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Joint Task Force SEVEN
TASK GROUP 7.3
Washington 25, D. C.

RCS-JTF SEVEN - H-1
FF3/7.3/001:jmt
A-12
Ser: 001394

SUBJECT: Historical Installment Number 3: submission of 79980

TO: Commander
Joint Task Force SEVEN
Washington 25, D.C.

1. Reference is made to CJTF SEVEN letter SGS/314.7 of 9 Oct 1953, serial 0-7467 and CJTF SEVEN Standing Operating Procedure Number 172-701.

2. Commander Task Group 7.3 Installment Number 3 of the History of Operation CASTLE is submitted.

H. C. BRUTON
Rear Admiral, U.S. Navy
Commander

Incl:
1. Historical Installment No. 3

Copies furnished:
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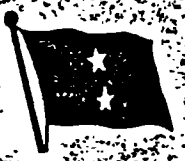

JOINT TASK FORCE SEVEN
COMMANDER TASK GROUP 7.3

HISTORY OF OPERATION CASTLE

INSTALLMENT NUMBER 3

RCS-JTF SEVEN H-1

Period ending 7 April 1954

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COMMANDER TASK GROUP 7.3

HISTORY OF OPERATION CASTLE

INSTALLMENT NUMBER 3

Period ending 7 April 1954

Submitted:

R. F. MADDEN
Lieutenant Commander, USNR-R

Approved:

H. C. BRUTON
Rear Admiral, U.S. Navy
Commander, Task Group 7.3

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No. 1 of 9 copies

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OUTLINE

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I

[redacted]REPARATION

1. This installment covers the period commencing with the arrival of CTG 7.3 in the forward area on 24 January 1954, and ending after the third CASTLE shot, KOON, detonated at Bikini on 7 April 1954. It omits coverage of special problems in security, operations, communications and logistics, which will be treated for the entire operational period in a subsequent installment.

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I

a. DEPLOYMENT

2. During this period ships and units of Task Group 7.3 arrived in and departed from the forward area in the following order:

26 January - USS PC 1546 arrived at Eniwetok. She had sailed from Pearl Harbor on 5 January but was delayed at Johnston Island by an engineering breakdown. With the arrival of the 1546, USS PC 1172, her temporary replacement, was released, and departed Eniwetok 27 January for her base at Kwajalein.

31 January - USS APACHE (ATF-67) arrived at Bikini from Subic Bay.

3 February - USS ESTES (AGC-12), flagship of Commander Joint Task Force SEVEN, arrived at Eniwetok from San Diego and Pearl Harbor.

6 February - Task Unit 7.3.6, the Atomic Warfare Countermeasures Unit, composed of YAG 39, YAG 40, and USS MOLALA (ATF-106) with CTU 7.3.6 in YAG 40, arrived at Bikini from San Francisco and Pearl Harbor. This unit reached Eniwetok the following day and began preparations for the first shot.

8 February - USS COCOPA (ATF-101)(LT W. O. Wilson, USN) with YC 1081 (barge for Project 1.4) in tow, and USS GYPSY (ARSD-1) (LT R. O. Wilson, USN) arrived at Bikini from Pearl Harbor and commenced operations in support of Project 1.4 the following day.

12 February - USS LST 825 (LT K. W. Laughlin, USN), relief

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for the damaged LST 551 undergoing repairs at Pearl Harbor, arrived at Bikini from San Diego. She beached on Eninman Island the same day, loaded cargo and sailed for Eniwetok on 13 February.

25 February - USNS FRED C. AINSWORTH (TAP-181)(C. W. Hutcheson, Master) arrived at Bikini from San Francisco, in time to participate in the first scheduled CASTLE shot.

26 February - USS LST 551 (LT R. G. Kanzenbach, USN), her repairs completed, returned to Bikini from Pearl Harbor. She sailed the following day for Eniwetok. Upon her arrival there LST 825 was released, and sailed for the Far East on 28 February.

27 February - The two PBMs, BUNO 122468 (LT W. A. Jeffers, USNR) and BUNO 122471 (LCDR M. Irwin, USNR), specially configured for inter-atoll passenger lift, arrived at Eniwetok after several weeks delay on the West Coast due to unfavorable weather conditions. Because their special configuration had reduced their fuel capacity, they were forced to wait out a lengthy period of adverse winds before departing San Diego for Hawaii.

13 March - USS LST 1146 (LT T. R. Larson), arrived at Eniwetok from Guam. She had been delayed two days enroute by high winds and heavy seas. The 1146 had been ordered into CASTLE as a temporary relief for LST 762. Upon her arrival the 762 was placed in upkeep status for replacement of a generator and other necessary and overdue repairs. The 762 completed her upkeep period 5 April and returned to duty. LST

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1146 departed Eniwetok for Pearl Harbor on 4 April.

23 March - USS MENDER (ARSD-2)(LCDR L. Jones, USN) arrived at Eniwetok from Guam. She had been ordered in as replacement for USS GYPSY for the remainder of CASTLE operations due to GYPSY's urgent need for hull repairs. MENDER, after a brief indoctrination in the tasks that would be required of her in support of Project 1.4, relieved GYPSY on 26 March and GYPSY departed for Kwajalein and Pearl Harbor.

29 March - USS SHEA (DM-30)(CDR J. W. Reed, USN) and USS LST 1157 (LCDR R. S. Scott, Jr., USNR), arrived at Bikini from Pearl Harbor. LST 1157 had departed San Diego for Pearl Harbor on 16 February. SHEA was based at Pearl Harbor. These two ships were a part of the forces assigned for the Bureau of Ordnance's mining project.

b. DISPOSITION OF FORCES

3. Eniwetok Atoll was the Task Force base of operations for CASTLE. There, on Parry Island, were the permanent headquarters of CJTF SEVEN, CTG 7.1 (Scientific Task Group) and CTG 7.5 (Base Facility Task Group). On Eniwetok Island itself were the permanent headquarters of CTG 7.2 (Army Task Group) and CTG 7.4 (Air Force Task Group). Eniwetok was the principal port of entry for ships and aircraft arriving in the area. It was the main assembly point for the test devices, and for the preliminary assembly and testing of experimental equipment. The principal machine shop, laboratory, photographic, warehouse and stockroom facilities were there, with only limited facilities at Bikini.

4. All test shots except one were scheduled to be detonated at Bikini Atoll, 186 miles to the East of Eniwetok. On Eninman Island at Bikini was the base camp for Task Group 7.1 and 7.5, from which their on-site operations at Bikini were conducted. Small camps were operated on several other islands of the atoll, to support scientific and construction personnel who were establishing and servicing stations for recording scientific data. The peak shore-based population at Bikini Atoll was approximately 1600 persons. Air transportation between the two atolls for personnel and high priority cargo was provided by 20 to 24 C-47 flights weekly, operated by the Air Force Task Group. Inter-atoll surface transportation was provided by the Navy.

5. Units of Task Group 7.3 were disposed at Bikini, Eniwetok and

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I

Kwajalein, with the major strength at Bikini:

a. TU 7.3.0 Special Devices Unit

CURTISS, after unloading her cargo of special devices at Eniwetok, proceeded to Bikini and anchored near the BRAVO shot site. There she furnished shop, laboratory and living facilities for the Scientific Task Group, principally for device assembly personnel.

b. TU 7.3.1 Surface Security Unit

When performing normal patrol operations, two DDEs and PC 1546 were based at Bikini. The remaining two DDEs were stationed at Eniwetok. These craft were rotated from time to time, usually incident to escorting a device movement from Eniwetok to Bikini.

c. TU 7.3.2 Carrier Unit

BAIROKO, upon her arrival at Eniwetok, discharged her cargo of Air Force aircraft, and placed three of her F4Us, with operating and maintenance personnel, ashore at Eniwetok airstrip. Proceeding to Bikini, she placed ashore there a detachment of HMR-362, with six helicopters. HMR-362, augmented by 3 Air Force helicopters, operated the inter-island and ship to shore airlift at Bikini. Also transferred ashore were the remaining three fighter aircraft and personnel of VC-3, controlled and operated from BAIROKO's CIC.

d. TU 7.3.3 Patrol Plane Unit

Patrol Squadron Twenty-Nine was based at Kwajalein. Four special aircraft, attached to the squadron for Operation CASTLE, were operated from Eniwetok. They were the two PBMs on loan to CTG 7.4

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for passenger service, and the P4Y2 and P2V5 assigned to the support of scientific projects.

e. TU 7.3.4 JTF Flagship Unit

ESTES, the Task Force Commander's flagship, was based at Eniwetok.

f. TU 7.3.5 Utility Unit

This unit was composed of GYPSY (ARSD-1) and five ATFs. GYPSY was based at Bikini in support of Project 1.4. The ATFs shifted between Eniwetok and Bikini according to the requirements of their assigned tasks. COCOPA was normally at Bikini with Project 1.4. MOLALA was usually employed in Project 6.4, with the drone ships YAG 39 and YAG 40. APACHE and SIOUX were usually engaged in assisting Project 2.5a, the fallout collector buoy project. TAWAKONI was employed as required in all three projects. Since preliminary work on Projects 6.4 and 2.5a was done at Eniwetok the assigned ATFs spent a large part of the time there.

g. TU 7.3.6 Atomic Warfare Countermeasures Unit

The drone ships, YAG 39 and YAG 40, with assigned ATFs were based at Eniwetok.

h. TU 7.3.7 Bikini Harbor Unit

This unit, headed by BAIROKO, was comprised in addition of BELLE GROVE and the Navy Boat Pool, less three LCMs and one LCPL stationed at Eniwetok. When BELLE GROVE was absent from Bikini on a device movement responsibility for the Boat Pool was normally assumed

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directly by BAIROKO.

i. TU 7.3.8 Eniwetok Harbor Unit

ESTES, with the Eniwetok LCMs and LCPL, and YO-120, YOG-61 and YOG(N)-82, normally headed this unit. During ESTES' absences the in-port DDE at Eniwetok functioned as the harbor unit.

j. TU 7.3.9 Transport Unit

This unit was assigned the task of transporting between Eniwetok and Bikini all cargo except a small amount moved by air. It was composed of BELLE GROVE, the LSTs, and the MSTS Transport, AINSWORTH. BELLE GROVE and AINSWORTH were based at Bikini, the LSTs operated on a continuous shuttle between the two atolls.

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c. INITIAL OPERATIONAL PERIOD

6. The period from 24 January until EX day, the Task Force shot day rehearsal, conducted on 22/23 February, was spent in shaking down the task group organization, getting it into operation, and preparing it for the initial shot, scheduled for 1 March.

7. As units arrived they unloaded any cargo or passengers they had aboard and went to work. BAIROKO proceeded to Bikini where her Commanding Officer, Captain Emmet O'Beirne, USN, took charge of Navy operations until the arrival there of the Task Group Commander. The Boat Pool and the Marine helicopter squadron commenced operations, the security DDEs and patrol squadron aircraft began their patrols of the area surrounding the two atolls. LST 762 continued shuttling large amounts of cargo to Bikini. GYPSY and the ATFs began their support tasks.

8. On Parry Island conferences were a daily occurrence. All major headquarters were within speaking distance of one another for the first time, and there was much to be accomplished. As units arrived at Eniwetok their commanding officers came ashore and were briefed on the Operation. There was considerable travel to Bikini by staff personnel to confer with ships' personnel on the scene. The Task Group Commander visited units at Bikini on several occasions and visited Pearl Harbor on one occasion for a conference at CinCPac headquarters. Security badges were issued to authorized personnel to permit their

movement into sensitive areas. Administrative procedures were developed and placed in operation. Detailed plans for the first shot were worked out and published. It was a busy period, with many problems to be solved before the task organization could function smoothly.

9. The task group units meanwhile were preparing for the first shot day. Crews were briefed on security and radiological safety. RadSafe organizations continued the training begun months earlier. The staff Atomic Defense section moved to Bikini where they supervised the installation of washdown gear to protect ships from radioactive fallout, and conducted atomic defense exercises and inspection. BELLE GROVE and LST 762 made preparations to carry the test devices from Eniwetok to Bikini. ESTES and other units took part in preliminary shot rehearsals and communications check-outs. All units were doubly busy during the period, performing their assigned tasks while they prepared for the BRAVO shot.

