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20 May 1944

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Jtr. C No 19 Aug. 1946
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This publication "Amphibious Operations" continues the series promulgating timely information drawn largely from action reports of recent amphibious operations.

Material contained herein has not been subjected to exhaustive study and analysis, but is issued in this form to make comments, recommendations, and expressions of opinion concerning war experiences readily available to officers engaged or interested in amphibious operations. It should be widely circulated among commissioned personnel.

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Report Documentation Page				Form Approved OMB No. 0704-0188	
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1. REPORT DATE 1944		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE Amphibious Operations				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) United States Fleet Headquarters Of The Commander In Chief Navy Department, Washington, D. C.				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES JFSC - WW II Declassified Records.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 183	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

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CHAPTER I

LANDING OPERATIONS

Marshall Islands Operation - January, 1944.

From: Commander Fifth Fleet.

For its success with minimum losses to ourselves, (the MARSHALLS OPERATION) required the following:

- (a) The early and simultaneous elimination of enemy aircraft from all fields on KWAJALEIN Atoll and within striking distance thereof.
- (b) Thereafter, the continued neutralization of enemy airfields in striking distance of KWAJALEIN.
- (c) Early use of KWAJALEIN lagoon in the vicinity of the main objectives of ROI-NAMUR and KWAJALEIN Islands.
- (d) Early seizure and occupation of MAJURO Atoll as an advanced fleet anchorage which could be used as a logistic base for oilers, ammunition ships, provision ships, etc., and as an anchorage for fleet task forces and task groups when they were no longer required to operate at sea or to be in KWAJALEIN lagoon.
- (e) A heavier and more protracted bombing and bombardment, than was made at TARAWA, of any objectives held in strength by the enemy prior to their assault by our landing forces.

Enemy airfields affecting (the MARSHALLS OPERATION) were those at PONAPE, ENIWETOK, WAKE, ROI, KWAJALEIN Island, WOTJE, TAROA, MILLE, NAURU and KUSAIE. These and his seaplane base at JALUIT were all either in striking distance of the KWAJALEIN objectives or threatened the advance from HAWAII of our amphibious forces.

Of the enemy fields in question PONAPE, so far as was known, had been little used and was not active. ENIWETOK was not highly developed but was most important as a staging point between TRUK and the other MARSHALLS fields and WAKE.

WAKE had a second possible air staging route to the Empire through MARCUS and CHICHIJIMA. WAKE had not been active as an air base for several months, but it was in striking distance with medium bombers of KWAJALEIN and of the approach routes of our amphibious forces. It had to be watched.

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The fields at MILLE and NAURU were usable, but neither had been active for some weeks, MILLE because of the bombing it had been receiving, and NAURU probably because of its geographical position which made it difficult to support. The KUSAIE field was not completed and could not be used. The JALUIT seaplane base was usable, but had not been active recently.

With the situation just described and with the forces available to us for the elimination of enemy aircraft and the continued neutralization of his airfields, it was decided that the most important fields to consider were, in order: ROI, TAROA, WOTJE, KWAJALEIN Island, MILLE, ENIWETOK, NAURU and WAKE.

Plans called for carrier strikes to be initiated at dawn on D - 2 day on ROI, TAROA, WOTJE and KWAJALEIN Island and on D - 1 day on ENIWETOK. Land based air based in the GILBERTS - ELLICES was to neutralize MILLE, JALUIT and NAURU. The Commander in Chief, U. S. Pacific Fleet was requested to strike WAKE from MIDWAY, which he did by making three night strikes with Navy patrol squadrons using Coronados. Bombardment of the fields at ROI, TAROA and WOTJE was to be initiated as soon as possible after the carrier strikes started, in order to prevent the enemy from using these fields.

In accordance with these plans attacks were started at daylight on D - 2 day by four carrier task groups - - - - - . These attacks were made on ROI, KWAJALEIN Island and TAROA airfields by three carrier task groups approaching from the southward and westward. The attack on WOTJE was made by a fourth carrier task group which approached from the east north east. This route of approach was chosen to furnish additional air cover for the transports and LST groups in addition to that contained in the two CVE divisions that accompanied the transports.

The enemy field at MILLE and the seaplane base at JALUIT were taken care of by the land based aircraft in the GILBERTS-ELLICES under Commander Task Force 57 (Commander Defenses and Land Based Air). These land based planes had worked over all enemy fields in range with as frequent strikes as possible ever since the GILBERTS OPERATION. The completion during December and January of four fields in the GILBERTS, all suitable for medium and heavy bombers, enabled Commander Task Force 57 to move his squadrons forward from the ELLICES and to increase the effectiveness of his strikes.

