

BIKINI RESETTLEMENT PROGRAMThe Problem

On August 12, 1968, President Johnson announced that certain islands in Bikini atoll in the Marshall Islands, Trust Territory of the Pacific, were no longer required for the nation's nuclear testing program or for defense purposes and that they were safe for return to civilian uses. He called upon various interested government agencies to cooperate in the preparation and implementation of a redevelopment and resettlement program.

This announcement culminated a prolonged period of radiological and biological surveys by the Atomic Energy Commission and a specific 1967 study to determine whether the islands in the atoll were safe for human habitation. The President's announcement was based upon a finding that the islands of Bikini and Enyu in the atoll were sufficiently free of radio activity so that there would be no serious hazards to bar resettlement if certain simple precautions were taken.

Ever since Bikini was acquired by the U.S. Navy in 1946 and the persons then living on the atoll, about 150 people, were relocated ultimately on the island of Killi, the displaced Bikini people have been looking forward hopefully to the time when they could return to their home islands. The Bikini population now living on Killi amounts to about 350 persons and an additional 200 people claim land rights on Bikini. Killi lacks a lagoon and in other respects has not provided the Bikini people with the economic environment or resources they desire or to which they were accustomed when living on Bikini.

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BIKINI SURVEY (Bio-med)  
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Because of growing population pressures and a shortage of productively inhabitable land areas in the Marshalls, it is the obligation of the United States to return to civilian uses any areas which are excess to its needs. The total land area of the Marshall Islands is approximately 70 square miles. With a 1967 population of approximately 19,000 the square mile ratio is 270. Killi has a land area of 0.36 square miles. On the other hand, Bikini atoll has a land area slightly in excess of two square miles. Its lagoon area is about 229 square miles.

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WIS* Bikini atoll is greatly changed as a consequence of the tests which were conducted there in the late 1940's and the 1950's. Some islands have totally disappeared; others are mere sand spits; still others have been diminished in size as a result of wave action; and all have suffered some loss of topsoil. Other than the main islands of Bikini and Enyu, they have a sufficiently high radiation level that continuous habitation is not yet possible and their damaged condition precludes substantial agricultural development at this time. Bikini and Enyu are overgrown with a jungle-like stand of scrub vegetation which will sustain neither subsistence nor commerce. This must be cleared and the island replanted to coconuts and other food crops. Additionally, all islands are littered with the remains of the testing programs. These remains, some of which are dangerous because of deterioration alone, some because of residual radioactivity, and others because they would interfere with or preclude agricultural redevelopment, must be removed before the Bikini people can be permanently resettled on the atoll. Housing and community facilities are non-existent and need to be provided.

The problem, therefore, is to plan, program and execute the redevelopment and resettlement of Bikini in compliance with the President's statement that "It is our goal to assist the people of Bikini to build on these once desolated islands a new and model community."

### Assumptions

The first assumption is that national policy as reflected in the Presidential announcement obligates the interested Federal agencies to carry out the President's instructions. On August 12 he requested the Secretary of Defense, the Chairman of the Atomic Energy Commission, and the Director of the Bureau of the Budget to cooperate and assist in effectuating a resettlement program. Bikini atoll is within the administrative jurisdiction of the Trust Territory of the Pacific Islands and the Department of the Interior. The Atomic Energy Commission has an interest because the AEC was responsible for much of the testing program which over a period of years devastated the islands in the Bikini atoll; destroyed most of the coconut trees, and left the islands littered with bunkers, towers, concrete slabs and a vast amount of other structures and debris. The Department of Defense is another interested agency because the atoll was taken for testing purposes by the military in 1946, the Bikini atoll was under military jurisdiction prior to the Presidential announcement, and the return of the islands followed Defense Department determination that Bikini atoll was no longer required for defense purposes.

It is further assumed, therefore, that the Atomic Energy Commission, the Department of Defense and the Department of the Interior have joint United States responsibility for restoring the island for resettlement and that the distributing of appropriate portions of the redevelopment program and costs must be determined and accepted by the appropriate agencies before the redevelopment can proceed.

