprehensive radiological survey of the atoll. In the complaint the Bikinians openly conceded their ignorance as to the atoll's safety, ignorance which, it now turns out, was shared by the U.S. government. The Bikinians stated: "For us to make an intelligent decision to resettle Bikini Atoll, we must be able to weigh our desire to return against the radiological risks of returning. We have not been provided with that information. . . ."

Settlement discussions quickly followed the filing of the lawsuit, and the United States readily agreed to conduct the survey. Nevertheless, governmental infighting continued over which agency would pay for the survey, and how much it would cost. The Defense Department, asked in 1976 to estimate the cost of a radiological survey of the entire northern Marshall Islands, put the figure at \$2.58 million. The House Interior Appropriations Subcommittee promptly budgeted \$2.6 million for the survey in 1977, but Defense took no action, saying it needed more money.

This squabble over paying for the survey lasted three years. During this time the fears of the Bikinians were borne out: tests in 1977 showed that the level of strontium 90 in the

well water on Bikini Island exceeded acceptable U.S. standards. Coconuts, formerly thought safe, turned out to contain high levels of radiation, and the islanders were told that they could eat only one a day. Medical examinations revealed that the people living on Bikini had absorbed doses of cancer-causing radioactive elements—such as strontium, plutonium, and cesium—in excess of those considered safe by U.S. experts.

In early 1978 U.S. scientists concluded that the Bikinians' alarmingly high levels of internal radiation were caused by their consumption of locally grown foods planted as part of the Bikini rehabilitation project. U.S. officials immediately informed the 139 people living on Bikini Island that they could no longer eat locally grown food but were to subsist solely on food and water brought in from the outside.

The outside food support system, which had been initiated in the mid-1970s to provide supplements to local food grown on Bikini, was a complete failure. Although the trust territory government scheduled monthly trips to take food to Bikini Island, it did not have enough ships to provide regular service. Ships did not call on Bikini for two or three months at a time, so the people on the island, having exhausted their supply of imported food, had no choice but to eat the contaminated food they grew themselves. By March 1978 Interior concluded that Bikini Island would have to be declared off limits for long-term habitation for at least 50 years, and it began to plan moving the people living on Bikini Island five miles south to Eneu.

One month later a medical team arrived on Bikini to test the islanders again. Ironically, the Bikinians, who still did not understand the risks to which they were being exposed, offered coconuts—the most radioactive crop on the island—to the arriving scientists as a sign of friendship. Examinations showed what was described as an "incredible" one-year, 75 per cent increase in body burdens of radioactive cesium 137. U.S. scientists stated that the people living on Bikini may have

ingested the largest amounts of radiation of any known population, and they concluded that it was necessary to move the people off the island as soon as possible.

History sadly repeated itself in August 1978, as U.S. ships once again entered Bikini lagoon, and the 139 people on the island packed up their possessions and left. No one has been allowed to live there since then.

Living Laboratory

The experiences of the people of Bikini since 1946 prove Murphy's Law. Anything that could go wrong did. But why? Why did the AEC ad hoc committee conclude in 1968 that Bikini was safe? What led the AEC in 1971 to state that the water was safe? Why did the Bikini resettlement begin before all the facts were known?

There is a strong feeling among Bikinians that they were moved back to Bikini as human guinea pigs in order to enable U.S. scientists to measure the long-term effects of low-level radiation. They point, for example, to a 1976 study prepared for DOE that concluded:

Bikini Atoll may be the only global source of data on humans where intake via ingestion is thought to contribute the major fraction of plutonium body burden. . . . It is possibly the best available source of data for evaluating the transfer of plutonium across the gut wall after being incorporated into biological systems.

DOE vigorously denies the charge that it used Bikini as a living laboratory, but serious questions are raised by the AEC's decision in 1968 to move people back to Bikini Island. Ignorance was a major factor in the AEC's decision. Scientists in 1968 could make reasonably accurate estimates of the long-term risks associated with external radiation on Bikini, but external doses constituted only 10 to 15 per cent of the islanders' total exposure. The bulk came from internal doses, the results of drinking contaminated well water and ingesting food grown in Bikini's radioactive soil. Scientists in 1968 had no

way of accurately predicting the levels of internal doses of radiation, short of moving people to the island and studying them over the years. That is exactly what they did, and in this sense the Bikinians' suspicions are well founded.