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d. EXERCISES AND REHEARSALS

10. A number of exercises were conducted prior to BRAVO involving various Task Group units, culminating in the Task Force shot rehearsal conducted 22 and 23 February 1954. ESTES left Eniwetok 9 February and again on 16 February to participate in CTG 7.4 shot rehearsals off Bikini. These were similar to the one conducted in October 1953 off San Diego, Operation TIGERCAT. On the 16 February exercise she was joined by CURTISS and RENSHAW. The RayDist unit installation in CURTISS had been completed 13 February. Coincident with these TG 7.4 rehearsals all shot time communications in ESTES were checked out, with CTG 7.1 and CJTF SEVEN representatives participating. RENSHAW took part as aircraft control DDE, on station midway between Bikini and Eniwetok, operating an automatic keyed homing device for aircraft navigational use, and serving as a communications relay station.

11. From 11 to 16 February APACHE and SIOUX rehearsed their tasks in support of Project 2.5a laying fallout collector buoys in patterns off both Eniwetok and Bikini, then locating and recovering them. The exercise brought out the fact that this program would have difficulty operating to the extent that had been planned, because the rough seas made the laying and recovery of buoys difficult, damaged the collector and electronic equipment in many of the buoys, and greatly complicated the task of finding them after the shot.

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12. On 16 February MOLALA and TAWAKONI put to sea with YAGs 39 and 40 for an embarking and towing exercise, with the project aircraft participating.

13. Three trial or dummy runs were made by LST 762 and BELLE GROVE prior to actual movement of the first test device from Eniwetok to Bikini. BELLE GROVE, on 28 January, pumped down and loaded in her well deck a shot barge complete with a dummy device and associated equipment and took it to Bikini where it was offloaded, positioned on the UNION shot site and used for preliminary sighting in. On 18 February LST 762, beached on Parry Island, received aboard and secured for sea a dummy device loaded in its special trailer, and transported it to Bikini. The 762 beached on Eninman Island and discharged the dummy, which was then taken to the shot site by LCU, off-loaded, placed in position and used to sight in test equipment. When 762 later brought the device for BRAVO to Bikini, she returned the dummy to Eniwetok. These two lifts provided 762 and BELLE GROVE the opportunity to check out loading and securing the devices, although that was not the primary reason the lifts were made.

14. On 20 February CTG 7.3 closed his headquarters ashore on Parry Island, moved aboard BAIROKO with his staff, and shifted to Bikini Atoll for the Task Force shot rehearsal. 23 February had been designated as the simulated shot day. All activities conducted a rehearsal of shot day minus one and shot day procedures, except those whose operations could not bear interruption without interference with

their final readiness for the shot. Those not actually taking part simulated participation to the extent practicable. The LSTs, BELLE GROVE and the Boat Pool, GYPSY and COCOPA did not take part in the operation. APACHE simulated AINSWORTH, not yet arrived in the area. Ships anchored in the lee of Enyu Island for evacuee embarkation, sortied from the lagoon and took their evacuation stations at sea, returning to the lagoon later in the day. As a drill for the coming BRAVO shot day it was a valuable preparation, very profitable to participating ships. It pointed out existing flaws in the basic naval plan for the shots and permitted their correction. These were largely in connection with communications, and in reporting by task group units as they completed scheduled events. It had been assumed up to this time that ships would be able to proceed in accordance with their schedules as laid down in the operation plan for the shot. It was found that they were often delayed in executing scheduled movements because of their project support tasks. A complete operation order had been issued for the rehearsal. For actual shots this was supplanted by an extensive and detailed check list of events leading up to and following the shot, supplemented by instructions concerning any special procedures. This check list called for prompt reporting by any unit falling behind schedule, to permit early corrective action and readjustment of schedules if necessary. Since MOLALA, APACHE and SIOUX were employed up to a few hours before shot time in areas of expected heavy fallout, their adherence to the schedule was of particular interest

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from the point of view of safety of personnel. The check list also lightened the communications load and speeded up shot time communications by permitting the use of brief plain language reports referring to event numbers from the list. Although the rehearsal was succesful and profitable, it would have been more so had all units been able to take part. The chance to test units not participating did not come until the actual operations in firing the initial shot; they would have benefited from the rehearsal. As it was, the rehearsal probably interfered with the work of those not participating to such a considerable extent that in the long run more might have been gained by a complete rehearsal with all taking part.

15. On 20 February BELLE GROVE received [redacted] barge loaded, in her well deck for a sea trial. The actual device was loaded and taken to sea to determine its reaction in a seaway. BELLE GROVE was escorted by EPPERSON and RENSHAW, with a patrol aircraft of VP-29 providing air cover. The task unit maneuvered off Eniwetok during daylight 21 February and returned to the lagoon where the device was offloaded. BELLE GROVE experienced no difficulty in handling the barge.

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II

PRE-BRAVO EVACUATION

1. All personnel, except for the members of a small firing party, were evacuated from Bikini Atoll prior to the detonation of BRAVO. During the forty-eight hours preceding shot day some fourteen hundred persons departed the island camps and were shuttled by LCM, LCU and helicopter to ships in the lagoon. Prior to the personnel embarkation all valuable material at the small camps and work sites nearer the shot island had been shifted to Eninman and Enyu for safekeeping. The amount of material at the atoll was too great to permit its temporary evacuation for a shot; stowage on the two southern islands was considered to give adequate removal to protect it from heat, blast and water wave action, with the chance of any significant contamination unlikely. Small craft that could not be accommodated on board BELLE GROVE were moored or anchored in deep water in the lee of Enyu. The LCUs were anchored with the smaller craft. As an experiment one manned LCU had been taken to sea in the BRAVO rehearsal. Since its performance in a moderately rough sea was not satisfactory, it had been decided to anchor all LCUs in the lagoon for the shot (as there was no indication the sea would not still be rough). To insure the safety of personnel their removal to a greater distance was advisable. This could be accomplished only by their movement aboard ship, and the subsequent movement of the ships to a safe distance at sea. The small firing party remained ashore for the shot, sheltered in the especially constructed bunker on Enyu from which the actual detonation of the

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device was controlled.

2. Extensive preparations and planning preceded the successful evacuation from BRAVO. It was necessary, first of all, to reduce the number of persons involved, because of shipboard space limitations, and to simplify and shorten the actual embarkation process. To this end personnel were transferred from Bikini in advance of the evacuation period, as soon as their services there were no longer required. They were shifted to Eniwetok and there reassigned, or returned to the United States. Surplus equipment and stores were lifted to Eniwetok by LSTs 762 and 551. This by no means denuded Bikini of equipment and supplies, for reoccupation of the base camp at Eninman and resumption of work on other islands were intended as soon as possible after the shot. Evacuees were permitted to bring with them only a small amount of hand luggage.

3. A series of four evacuation conferences was conducted at CJTF SEVEN Headquarters, with CDR Daniel Bontecou, U.S. Navy, Staff Logistics Officer, representing the Task Group Commander. From these conferences resulted the final evacuation plan. The plan was based upon four premises:

a. No major ship would be in the vicinity of the device after it had been armed.

b. The majority of passengers would be embarked in ships on BRAVO-1 day, sufficiently early to conduct a thorough muster of all personnel in the Bikini Area, with time remaining before dark to locate any "lost" persons.

c. Evacuees would embark initially in ships moored or anchored nearest to the islands on which they were based.

d. Passenger ships would shift to the comparatively smooth waters off Enyu by 1300 on BRAVO-1 day, and anchor there while the final evacuation was carried out, and personnel initially embarked in the other ships shifted to the ones to which they had been assigned.

4. The capacity of each major ship was set off against the requirements to be placed upon it, and spaces were allocated to the various task groups. BAIROKO was to carry personnel scheduled for early reentry by helicopter, including the Task Force RadSafe organization. Scientific and technical personnel were on board CURTISS, while AINSWORTH would accommodate the majority of construction personnel. ESTES, as the headquarters ship, would carry the commanders and staffs of the Joint Task Force, and of the Scientific, Base Facility and Air Force Task Groups. Special arrangements were made, principally in BAIROKO, for the temporary accommodation of passengers in excess of normal capacity. The movement times of various ships were adjusted to meet the needs of the other task groups. Officers on ESTES, BAIROKO, CURTISS, BELLE GROVE and AINSWORTH were designated troop quartermasters, and briefed in their duties. A system for strict personnel accounting was set up, providing for the submission of accurate passenger lists to the troop quartermasters, two complete sight musters aboard ship of all personnel in the Bikini area, and the submission of muster reports to the JTF SEVEN Transportation Officer in ESTES, to insure that the

evacuation would be complete and the whereabouts of every person in the area positively established. Total accuracy of these musters and reports was required, to ensure that no one was stranded ashore during the shot. The plan for reentry called for aerial RadSafe surveys in BAIROKO's helicopters, followed by the return of ships to the lagoon when it had been declared safe from harmful radiation. The Boat Pool and helicopters would then return to operation, personnel move back ashore, and recovery of BRAVO data and preparations for the next shot commence.

5. An evacuation rehearsal was conducted in conjunction with the shot-day rehearsal 22/23 February. On the simulated minus-one day a token evacuation was carried out with boats making dummy runs to the major ships, and the ships moving on schedule to their anchorages off Enyu and thence to sea. USNS AINSWORTH had not yet arrived in the forward area; her movements were simulated by the APACHE. Simulated musters were held and drill message reports were submitted to the task force command post in ESTES.

6. For the actual shot the evacuation was effected with little difficulty. On BRAVO minus two the Bikini fighter detachment (3 F4Us) moved aboard BAIROKO, together with the six Marine helicopters and the Air Force helicopters and L-13 that comprised the Bikini inter-island airlift. The Marine helicopters continued operations from the carrier. On the morning of BRAVO minus-one day CURTISS took aboard personnel

evacuating the shot site and departed her station there. She proceeded down the lagoon and anchored off Enyu. ESTES, BAIROKO, AINSWORTH and BELLE GROVE, anchored or moored off Eninman, received personnel evacuating that island and other islands in the atoll, and shifted to the Enyu anchorage. Evacuees initially embarked in ships other than those to which they were assigned were transferred to their assigned ships. Boating was secured; the LCUs were anchored and the Holmes and Narver LCMs were moored in the Enyu anchorage and their crews taken aboard BELLE GROVE. BELLE GROVE loaded the 15 Navy LCMs, 3 Holmes and Narver LCMs and the AVR in her well deck and proceeded out of the lagoon, only slightly behind schedule. The final muster was completed as task units moved to sea. BAIROKO delayed her departure until she had recovered her two helicopters after their flight with the firing party from the shot island to Enyu, and then proceeded to sea leaving the atoll evacuated and ready for the shot.

7. The final muster was complete, with one exception. On BRAVO minus-two a destroyer had placed a man ashore on Bikini Island for helicopter pickup, air lift to Eniwetok and eventual transfer to the United States for emergency leave. In her muster report the destroyer was unable to account positively for his location and there was considerable concern until the man was located already enroute to Hawaii from Eniwetok by air. On subsequent shots transfers of this type were prohibited on or after minus 2 day.

8. During the period of evacuation, personnel aboard ship lived

and worked in reasonable comfort, with the exception of those assigned BAIROKO. The number of passengers assigned the carrier considerably exceeded her normal capacity, and the excess was accommodated not too comfortably on cots placed on the hangar deck. They were joined by others who had been assigned bunks but found the bunk spaces too warm for comfort. There was insufficient working space, as well, for assigned units, and the CTG 7.3 staff and Task Unit 7 (the TG 7.1 RadSafe organization) were forced to share space that was hardly adequate for either. The subsequent move of the Task Group Commander and his staff to CURTISS on 6 March relieved this situation for later shots.

9. The planned post-shot reentry was not effected due to the heavy radioactive contamination of Bikini that resulted from BRAVO. Instead all major units except BELLE GROVE proceeded to Eniwetok and there disembarked their passengers. BELLE GROVE remained behind waiting at sea until she could enter the lagoon safely. She re-entered next morning and commenced decontamination of craft that had been left moored in the lagoon at Eniwetok. The task groups reorganized their Bikini units for the resumption of operations from shipboard, and on 3 March BAIROKO and other units returned to Bikini and commenced the recovery of test data by helicopter.

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BRAVO-ROMEO-KOON

BRAVO

1. The first three CASTLE test shots were detonated at Bikini Atoll. BRAVO was fired at 0645, 1 March 1954, on the reef about ½ mile west southwest of Namu Island. ROMEO was a barge shot fired at 0630, 27 March 1954, in the BRAVO crater. KOON was set in place on the eastern end of Eninman Island and fired at 0620, 7 April 1954.