Finally it is assumed that the habitable islands, Bikini and Enyu, must be cleaned up and cleared of unusable structures and debris before redevelopment

can proceed. Other islands of the atoll which are neither safe for continuous human occupation or which are no longer productive in an agricultural context need to be cleared of all dangerous debris.

## Alternatives

To determine the problems and develop estimates of redevelopment costs the Atomic Energy Commission, the Department of Defense, the Department of the Interior and the Trust Territory of the Pacific Islands conducted an on-site survey of Bikini in late August. It was agreed that until conditions on the islands had been inspected no reliable redevelopment cost estimates could be projected. Inasmuch as the President's announcement was not issued until mid-August and in view of the time required to survey the islands following the announcement to develop preliminary cost data, it was not hitherto possible to reflect the Bikini program requirements adequately or accurately in the 1970 program or budget justifications.

Following the August-September survey trip the Atomic Energy Commission worked up estimates of the cost of clearing the islands of debris and scrub vegetation and the Trust Territory developed estimates for replanting, redevelopment and resettlement. Cleanup costs are estimated to be \$1,200,000 and it is further estimated that the cleanup job could be completed within a six-month period after funds are made available. Detailed estimates are attached. Redevelopment costs are estimated to total \$2,781,800 over a five-year period. The bulk of the redevelopment expense is encountered in the first year of new construction. Cost data are provided in exhibits attached to this paper. For program planning purposes the costs have been allocated to seven major categories:

Atoll cleanup .....	\$1,200,000
Planning.....	15,000
Replanting.....	177,000
Grove Maintenance.....	112,000
Construction.....	815,000
Administration.....	245,000
Resettlement.....	<u>217,800</u>
	\$2,781,800

Because (as discussed below) the Bikini people will have to continue to live for the next several years on Killi and because there is some probability that some of them will elect to remain on Killi rather than relocate themselves on Bikini, some improvements to housing, community facilities, and agricultural resources are in order for that island. These costs are estimated at approximately \$100,000 and are required in fiscal year 1970 and 1971.

Similarly, the plight of the former Eniwetok people, who have been relocated on Ujelang, requires attention. These people were removed from Eniwetok shortly after the removal of the Bikini people and resettled on the much smaller Ujelang atoll. The Defense Department has concluded that national security requirements for Eniwetok are such that return of these people is not foreseeable. The Ujelangese are in urgent need of improved housing, community facilities, and agricultural resources, all of which are currently beyond their means. Their near desperate situation is highlighted by the impending end of the Bikini odyssey. Improvements to the Ujelang community are estimated to total \$80,000 for fiscal years 1970 and 1971.

The total resettlement program, including clearing, redevelopment over a five-year period, and essential improvements to the Killi and Ujelang communities, is estimated to amount to \$2,961,800.

The alternatives are:

1. Do nothing now, but let a few islanders return and reestablish residence on Bikini in its present condition.

This alternative is rejected because of the moral responsibility as well as the political, sociological and economic need to rehabilitate the islanders.

Survival would be difficult and the redevelopment of Bikini would be a painfully slow process covering generations. It would be inconsistent with the President's goal of assisting the Bikinians to build a new and model community.

2. Defer action until required funds can be programmed in fiscal year 1971 and subsequent years.

This delay is not recommended because of the world attention which has focused on the United States stewardship of Bikini and because of the Trust Territory's need to resettle the Bikini people as soon as possible.

3. Seek a fiscal year 1969 supplemental to cover costs of redevelopment requirements which are most urgent, deferring other expenses until subsequent years.

Although return of Bikini could not be anticipated in time to be included in the regular 1969 appropriation and although the Trust Territory is well under its authorized ceiling, chances of obtaining favorable action on a supplemental request for the redevelopment phase of the program are regarded as negligible. This alternative, therefore, is not recommended.