On seeing the site of the Bravo shot . . . the Bikinians declared that their islands had lost their bones.

An equally troublesome factor in the AEC's decision-making process was what seems to have been sheer negligence. To estimate internal doses of radiation, the AEC needed to know something about the diet of people who would be living on Bikini. Lacking detailed information, the AEC referred to a 1957 report by an AEC researcher on the diet of other people living in the Marshall Islands. This study predicted that the Bikinians' entire daily intake of coconut meat and milk, the only liquid in their diet, would be nine grams, or several teaspoonsful.

This figure was obviously wrong. The author of the report has suggested that the nine-gram figure in the AEC study may have been a typographical error. In fact, recent reports revealed that the correct figure is closer to 600 or 700 grams. Whatever the reasons for the error, it rendered the AEC's internal dose assessment calculations ludicrous.

Carter administration officials and the Congress concede that America neglected the Bikinians in the past, but they have promised to rectify three decades of mistakes and bungling. To a limited extent, their promise has been kept. Congress, under the strong leadership of Representatives Phillip Burton (D.-California) and Sidney R. Yates (D.-Illinois), has passed legislation providing for periodic radiological surveys of Bikini Atoll, updated radiation dose assessments, and a comprehensive health-care program for the people of Bikini. It has also appropriated \$6 million for a trust fund for the Bikinians, as well as \$1.4 million for direct distribution to

them. (The trust fund pays approximately \$40 per month to each Bikinian, and the one-time \$1.4 million payment will amount to \$1,520 per person.)

Nevertheless, the bigger questions remain unanswered. The Bikinians, most of whom have resided on Kili Island for over 30 years, must be resettled, but there are no suitable locations available outside their atoll. Land in the Marshalls is scarce, and there is nowhere the Bikinians could resettle without being squatters on someone else's land. Most of the Bikinians, however, reject the possibility of moving out of the Marshall Islands area (say, to Hawaii), because they fear they would lose their Marshallese identity and cultural heritage.

One possible compromise is Wake Atoll, annexed by the United States in 1899 but considered by some to be part of the Marshall Islands. Located some 425 miles north of Bikini, Wake has no indigenous population. It has very little rainfall and virtually none of the life-sustaining vegetation commonly found throughout the rest of the Marshall Islands, but it does have one very attractive feature for the Bikinians—the American military.

The Bikinians' desire to be looked after by the United States may seem ironic, but it is understandable. The U.S. military removed them from Bikini in 1946. The Bikinians have not yet been given a home, so they look anxiously to the United States to continue to care for them. They view Wake as a pocket of continuing U.S. presence in the region, and in 1979 they asked that it be considered as a possible resettlement site. The Pentagon, however, has flatly refused to permit them to settle there.

Even more attractive to the Bikinians than Wake is Eneu, an island five miles south of Bikini in Bikini Atoll. Eneu is three times the size of Kili, it provides a calm lagoon for fishing, and it is equipped with an airstrip built for the weapons testing program.

Since it is uncertain whether Eneu can handle a large number of people, the Bi-

kinians propose to settle there using a system devised by the people of Enewetak in the mid-1970s, when they, like the Bikinians, were living temporarily on another atoll. When the southern islands of Enewetak were ready for habitation, the people had to decide who would move. Since the whole population could not move at once, the people set up a rotation system by which a certain percentage of the population moved to Enewetak for six months. After six months these people left and were replaced by another group. This rotation program is working successfully today. The Bikinians have proposed to apply it to Eneu Island.

If the system is implemented, only part of the Bikinian population could be accommodated on Eneu at any given time; the remainder would stay where they are living now. Most of the Bikinians—550, or about 60 per cent—are living on Kili, and the rest live on other atolls in the Marshalls. Some Bikinians may wish to live permanently on Kili or elsewhere without going back to Eneu.