2. This was not the firing order planned for CASTLE and the time interval between the first and second shots was considerably longer than had been intended. Radioactive fallout on the Bikini islands from BRAVO was so severe in intensity that it necessitated the abandonment of the shore bases there, with a shift of operations to a base afloat on Task Group 7.3 vessels. The winds during BRAVO carried relatively heavy fallout to such an unexpectedly great distance from Bikini that ROMEO was long postponed to guard against a recurrence. It was not fired until favorable winds finally assured that its detonation would not result in contamination of the Task Force Eniwetok base to the West, or of the populated atolls to the East and South of Bikini. When ROMEO was fired the resultant contamination did not hinder subsequent operations. KOON actually caused less damage than had been expected, and did not impede preparations for the next Bikini shot at all

3. Up to about 1½ hours after the detonation, BRAVO may be taken as typical of the Bikini shots, insofar as Navy preparations and shot time operations are concerned. The principal change after BRAVO,

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namely, the shift to an afloat operation, actually somewhat simplified the Navy's operations on the day preceding subsequent shots, since it was no longer necessary to evacuate large numbers of shore based personnel.

4. In preparing for a shot at Bikini, the Navy had certain standard tasks to be performed. The naval forces themselves had to be ready for their scheduled operations. BELLE GROVE, or an LST, transported the shot device to the scene, escorted by DDE's and patrol aircraft. The security forces had to guard against the presence in the Danger Area, or in the downwind sector from the shot site, of any ships or aircraft that might attempt to observe or interfere with the test operations, or be endangered by fallout after the shot. DDE's patrolled around Bikini, concentrating on the lagoon entrances and the sea area off the shot site, and VP 29 patrol aircraft searched the outlying areas. Units assigned to assist scientific projects completed their extensive preshot activities. APACHE and SIOUX, supporting project 2.5a, loaded fallout collector buoys at Eniwetok, and during the twenty-four hours preceding the shot, laid them in the prescribed downwind pattern, and then steamed to a safe sector before zero hour. GYPSY, later replaced by MENDER, and COCOPA planted buoys for project 1.4's underwater pressure tests prior to evacuation of the lagoon. Boat Pool small craft and HMR 362 helicopters operated intensified schedules to transport scientific personnel completing last minute preparations at their stations throughout

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the atoll. The MOLALA, with YAG's 39 and 40, left the Eniwetok base and joined the ships at Bikini, preparatory to putting to sea to set up their drone ship operation in the fallout area. CJTF SEVEN, TG 7.1, TG 7.4 and TG 7.5 command posts opened in ESTES. CTG 7.1 opened his RadSafe center on BAIROKO. LST's completed loading, retracted from the Enirman beach, and departed for Eniwetok to be clear of the area before shot time. Fueling and replenishment operations were scheduled around the shot to keep transient vessels out of the area.

5. Two days before BRAVO, shore based personnel at Bikini began to move aboard ship. BAIROKO took aboard her shore based aircraft, fighters and helicopters, the Air Force L-13, and H-19 helicopters. Sight musters of personnel began, the first step in the evacuation process of an exact accounting for the whereabouts of each individual present in the area. Starting on shot day minus-one, communications were restricted to essential traffic. Final evacuation of Bikini commenced. As small craft were no longer needed they were loaded in BELLE GROVE's well deck or run into the lee of Enyu Island, anchored or moored and their crews moved aboard ship. The boat pool's coverage barge, and the helicopter landing barge, were unmoored and taken to sea, towed by an ATF. In the late morning ships left their regular anchorages and anchored off Enyu to complete the evacuation. The last boats left shore and delivered their passengers aboard ship. Another sight muster was held to insure the evacuation was complete. Boating

was stopped and BELLE GROVE completed loading and pumped her well deck dry. The firing party departed for the shot site by helicopter to make final preparations and arm the device. Ships began their movement to sea.

6. By 1900M on BRAVO-one day all ships had cleared Bikini Lagoon except BAIROKO. She was still at anchor off Enyu awaiting return of two helicopters. They were waiting at the shot site to evacuate the firing party to the bunker on Enyu. The LSTs were not in the Bikini area. LST 825 had sailed at 1600 on B-one day for the Far East, on a course to take her well clear of radioactive fallout. LSTs 762 and 551 were at Eniwetok. NICHOLAS was out of the area, employed in the search for a missing British aircraft. EPPERSON was on patrol at Eniwetok. CURTISS, ESTES, BELLE GROVE, PC 1546, GYPSY, TAWAKONI, and COCOPA, with her tow, were all on their evacuation stations. RENSHAW was on station as aircraft control DDE, 90 miles southwest of Bikini. PHILIP was on her assigned patrol north of the shot island. MOLALA, with YAG 39 and YAG 40, was at the drone ships' initial station, awaiting the time to remove personnel and surrender control of the drones to the project aircraft. APACHE and SIOUX had finished laying fallout collector buoys and were enroute south to their evacuation stations, keeping well clear of the shot site. Project aircraft were on the ground at Eniwetok, awaiting time for their

7. One VP-29 aircraft had completed the final daylight search of the ocean area out to 800 miles from Bikini along the forecast track of the radioactive cloud, to warn any ships out of the area. The prescribed sector was clear of shipping except for USNS GENERAL PATRICK, contacted by the aircraft 415 miles from ground zero. Since the PATRICK would clear the designated danger sector by 1800 of B-one if her present course and speed were continued, she was not diverted.

8. At approximately 2000 PHILIP ended her patrol off the shot island and proceeded south, keeping well to the west of the atoll, to join BAIROKO on station as plane guard. By 2230 BAIROKO's two helicopters, with firing party on board, had departed the shot island for Enyu. At 2305 they returned to the ship and BAIROKO got underway and proceeded out of the lagoon. Bikini Atoll was clear of ships and personnel, except for the firing party in the Enyu bunker, and ready for the detonation of BRAVO.

9. At 0030 BAIROKO reached her assigned station. At 0130 the P2V5 aircraft (LT R. BORGSTROM, Jr, USN) assigned to Project 6.4 (drone ships YAG 39 and 40) took off from Eniwetok airstrip. By 0200 APACHE and SIOUX had reported ETA's that would place them on station by 0400. At 0300 the Project 6.4 P2V5 arrived in the Bikini area and control of it was assumed by BAIROKO CIC. At 0445 CJTF SEVEN issued his final confirmation that the shot would be fired on schedule.

At 0330 the P4Y2 (LCDR W.R. HAHN, USN) assigned to Project 1.4 took off from Eniwetok airstrip. At 0505 all ships reported on station except MOLALA. At 0510 MOLALA had taken all YAG personnel aboard and was preparing to turn over control of the drone ship to the P2V5. At 0520 VP-29 reported all patrol aircraft on the ground at Kwajalein. By 0525 MOLALA, with YAG personnel aboard, was proceeding south, out of the downwind danger area. She was then over 40 miles from the shot site and on a safe bearing, and was reporting her position, course and speed each half hour. At 0550 CTG 7.3 reported to CJTF SEVEN that all ships, except MOLALA, were on station, and that MOLALA was clear.

10. Shortly after 0500, CJTF SEVEN authorized the movement of minor units to new stations at any time, and of BAIROKO, ESTES and CURTISS after H-hour plus thirty minutes. These movements were to be made at the Task Group Commander's discretion, with ESTES required to remain on her assigned bearing but permitted to move out to a distance not to exceed 50 miles. After consideration of the predicted winds, it was decided to reorient some of the smaller and slower ships to guard against the possibility of radioactive fallout in their areas. At 0600 APACHE, SIOUX, GYPSY and COCOPA, with her tow, were directed to open their range from Bikini, and began moving to new positions fifteen to twenty miles south of their original shot time stations. At 0645, as MOLALA reported well clear of the fallout area and COCOPA reported on station, BRAVO was detonated. Some three minutes later the shock wave passed the formatio

without ill effect.

11. At 0655 the P4Y2 departed her shot station for Eniwetok. At 0715 TAWAKONI proceeded west from her station to join MOLALA, to transfer the YAG 40 crew and assist in recovering the YAGs. BAIROKO, ESTES and CURTISS remained on their shot time stations, to facilitate scheduled helicopter operations and to keep in communication with the firing party in the Enyu bunker. At 0725, upon orders of CJTF SEVEN, BAIROKO launched a helicopter with six airstrip operations personnel aboard bound for Eninman Island to man essential airstrip stations, and was prepared to launch other helicopters. Five minutes later the aircraft was recalled, upon advice from CTG 7.1 that the island was probably heavily contaminated. Meanwhile the P2V5 was having difficulty maintaining control of the YAG craft since his antenna had carried away. He had not yet succeeded in turning on the washdown system on YAG 39. Preparations were made on BAIROKO to launch a helicopter equipped for radio control of the drones, but at 0734 CJTF SEVEN directed that it not be launched.

12. Up to this point operations were normal, and as expected. However, at about 0800, CJTF SEVEN advised that all major units open to a 50 mile range to avoid radioactive fallout. About this time, ships' damage control parties began to report considerable radioactive contamination on deck. All ships were directed by CTG 7.3 to proceed south at best speed to a fifty mile range, to activate [redacted] washdown systems, and to use maximum damage control measures.

[redacted]

III

Decks were cleared of exposed personnel, all openings and unnecessary ventilation secured, and washdown systems were turned on.

13. Washdown systems were operated generally until about 0930. Most ships received at least some contamination from fallout; BAIROKO and PHILIP, her plane guard, received the heaviest. By 0840 flight deck readings of 1000 mr/hr had been reported by BAIROKO, and dosimeters worn by personnel in the forward ready room indicated dosages of 140 mr. Intensity readings in the enclosed bridge varied from 200 to 2000 mr/hr, with an average of 800 mr/hr. Intensities on deck later reached a maximum of 5000 to 25000 mr/hr in flight deck drains. PHILIP reported average intensity readings of 5000 mr/hr on deck, with a highest reading 20000 mr/hr. After the fallout had ceased, ships carried out standard shipboard survey procedures and proceeded immediately with rough decontamination of hot areas. The highest individual dosage recorded for shot day among TG 7.3 personnel, by film badge, was 6000 mr, most of which was received while the wearer was engaged in topside decontamination on the BAIROKO. Other shot day dosages were under 3000 mr, with the majority considerably lower.

14. At 0830 the P2V5 had completed rigging a new antenna and succeeded in turning on the YAG washdown system. At 0840, when it became evident that ESTES was not in the heavy fallout area, she was ordered to remain in her present position, to keep in communication with the firing party in the Enyu bunker. At 0915, CJTF SEVEN

[redacted]

requested CTG 7.3 to launch two helicopters to proceed to Enyu and evacuate the firing party. BAIROKO secured her washdown system, shifted two uncontaminated helicopters to the flight deck and began closing Enyu. The helicopters were launched at 1015 and evacuated the party successfully, returning to BAIROKO at 1230.

15. Following the detonation, a VP-29 aircraft took off at 0830 to search out along a track bearing 065° true from ground zero for a distance of 600 miles from Bikini. This aircraft was directed to take departure from a position 50 miles bearing 065° true from ground zero in order to avoid fallout. However, this was a miscalculation, for by 1000 this aircraft had become so contaminated it had to return to base. A relief aircraft was ordered to search the same bearing taking departure from a position 180 miles bearing 065° true from ground zero. (The approximate position where the previous search had terminated). The only contact reported by these two search aircraft was the PATAPSCO (AGO-7) contacted at 12° 31'N, 170° 48'E, at 1925, course 030°, speed 10 knots. As the PATAPSCO was heading into the danger sector designated by CJTF SEVEN, the aircraft turned the ship to an easterly heading.

16. At 1100, after air sampling had indicated that the fallout had ended, all ships were ordered to close Bikini Atoll to a range of ten miles. The next few hours were relatively uneventful. The P2V5

returned control of the drone ships to MOIAIA, and departed for Eniwetok. CTG 7.4 reported that he had no further positioning requirements for ESTES. Ships were reassigned new stations at sea south of Eninman Island.

