

~~SECURITY INFORMATION~~

Brig. Gen. K. E. Fields, USA, Director of - 207820  
Military Application, AEC, Washington, D.C.

NOV 18 1952

Carroll L. Tyler, Manager, SFO

DEVELOPMENT OF BIKINI FOR OPERATION CASTLE

SYMBOL: T-6

CLASSIFICATION CANCELLED  
WITH DELETIONS  
BY AUTHORITY OF DOE/OC

M.L. Nash 11/6/84  
J. Diaz 4/22/86  
REVIEWED BY

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Discussions between representatives of your office and personnel of this office and exchanges of correspondence have been concerned with changes in concept regarding development of Bikini for Operation Castle and with the lack of a written record of this development. In this memorandum we will try to review the history of Castle planning involving use of Bikini and provide you with as much information as possible which may be useful to you in informing the Commission of what we are doing and why. Particularly, we hope to assure you and the Commission that the directive to utilize only temporary construction and to make maximum use of temporary and portable facilities has been followed throughout in development of operational facilities at Bikini.

On May 21, 1952, General Clarkson called on Mr. Dean in his office and briefed him on Task Force planning for Castle. Among other things, General Clarkson reported he was examining the pros and cons of shooting very high yield devices elsewhere than at Eniwetok and suggested that the AEC also consider this problem.

By a letter dated June 4, 1952, Ref. DIR-716, Dr. Bradbury informed Mr. Tyler of LASL current planning for Castle, including a statement that a preliminary investigation of the cost of reactivation of Bikini had been begun. A copy of this letter was furnished you by memorandum from Mr. Kraker, dated June 13, 1952, subject: "Plans for Future Test Operations." In this same memorandum, it was reported that the Field Manager, Eniwetok Field Office, had scheduled a reconnaissance of Bikini to evaluate existing conditions at that atoll.

You were furnished a copy of letter, dated June 11, 1952, Ref. J-12121, from Graves to Clarkson, in which expansion of Eniwetok facilities to include Bikini was discussed.

PLANTS, LAGOON, BUILDINGS & LAND

MILITARY RESERVATION AREA

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RG 326 US ATOMIC ENERGY COMMISSION

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Location  
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Folder PLB-L All Breaks  
Fy-54

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OFFICE	Test Oper	Test Oper	EFO	Deputy Mgr	Mgr	
SURNAME	Mar	Graves	Spe	Kraker	Tyler	
DATE	11/10/53		11/12			



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On June 23, 1952, the Commander, TG 132.1, outlined his general concept of Operation Castle, which was then scheduled for September - October 1953. At that time it was thought that the operation would involve testing of as many as three fission experimental weapons of the order of 50 kilotons in addition to one high yield dry experimental device. It was expected that the experimental programs would be as extensive as and probably greater in scope than Ivy. Use of Bikini was being considered at that time and contemplated a forward temporary camp there to accommodate approximately 500 men, and to include a C-47 airstrip. The Field Manager had been asked to submit cost and support estimates and recommendations concerning a construction program to start in October 1952.

Holmes & Narver's Report on Auxiliary Proving Ground in the Marshall Islands, dated August 1, 1952, outlines the criteria utilized in the study. Copies of this report are available in your office. This report proposed construction of a base camp of 250-man capacity at Bikini Island and a shot-island camp of 500-man capacity at the Eniwetok group of islands. Operations would begin with a "beachhead phase" to include preliminary planning and surveying activities on about October 1, 1952.

By letter, dated August 21, subject: "Necessity for Beginning Work at Bikini Atoll," Ref. PG-1-955, you were informed of the work proposed for the "beachhead phase" of Bikini development. Your concurrence in initiating work as proposed was requested.

At AEC Meeting 746 on September 11, 1952, Dr. A. C. Graves outlined Operation Castle, as it was being considered at that time (3 IASL tests and 1 UCNL test). He pointed out the problems related to conducting an operation of several high yield tests at Eniwetok and proposed location of some shots at Bikini. The Commission noted that a survey of Bikini would be initiated as preparation for eventual test shots in the Fall of 1953, and that appropriate authorities in the Department of Interior would be notified of this survey.

As noted in memorandum, dated August 6, 1953, from Guthrie to Reeves, subject: "Development of Bikini" use of Bikini was considered further at AEC Meeting 748 in which the Commission: **ALOO**

- a. Approved the use of Bikini for Operation Castle on the basis of minimum possible expenditure in Fiscal Year 1953.
- b. Authorized proceeding with the beachhead operations proposed by Holmes and Narver in their report of August 1, 1952.

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real estate to accommodate the various structures which would be required, and was suitable for construction of an airstrip of adequate length and load capacity to accommodate inter-stall air transportation with aircraft of C-47 and C-54 type.

Experience in Ivy as to destruction and radiological contamination influenced a decision to relocate a high yield ground shot from Eniwetok to Bikini. The Namu group of islands was selected for this shot and a shot island camp and related facilities became necessary.