Snags and Squabbles

It has always been assumed that the Bikinians would live temporarily on Kili until they could return to Bikini. If DOE projections are correct, a return to Bikini Island is at least several generations away, so the Bikini resettlement program should provide continued support for people on Kili. The Bikinian community on Kili will require permanent housing; a short airstrip; and improved ocean access—either a dock, a deeper channel, or a ferry stationed at the nearest atoll, 40 miles away.

Resettlement on Eneu, which the Bikinians have proposed to Congress and the administration, is not without pitfalls. Is the island safe for habitation? If it is, how will a rotation program be enforced? Who will insure that the people do not go five miles north to eat the food on Bikini Island? Who will take charge of the program, and who will insure that ships arrive with imported food at Eneu on a regular basis?

Radiation levels on Eneu are one-eighth the levels on Bikini Island. Both government and independently hired scientists agree that resettlement on Eneu, even without a rotation system, will result in radiation exposures well within federal radiation protection guidelines, provided the people eat no food from Bikini and maintain a diet consisting of 50 per cent food grown on Eneu and 50 per cent imported food. The Bikinians have given their assurance that they would comply with these conditions and that they would be willing to accept restrictive measures to insure that they do not violate DOE proscriptions. - Given the Bikini Island experience, it is clear that an Eneu resettlement program, if adopted, cannot be implemented halfway. There must be a special ship purchased and earmarked for supplying Eneu with imported food. There are adequate local crops growing on Eneu, so there will be little incentive to travel to Bikini to obtain food. Nevertheless, the Bikinian leaders, perhaps together with Marshallese or American officials, would have to take responsibility for keeping the people away from Bikini Island. Moreover, the homes built on Bikini in the early 1970s could prove to be an attractive nuisance and might have to be removed.

An Eneu rotation program will require good planning and implementation by the United States and sacrifice and self-discipline on the part of the Bikinians. But the people of Bikini strongly support the program, even though it is a far cry from their hopes of returning to Bikini Island.

Resettlement on Eneu will accomplish three important objectives. First, it will give the Bikinians an outpost at Bikini Atoll, their homeland. Second, it will insure the active participation of the United States after its trusteeship of the Marshall Islands terminates. Third, a rotation system will reduce each individual's living time on Eneu, thereby minimizing his exposure to radiation. Although scientists agree that radiation exposures on Eneu are well within federal

standards, every effort should be made to keep exposure as limited as possible.

There remains the principal policy question regarding a resettlement program for the Bikinians raised by Carter's pledge to end the U.S. trusteeship of Micronesia in 1981: Who should negotiate the program and how should it be implemented? In January 1980 the United States and the Marshalls initialed a Compact of Free Association that will grant a large degree of self-rule to the islands, and the agreement will be submitted to Congress as soon as the other Micronesian governments have signed. The compact provides that the governments of the United States and the Marshall Islands "shall set forth in a separate agreement provisions for the just and adequate settlement" of all post-trusteeship nuclear claims issues, ranging from monetary claims to medical treatment, radiological surveillance, and "such additional programs and activities as may be mutually agreed. . . ."

The United States continues to treat the Pacific islands as its backyard dumping grounds.

The compact is ambiguous on the question of who should negotiate these programs and how they should be implemented. It states only that the two governments shall confront these matters "in a separate agreement," but it does not specify the parties to the negotiations leading to such an agreement and is silent on the question of its implementation.

The Marshall Islands government has indicated that it intends to negotiate a separate agreement exclusively with the United States. It desires direct government-to-government negotiations on these issues, perhaps with token representation by the Bikinians on its delegation, in order to shore up its new sovereignty. To be sure, there are some nuclear-related matters that should be addressed in this way, such as the responsibility, if any, of the Marshall Islands government to insure

that Bikini Island is not resettled, and the action, if any, that government will take should the Bikinians receive radiation doses in excess of federal standards.

But the Bikinians strongly resist the idea of direct negotiations on resettlement between the American and the Marshall Islands governments, for they doubt that the government of the Marshall Islands would act in their best interests. When the government came into existence two years ago, the Bikinians voted for the losers. And the Marshallese president, Amata Kabua, is the son of the *iroij* whose claim to ownership of their atoll the Bikinians have rejected.