17. The Task Group Commander transferred to ESTES by helicopter and took part in a conference, where plans for reentry into the lagoon were revised. Ordinarily, had the ships themselves not been contaminated, and had contamination on the islands not been so extreme, RadSafe surveys of the atoll would have been flown by BAIROKO's helicopters, carrying TG 7.1 monitors. When the survey was complete, and water samples had shown the lagoon waters were safe for entry, ships would have reentered the lagoon and commenced recovery operations. -By boat and by helicopter, scientific parties would return to their stations throughout the atoll, to recover film, instruments and other data, their movements into contaminated areas controlled by CTG 7.1's RadSafe Unit. But the ships were contaminated, and radiation intensities on most islands were too high for early reentry. A new plan was indicated. It called for BAIROKO, ESTES, CURTISS and AINSWORTH to return to the Eniwetok base, to permit the Task Force to reorganize and prepare to resume Bikini operations based afloat. BELLE GROVE, with a TG 7.1 RadSafe representative on board as advisor, would remain outside

the lagoon until daylight, reenter and survey the lagoon water for contamination. If the lagoon was safe for general reentry BELLE GROVE would order ships not occupied on project support tasks back into the lagoon, and begin survey and decontamination of small craft moored and anchored off Enimman and Enyu. MOLAIA and TAWAKONI would tow the YAGs to Eniwetok. APACHE and SIOUX would commence the fallout collector buoy recovery.

18. Commencing about 1530, a second, comparatively mild fallout was experienced, with readings in the order of 50 to 300 mr/hr reported by various ships. TG 7.1 RadSafe personnel advised that the particles composing this fallout were of a size that might be inhaled by exposed personnel. Ships were directed to keep only essential personnel topside, and to take necessary damage control measures, including the operation of washdown gear. By 1800 CURTISS, AINSWORTH and ESTES were enroute to Eniwetok. BAIROKO departed at 1915 after completing transfer of the RadSafe advisor to BELLE GROVE. All arrived at Eniwetok the following morning and disembarked Eniwetok-based staffs and their evacuation passengers. MOLAIA and TAWAKONI took YAG 39 and 40 in tow late on shot day and proceeded to Eniwetok. The YAGs had not succeeded in their attempt to receive heavy contamination. APACHE and SIOUX commenced the search for fallout buoys. Next day BELLE GROVE carried out the reentry plan, found the lagoon waters safe, and started the small craft survey and decontamination.

[redacted]

III

19. On 2 March personnel of other task groups began moving aboard CURTISS, AINSWORTH, BAIROKO and ESTES and as they were loaded, the ships sailed for Bikini. Upon BAIROKO's arrival at Bikini 3 March, complete RadSafe surveys were flown by her helicopters, and recovery operations were commenced, almost exclusively by helicopter since the islands were too radioactive to permit reentry by LCM or DUKW. Bikini based personnel began to shake down to conduct their future operations from shipboard.

[redacted]

[redacted]

III

ROMEO

20. ROMEO had originally been scheduled as the sixth shot; it was now advanced to the number two position on the schedule. Despite the time consumed in recovering from the effects of BRAVO, it was possible to reschedule ROMEO for 13 March, with the interval between the first two shots only two days longer than had been called for in the original pre-BRAVO schedule.

21. On 12 March all was in readiness, and the shot-day minus one schedule was begun. At noon CJTF SEVEN indicated that there was some uncertainty as to whether the winds would permit firing and the sortie was delayed. Shortly after 1600 word was received to resume the schedule, and ships began moving out of the lagoon to their stations. MOLALA and the YAGs sailed at 1700, with others following as they completed their tasks. By 1900 the lagoon was clear. At 1928 word was received that the shot had been postponed because of unfavorable weather. Thus began a two week long delay while the Task Force waited for the winds to change so that ROMEO could be safely fired. On this first abortive attempt the formation remained at sea through the night and returned to the lagoon the following morning, backing up the shot-day minus one procedure until the minus two day disposition had been reformed. The Task Force remained in a readiness condition varying from minus one to minus three until the shot was finally fired. Minus one day was again declared on 19 March. Once more the movements began, and

[redacted]

this time they progressed to the point where the major units were anchored off Enyu Island waiting for the last personnel to return aboard ship, with APACHE and SIOUX at sea to lay their fallout buoy pattern, and RENSHAW, GYPSY, and COCOPA with the YFN barge in tow proceeding to their shot stations. At 1900 CJTF SEVEN directed that the task group sortie be delayed; at about 2000 word was received that the shot had again been postponed. Next day the ships again returned to their minus two day positions. On 21 March the minus one day pattern was started again. This time the sortie was complete except for ESTES and BAIROKO, when another two day postponement was announced. Ships returned to the lagoon and resumed their mimus two day status. Postponements continued from day to day, until 27 March was designated as shot day. This time the winds were favorable, and the shot was fired.

22. On 26 March, with the ease born of long practice, task group ships sortied from Bikini lagoon for ROMEO. The only mishap occurred when COCOPA, with the YCV 9 in tow, in attempting to take the YFN 934 in tow, fouled the YCV tow wire in her screw. To minimize delay in sortie, the YCV was anchored, the YFN was placed alongside COCOPA and TAWAKONI was directed to take COCOPA in tow. Immediately before this was accomplished COCOPA succeeded in clearing her screw sufficiently to permit operation and proceeded to sea with the YFN in tow. After return to port several turns of wire still wound on the shaft were removed.

23. Events up to shot time were generally conducted much as they had been in BRAVO. The disposition of ships off Bikini was substantially the same. The coverage of the pre-shot air search had been enlarged greatly, and five planes were now required to search the new Danger Area and the downwind sector, as against three during BRAVO. The firing bunker and four hundred foot photographic tower on Enyu Island were now used as a radio relay point, and the firing party was embarked in ESTES in which special equipment was used to send out the firing signals by radio. The firing party was evacuated from the shot barge by 2 LCMs, rather than by helicopter.

24. The shot was fired on time. There was no fallout on task group ships. Shortly after 0900 two helicopters left BAIROKO for the initial radiological survey, and two more proceeded to the airstrip with personnel to clear it of debris that had been deposited by the blast. Reentry was tentatively scheduled for 1200, pending a survey of the lagoon water. BELLE GROVE entered to test for water contamination. All ships left their evacuation stations and closed on Bikini. Shortly after 1100 word was received that fallout on Bikini was not significant, except in the shot crater area. BELLE GROVE reported the lagoon clear, and 1300 was set as R-hour. APACHE and SIOUX began their search for fallout collector buoys. YAG 39 and 40 were reported dead in the water in the fallout area. MOIALA and TAWAKONI were proceeding to an area south of them, to gain radar contact and stand by to recover them when

when they left the "hot" area. At 1315 ships began to enter the lagoon, and by 1600 reentry was complete and normal operations had been resumed. The Eniman airstrip was quickly restored to operation.

25. During the night and on 28 March, the day following the shot, three ships searching for fallout collector buoys north of Bikini Atoll, [redacted], and SIOUX in succession experienced fallout, the maximum being 42 mr/hr. They retired to the southeast. A light fallout was experienced generally throughout the Bikini area. Ships did not leave the lagoon, but cleared their decks, secured ports and hatches, and operated washdown systems intermittently throughout the night. The fallout almost ceased by about 2400 the morning of 29 March, but a very slight amount continued for the remainder of the day. The highest intensity during this period was 30 mr/hr reported by SIOUX. Average topside contamination levels aboard ship reached highest values around 20 mr/hr, but were below 10 mr/hr in most cases by 0600 of 30 March, and around 5 mr/hr by 0600 of 31 March.

[redacted]

[redacted]

III

KOON

26. After ROMEO, KOON was scheduled for detonation on 2 April 1954. This shot was postponed briefly awaiting favorable winds, and the Task Group did not sortie from Bikini Lagoon until 5 April. Since the site of this shot was close to both lagoon entrances, the device was not armed until after the lagoon was clear of ships. The firing party and firing party boat crews were transported from the shot island, Eninman, to the firing bunker on Enyu, and thence to the ESTES, at sea, by helicopter. The drone ships, YAG-39 and 40, since they were still contaminated from their successful operations in ROMEO, did not participate in KOON. The sea phase of Project 2.5a, and project 1.4 also did not participate. APACHE, SIOUX, MOLALA, TAWAKONI and the two special project aircraft therefore were not required to perform their usual tasks for KOON. PC 1546 had been assigned a special mission in support of Scripps Institute of Oceanography personnel, standing by near Ailingnae to give warning if a tidal wave developed from the shot.

27. This shot was fired on Eninman where the main Bikini camp had been located. All material had to be removed from the island prior to the shot. The time permitted by the postponement of both ROMEO and KOON had been used to great advantage in removing equipment from the island and evacuating it to Eniwetok. This task kept

[redacted]

the LSTs fully employed during the period between shots.

28. On 5 April 1954, the shot day minus one procedure commenced. Boats made their last trips to the islands, delivered their passengers to their assigned ships, and then were loaded in BELLE GROVE, or left anchored or moored off Enyu. The sortie began at noon. By 1400 all ships except BELLE GROVE had cleared the lagoon, and she was under way. By 1600 the device had been armed, BAIROKO's helicopters were all aboard, and the ships were on their evacuation stations. SHEA and LST 1157 arrived from Eniwetok and joined the formation at sea to view their first shot and be prepared to commence laying the Project 3.4 mine pattern as soon as KOON was detonated. At 1900 all ships evacuation stations were shifted 20° toward the south, and their distances from ground zero opened by 2 miles. Shortly before midnight the last VP-29 aircraft reported completion of his search and arrival at Kwajalein. Of the five aircraft making the day's search, two reported no contacts, the other three had discovered two Japanese fishing boats one at a distance of 330 miles, the other 570 miles northeast of Bikini, near the edge of the Danger Area, at the northeastern end of the downwind danger sector. The presence of these craft was reported to CJTF SEVEN. No significant fallout was likely to occur so far from Bikini, and the boats were on courses that, if maintained, would place them in even safer positions before shot time.

29. Shortly before 0200 CJTF SEVEN announced postponement of KOON for twenty-four hours to await a predicted wind change that would be more favorable.

[redacted]

30. It was decided that the ships would not reenter the lagoon, but would remain at sea through the day to await the firing next day. Scheduled shot day flights by VP-29 were cancelled, and a new five plane search of the Danger Area and downwind sector ordered. At about 0900 ESTES, BAIROKO and EPPERSON closed on Eninman Island and the firing party was picked up off ESTES and landed on Enyu and Eninman by helicopter. Resupply of fuel to generator sets and the rechecking and repair of scientific installations was also performed by helicopter. All ships moved closer to Bikini where they remained during the day. At 1900, with the firing party again evacuated, the ships re-opened the range and returned to their shot time stations. The search aircraft reported no contacts. Everything proceeded satisfactorily, and KOON was detonated at 0620, 7 April. PC 1546 signalled from Ailingnae that no Tsunami effect had been detected. At 0640 the formation headed south at 15 knots, to increase their range from the radioactive cloud, but at 0700 this movement was cancelled when it became apparent from the plot of actual shot time winds and the small size of the detonation that they were already in an area entirely safe from fallout. ESTES, BAIROKO and EPPERSON then approached Enyu and commenced helicopter operations.

31. By 0900 the RadSafe survey reports were in and 1045 was established as reentry hour. The ships returned to the lagoon on schedule and resumed operations. No ships or boats received any contamination during KOON.

[redacted]

[redacted]

[redacted]

ATOMIC ENERGY [redacted]

IV

RADIOLOGICAL SAFETY

1. A primary mission of Task Group 7.3 on shot day and the day preceding was the evacuation of personnel and material from the shot atoll, to whatever extent was dictated by the size of the shot, and deployment of task group ships to sea to avoid damage to the ships and injury to personnel embarked. The responsibility for radiological safety of task force personnel during periods afloat was placed upon CTG 7.3.[1] To escape the effects of instantaneous radiation from the fireball, and to minimize the blast and heat effects, ships were assigned shot-time operating areas at a safe distance from ground zero. The distance was usually a minimum of from 25 to 30 miles. To avoid contamination from radioactive fallout, ships were assigned to operate in a sector assigned by CJTF SEVEN, where the predicted winds were not likely to carry the radioactive cloud, and if necessary were maneuvered after the shot to a safer bearing and distance. Operational considerations required that the ships be positioned at a distance no greater than was required for safety, and demanded that some ships be stationed until after shot time on bearings involving a slight risk of being in the fallout area. To maintain voice communications and thereby tactical control, all operating areas had to be adjacent to one another.

