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HEADQUARTERS

# TASK GROUP 7.1

JOINT TASK FORCE SEVEN
P.O. Box 1663
Los Alamos, New Mexico

4 February 1957

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MEMO TO: A. C. Graves, Chairman Designate, EPG Coordinating Council 411375

FROM : G. L. Felt, Commander, Task Group 7.1

SUBJECT: STAFF STUDY OF THE USE OF TAONGI ATOLL

SYMBOL : J-15G-190

[redacted] DOCUMENT# [redacted]

Attached is a rather hurried consolidation of three draft memoranda, J1-3284, J3G0-220, and J6-3465, which were prepared for me in response to my memorandum J-15G-178.

Originally this study was to be presented in draft form for use in a general discussion of the use of Taongi by the proposed EPG Coordinating Council. At the request of G. W. Johnson this more formal statement is issued in advance of review by that Council. Since the general topic is clearly a matter for consideration by the Council and since our study has been confined to a single aspect of the general problem, I specifically do not wish to make any general recommendation on the question of whether the use of Taongi is justifiable.

You will note that the study assumes a hypothetical generalized operation though the basic staff memoranda referred to above reflect our several very helpful talks with Walter Gibbins about the particular case of Hardtack.

Conclusions from this study which are pertinent to Hardtack may be combined into the single important point, that rapid action is absolutely necessary if we are to obtain the facility itself and the support required to utilize it. Given the policy backing necessary to implement the meeting of our major requirements, we believe we can successfully integrate Taongi into the EPG system to meet a Hardtack starting date of 1 May 1958.





Gaelen L. Felt
Commander

Enc: J-15G-189

GLF:lee
Distribution:
1A - A. Graves (w/Cy 1A of enc)
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HEADQUARTERS
TASK GROUP 7.1
Joint Task Force SEVEN
P. O. Box 1663
Los Alamos, New Mexico

J-1SG-189

4 February 1957

SUBJECT: TAONGI ATOLL STUDY

I/1991

I. Background

UCRL has re-opened the question of the use of Taongi Atoll as a firing site for weapons tests. It has been suggested, and new analyses ("Climatology of Taongi", JTF-7, 2 Jan 57) bear out this view, that general weather conditions in the Taongi area would make the site a desirable acquisition. Beyond the point of general desirability, UCRL has further suggested that the repatriation of the natives to Rongerik and Rongelap may lead the AEC to impose severe limitations on the future use of the Bikini site and that in such a case the acquisition and development of the Taongi site would be a virtual necessity if we are to continue weapon testing at anything approaching the present rate. For the time being, UCRL further believes that the operation of a site at Taongi can best be effected within the existing JTF structure. As a consequence of these views, CTG 7.1 agreed with C. H. Johnson (UCRL) that as a supplement to related studies undertaken by UCRL and JTF-7, the staff of TG 7.1 would undertake a study of the implications for EWG operations of developing and using a facility at Taongi.

II. Division of Problem

If Taongi is developed into a firing facility, it will probably be under one of the following separate situations:

1. that Taongi is included in the EWG merely as a third site,

2. that Taongi is included as a third site while the Bikini site is restricted in a manner similar to the restrictions of ETS for Mumb Bob.



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3. that Teongi is added to ETG while Bikini is completely inactive as a firing facility.

III. Purpose of the Study

The purpose of this study is to examine the implications of developing and operating Teongi and to estimate the over-all requirements generated under each of the above situations.

IV. Basic Assumptions

1. The following generalized type of overseas operation is considered satisfactory for the purpose of this study:

| No. of Shots | Yield | Manner of Firing | Remarks |
|---|---|---|---|
| 5 | >5 MT | Barge | About equally divided between LASL and UCRL. "Tower" includes 1 or 2 land surface shots. |
| 5 | 1 MT to 5 MT | Barge | |
| 5 | 20 KT to 1 MT | 2 Barge<br>3 Tower | |
| 5 | <20 KT | 5 Tower | |
| 5 | | | Effects shots (AFSWP) |

It is assumed that shots larger than 5 MT will not be scheduled at Eniwetok.

2. The government will approve the use of Teongi and will make available the necessary support, including funds, equipment, material and personnel, as required.

3. An LCT-barge channel can be cleared through the reef and within the lagoon to permit minimum construction ashore and placement of shot barges.