LANDING OPERATIONS - MARSHALLS

Long range searches were effected D - 7 day for the purpose of obtaining early knowledge of any enemy raiding forces which might attempt operations against our assault shipping. The search planes not only carried out this mission, but also were able to destroy a considerable number of small enemy craft being used to supply his various bases, and to attack enemy weather stations and other minor shore installations. After D day, searches were curtailed to allow greater use of Navy bomber type aircraft for attack missions.

Following the capture of KWAJALEIN Atoll, land based aircraft continued to pound WOTJE, TAROA, MILLE and JALUIT and extended their operations to KUSAIE and PONAPE.

To prevent the enemy from using his fields at ROI, WOTJE and TAROA after the D - 2 day carrier strikes, an intermittent bombardment by surface ships was instituted on these islands as soon as possible on D - 2 day. This was done on ROI by the NORTH CAROLINA (BB), LANG (DD), and STERETT (DD) - - - - - with bombardment starting about sundown on D - 2 day and continuing at intervals throughout the night. WOTJE and TAROA were similarly taken care of - - - - - by Cruiser Division 5 and four destroyers - - - - -.

On D - 1 day, ROI-NAMUR and KWAJALEIN Islands were bombarded by battleships and destroyers from Task Group 58.2 and 58.3 respectively. WOTJE and TAROA at the same time were being bombarded by cruisers and destroyers temporarily detached from Task Force 53 and 52 respectively.

During the night of D - 2 day, Task Group 58.3 moved from its strikes on KWAJALEIN Island out to hit the field on ENGEBI Island, ENIWETOK. Here on the morning of D - 1 day, it succeeded in surprising on the ground and destroying a considerable number of medium bombers.

On and after D day, the field on ENGEBI Island was kept neutralized by air attacks from Task Group 58.3, which was relieved with this task from D + 3 day to D + 5 day and after D + 6 day by Task Group 58.4. This neutralization was effective in preventing any enemy use of ENIWETOK until its capture was commenced by our forces - - - - - on 17 February.

On and after D day, the fields on WOTJE and TAROA were kept neutralized by intermittent day and night bombardments conducted until 20 February by the cruisers and destroyers of Task Group 50.15, by small strikes with the aircraft from the CVE's NASSAU

LANDING OPERATIONS - MARSHALLS

and NATOMA BAY also of Task Force 57, and by one bombardment of each place by the three battleships of Battleship Division 3.

By 22 February it was considered that bombardment of WOTJE and TAROA by ships' gunfire was no longer necessary for the continued neutralization of the airfields on these islands. The responsibility for this neutralization was accordingly turned over to Commander Task Force 57 to be accomplished by bombing with land based aircraft.

MAJURO Atoll was occupied on D day by Task Group 51.2 - - -
- - - - - . The atoll was not occupied by the enemy. As soon as the entrance channel and an anchorage area had been swept, it was placed in use. Oilers and ammunition ships were moved in, available either for use at MAJURO or for moving to more forward areas as required. The eastern half of MAJURO lagoon gave us an unexcelled fleet anchorage, which has proved of inestimable value in the MARSHALLS OPERATION. An excellent bomber field is in process of construction. The position of this field half way between MAKIN and KWAJALEIN makes it valuable as a staging point between the GILBERTS and KWAJALEIN.

From: Commander Joint Expeditionary Force.
(Commander Fifth Amphibious Force)

ORGANIZATION OF TASK FORCE 51

This report includes a description of the major features of the operations of Task Force 51, which was the Joint Expeditionary Force assigned the task of capturing the MARSHALL ISLANDS; and the details of the operations of Task Force 52 (Southern Attack Force).

Task Force 51 comprised:

Task Force 52 (Southern Attack Force) charged with the capture of the southern half of KWAJALEIN Atoll.

Task Force 53 (Northern Attack Force) charged with the capture of the northern half of KWAJALEIN Atoll.

Task Group 51.1, (Expeditionary Force Reserve Group), carrying the Corps Reserve of troops.

Task Group 51.2 (MAJURO Attack Group), charged with the capture of MAJURO Atoll.

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Task Groups 51.3 to 51.9, transporting the Garrison Forces to KWAJALEIN and MAJURO Atolls.

Task Group 51.11 (ENIWETOK Expeditionary Group) charged with the capture of ENIWETOK Atoll. This group included Task Groups 51.1 and 51.2, certain elements of Task Forces 52 and 53 and Task Group 58.4. The group was organized at KWAJALEIN after the capture of that atoll had been assured.