2. A positive program had been carried out to insure that all ships nominated to participate in Operation CASTLE attained a high

1. CJTF SEVEN OpPlan No. 3-53 Annex H, para "o".

[redacted]

degree of Atomic Defense readiness before the first CASTLE shot. In August 1953 type commanders had been informed of the special Atomic Defense preparations that would be required of ships and units nominated for CASTLE.[2] Before BRAVO all units had completed satisfactory radiological safety exercises and inspections, conducted by the Staff Radiological Safety Officer, LCDR D. A. Pickler, USN.[3] Water spray equipment devised and supplied by the Bureau of Ships to minimize contamination of a ship subjected to fallout had been assembled for all ships and installed with BuShips technical assistance.[4] A BuShips representative, Mr. Seymour Gordon, had been assigned to the Task Group Commander's staff to assist in this program. Standard Atomic Defense Bills were modified to provide for operation of the water spray equipment. Decontamination stations prescribed in Navy directives were ready for use. Allowances of protective clothing and radiac instruments were filled, the latter with considerable difficulty due to the comparative scarcity of instruments. RadSafe personnel completed Atomic Defense and monitoring courses at training schools, and ships' crews were indoctrinated in basic Radiological Safety. CTG 7.3 established and operated a radiac instrument pool in the forward area, to assist ships' personnel to repair and calibrate their instruments.

3. These extensive preparations proved their worth when, in the first CASTLE shot on 1 March 1954, the ships deployed off Bikini were

2. CTG 7.3 ltr serial 00440 of 24 August 1953
3. TG 7.3 Instruction 03440.1A
4. TG 7.3 Instruction 3440.2A

[redacted]

subjected to extensive radioactive fallout, three of them, BAIROKO, ESTES and PHILIP, on a relatively heavy scale.[5] Prior to the detonation the ships had been deployed at sea generally in the southeast quadrant from ground zero, at distances ranging from 30 to 40 miles. This disposition and its location were based on four principal factors: the latest CJTF SEVEN radex; the requirements of CTG 7.1 and CTG 7.4 that ESTES and CURTISS be positioned about 12 miles from Enyu Island for reliable UHF communications, and Raydist and aircraft control purposes; the necessity that ships be at safe distances from the shot site; and the requirement of reasonable concentration for communications and ship control purposes. When wind data began to indicate an easterly component just before the shot, some of the smaller, slower units were moved to the south. The larger ships were not moved because of their positioning requirements.[6]

4. About 0800, just as BAIROKO was launching helicopters to begin the initial reentry schedule, sudden and rapidly increasing radioactive fallout was detected on several ships. All ships steamed south at their best speeds, cleared personnel from their weather decks, closed ports and hatches, secured unnecessary ventilation and turned on washdown systems.

5. Highly radioactive, visible white particles, about the size of pinheads, fell on the ships. In spite of the continuous use of

5. CTG 7.3 ltr ser 00666 of 22 March 1954
6. Encl (5) to CTG 7.3 ltr ser 00419 of 26 Feb 1954

[redacted]

[redacted]

their washdown systems, concentrations of up to several roentgens per hour built up rapidly on BAIROKO, and her plane guard, PHILIP. Average readings reached 500 mr/hr on BAIROKO and 750 mr/hr on PHILIP, with high reading between 5 and 20 R/hr. The fallout pattern was not symmetrical, since both ESTES and CURTISS, approximately the same distance from ground zero as BAIROKO (31 miles) but on opposite sides of her, received considerably less contamination. Other ships, including those which had been moved southward before the shot, received none of this early fallout, which ended about 0930.

6. In the afternoon and early evening of shot day, light, invisible fallout was detected by all ships in the area. Again damage control measures were employed. This fallout commenced about 1300, reached a maximum about 1800 and decreased to almost zero by 2400. Average readings during this period reached 300 mr/hr, with maximum concentrations up to 475 mr/hr.

7. After each fallout period had ended, ships decontamination crews turned to to reduce the inter ity levels. The heavy, visible material deposited on deck during the early morning was concentrated by the washdown systems in and around drains and in places where water did not flow off readily. It was cleared away quickly when the decks were hosed down with heavy streams of water under pressure and intensities dropped rapidly. Continued application of water under pressure, and scrubbing, plus natural radioactive decay, gradually reduced the invisible contamination and brought the average topside

intensities down still further. By 36 hours after the first contamination was received, topside intensities on all ships averaged less than 25 mr/hr.

8. Three barges, ten LCUs and ten LCMs had been anchored or moored in the southeast portion of Bikini Lagoon, off Enyu Island, prior to the shot. It was not considered practicable or safe to take them to sea in the prevailing weather. BELLE GROVE was loaded to capacity with 18 LCMs and the Bikini based AVR. Since these craft left in the lagoon were about 20 miles from ground zero, they suffered no damage from blast, heat or wave action. But they were all heavily contaminated. Twelve hours after shot time they had radioactive intensities averaging several roentgens per hour. On the day following the shot, when ships reentered the lagoon, decontamination of the small craft was begun. They were first hosed down by other vessels, notably GYPSY who was thus employed for several days, then hosed and scrubbed by decontamination personnel when they could get aboard. Work continued throughout the daylight hours until by 6 March intensity levels were reduced to the point where all boats were back in operation.

9. After the shot there was considerable contamination of the lagoon water, but it was concentrated in the northwestern end of the lagoon. Ships were able to enter and anchor in the lower lagoon without danger. A period of light winds left the lagoon waters calm, with less than normal circulation, while the radioactive solids in the water settled to the bottom, and intensities were reduced by decay.

By three days after the shot, all the lagoon water had become slightly contaminated, in the order of one microcurie per liter. Water samples were taken and tested at frequent intervals and salt water systems and adjacent engineering spaces monitored continually. Evaporators, condensors and fire mains on most ships gradually became contaminated. At one time it was feared this might become a major problem, and require ships to evacuate the lagoon, at least at night. However, 10 days after the shot the intensities of salt water system contamination began to drop steadily and there was no need for ships to leave the lagoon. The highest shipboard intensity resulting from intake of contaminated lagoon water was 30 mr/hr, detected on the exterior of an auxiliary condenser on CURTISS. The average intensity in the engineering space where this condenser was located was only 2 mr/hr. Drinking water produced from lagoon water by ships' evaporators showed no activity and was completely safe for use. One alarming report of a contaminated drinking water sample turned out to be due to contamination taken into the testing laboratory by its ventilation system, and not to contamination present in the sample.[7, 8]

10. Most Navy Task Group personnel present at Bikini for shot BRAVO received at least some radiation; a considerable number received dosages that were considered heavy by laboratory standards. Three may have received substantial dosages by tactical standards. The

7. CTG 7.3 ltr ser 0560 of 14 March 1954
8. CTU 7 ltr "Report of Water Samples" dated 10 March 1954

[redacted]

[redacted] IV

Maximum Permissible Exposure (MPE) for any individual (other than Air Force cloud sampler pilots) was established by CJTF SEVEN at 3.9 roentgens for the entire operation. By 20 March 1954 approximately 144 Naval personnel had received dosages between 3 and 3.9 roentgens, 123 had dosages exceeding 3.9 roentgens. The latter figure includes 3 men comprising an LCM crew, whose film badges read approximately 90 roentgens. All these represent somewhat less than 5% of total task group personnel. Almost 70% of total task group personnel received dosages of less than 1 roentgen. In the latter part of March sixteen RAIROKO personnel and twenty-one men on PHILIP developed skin irritations which appeared to be minor radiation burns. They were in the form of minute, scattered inflamed lesions, appearing usually on the waistline, scalp or neck. The burns were treated and studied, and did not appear to be serious.

11. Thorough investigation failed to explain how the three men in the LCM crew could have received the high dosages indicated by their film badges; they were transferred to Naval Station, Kwajalein and later to Tripler Army Hospital for observation. They have revealed no symptoms of radiation sickness. The less severe dosages approaching or exceeding the MPE were received by members of RAIROKO's flight deck crew, and by personnel stationed in the CVE's island at shot time; by boat crew personnel of the Navy Boat Pool; by helicopter pilots and crew chiefs who flew many missions into contaminated areas; and by PHILIP personnel, due to PHILIP's relatively heavy contamination, and her later visit to the contaminated atolls of Rongelap and Ailingnae to evacuate the

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[redacted]

natives living there. To permit continued operations in support of CASTLE, CJTF SEVEN, at the request of CTG 7.3, doubled the MPE for all U.S. Marine Corps helicopter pilots and plane captains, all boat operating personnel of Task Group 7.3 Boat Pool, the entire flight deck crew of BAIROKO and all personnel attached to PHILIP.[9] A system was established whereby MPEs for other essential personnel with accumulated dosages in excess of 3.5 roentgens could be increased to 7.8 roentgens on an individual basis.

12. The widespread exposure to radiation experienced by Navy personnel placed a heavy load on the Scientific Task Group's Task Unit 7, which was responsible for film badge processing for the entire Task Force. CTG 7.3 directed Navy Task Group units to assist CTU 7.1.7 by submitting rosters and film badge data forms for use in reporting film badge readings, and by maintaining their own individual dosage records. A system was devised to furnish CTG 7.3 weekly reports of each unit's situation with respect to dosages, and to provide close control of further dosage accumulations. Wherever practicable personnel with high dosages were shifted within their units, to duties where they were less likely to be exposed to additional extensive radiation. PHILIP was employed at Eniwetok during the second and third shots, while BAIROKO remained at Bikini Atoll, but was stationed in areas clear of radiation, insofar as possible.[10]

9. CTG 7.3 ltr ser 0593 of 18 Mar 1954
10. TG 7.3 Instruction 6470.3 of 2 Apr 1954

[redacted]

V

ADJUSTMENT TO AFLOAT OPERATIONS AT BIKINI

1. After BRAVO the radiological situation at Bikini required that the shore bases there be abandoned, as far as full-time occupancy was concerned. This fact became apparent on shot day, and the headquarters staffs immediately developed plans for continuing operations at the heavily contaminated atoll, with all personnel permanently based aboard ship. On the afternoon of shot, ESTES, BAIROKO, CURTISS and AINSWORTH, with most of the 1400 evacuated personnel aboard, left Bikini and steamed for Eniwetok. They arrived there next morning and disembarked their passengers.

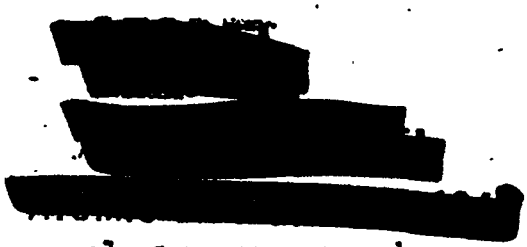
2. While the Bikini contingents of the Scientific and Base Facility Task Groups made preparations for an extended stay aboard ship, the ships prepared to receive them. BAIROKO, in addition, prepared to conduct all Bikini helicopter operations from afloat. The three Bikini fighter aircraft were barged ashore to Eniwetok Island, and personnel of the VC-3 detachment moved with them. The Air Force helicopters and L-13 were flown ashore to the Eniwetok airstrip. Providing local air transportation at Bikini thereafter was solely a Navy/Marine Corps responsibility. BAIROKO received her new permanent residents that afternoon and sailed for Bikini before nightfall. Before the week was out AINSWORTH, CURTISS and ESTES were anchored in Bikini Lagoon, with BAIROKO and BELLE GROVE, all fully engaged in their new support task.

3. BAIROKO was first to return to Bikini in order to support the

[redacted]

most urgent task then at hand, the recovery of scientific data from stations on the contaminated islands. This was largely a helicopter operation, with the recovery parties' movement into hot areas controlled by the Task Unit 7 RadSafe Center, working out of BAIROKO's forward ready room. The ship was so jammed with personnel that it soon became apparent that something had to give. To provide some relief, the Navy Task Group Commander and his staff, on 6 March, moved to CURTISS, thereby freeing a portion of BAIROKO's limited personnel and working spaces for the use of other task groups. CURTISS' excellent living and office facilities were not being used to capacity in her primary support function of tending the shot site, and with minimum increase in her communications capability, she served successfully as the permanent task group flagship throughout the remainder of the operation. After the return of ESTES and AINSWORTH to Bikini, additional personnel moved from BAIROKO in numbers sufficient to permit the restoration of at least adequate if not entirely comfortable living and working conditions for those remaining on board.