4. Through joint consultation among interested agencies and the Bureau of the Budget establish a procedure whereby funds may be made available to begin cleanup in the last half of fiscal year 1969 and reconstruction in fiscal year 1970. Other redevelopment expenses can be programmed in subsequent years.

Alternative No. 4 is the recommended course.

## Program Planning Alternatives

1. Cleanup and redevelop facilities to accommodate only the few returning islanders who could subsist in Bikini's present environment.

This is rejected because of the need to resettle and provide as suitable an environment for all of the displaced islanders who have rights to Bikini and who desire to return, not just the few who might be disposed to attempt to survive under Bikini's present conditions.

2. Undertake a replanting and reconstruction program to accommodate all those who desire to return to Bikini now.

This is not recommended because newly planted coconut trees require six to ten years of growth before they are sufficiently productive to provide subsistence and an export crop of copra. If all islanders desiring to return were resettled on Bikini at the outset of the replanting program, they would have to be subsidized for several years. This is not regarded as socially or economically desirable.

3. Replant the island; limit the number of resettled families in the first increment to those who can be employed in construction, planting and orchard maintenance. Phase in other families in subsequent years.

The recommended resettlement program may be summarized as follows:

The main islands of Bikini and Enyu, which are those designated by the Atomic Energy Commission consultants as being suitable for return and redevelopment, shall be cleared of test activity debris and cleared of scrub vegetation so as to permit the replanting of the coconut groves and other food crops. The 4,500 foot airstrip on Enyu will be rehabilitated and the few salvageable

buildings will be used in the clean-up and early redevelopment work.

Clearing of vegetation will be done in strips so as to permit the planting of seedlings with intervening strips of existing vegetation left to control erosion. As the seedlings develop the erosion control strips will gradually be cleared. Replanting, estimated to require 100,000 nuts should follow on the heels of debris and vegetation clearing on Bikini and Enyu.

Clearing of other islands should follow the cleanup of Bikini and Enyu. The other islands of the atoll will not be cultivated or used for residences for the foreseeable future. Clearing will consist of removal of test activity debris, particularly radio-active material. It is planned to leave the massive bunkers which are located on several of these islands. The Bikini and Enyu bunkers will also be left to provide storm shelter or other community use.

Bikini was the population center of the pre-test community and the Bikinians have indicated they want their new village center located adjacent to the cemetery, its former location. This will consist of a dispensary, school, meeting house, church, administrative facilities and some warehousing and equipment shelter. It is planned to construct at the outset facilities (except for the school) which will be adequate for the total anticipated population of Bikini. An addition to the school is planned for 1973.

The Bikinians wish to live on their individual "wetos" (land parcels) rather than in a village complex. This decision on their part will preclude a central water supply and sewerage system although the relative dispersal will have other health benefits. The Bikinians have been living in a village situation since 1946 and appear to prefer the traditional Marshallese style of living on the land. Plans call for the construction of 30 housing units

the first year and six additional units per year for the next five years. Each unit will consist of the dwelling itself, cistern, bath house, toilet, cook house, etc. Costs estimates per unit include these facilities. The Bikini people have stated a preference for permanent--concrete--construction. Housing designs are being prepared to meet these requirements within the \$6,000 cost estimates.

Resettlement costs anticipate the relocation of 30 families as soon as housing is available with additional families being phased into the new community as additional housing and plantings permit. Estimates are based upon an average of 6 persons for each family. They also include a feeding subsidy of \$3.00 a day per family for its first year on Bikini, dropping to \$2.00 a day per family for the second and subsequent years. The employment of Bikinians in the clearing and redevelopment work will diminish the need for direct feeding subsidies pending the maturation of commercial and food crops. Employment is a basic assumption in the plans for Bikini and the cost estimates include wages at the prevailing scale.

The goal is to provide an attractive, healthful, liveable community fully and adequately meeting the needs of the people of the atoll; one which can serve as a model for community development in other Pacific islands.