4. The wind patterns at Teongi will permit a firing frequency limited essentially by technical and operational considerations only. It is further assumed that local contamination at Teongi which might result from acceptable wind patterns will not preclude firing.

V. Geography

Inclosure 1 is a chart which indicates the relative position of the ETG





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atolls and the distances between them. Distances from Taongi to key points in the Pacific Ocean area are as follow:

Taongi to:

| | |
|---|---|
| Guam | 1454 sea miles |
| Kwajalein | 356 " " |
| Bikini | 285 " " |
| Eniwetok | 447 " " |
| Wake | 324 " " |
| Hawaii | 2024 " " |

VI. Discussion

1. The three situations in II. above contemplate simultaneous operations at Taongi and Eniwetok irrespective of the manner in which Bikini is used. In this circumstance we would recommend that Taongi be used for large shots and Eniwetok for small shots plus large shots not to exceed the 5 MT limit for all three situations. For the generalized operation assumed in IV. we would not consider firing small shots at Taongi, though in principle, there is no objection.

2. Having assumed the availability and suitability of Taongi for firing large shots, we recommend that shots scheduled for Bikini be limited in size and location to those which would permit operations to be carried out without the necessity for pre-shot evacuation of personnel from the atoll. This condition is met automatically in Situations 2 and 3 and could be met under Situation 1 by limiting the yield to 5 MT and placing hazardous shots safely with respect to Enyu Island.

3. The nature of Taongi atoll itself, particularly its small size, is such that one would contemplate ship-based operations, in the sense that following the first shot there would no longer be support facilities ashore and that subsequent operations would have to be conducted from afloat. This would clearly be

true for the case we are considering, that Taongi will be used for large shots.

4. Our best opinion is that operations in the Taongi area will be conducted in a fashion similar to Bikini operations in the latter part of Castle but modified by a few important differences between the two locations.

VII. Concept of Taongi Operations

Our conclusions up to this point are: first, that Taongi operations will be ship-based; and second, that Taongi operations will be of the same general character under all three of the situations proposed in II. The qualifications on this second conclusion is that the number of shots scheduled for Taongi would undoubtedly be larger if the Bikini site were restricted or abandoned as a firing site.

There is also a qualification on the first conclusion in that there are basically two ways in which to carry out a ship-based operation. In both cases, the support facilities are afloat and the firing system is afloat. The difference is that in one case, the major diagnostic instrumentation is done remotely, from a ship in the fashion of certain of the Ivy Mike experiments (fireball, time-interval), and in the other, the major instrumentation is done ashore in the fashion carried out on Castle shots fired south of Yurochi. Whether the tests are performed one way or the other depends upon the adequacy of the remote instrumentation to provide the desired experimental data.

Though the two modes of conducting the experiments do not alter the basic nature of the sea-based operation, they do lead to variations in detail. We have investigated the implications of these variations arising from the differences in mode of experimentation as well as the implications of the variations in the general nature of the operation arising from the differences between Taongi and Bikini.

We asked Mr. Joe B. Sanders of AEC to obtain from the AEC engineering and construction contractor, Holmes and Narver, Inc., estimates of the manpower, time and money required to provide what we termed the minimum and the maximum

shore facilities. Apart from the inherent interest of such a report, we intended to make use of any operational implications arising therefrom. Mr. S. P. Howell's report and further comment by the J-6 Division, TG 7.1, on the matter of Taongi facilities is attached to this study as Inclosure 2. From the point of view of operations the most important difference between Mr. Howell's two plans is the requirement for an airstrip to accomplish the larger. The existence of an airstrip, even though its condition were reduced to that of the Eniriman airstrip in the late phase of Castle, would be of very great advantage to all elements of the Task Force and would surely expedite operations in the Taongi area.

A further implication resulting from the presence of instrument shelters ashore is a pronounced need for helicopter transportation. This need is minimal and possibly non-existent in the case of the minimum shore facility.