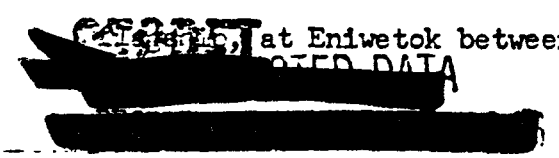
4. AINSWORTH, with the largest passenger capacity, and the best large scale living facilities of any ship in the task group, became the Bikini base for Task Group 7.5, the contractor's group who performed all necessary construction work in the area, and operated the civilian manned boat pool. She accommodated an average of 450 personnel throughout the remainder of the period. Since she was fitted out as a passenger vessel, with facilities for 317 cabin class and 685 troop



V

class passengers, she assumed her new function with a minimum of difficulty. Her working force of cooks and stewards was supplemented with a small number of contractor employees to assist with the long term housekeeping task. The radiation levels on the islands dropped from day to day due to natural decay, and soon were low enough to permit the gradual resumption of work ashore. As soon as AINSWORTH's passengers returned to work, a shortcoming in her equipment became obvious. She had no accommodation ladder. Since MSTS transports in their customary employment receive and discharge passengers alongside a pier, AINSWORTH ordinarily used a brow for the purpose. Personnel could board or leave the ship at anchor only by Jacobs ladder. In the normally choppy and often rough lagoon waters this was a time consuming and often hazardous procedure, particularly when LCMs were the mode of transportation. As a partial remedy LCUs were pressed into service for AINSWORTH passenger runs, since they provided a steadier platform when alongside than did the smaller LCMs and the brow could be used to onload and offload passengers. Partially to solve this problem, and partially to provide an off-ship RadSafe center and change station for the workmen returning to the ship from the contaminated islands, Holmes and Narver provided a barge equipped with personnel decontamination facilities that was stationed permanently alongside AINSWORTH when she was anchored. The presence of the barge greatly simplified the movement of personnel on and off the transport but did cause some minor damage to AINSWORTH's hull.

5. It had been planned to station ESTES, the Task Force Commander's [redacted], at Eniwetok between shots. To accommodate all the personnel



[redacted]

required at Bikini after BRAVO and provide command facilities for CTG 7.1 it was necessary to revise this plan and shift the AGC to Bikini. She was used there primarily as the headquarters ship for the Scientific Task Group's Bikini staff, continuing to serve as the Task Force flagship during shots. Her planned function as Eniwetok Harbor Control was assumed by the senior vessel present at that atoll, usually one of the security DDEs.

6. Use of the ships as the full time base for operations at Bikini increased some of the Navy's problems there. Where planning had called for only temporary and occasional occupancy of the ships by Bikini personnel, they were now on board permanently. This caused greatly increased consumption of stores and fresh water, placed a strain on ships' facilities, particularly laundries and messes, and in general led to long and arduous hours of labor for ships' crews. The necessity for ships to remain immobilized at Bikini complicated the logistics problem, especially in refueling operations. It was occasionally necessary to get ships underway despite the interference with operations ashore, and send them to sea for refueling. Training, except RadSafe training, suffered seriously during the period. The Boat Pool felt the change to a considerable degree, in the form of a sharply increased work-load. BRAVO cost naval personnel their recreation facility ashore on Bikini Island. The area remained too "hot" for use. Since the major ships were required to remain at Bikini, there was no opportunity for

[redacted]

them to grant liberty, or send recreation parties ashore. Despite this unfortunate circumstance, as well as the depressing effect of delays between shots, and difficulties in obtaining prompt delivery of mail, the morale of naval personnel was not seriously affected.

7. Since the airstrip at Bikini was closed due to contamination, it was necessary to institute, for several weeks, a nightly inter-atoll ferry run with one ship leaving each atoll each night, carrying passengers, light cargo and mail. Whenever possible this requirement was met by using a ship scheduled for the trip for other reasons. Frequently, however, it was necessary to schedule a ship out specifically for this purpose, usually one of the security DDEs. This was at a time when the DDEs were often engaged in other non-security employment such as the evacuation of natives, SAR missions and surveys of the atolls to the East. As a result of the additional tasks assigned the DDEs the effectiveness of surface security measures was severely curtailed for a time. The removal of the Bikini fighter aircraft to Eniwetok contributed to this situation. There was no complete device at Bikini when the security situation was at its lowest efficiency. While the reduction in security was undesirable, it was a necessary evil, with the somewhat increased risk acceptable under the circumstances.

8. The abandonment of the Bikini Island bases, and a revision in the shot schedule that moved KOON, the Eninman Island shot, from the final shot to third place on the schedule, placed a considerable task on the LSTs and BELLE GROVE. There was several million dollars worth

of equipment on Enirman Island, to be returned to Eniwetok as soon as radiation levels permitted, and before the third shot. LST 762 took the first load out on 5 March. Fourteen LST round trips were completed between BRAVO and KOON, with 2765 tons of valuable equipment evacuated. BELLE GROVE made one trip, carrying LCUs loaded with mobile construction equipment. All equipment and material of any value had been removed by 31 March, prior to KOON.

9. In one respect the afloat operation eased a Navy task. On shots subsequent to BRAVO, no large scale shot time evacuation of personnel was necessary. The Task Force at Bikini lived and worked in a state of continual evacuation.

[redacted]

VI

EVACUATION OF NATIVES

1. To the east of Bikini, between 166° and 173° east longitude and between 5° and 14° north latitude, are some 30 atolls and islands of the Marshall chain. Of these, 25 support native populations, varying in size from an estimated 30 persons on Wotho Atoll, south and slightly east of Bikini, to over 1000 persons each on Kwajalein, Jaluit, Majuro and Arno Atolls. At Kwajalein, in addition to the native population, is a considerable force of U.S. military personnel, predominantly Navy, based at U.S. Naval Station, Kwajalein. To the west and south of Bikini and Eniwetok lie a number of atolls with even larger native populations. All of these are at a considerably greater distance than the eastern islands, however, except Ujelang Atoll, which lies about 125 miles to the southwest of Eniwetok.

2. The atolls are administered by the U.S. Department of the Interior through the High Commissioner of the Trust Territory, Pacific Islands, in Honolulu. The Marshall Islands are under the District Administrator whose headquarters is at Majuro. At Kwajalein Atoll is a District Administrator's Representative, located on Ebeye Island.

3. The safety of these populated atolls has always been an important factor for consideration during tests at the Pacific Proving Grounds. As the size of devices detonated has increased, the possible hazard to the natives from radioactive fallout has become a matter of increasing concern. Prior to MIKE shot, during Operation IVY, the natives at Ujelang Atoll were taken on board an LST as a

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precautionary measure. When no significant fallout occurred at Ujelang, the evacuation was not completed, and the Marshallese were returned to their homes.

4. Preliminary evacuation of natives during CASTLE was not considered necessary nor desirable. The possibility that evacuation of some atolls might be necessary after a shot was recognized, and plans were made to insure that the Task Force was capable of effecting such an evacuation on short notice. The Navy Task Group was assigned the responsibility of providing ships for this purpose. A task group representative was sent to Kwajalein before BRAVO for discussions with Trust Territory officials and Naval Station personnel to insure that interpreters, Trust Territory representatives and air transportation would be available, should evacuation become necessary. During the period preceding BRAVO, the weather picture created the most concern for Ujelang Atoll, southwest of Eniwetok. As it developed after the shot, the crucial area lay almost in the opposite direction to the east of Bikini.

5. Lying almost on a line slightly south of east from Bikini are Ailingnae, Rongelap, Rongerik, Taka, and Utirik Atolls. Information available to the Joint Task Force prior to BRAVO indicated that only Rongelap and Utirik were populated. It later developed that there was a small number of natives on Ailingnae. On Rongerik CTG 7.4 operated a weather station manned by Air Force personnel.

Distances in nautical miles from Bikini are: Ailingnae: 73, Rongelap: 98, Rongerik: 134, Taka: 263, and Utirik: 273.

6. Late on the evening of 2 March 1954, BRAVO + one day, the Task Force Commander directed that a DDE be dispatched to Rongelap, to arrive there at daylight 3 March prepared to evacuate the native population because the atoll had received considerable fallout. USS PHILIP (DDE 498) was ordered to Rongelap, and departed Bikini at 2145 on 2 March. Commanding Officer, Naval Station Kwajalein, RADM Ralph S. CLARKE, U.S. Navy, arranged for an interpreter and a Trust Territory official to proceed to Rongelap by air, and set up a PBM flight to arrive there at daylight 3 March. After the initial arrangements had been completed, CJTF SEVEN provided additional instructions, indicating that all possible measures should be taken to make the natives comfortable and happy during the evacuation and directing that PHILIP work closely with the Trust Territory representative on the scene. He also requested that PHILIP obtain drinking water samples from the Rongelap living areas. CTG 7.3 directed PHILIP to embark and evacuate all natives from Rongelap to Kwajalein, when requested to do so by the Trust Territory official arriving by PBM. PHILIP arrived and anchored off Rongelap Island, in the lagoon, at 0730 on 3 March. The Kwajalein PBM, with Mr. Marion Wilds, civilian representative of the Marshalls' District Administrator, and Oscar DeBrum, Marshallese interpreter, aboard,

landed and anchored off Rongelap Island shortly before 0730. Prior to landing, the PBM, in good radio communication with the PHILIP, made a thorough reconnaissance flight around the atoll. Radiation readings taken by the PBM at a 200 foot altitude over Rongelap Island averaged 250 MR/HR with a high reading of 400 MR/HR.

7. A party from PHILIP, consisting of the Commanding Officer, the Executive Officer, the RadSafe Officer and a three man monitering team, put off in a motor whale-boat, picked up Mr. Wilds and the interpreter from the PBM, and landed on Rongelap Island. The party was met at the beach by John, the Magistrate of Rongelap. Monitoring of the island was begun immediately. On the basis of the initial ground survey it appeared obvious that evacuation was necessary. Mr. Wilds, when he was advised of the RadSafe situation, requested that the evacuation be carried out, and removal of the natives was begun at once. Survey intensities recorded by PHILIP's monitors on Rongelap Island at 1000 on 3 March averaged 1550 mr/hr, with a highest intensity of 1900 mr/hr indicated.[11]

8. Meanwhile, about 0200 on 3 March, CJTF SEVEN advised that the evacuation of Utirik Atoll might be necessary, and directed that a DDE be dispatched to arrive there at sunrise on 4 March. Commanding Officer, Naval Station Kwajalein again arranged for the transportation of the necessary civil official and interpreter. USS HENSHAW (DDE 499)

11. C.O. USS PHILIP ltr ser 001 of 5 Mar 1954

was ordered to Utirik, and departed Eniwetok at 0600 3 March. It had been learned that the Air Force personnel at Rongerik weather station had been evacuated by PBM. During the morning of 3 March CinCPacFlt made available to CTG 7.3 two DEs of Escort Division 112, USS MUNRO (DE-422) and USS SILVERSTEIN (DE-534), to assist if required. CTG 7.3 accepted this offer of assistance and assumed operational control of both vessels. MUNRO was ordered to Utirik to assist HENSHAW. Later in the day, after the situation cleared, operational control of SILVERSTEIN was returned to Commander, Hawaiian Sea Frontier, since her services were not needed.

9. The evacuation at Rongelap Island proceeded rapidly. By 1045 on 3 March all natives had been removed from the island. The PBM was used to move the elderly and sick to Kwajalein. The island Magistrate designated 16 persons in this category; they were embarked in the aircraft and departed for Kwajalein at 0935. The remaining 48 Marshallese were placed aboard PHILIP. With Rongelap cleared, a search party, including John, the Magistrate, and the interpreter, was sent to Eniaetok Island, across the lagoon, where the PBM had reported seeing people. The party landed there at 1245 and after a thorough search determined that there was no one on the island. It was fortunate that Eniaetok was uninhabited, since radiation intensities there exceeded 3000 mr/hr. PHILIP personnel shifted and reanchored in a better lee a 30 foot sloop belonging to the Magistrate, and PHILIP then departed Rongelap. Upon the advice of the

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[redacted]

Rongelap magistrate the ship proceeded to Ailingnae Atoll, 25 miles to the west. John believed that a party of seventeen natives was there on Enibuk Island. PHILIP found no one on Enibuk, but sighted a sloop in the lagoon off Sifo Island. Her two whale boats were dispatched to Sifo, and brought off 18 Marshallese. Members of this party and the Rongelap Magistrate assured Mr. Wilds and the Commanding Officer, PHILIP, that there were no more natives on either atoll, and PHILIP departed at 1800, with an ETA at Kwajalein of 0830 4 March.

10. At 0735 on 4 March RENSHAW arrived at Utirik and hove to 500 yards south of Utirik Island. She could not enter the lagoon; it was necessary to evacuate the natives over the reef to the ship lying off shore. RENSHAW's two motor-whaleboats were launched. One, with the beach party aboard, proceeded inshore to attempt a landing, the other departed to search along the reef for a break that would offer a favorable spot for safe boat handling in the evacuation.