## Major Objectives

1. Fulfill the United States' moral obligation, albeit not a legal responsibility to return the people of Bikini to their home islands from which they were removed for the convenience of the government twenty-one years ago.

2. Establish the principle that whenever lands are taken in the Trust Territory for defense related purposes, those lands should be restored to their original owners for civilian use whenever they become excess to defense needs. (This principle should apply to all other United States Government land takings, as well.)

3. Implement a sound redevelopment program which will make United States stewardship defensible if not exemplary in the court of world and public opinion.

4. Strengthen the United States's political posture in the Trust Territory and in the United Nations.

### Immediate Goals

1. Complete planning and prototype housing design and prepare plans for other facilities in fiscal year 1969. This can be accomplished by the Trust Territory with funds currently available.

2. Establish a small administrative unit on Bikini in fiscal year 1969 to protect existing assets and facilities and to place the atoll under adequate police and administrative control. This can be accomplished by the Trust Territory with funds currently available.

3. Start the cleanup in the last half of fiscal year 1969.

4. Fund and begin redevelopment in fiscal year 1970.

## Economic Future

Some additional comments are in order with respect to the economic future of Bikini. The basic resettlement program is designed to provide, at the minimum, the coconut-based economy which existed during the pre-testing period. The coconut is virtually the only commercial crop which can be grown on a coral atoll and it is essential to life on such an atoll. The resettlement plans, however, do not preclude building upon this base for a more diversified economy for the returned Bikinians.

The islands and the remarkable lagoon provide a potential for tourism which might be developed to the benefit of the Bikinians. Access is readily available because of the airstrip; the islands are potentially attractive if properly developed; they have an historic aura; some of the physical remains of the testing program are impressive and awe-inspiring; and there are existing recreational resources in the lagoon -- shelling, sport fishing, snorkeling.

A third economic potential is research activity. Bikini has been the basis for considerable study in nuclear-related fields and the return of the people need not terminate such research. In fact, the return of the people might well facilitate such work. The establishment of a research center on Bikini by the Federal Government or by universities and private organizations would provide employment and income possibilities for the local people. The Weather Bureau is already planning a weather station on the atoll.

These opportunities will need further exploration as the resettlement program progresses.

BIKINI RE-SETTLEMENT PROGRAM

Fiscal Years	1969	1970	1971	1972	1973	1974	1975	Total
ATOLL CLEANUP	\$ 600,000	\$ 600,000						\$ 1,200,000
PLANNING	15,000							15,000
REPLANTING		133,000	\$ 44,000					177,000
GROVE MAINTENANCE			21,000	\$ 28,000	\$ 28,000	\$ 28,000	\$ 7,000	112,000
CONSTRUCTION		625,000	36,000	36,000	46,000	36,000	36,000	815,000
ADMINISTRATION	29,000	46,000	50,000	30,000	30,000	30,000	30,000	245,000
RE-SETTLEMENT			25,200					25,200
KILLI IMPROVEMENT		83,300	16,700					100,000
UJELANG IMPROVEMENT		66,700	13,300					80,000
TOTAL	\$ 644,000	\$1,579,200	\$210,900	\$128,200	\$142,500	\$135,800	\$120,200	\$ 2,961,000

BIKINI REDEVELOPMENT COST ESTIMATES

ATOLL CLEANUP - \$1,200,000

The AEC estimates cleanup costs at \$1,200,000. It is hoped this work could get under way by the fourth quarter of FY-69. For planning purposes the total estimated cleanup cost of \$1,200,000 has been allocated as follows:

<u>FY-69</u>	<u>FY-70</u>	<u>FY-71</u>	<u>FY-72</u>	<u>FY-73</u>	<u>FY-74</u>	<u>FY-75</u>
\$600,000	\$600,000	---	---	---	---	---

PLANNING - \$15,000

This cost category includes the survey trip to Bikini and Killi; designing prototype housing and other facilities, and community development planning.