It was the United States, not the Marshall Islands government, that took possession of Bikini Atoll, rendered it uninhabitable, and promised to care for its population until Bikini Island could be resettled. The United States has the wherewithal to provide housing, food support, transportation, monetary compensation, radiological surveillance, medical care, and arrangements for an eventual return to Bikini Island; the government of the Marshall Islands does not. Interposing the Marshall Islands government in the formulation and administration of a resettlement program can only cause further bureaucratic snags and squabbles of the kinds that have plagued the Bikinians for 34 years.

If the United States is to fulfill its stated obligation to the people of Bikini, Congress must legislate a resettlement program for them under the direct supervision of the U.S. government. The separate agreement referred to in the compact between the United States and Marshall Islands should incorporate this legislation directly and stipulate that it preempt any other terms of the compact with which it may conflict.

Beyond Incompetence

The record of U.S. policy toward the Bikinians over the past 34 years is dismal. The legality of the fundamental decision to appropriate non-U.S. land for military purposes and to remove non-U.S. citizens from

that land was either never questioned or dismissed without concern.

The first move of the Bikinians—to Rongerik—was ill conceived and nearly tragic. The second move—to Kili—has caused unwarranted hardship. The conclusions drawn from the 1967 survey were wrong. The 1968 decision to move people back to Bikini was wrong. The AEC focused more on the resettlement of Bikini than on the careful assessment of the island's safety, and the constant reassurances that there were no serious radiation problems were based on incomplete information. The three-year interagency bickering over paying for the cost of the radiological survey was deplorable. The trauma of August 1978, when Bikinians again were removed from their atoll, might have been avoided if a comprehensive study of the islands had been conducted several years earlier or if U.S. scientists had been more honest and conscientious in recognizing their ignorance of the real dangers.

The Bikinians described themselves at a 1978 congressional hearing as "victims of bureaucratic incompetence." But the problem goes beyond incompetence; it is one of indifference. The Pacific community is perhaps the only major region of the world today whose foreign policy is entirely pro-American. Furthermore, the western perimeter of American strategic defenses has receded over the past decade from the Asian continent into the Pacific. Yet the United States continues to treat the Pacific islands as its back-yard dumping grounds, disregarding the interests and legitimate rights of their inhabitants.

It is with an eerie sense of déjà vu that one reads the State Department testimony of June 1979 regarding potential storage sites in the Pacific basin for spent nuclear fuel. State suggests that the ideal location for storing nuclear waste would be an island "far from [populous] areas . . . without severe weather conditions and having long-term geologic stability . . . with sufficient land area including areas for necessary harbor and airfield facilities."

The Pacific community, not surprisingly, has reacted strongly to Washington's proposal that a Pacific site, such as Wake, Midway, or Palmyra, be used as a storage facility. "The day has long passed," one Pacific journal editorialized, "when the United States could arbitrarily decide on which islands to bomb and which islands would be laden with nuclear waste."

It is difficult for outsiders to understand the importance of land to the Marshallese people. Land is not a commodity for them: it is a symbol of individual identity. Through its nuclear testing program, the United States gained a position of nuclear strength. The people of Bikini, on the other hand, lost their land—and with it their identity. The testing program is over, but Bikini will bear its scars for many generations, and the United States must continue to provide direct care for the people of Bikini for the indefinite future.

Two years ago Tomaki Juda, leader of the Bikinians, recalled before a congressional subcommittee the ironic words of Wyatt, who asked the Bikinians to leave their atoll so that it could be used "for the good of mankind and to end all world wars" and compared the Bikinians to the Children of Israel whom the Lord led into the Promised Land. Juda testified that his people "were naive then," and he concluded: "We are, sadly, more akin to the Children of Israel when they left Egypt and wandered through the desert for 40 years." Resettlement on Eneu will return the Bikinians to their atoll, if not to their homeland, and it will help them begin to rebuild their identity and dignity.