Based on the similarity between ship-based operations at Taongi and at Bikini during the late phase of Castle, we believe the following procedures and requirements may be determined:

1. Manner of Firing

In the light of the foregoing we believe the manner of firing should be by barge, that devices should be assembled on the barges in the existing facility at Parry Island, and transported to Taongi by LSD. Since an LSD cannot enter Taongi lagoon, the shot barge would have to be discharged in the lee of the atoll and moved into position by small craft. The informal and unofficial opinion of representatives of TG 7.3 was that the barge would have to be discharged one hour's run by LCU from the Taongi passage. They further cautioned that the unloading operation would be risky and that suitable sea conditions were likely to be infrequent. They pointed out that in the past this operation had been carried out in the calmest waters of Bikini lagoon, namely in the lee of Bikini island. It is also the opinion of TG 7.3 that LCT's should not be used in the open ocean

and that therefore, shot barges should be moved from the LSD by LCU. Further, it is likely that an LCU with a shot barge would not be able to negotiate a passage at Taongi except at high slack water. As a result of these considerations, we estimate the time from departure of the LSD to mooring of the barge to be no less than three days under the most favorable conditions. On the basis of full-time duty for one LSD in moving shot barges, we estimate a minimum interval of five days between shots.

2. Boat Pool

We recommend that all small boats be evacuated from Taongi during firing because of the high probability of damage and contamination.

In view of the opinion of TG 7.3 with regard to operation of LCM's in the open sea, we believe it is inadvisable to include LCM's in the boat pool. We would, however, include DUKW's, which could be picked up by LCU and taken to an LSD outside the atoll. It is desirable to supplement the DUKW's with motor whale boats for use inside the lagoon provided these can either traverse the open water from the passage to the waiting ship, be towed out by LCU, or be picked up by davits rigged on the LCU's. One LSD will hold three LCU's in its well.

If the LSD which picks up the small boats is the same as the LSD used for barge movement, we estimate the minimum firing interval under the most favorable conditions to be eight days, since the LSD could not return to Eniwetok before its LCU's could be put back in Taongi lagoon. The LCU's in this case would have to be equipped to support a minimum crew for at least five days.

If an LSD is assigned full-time duty to support the Taongi boat pool, the LCU's need not be equipped to support their crews. Furthermore, a five-day firing interval may be maintained. Inclosure 3 contains estimated LSD schedules.

3. Scientific Personnel

Regardless of whether instrumentation is installed ashore, it will be necessary to provide living and working space afloat. We estimate the total com-

plement of TG 7.1 and personnel from other Task Groups in direct support of 7.1 activities to be approximately 250. Of the 250 accommodations, about 100 should be cabin class. An AV could accommodate the bulk of the 7.1 personnel, providing living space, working space and a firing facility.

Our experience in previous operations leads us to expect that considerable rotation of personnel will be found necessary. We believe that the additional hardships resulting from the absence of a lagoon anchorage will make the need for rotation of personnel even greater than it has been in the past.

4. Operational Personnel

Representatives of both JTF-7 and TG 7.3 have expressed the opinion that if Tacagi were used as a firing site, a command ship would be necessary. In addition to serving as a flagship, such a ship would house an air operations center, weather central facilities, etc., as did the [redacted] during Redwing. The best opinion from JTF-7 and TG 7.3 is that such a ship should be either an AGC or a carrier. Those TG 7.4 personnel in direct support of 7.1 activities would, of course, be billeted aboard this ship. It is doubtful, however, that this ship could replace the ship mentioned in VII.3. above, unless it were a large carrier. Furthermore, in view of conflicting requirements, it is not recommended that these activities be combined aboard a single ship.

5. Intra-atoll Transportation

The primary means of intra-atoll transportation would be by boat, as indicated in VII.2. above. It is nevertheless desirable to supplement this means, if at all possible, by furnishing limited helicopter transportation. Such transportation is believed to be necessary in the case of instrumentation ashore in order to provide adequate transportation to points which may be heavily contaminated. Helicopters are useful but not absolutely necessary for post-shot survey of lagoon contamination.

Unfortunately, helicopter operations in the Taongi area would necessitate routine flights over the open ocean. Such flights have not been common practice in the past.

In order to provide maintenance facilities for helicopters, it would most likely be necessary to have a small carrier (CVE). The facilities of the CURTISS and ESTES were not adequate for maintenance.

6. Inter-atoll Transportation

a. Sea

During the operational phase the minimum requirement for inter-atoll sea transportation is one APD or equivalent. This ship is necessary to provide rotation of personnel and to carry personal and official mail. Because of uncertainty in the physical condition of Taongi lagoon and the sand islands following the first shot, we may not count on air lift at all, even in emergencies.