11. The beach party boat approached the south shore of the island to the edge of the reef, which extended about 40 yards off shore. Since a sizable surf was breaking, it was decided not to attempt a landing in the boat. Instead a small rubber raft was launched, secured to the boat by a line, and in it RENSHAW's Executive Officer, LCDR W. R. Easton, USNR, paddled shoreward. After considerable difficulty he reached the island, assisted by several natives who swam out to meet him. At about this time a Navy UF1 arrived from Kwajalein, first landed in the lagoon, then took off and landed again in the open sea near RENSHAW. Aboard was a Trust Territory official, an interpreter and two CJTF SEVEN

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representatives.

12. Meanwhile the remainder of the beach party had succeeded in landing on the island by wading over the reef. Their boat returned, picked up the aircraft's passengers and placed them ashore. The plane departed shortly for Kwajalein. The whaleboat reconnoitering the reef had been unable to find a break in it, so it was decided that the evacuation would be carried out by shuttling the natives over the reef on a liferaft, where they would be transferred to the whaleboats and taken to the ship.

13. The RadSafe team in the beach party surveyed the island and found radiation intensities of from 100 to 150 mr/hr over the entire area. Four drinking water samples were collected. The movement to the ship was begun at 1050. With considerable assistance from the native men, the Marshallese were taken to the ship in ten whaleboat trips. About 1200, with the evacuation half completed, the wind began to freshen, and the raft in use nearly upset. A second raft was brought in, the number of persons in each raft trip reduced, and the evacuation speeded up. Most of the women, children and aged were already aboard RENSHAW, and no one had been injured beyond a few coral cuts. The last raft left the beach at 1245. A total of 154 persons were taken aboard RENSHAW: 47 men, 55 women and 52 children under 16. At 1300 RENSHAW departed Utirik for Kwajalein. At 1345 USS MUNRO joined RENSHAW, and accompanied her to Kwajalein, where she was returned to her normal duties.[12]

14. PHILIP arrived at Kwajalein at 0830 on 4 March, and RENSHAW

12. CO RENSHAW ltr serial 038 of 18 March 1954

at about the same time the following day. Upon the arrival of each ship the evacuees were disembarked and turned over to the Commanding Officer of the Naval Station, Trust Territory officials and representative of CJTF SEVEN on the scene.

15. Throughout the evacuation, and during their time aboard ship, the Marshallese were most cooperative. In addition to the assistance rendered by the Trust Territory official and interpreters, each ship was fortunate to have in its company a former member of the Navy island government program who had seen duty in the Pacific islands. PHILIP's Executive Officer, LCDR V. L. MURTHA, had been stationed at Majuro in the Marshalls, and E. K. TRYBA, Chief Boatswain's Mate on the RENSHAW had served in the islands to the west.

16. The ships provided the Marshallese the best accommodations they could. Considering that a destroyer type vessel is hardly ideal for carrying large numbers of passengers, the natives spent a comparatively comfortable period on board. Those on PHILIP brought only small bundles of their personal belongings, leaving their sleeping mats behind since they were likely to be heavily contaminated. Cots, stretchers and kapok lifejackets served for sleeping. All natives took showers immediately after coming aboard, and their clothing was washed in the ship's laundry. The crew of the PHILIP donated clothing for the natives' use during the laundering. The women and children were billeted in the torpedo room, with the after officers' head set aside for their use. The men slept on the fantail under the awning, and used the after crew's head and washroom. natives went through the regular mess line for meals and had the same ration the crew. The meat course was the least popular, with hot soup, bread,

vegetables and ice cream the most in demand. RENSHAW's evacuees brought aboard their sleeping mats as well as small amounts of personal gear. They were reluctant to take showers, although most of them were persuaded to do so, and they objected successfully to giving up their clothing for decontamination. Since the fallout had been much lighter on Utirik than it was on Rongelap and Ailingnae, their bodies and clothing were not heavily contaminated and a complete decontamination aboard ship was not essential. RENSHAW's passengers showed contamination levels below 7 mr/hr when they first came aboard, while PHILIP's averaged 50 mr/hr before and 20 mr/hr after decontamination. RENSHAW billeted all her passengers on the fantail, roped off and rigged with awnings for privacy and shelter. The after crew's head and washroom was assigned for their use. After the natives were aboard the women's side of the head was partitioned off for privacy upon the recommendation of the Trust Territory representative on board. RENSHAW set up a special mess line on the fantail. The Utirik natives showed the same food preferences as did those from Rongelap and Ailingnae. RENSHAW gave them an evening meal of boiled fish and rice, with vegetables, which was very well received. All the natives watched the evening movie programs.

17. The evacuation of the Marshallese from their homes was a successful operation. The natives themselves played no small part in this success. This is attested to by Commanding Officer, USS PHILIP

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when he says in his report of the operation: "The Marshallese were excellent passengers, most cooperative, never demanding and exemplary in conduct. It was a distinct pleasure for the crew of the PHILIP to have been afforded the opportunity to assist these quiet people in the evacuation."

18. After the evacuation, Task Group 7.3 DDE's made three additional trips to the eastern atolls. A ground survey of all inhabited atolls and islands contaminated in excess of 10 mr/hr 24 hours after shot time was directed by CJTF SEVEN. Commanding Officer, Naval Station, Kwajalein provided air transportation for this survey. Since seaplane landings at Likiep, Jemo, Ailuk and Mejit would have been extremely hazardous, RENSHAW, with a survey party on board, was dispatched to them on 5 March.[13] Between 8 and 11 March USS NICHOLAS (DDE-449) called at Rongelap, Utirik, Bikar, Rongerik and Ailingnae. She carried Dr. Herbert Scoville, technical director, AFSWP, and a party of scientific personnel. The party made a detailed survey of the evacuated atolls, plus Bikar, to obtain data for the evaluation of radiation effects on the evacuees and to collect ground readings from which to estimate how soon they would be able to return to their homes. NICHOLAS working parties assisted scientific personnel in making the survey and in collecting water and soil samples. Under the direction of Mr. Wilds of the Trust Territory organization, they secured the natives' personal property. They moved into native houses articles that had been left in the open, closed up the houses, cared for pigs and chickens, which

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13. ComNavSta KWAJ Dispatch 050644Z of March 1954.

RESTRICTED DATA

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were found to be in good condition, and destroyed dogs and cats lest they harm the pigs and chickens when food became scarce. They beached native canoes above high water and re-anchored a thirty foot sailing schooner at Ailingnae in a lee, and over a sand bottom in case it should sink before the natives returned. They helped Air Force personnel to test and secure against the weather the weather station equipment at Rongerik.[14] NICHOLAS made a second expedition, this time to Rongelap on 25 March, carrying a party of Task Group 7.1 scientists headed by Dr. Lauren R. Donaldson. They were met at Rongelap next morning by a party arriving from Kwajalein by air. This group captured animals, birds and fish, and collected samples for radiation effects study purposes. NICHOLAS rejoined the Task Group at Bikini on 27 March in time for shot ROMEO.

19. In addition to the DDE based surveys, a VP-29 aircraft made a special air survey of the Gilbert Island chain to insure that these islands had escaped any significant contamination.[15]

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14. CO NICHOLAS ltr ser 049 of 20 March 1954
15. CJTF SEVEN Dispatch 040435Z of March 1954

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VII

STATISTICS

Personnel Clearance Status

Helicopter Operations

Boat Pool Operations

BRAVO Contamination

BRAVO Dosages

Inter-Atoll Surface Lift

Communications

Costs

Status of Allotments

[redacted]

[redacted]

VII

PERSONNEL CLEARANCE STATUS OF SHIPS AND UNITS OF TASK GROUP 7.3
AS OF 7 APRIL 1954

SHIP OR UNIT	"Q" GRANTED	"Q" PENDING	NAC COMPLETED	NAC PENDING	TOTAL
USS SHEA	0	0	14	214*	228
USS COCOPA	6	4	71	0	81
USS LST 1157	5	0	175	0	180
USS PHILIP	13	1	256	0	270
USS ESTES	113	24	476	0	593
VP TWENTY-NINE	6	0	350	50*	406
VC THREE	4	0	4	0	8
USS TAWAKONI	9	4	66	0	79
YAG 40	15	10	24	0	49
USS LST 1146	0	0	99	0	99
USS PC 1546	6	2	49	0	57
Underwater Detection Unit	19	3	0	0	22
USS LST 762	26	3	96	0	125
USS EPPERSON	11	1	380	0	392
HMR 362	39	13	62	0	114
USS BAIROKO	63	13	781	26*	883
USS LST 551	17	3	85	0	105
USS MOLALA	16	4	66	0	86
USS RENSHAW	10	0	259	0	269
USS BELLE GROVE	29	9	298	0	336
USS NICHOLAS	12	2	258	0	272
USNS FRED C. AINSWORTH	2	2	166	21*	191
USS CURTISS	65	8	565	0	638
TG 7.3 BOAT POOL	32	16	169	0	217
COMCORTDESDIV TWELVE	3	1	3	0	7
MARINE DETACHMENT	37	7	22	0	66
YAG 39	16	3	24	3*	46
USS APACHE	0	0	71	0	77
USS SIOUX	7	4	74	0	98
STAFF, TG 7.3	48	5	0	0	53
USS MENDER	0	0	17	50	67
TOTAL	629	142	4,980	364	6,114

* All personnel hold Interim Secret Clearances or Access to Secret pending results of NAC's.

[redacted]

[redacted]

VII

HELICOPTER OPERATIONS AT BIKINI ATOLL - HMR 362 - U.S. MARINE CORPS

20 JANUARY - 1 APRIL 1954

	January	February	March	Average
Aircraft assigned	12	11	11	11.3
Average Aircraft Available	11.5	10.7	11	11.1

				Total
Flights	220	903	730	1853
Hours flown	169.3	746	733.6	1648.9
Passengers carried	766	5288	4819	10873
Accidents	*1	0	0	1
Casualties	*1	0	0	1

* Note: On 28 January 1954, a helicopter took off on a routine ship to shore flight. Immediately upon becoming airborne, and at an altitude of approximately two (2) feet, the aircraft crashed to the deck on its right side as a result of a mechanical failure. A fragment of the rotor blade struck the left knee of the Landing Signal Officer, Technical Sergeant Eldon R. LARAWAY, 520276, USMC who sustained mild lacerations, moderate contusions, and moderate abrasions.

[redacted]

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VII

TASK GROUP 7.3 BOAT POOL LCM OPERATIONS BIKINI ATOLL

20 JANUARY - 7 APRIL 1954

BOAT	TOTAL TRIPS	TRIPS FOR TG 7.1	CARGO TONS	PASSENGERS	TRIPS FOR TG 7.3	CARGO TONS	PASSENGERS	TRIPS FOR TG 7.5	CARGO TONS	PASSENGERS
LCM 33	762	25	0.1	61	560	63.6	2501	177	267.5	651
LCM 34	510	100	24.0	303	342	57.5	979	68	82.0	180
LCM 35	577	88	87.0	80	372	34.0	1516	117	83.5	106
LCM 36	661	95	19.0	328	484	38.0	2669	82	105.5	104
LCM 37	354	205	2.0	279	149	1.0	130	-	-	-
LCM 38	516	44	22.0	106	374	67.4	1178	98	198.0	121
LCM 39	485	49	20.0	217	363	27.0	3023	73	5.5	156
LCM 40	337	17	-	40	229	75.0	1251	91	140.0	93
LCM 41	504	122	29.0	331	305	72.0	1552	77	163.0	176
LCM 42	926	150	63.0	516	568	100.2	1670	208	244.5	199
LCM 43	636	81	45.0	310	358	73.0	1416	197	311.0	460
LCM 44	684	-	-	-	597	56.5	1493	87	88.5	57
LCM 45	482	23	7.3	24	397	7.0	1093	62	65.0	82
LCM 46	507	155	-	536	233	34.0	1207	119	181.0	148
LCM 47	588	40	9.7	125	314	44.4	1443	234	273.0	880
LCM 49	371	40	14.0	96	219	20.5	701	112	145.0	117
TOTALS	8900	1234	342.1	3352	5864	771.1	23822	1802	2353.0	3530

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BRAVO CONTAMINATION

Average topside radioactive intensities (in mr per hour) of Task Group 7.3 ships at various times following BRAVO

Date MAR.	Local Time	CURTISS	ESTES	AINSWORTH	BELLE GROVE	COCOPA	APACHE	SIOUX	PC 1546	BAIROKO	PHILIP	GYPSY
1	0900	8	400 (e)	-	-	-	-	-	-	500	750	-
	1000	5	200 (e)	-	-	-	-	-	-	500	265	-
	1100	3	150 (e)	-	-	-	-	-	-	500	196	-
	1200	2	100	-	4	-	-	-	1	350	145	-
	1300	5	100	1	5	5	3	4	3	300	147	-
	1400	18	110	2	12	10	7	8	6	240	138	7
	1500	25	120	10	20	14	2	9	15	200	134	30
	1600	45	140	16	35	18	12	10	21	170	180	200
	1700	55	120	22	75	20	50	22	25	140	225	230
	1800	50	120	19	150	75	17	50	80	200	262	250
	1900	40	120	20	190	75	20	34	90	180	194	200
	2000	37	120	20	300	110	30	15	85	180	199	150
2	0000	30	120	20	80	75	30	40	80	160	188	130
	0400	25	120	20	60	70	30	30	50	145	156	110
	0800	20	80	20	60	30	25	12	40	134	111	80
	1200	15	50	20	50	20	10	10	30	108	78	45
	1600	10	30	12	50	20	10	9	20	36	60	40
	2000	10	20	10	20	18	10	7	15	30	47	35
3	0000	9	20	8	20	15	8	6	14	27	39	35
	0400	8	18	7	15	12	3	6	13	25	41	35
	0800	7	16	6	12	7	3	5	12	22	34	25
4	0800	3.2	7	5	8	5	2	4	6	14	17	20
5	0800	1.2	4	4	7	3	2	4	3	9	8	14
6	0800	1	4	3	5	2	2	4	2	6	7	12
7	0800	1	2.7	2	3	2	1	4	1	4	5	10
8	0800	1	2.1	1.5	2	1.5	1	4	1	3	4	8

All ships other than those listed in this enclosure received negligible contamination.