<u>FY-69</u>	<u>FY-70</u>	<u>FY-71</u>	<u>FY-72</u>	<u>FY-73</u>	<u>FY-74</u>	<u>FY-75</u>
\$15,000	---	---	---	---	---	---

REPLANTING - \$177,000

Costs in this category are based on on-site survey made by the Marshall Islands District Agriculturist.

100,000 coconut seedlings @ \$.10 each	\$ 10,000
Trucks and tractors	17,000
Chain saws, machetes, tools	3,000
Lagoon boats (2)	8,000
Misc. equipment and supplies	24,000
Freight and Transportation	30,000
Project manager	15,000
Other labor (20 men)	40,000
Contingency	30,000
	\$ 177,000

<u>FY-69</u>	<u>FY-70</u>	<u>FY-71</u>	<u>FY-72</u>	<u>FY-73</u>	<u>FY-74</u>	<u>FY-75</u>
---	\$ 133,000	\$ 44,000	---	---	---	---

GROVE MAINTENANCE - \$112,000

After replanting is completed the orchard will have to be maintained during the first five critical growth years. On an average basis, annual costs will include:

Orchard manager	\$12,000
Labor	12,000
Supplies and equipment	4,000
	\$28,000

<u>FY-69</u>	<u>FY-70</u>	<u>FY-71</u>	<u>FY-72</u>	<u>FY-73</u>	<u>FY-74</u>	<u>FY-75</u>
---	---	\$21,000	\$28,000	\$28,000	\$28,000	\$ 7,000

CONSTRUCTION - \$815,000

Construction plans envision building 30 houses in the first year to accommodate approximately half of the present population of Killi (360). In the second and succeeding years through FY-75, the redevelopment plan calls for the addition of six houses each year so that by FY-75 there will be a total of 60 units, or sufficient housing to take care of about 360 persons. The Bikini people want to reestablish their homes on their original "wetos" or land holdings. This precludes cluster or "subdivision" planning, and means that the houses will be scattered instead of being grouped in a community complex. Estimated costs of \$6,000 per house include cistern for water catchment, cook house, toilet, bath houses, copra crib, etc. The construction is programmed for completion in FY-70, assuming funding can be arranged. The only construction scheduled for following years is the addition of six houses each year and the addition of expandable school facilities in FY-1973 to take care of increased population.

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The various elements in construction cost estimates are as follows:

30 houses @ \$6,000	\$ 180,000
School	30,000
Church	20,000
Meeting house	15,000
Roads	20,000
Administrative Buildings	20,000
Dock repair	25,000
Airport repair	10,000
Warehouse	10,000
Equipment	30,000
Equipment shed	5,000
Freight and Transportation	100,000
Supervision and labor	100,000
Contingency	60,000
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Total construction FY-70	\$ 625,000

Construction schedule through FY-75:

<u>FY-69</u>	<u>FY-70</u>	<u>FY-71</u>	<u>FY-72</u>	<u>FY-73</u>	<u>FY-74</u>	<u>FY-75</u>
---	\$625,000	\$ 36,000	\$36,000	\$46,000	\$36,000	\$36,000

ADMINISTRATION - \$245,000

It is desirable to establish an administrative unit on Bikini as soon as possible to place the lagoon islands under proper control; protect the area from squatters; protect existing assets; conserve the fishing resource for future settlers, and to provide administrative liaison with agencies and companies who will be involved in the cleanup and redevelopment. For this purpose it is planned to assign a few staff personnel to Bikini by the third quarter of FY-69 to include:

One district representative (U.S.) - 6 months	\$10,000
One assistant (Micro.)	5,000
One boat operator (Micro.)	5,000
One lagoon boat	4,000
Radio	2,000
Other supplies and equipment	<u>3,000</u>
FY-69 estimated admin. costs	\$29,000

For the second and succeeding years the initial cost of radio and lagoon boat would not be repeated. However, if re-settlement begins in FY-70 additional staff would be required to include a health aide in FY-70 and a U.S. teacher in FY-71. It is assumed that by FY-72 all positions could be filled by Micronesians.