In a letter, dated November 28, 1952, which was transmitted to you by memorandum of December 9, 1952, subject: "LASL Revised Test Program," Dr. Bradbury submitted a new concept of Castle proposing that the Operation be increased to six shots and that the operational period be rescheduled from the Fall of 1953 to the Spring of 1954.

It is noted that the Commission was provided copies of Dr. Bradbury's letter of November 28, along with a letter of November 24 from Dr. Yerk, of UCPL, also recommending a date of Spring 1954 for Castle, in Staff Paper AEC 597/2, dated December 10, 1952.

TX No. S-86 of December 092250Z from Captain Hayward concurred in proceeding with the six shot program as proposed. Approval of the revised date was withheld for further study and discussion with DOT. The proposal for scheduling Castle in the Spring, 1954, was subsequently approved.

By letter to you, dated December 16, 1952, subject: "Operational Concept of Operation Castle," reference J-15163, Dr. Graves informed you of the concept of Castle at that time, including planning for four detonations at Bikini Atoll. He requested Commission approval at an early date in order that detailed planning might proceed.

It is beyond the scope of this memorandum to go into the many changes in concept of Castle since December 1952, all of which are familiar to you. The current Castle program, established by TX No. S-43 of October 161644Z from Graves to you and other addressees, is as follows:

**ALOO**

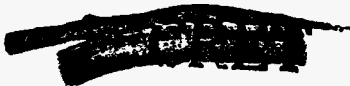
- On Namu reef - Bikini
- On barge off Yurochi - Bikini
- On barge off Yurochi - Bikini
- On ground at Eberiru - Eniwetok
- On barge off Yurochi - Bikini
- On barge off Yurochi - Bikini
- On ground at Eniwesen - Bikini

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- c. Noted that there would be no permanent construction at Bikini and that the maximum possible use will be made of temporary and portable equipment.
- d. Noted that the appropriate authorities in the Department of the Interior and the Military Liaison Committee will be notified of this action by an appropriate letter.

As a result of this meeting, your office transmitted TWI No. S-84 of September 122110Z which authorized initiation of field action.

On October 7, 1952, a meeting, attended by you, Mr. Boyer, Captain Hayward, Lt. Col. Campbell, Dr. Greves, Mr. Burriess, Mr. Spain, and Mr. Cole, was held at Eniwetok to establish basic assumptions on which planning for Operation Castle and subsequent overseas operations could be based. At this meeting, it was decided that:

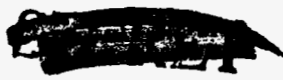
1. Only one Mike-type shot could be performed at Eniwetok in any one operation.
2. That not more than two Mike-type shots should be planned in any operation.
3. That the maximum number of shots which should be planned for any operation would be four, consisting of the above two Mike-type plus two George-type shots.
4. That this total number of four should not be exceeded and any variation in types of shots should reduce the overall requirement rather than add to it; that is, an airdrop could be substituted for a George-type, or a George-type could be substituted for a Mike-type.
5. That any development at Bikini should be on the shot island type development.
6. That any shot equal or exceeding George yield would require evacuation capability.

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Based on program concepts at that time, it was anticipated that one Mike-type and two George-type shots could be detonated at Eniwetok and Bikini would be required only for one Mike-type shot. Decision was, therefore, made to develop only the Eninman group of islands which was adequate for camp and base operations, contained sufficient

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In reviewing the operational history as briefly outlined herein, it will be evident that the requirements for support facilities in the Bikini area have changed extensively since the development of that atoll was planned and construction initiated. The principal camp at Eniwana has been expanded to 1000-man capacity and in addition to serving as a shot island camp for [REDACTED] it functions as the base camp for all supply and operational functions at the atoll. With the decision to detonate more than one device at Bikini, it became necessary that a communication system and control point which would survive the successive tests be provided. To meet this requirement, the island of Enyu has been developed. A communications center to serve the whole atoll and to connect with Eniwetok and a firing center to house the timing and firing gear utilized in providing timing signals to experimenters and in initiating the detonation have been located here in a reinforced concrete structure designed to withstand any anticipated blast and to provide protection from dangerous radiological exposure. A power house similarly constructed will provide uninterrupted power for carrying on activities at the control center. To accommodate communications and technical personnel who will operate at this location, a 100-man camp has been provided.

Due to excessive time which would be lost in transportation, it was decided that shot island camps should be provided at locations where justified. This is the same philosophy which applied in establishing the shot island camps at Eniwetok for Ivy and which has certainly been proved to be realistic and economical. 200-man camps have been established at Namu to accommodate construction and technical personnel preparing for the [REDACTED] test and at Komurikku to accommodate similar personnel preparing for the four barge shots. Camps of these capacities appeared to be adequate for the program with four shots scheduled for detonation at Bikini in the first part of the operation. The revised schedule as listed above has necessitated a review of housing requirements and capacities. Slight increase in capacity of the Enyu or Eniwana camps might be necessary.