Note: (e) - estimated

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VII

BRAVO DOSAGES

TABULATION OF ACCUMULATED RADIOLOGICAL EXPOSURES OF TASK GROUP 7.3 PERSONNEL BY SHIPS AND UNITS AS OF 7 APRIL 1954.

EXPOSURE IN ROENTGENS

UNIT	0.0 to 0.999	1.0 to 1.999	2.0 to 2.999	3.0 to 3.999	4.0 to 4.999	5.0 to 5.999	6.0 to 6.999	7.0 to 7.8	Over 7.8
TG 7.3 STAFF	10	47							
USS BAIROKO	466	228	47	51	71	8	1		
HMR-362		80	12	18	4				
USS CURTISS	703								
VP-29	432								
USS ESTES	145	376	115	3	5	7			
USS BELLE GROVE	166	148	22						
TG 7.3 BOAT POOL	34	85	56	22	11	3	2	1	3
USS LST 762	85	29	7	1					
USS LST 551	106								
USS LST 1157	187								
USS EPPERSON	281	8							
USS NICHOLAS	268		1						
USS RENSHAW	223	30	6						
USS PHILIP		36	103	87	32	2	1		
USS SHEA	265								
USS PC 1546	55	5							
USS GYPSY	1	32	29	1					
USS MENDER	65								
USS RECLAIMER	93								
USS MDLALA	84	2							
USS APACHE	81	2							
USS SIOUX	23	55	5						
USS TAWAKONI	78	1							
USS COCOPA	79								
USNS AINSWORTH	159	39							
YAG 39	40	6	4	1					
YAG 40	23	19	9				1		
TG 7.3 UDU	22								
PROJ. 1.4 AIRCRAFT	8								
PROJ. 6.4 AIRCRAFT	8								
VC-3	20		23						
TOTAL	4210	1228	439	184	123	20	4	2	3

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VII

INTER-ATOLL SURFACE LIFT

SHIP	DATE	FROM	TO	PAX	M/T CARGO LIFTED
LST 762	1 Jan	Bikini	Eniwetok	-	582
LST 762	5 Jan	Eniwetok	Bikini	-	448
LST 762	7 Jan	Bikini	Eniwetok	-	474
LST 762	10 Jan	Eniwetok	Bikini	-	525
LST 762	13 Jan	Bikini	Eniwetok	-	423
LST 762	16 Jan	Eniwetok	Bikini	-	504
LST 762	21 Jan	Bikini	Eniwetok	-	291
LST 762	26 Jan	Eniwetok	Bikini	-	405
LST 762	4 Feb	Bikini	Eniwetok	-	438
LST 762	7 Feb	Eniwetok	Bikini	-	168
LST 762	9 Feb	Bikini	Eniwetok	-	862
LST 762	18 Feb	Eniwetok	Bikini	-	83
BELLE GROVE	20 Feb	Bikini	Eniwetok	-	125
LST 825	20 Feb	Eniwetok	Bikini	-	172
LST 762	21 Feb	Bikini	Eniwetok	-	748
BELLE GROVE	21 Feb	Eniwetok	Bikini	-	675
LST 762	23 Feb	Eniwetok	Bikini	-	54
LST 825	23 Feb	Bikini	Eniwetok	-	740
LST 762	25 Feb	Bikini	Eniwetok	-	394
LST 762	2 Mar	Eniwetok	Bikini	-	104
LST 551	3 Mar	Eniwetok	Bikini	31	37
AINSWORTH	4 Mar	Eniwetok	Bikini	167	5
LST 762	5 Mar	Bikini	Eniwetok	9	112
NICHOLAS	5 Mar	Bikini	Eniwetok	20	-
CURTISS	5 Mar	Eniwetok	Bikini	99	20
BELLE GROVE	6 Mar	Bikini	Eniwetok	17	-
BELLE GROVE	7 Mar	Eniwetok	Bikini	13	-
COCOPA	8 Mar	Eniwetok	Bikini	46	-
RENSHAW	8 Mar	Bikini	Eniwetok	22	-
PHILIP	8 Mar	Eniwetok	Bikini	32	-
PHILIP	9 Mar	Bikini	Eniwetok	16	-
RENSHAW	10 Mar	Bikini	Eniwetok	17	-
PHILIP	10 Mar	Eniwetok	Bikini	20	-
LST 551	11 Mar	Eniwetok	Bikini	21	10
LST 762	11 Mar	Eniwetok	Bikini	55	3
EPPERSON	11 Mar	Eniwetok	Bikini	27	-
PHILIP	11 Mar	Bikini	Eniwetok	22	-
LST 762	13 Mar	Bikini	Eniwetok	6	748
LST 551	13 Mar	Bikini	Eniwetok	3	78
RENSHAW	13 Mar	Eniwetok	Bikini	48	3
LST 551	14 Mar	Eniwetok	Bikini	-	68
LST 1146	14 Mar	Bikini	Eniwetok	-	127

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SHIP	DATE	FROM	TO	PAX	M/T CARGO LIFTED
LST 762	15 Mar	Eniwetok	Bikini	6	-
LST 762	16 Mar	Bikini	Eniwetok	-	115
LST 551	17 Mar	Bikini	Eniwetok	9	103
LST 1146	18 Mar	Bikini	Eniwetok	1	-
LST 1146	19 Mar	Eniwetok	Bikini	2	5
LST 551	19 Mar	Eniwetok	Bikini	1	141
LST 1146	20 Mar	Bikini	Eniwetok	-	120
NICHOLAS	23 Mar	Eniwetok	Bikini	-	2
LST 551	25 Mar	Bikini	Eniwetok	5	198
LST 1146	26 Mar	Eniwetok	Bikini	-	25
CURTISS	27 Mar	Bikini	Eniwetok	81	-
LST 1146	28 Mar	Bikini	Eniwetok	-	207
LST 1146	29 Mar	Eniwetok	Bikini	-	110
BELLE GROVE	29 Mar	Bikini	Eniwetok	12	500
LST 551	30 Mar	Eniwetok	Bikini	3	1
NICHOLAS	31 Mar	Eniwetok	Bikini	17	-
RENSHAW	31 Mar	Bikini	Eniwetok	10	-
BELLE GROVE	31 Mar	Eniwetok	Bikini	10	60
LST 551	2 Apr	Bikini	Eniwetok	-	155
LST 1146	2 Apr	Bikini	Eniwetok	7	153
TAWAKONI	3 Apr	Bikini	Eniwetok	4	-
LST 762	7 Apr	Eniwetok	Bikini	32	72

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VII

COSTS OF TASK GROUP 7.3, PERIOD 1 JANUARY 1954 - 7 APRIL 1954

Travel and Per Diem	$ 2,596.00
Telephone and Utilities	500.00
Military Pay	2,714,951.00
Office Supplies	1,030.00
Alterations of Ships	10,000.00
Radiological Defense	- - -
Land Improvement	- - -
Buoy Project (Coast Guard)	- - -
Documentary Photography	- - -
Transportation of Baggage	375.00
General Stores Items for Ships	198,870.00
Fuel and AvGas	655,258.00
Provisions (Food), General Messes	495,885.00
	$ 4,079,465.00

CUMULATIVE COST OF TASK GROUP 7.3 FROM 1 JANUARY 1954 - 7 APRIL 1954

Travel and Per Diem	$ 8,524.00	($35,374.00)* obligated
Telephone and Utilities	3,500.00	
Military Pay	3,360,241.00	
Office Supplies	2,655.00	
Alteration of Ships	85,200.00	
Radiological Defense	11,600.00	
Land Improvement	4,500.00	
Buoy Project (Coast Guard)	12,000.00	
Documentary Photography	2,700.00	
Transportation of Baggage	375.00	
General Stores for Ships	198,870.00	
Fuel and AvGas for Ships	655,258.00	
Provisions (General Mess)	495,885.00	
	$ 4,841,308.00	

* Note 1. Indicates funds obligated for per diem but not actually expended.

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VII

STATUS OF ALLOTMENTS RECEIVED FROM JOINT TASK FORCE SEVEN AS OF

1 APRIL 1954

ARMY APPROPRIATION 21\2020 M&OA 1954

DESCRIPTION	RECEIVED	OBLIGATED	EXPENDED	UNOBLIGATED
Travel	$ 46,000.	35,374.50	8,524.58	10,625.50
Transportation of Things	500.	375.00		125.00
Communications	2,000.			2,000.00
Task Group Overhead	400.			400.00
Modification of Ships	85,200.	85,200.00	80,200.00	- - -
Land Improvement	4,500.	4,500.00		- - -
Documentary Photography	3,000.	2,700.00	185.25	300.00
Radiological Defense	13,300.	12,500.00	11,600.00	800.00
Buoy Project (Coast Guard)	12,000.	12,000.00	12,000.00	
	$ 166,900.	152,649.50	112,509.83	14,250.50

STATUS OF BUSHIPS FLAG ALLOTMENT NUMBER 42299/54 HELD BY THE SUPPLY OFFICER, USS BAIROKO (CVE-115) AS OF 1 APRIL 1954

Received	4,800.
Obligated	3,630.
Expended	459.
Unobligated Balance	711.

STATUS OF THE BUREAU OF SHIPS BOAT POOL OUTFITTING ALLOTMENT HELD BY SUPPLY OFFICER, U.S. NAVAL AMPHIBIOUS BASE, CORONADO, SAN DIEGO, CALIFORNIA, AS OF 1 APRIL 1954 - ALLOTMENT NUMBER 44002

Received	165,000.00
Obligated	64,082.45
Expended	96,449.55
Unobligated Balance	5,468.00

Note: This allotment will be reported to CJTF SEVEN by BuShips and is not reflected in CTG 7.3 Cost Report

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VII

COMMUNICATIONS

The following figures represent traffic handled by the CTG 7.3 Communication Section for writeup and staff routing. They do not reflect traffic handled for flagships on which the staff was embarked nor do they include messages handled as relays by staff facilities.

	January	February	March
Incoming Messages	948	1497	2095
Outgoing Messages	264	625	1204
Total	1212	2122	3299
Daily Average Incoming	31	54	68
Daily Average Outgoing	8	22	39
Classified Messages	46%	30%	48%
Emergency Precedence	00%	00.6%	00.5%
Operational Immediate	5%	9 %	16 %
Priority	27%	29 %	39 %
Routine and Deferred	68%	61.4%	44.5%

SHOT TIME TRAFFIC HANDLED

	INCOMING	OUTGOING
BRAVO - 1	78	61
BRAVO	56	40
BRAVO + 1	100	54
Total	234	155
ROMEO - 1	67	44
ROMEO	87	42
ROMEO + 1	61	43
Total	215	129
KOON - 1	57	43
KOON	59	38
KOON + 1	57	27
Total	173	108

ROMEO - reduction over BRAVO 14%
KOON - reduction over BRAVO 30%

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