At least in the pre-operational phase, TG 7.5 will require regular LST service between Eniwetok and Taongi (see Inclosure 2).

b. Air

The minimum requirement for inter-atoll airlift during the pre-operational phase is emergency seaplane service. It is desirable to maintain the capability of emergency seaplane service throughout the operational period. We recommend very strongly that the seaplane service be "limited" rather than "emergency" in order to provide fast transportation for key personnel of all elements of the Task Force. For this purpose, we believe three SA-16 aircraft or equivalent are necessary and that a suitable seadrome should be built.

In the event that the construction of extensive facilities ashore makes construction of an airstrip necessary, we recommend that regular airlift be provided for as long as conditions permit. In this connection, we recommend further that shot sites be selected and shot schedules be arranged to cause the least

physical damage to the airstrip. It would be desirable to have equipment available to perform reasonable repairs and decontamination.

In the unofficial opinion of representatives of TG 7.4, an emergency airstrip for test aircraft would not be necessary. If, however, an airstrip were built at Taongi for other purposes, it is likely it would be equipped for emergency use by test aircraft.

7. Communications

Communications between Eniwetok and Taongi would have to be at least equivalent to communications between Eniwetok and Bikini during Castle. Prior to the operational phase, Holmes and Narver would require facilities as indicated in Inclosure 2.

It would be desirable, but probably not technically feasible, to have voice ciphony equipment between Eniwetok and Taongi or Bikini and Taongi.

Generally speaking, we expect operations in the Taongi are to resemble Bikini operations during Castle. The important differences result from two factors: first, that Taongi is small, shallow, and has no anchorage for ships; and second, that Taongi is over twice as far from Eniwetok.

VIII. Concepts for EPG

Having outlined a concept of operations for Taongi, we may now proceed to the three situations described in II. In all three situations we consider the generalized operation of 25 shots assumed in IV.

1. Situation 1

In this first case Taongi has been added to the EPG and no restrictions beyond those existing during Redwing have been imposed on Bikini. The acquisition of Taongi is of advantage, however, as it permits us internally to impose a limitation which will simplify our operations at Bikini and expedite the firing of the series.

We do not know at this stage whether remote instrumentation from a ship

will be adequate for diagnosis of the five shots with yields greater than 5 MT but we do know that, by putting in a shore installation at Teongi, we may discontinue the sea-based capability at Bikini and reduce the number of shots scheduled for Bikini. Since we have assumed the availability of Teongi we would in this case recommend the following distribution: five shots >5 MT at Teongi; the remainder (20 shots) divided about equally between Eniwetok and Bikini.

There is presently no small-shot facility at Bikini, but the Enimmen complex is well-suited for this use. Adequate barge-shot facilities exist at the north end of both Eniwetok and Bikini atolls.

2. Situation 2

In this second case, a restriction has been placed on Bikini such as to prohibit the firing of shots which could produce objectionable radiological conditions on atolls outside the EPG. Such a limitation means that either the yield or the manner of firing must be adjusted to produce essentially no fallout outside the EPG danger area. In the case of our generalized operation shots in excess of about 50 MT may not be fired on towers or on the surface at Bikini. There are therefore at least about half of the shots to be fired either at Teongi or at Eniwetok. Ten of these are larger than 1 MT.

In this circumstance, we would recommend the following distribution:

a. Most of the shots satisfying the Bikini restriction should be scheduled there.

b. Five shots larger than 5 MT are scheduled for Teongi.

c. Two or three of the shots between 1 MT and 5 MT are scheduled for Teongi.

d. The remaining shots are scheduled for Eniwetok.

In this case, it is desirable to establish two small-shot facilities at Bikini in order to permit somewhat freer use of the Eniwetok site for larger or more difficult shots.

While the acquisition of Taongi, in this case, has become rather more of a necessity, the curtailment of Bikini has, we feel, resulted in a net loss compared with the Redwing situation.

3. Situation 3

This situation represents a very serious set-back inasmuch as Bikini could be used at most as a staging area for Taongi and no longer as a firing site. In this circumstance, we would recommend a re-evaluation of the entire EPG system based upon a move of the base facilities away from Eniwetok and Parry Islands. Under the assumptions of this study, however, we would recommend the following distribution:

a. All shots >1 MT are scheduled at Taongi.

b. 15 remaining shots are scheduled at Eniwetok.