In keeping with the Commission directive, all base facilities construction at Bikini has been of temporary type with maximum use being made of portable equipment. As is true for all test operations, many equipment bunkers, instrument stations and other scientific structures are designed to survive specific tests and thus are physically permanent, but not necessarily operationally permanent. The requirements for continued use of the control center at Enyu are scientific rather than operational, hence they are considered in the same category.

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In all camps at Bikini housing is provided in tents. Mess halls, infirmaries, latrines, the principal administration buildings and some few operational buildings at each location are frame construction with plywood siding and corrugated aluminum roofing or roofing felt on plywood. This type of construction is utilized where sanitation and cleanliness require, where materials must be given this type of protection, and where suitable facilities are not available in the form of tents or prefabricated structures. The only operational structure at Bikini with metal siding is the helicopter hangar on Airukiraru. Design considerations indicated that this was the most practical and economical type of structure for this purpose. In all cases structural criteria have been directed toward lowest cost and minimum facilities to meet the temporary requirements. Maximum use has been made of portable equipment such as motor generator sets, distillation equipment, refrigerators, etc. In cases where it was reasonably expected that salvage might not be possible, old and used equipment was moved up from Eniwetok with new equipment being installed at the permanent base on Farry.

Operational planning is directed toward maximum economical pre-shot salvage of equipment and materials at the shot island camps. It is intended that all tents be salvaged although frames probably cannot be removed. Equipment such as generators, water evaporators, reefers, kitchen equipment, etc., will be removed by increments so that the only items sacrificed will be those required immediately up to shot time.

Recreational and personal service facilities have been provided at a minimum consistent with the numbers of people and their periods of occupancy. Recreational facilities at each camp consist of a simple outdoor theater, unpretentious athletic facilities such as ball diamond, volley ball court, a couple of horseshoe pits, and a refreshment area with enclosed and covered serving structure. Personal service facilities include a small exchange type store stocking minimum facilities for personal convenience, a post office and a barber shop. A small, simple chapel has been constructed at the Eninman camp.

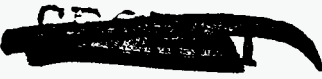
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Utility systems are the minimum necessary to serve the intended purpose, utilizing materials on hand to the maximum extent possible. Distribution and collection systems are sized for the design capacity of the camp with little allowance for departure from design loads. Transportation is over compacted roads without paving and minimum surface drainage is provided.

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For your information and reference, there is enclosed herewith a set of photographs which illustrate the temporary nature of the camp and operational facilities at the camps at Bikini. These photographs are indexed as follows:

**Eninman Group -**

- W-9-9            Aerial view of Eninman group from east to west with air strip in foreground.
- W-56-8          Helicopter hangar - Airukirara
- W-62-10        Aerial view of Eninman Camp - Central and east end
- W-62-8          Aerial view of Eninman Camp - Center of camp
- W-62-7          Aerial view of Eninman Camp - west end of camp
- W-18-10        Structures in Eninman Camp - Left to right - Fire station, infirmary, and administration building
- W-18-2          Interior of mess hall, Eninman Camp
- W-9-5           Typical latrine structure, Eninman Camp (similar latrines used at all camps)
- W-17-10        Power house, Eninman Camp
- W-17-7          Distillation plant, Eninman Camp
- W-19-2          Eninman Camp, outdoor theater in rear and structure housing exchange store, post office and barber shop at right
- W-9-2           Refreshment area with storage and service structure in rear

**Haru Camp**

- W-62-6          Aerial view - Center and east end of camp
- W-62-4          Aerial view - west end of camp

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**Remurikku Camp**

- W-54-3 Aerial View - Yurochi Island to Remurikku Island
- W-62-2 Aerial view - Center and south end of camp
- W-62-1 Aerial view - Center and west end of camp
- W-53-12 Left to right - Administration building, latrine, exchange store
- W-53-11 Power house and distillation plant building

**Eryu Camp**

- W-61-1 Aerial view, camp area

In conclusion, it might be stated that if the operational program now established had been known in October, 1952, when construction activities were started, we would probably have had a different camp arrangement than exists today. The increased use of Bikini Atoll as the major shot area for Castle has resulted in much greater construction, supply and operational effort than was anticipated. Nevertheless, we feel that, considering the lack of complete information with which we started the development of Bikini and the many program changes which have occurred since that time, both the letter and intent of the Commission's directive requiring temporary construction and maximum use of portable and temporary equipment have been complied with.

Enclosures:  
Photographs, as listed above

CC: Spain, EFO

*Series A*  
 1 x 2 - Dilla  
 3 - Spain  
 4 x 5 - M + R  
 6 x 7 - OTO

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