The proposed schedule for administrative costs is as follows:

<u>FY-69</u>	<u>FY-70</u>	<u>FY-71</u>	<u>FY-72</u>	<u>FY-73</u>	<u>FY-74</u>	<u>FY-75</u>
\$29,000	\$46,000	\$50,000	\$30,000	\$30,000	\$30,000	\$ 30,000

RE-SETTLEMENT - \$217,800

If construction gets under way at the beginning of FY-70 and includes 30 houses, it is assumed that most of these will be ready for occupancy by the third quarter of FY-70. If the housing is planned and programmed on a "do it yourself" basis, some families may be able to return sooner.

Re-settlement cost data has been projected on the assumption that 30 families will be resettled during the third and fourth quarter of FY-70. Another assumption is that there will be an average of six persons per family or a total of 180 persons (approximately one-half the present Killi population) in the first contingent.

Transportation costs from Killi to Bikini are figured at an average of \$50 per person. A subsistence allowance is estimated at \$3 per family per day for the first half year.

Re-settlement - FY-70

Transportation = 180 x \$50	\$ 9,000
Subsistence = 30 x \$3 x 180	<u>16,200</u>
Total FY-70 re-settlement costs	\$25,200

Re-settlement - FY-71

Continue subsidy 30 families @ \$2/family/day 30 x \$2 x 360 days	\$21,600
6 new families @ \$3/day 6 x \$3 x 360	6,480
Transportation for 6 new families 36 x \$50	<u>1,800</u>
Total FY-71 re-settlement costs	\$29,880

Re-settlement - FY-72

Continue subsidy 36 families @ \$2/family/day = 36 x \$2 x 360	\$25,920
Add 6 new families @ \$3/day = 6x3x360	6,480
Transportation 6 new families	<u>1,800</u>
Total FY-72 re-settlement costs	\$34,200

Re-settlement - FY-73

Continue subsidy 42 families @ \$2/day/family = 42 x \$2 x 360	\$30,240
Add 6 new families @ \$3/day	6,480
Transportation 6 new families	<u>1,800</u>
Total FY-73 re-settlement costs	\$38,520

Re-settlement - FY-74

Continue subsidy 48 families @ \$2/day/family	\$ 34,560
Add 6 new families @ \$3/day	6,480
Transportation 6 new families	<u>1,800</u>
Total FY-74 re-settlement costs	\$ 42,840

Re-settlement - FY-75

Continue subsidy 54 families @ \$2/day/family	\$ 38,880
Add 6 new families @ \$3/day	6,480
Transportation 6 new families	<u>1,800</u>
Total FY-75 re-settlement costs	\$ 47,160

KILLI IMPROVEMENT - \$100,000

Bikini redevelopment and re-settlement plans require continued residence on Killi by half or more of the present population of that island until the economic environment on Bikini can support a larger population than will be possible until newly planted coconut trees begin to produce. It is also likely that there will remain on Killi a "colony" of Bikinians. Therefore improvement of facilities on Killi is required at an estimated cost of \$100,000. This will include improvement of the dispensary, school, water catchment, warehousing, etc. For planning purposes it is hoped to get some work on Killi under way in FY-70 and to complete improvements in FY-71.

FY-70 = \$83,300  
FY-71 = \$16,700

UJELANG IMPROVEMENT - \$80,000

Ujelang is inhabited by approximately 350 islanders, descendants or relatives of the original group moved from Eniwetok. The Ujelang people have been hopeful of returning to Eniwetok but have been told this will not be possible in the foreseeable future. Ujelang coconut trees were planted in German times many years ago. They are beyond the age of maximum production. A program of replanting and thinning and rat control has been started. However, housing, water catchment, dispensary, school and other facilities need immediate improvement, at an estimated cost of \$80,000.

FY-70 = \$66,700  
FY-71 = \$13,300