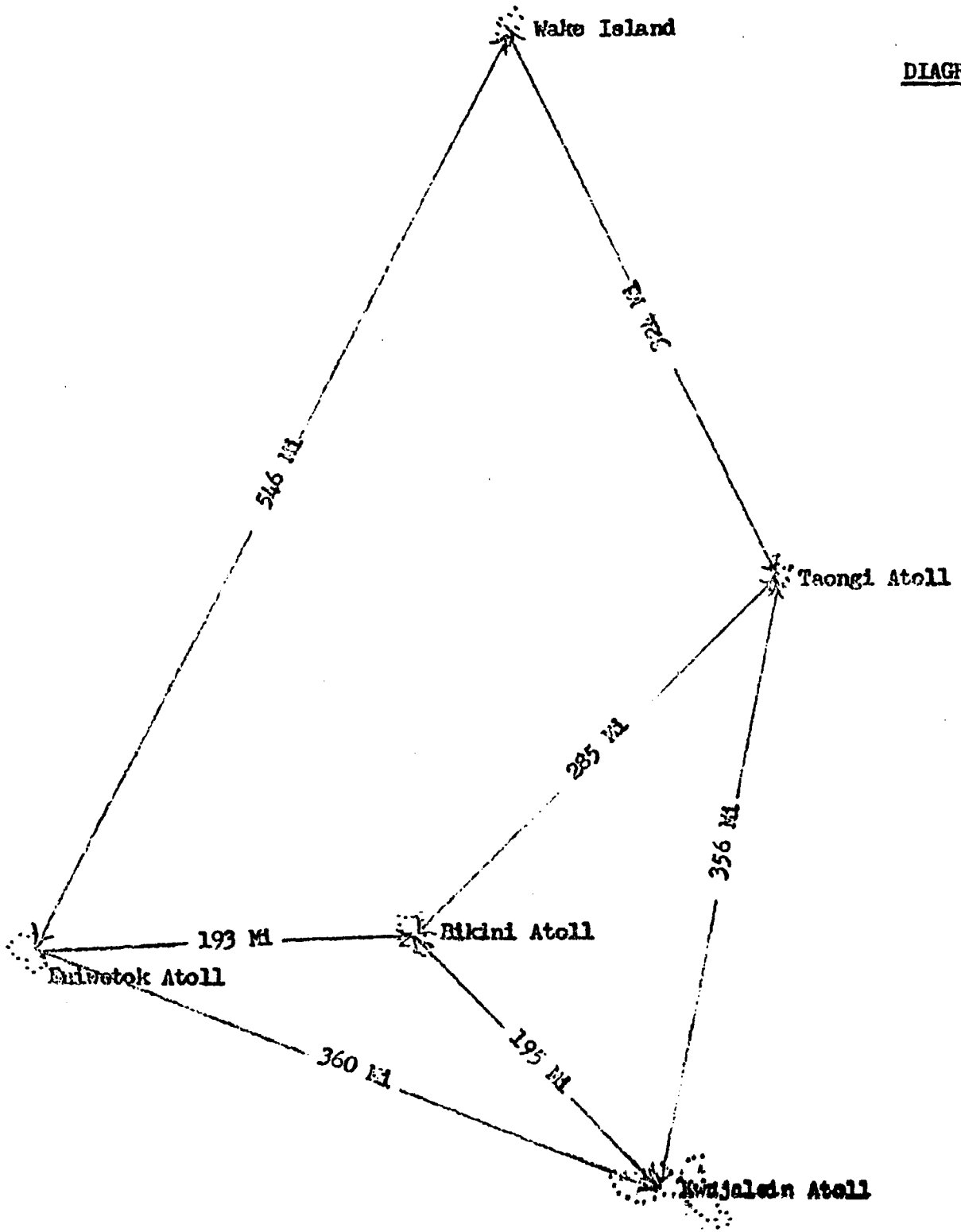
The reasons for moving shots in the range 1 to 5 MT are simply that, being barge shots, they may be moved easily, and their movement to Taongi relieves the scheduling problem at Eniwetok.

The only advantage to be found in Situation 3 is that certain types of support may be reduced below the Redwing level.

A tabulation of major support requirements (exclusive of TG 7.5 support) for the three situations described is presented in Inclosure 4.

4 Incls:
1. Chart (from J-3)
2. Memo, J6-3465 (from J-6)
3. LSD Schedules (from J-3)
4. Tabulation of Major Support Requirements (from J-3)

DIAGRAM OF APPROXIMATE SEA MILES

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