Task Group 51.19, comprising a series of task units transporting Garrison Forces to ENIWETOK Atoll.

Summary of Vessels of Joint Expeditionary Force:

AGC	-	2	DD	-	63	XAP	-	8
OBB	-	7	DE	-	12	XAK	-	16
CV	-	1	DMS	-	8	LST	-	45
CVL	-	2	AM	-	8	LCT	-	15
CVE	-	8	SC	-	10	LCI	-	12
CA	-	8	YMS	-	8			
CL	-	4	AT	-	6	Total	-	297
APA	-	28	APD	-	4			
AKA	-	7	AP	-	6			
LSD	-	5	AK	-	4			

Note: BBs and other vessels of the Carrier Force also conducted bombardments.

Summary of Troops of Joint Expeditionary Force:

	: Assault		: Garrison Troops				
	: Troops		: (including Initial				
	:		: Defense Forces)	:	Total		
	:		:				
	: <u>Army</u>	: <u>Marine</u>	: <u>Army</u>	: <u>Marine</u>	: <u>Navy</u>		
Southern Attack Force	: 21,768	:	:	:	:	:	21,768
Northern Attack Force	:	: 20778	:	:	:	:	20,778
MAJURO Attack Force	: 1,459	: 136	:	:	:	:	1,595
Corps Reserve	: 3,701	: 5624	:	:	:	:	9,325
ENIWETOK Attack Force	: 4,509	: 5670	:	:	:	:	10,269
	: (4,509)	: (5760)	:	:	:	:	
Southern Garrison Force	:	:	: 8558	: 1832	: 2936	:	13,326
	:	:	: (4554)	: (1154)	:	:	(5708)
Northern Garrison Force	:	:	:	: 7710	: 3175	:	10,885
	:	:	:	: (4124)	:	:	(4124)

LANDING OPERATIONS - MARSHALLS

Summary of Troops of Joint Expeditionary Force: (cont'd.)

	: Assault	: Garrison Troops	:
	: Troops:	(including Initial	:
	: Defense Forces)	: Total	:
	: Army : Marine:	Army : Marine: Navy :	:
MAJURO Garrison Force	: : : 1459 : 1978 : 3728 :	7165	:
	: : : (1459): : :	(1459)	:
ENIWETOK Garrison Force	: : : 5990 : 3212 : 5439 :	14641	:
	: : : (3777): : :	(3777)	:
Force Aggregates	: 31437 : 32298 : 16007 : 14732 : 15278 :	109752	:
Total duplications	: (4509): (5760): (9790): (5278): :	(25337)	:
Net Total Troops employed:	26928 : 26538 : 6217 : 9454 : 15278 :	84415	:

NOTE: (1) Figures shown in parenthesis represent duplication resulting from the re-employment of certain troops for successive missions.

Examples:

- (a) Some assault troops reemployed for garrison defense.
- (b) Corps Reserve reemployed for ENIWETOK Attack. These duplications are deducted to show Net Total Troops Employed.

(2) Figures do not include garrison troops which were sent forward in later echelons not assigned to TF 51.

STRATEGIC FEATURES OF MARSHALLS PLAN

The principal strategic features of the MARSHALLS Plan were as follows:

(a) An intensified bombing by Central Pacific shore-based aircraft of all defended islands of the MARSHALLS, beginning Dog minus FIFTEEN Day.

(b) Destruction of all enemy aircraft in the MARSHALLS by carrier attacks on the airfields on KWAJALEIN, ENIWETOK, WOTJE, and MALOELAP Atolls, beginning Dog minus TWO Day.

LANDING OPERATIONS - MARSHALLS

Thereafter, continued interdiction of enemy airfields on ENIWETOK by carrier aircraft, and enemy airfields on WOTJE and MALOELAP by carrier aircraft and by ship bombardment.

(c) Destruction by friendly shore-based aircraft of enemy aircraft, and interdiction of enemy airfields, on MILLE, JALUIT, NAURU, WOTJE, MALOELAP, and WAKE.

(d) Softening up of enemy defenses, and destruction of supplies on KWAJALEIN Atoll, by carrier and shore-based air attacks and by bombardment by new battleships on Dog minus ONE Day. Destruction of enemy supplies on MALOELAP and WOTJE by cruiser and destroyer bombardment on Dog minus TWO and Dog minus ONE Days.

(e) Attacks on enemy naval and merchant shipping by a concentration of submarines in the CAROLINES.

(f) The operation of four large carrier groups in covering positions with respect to KWAJALEIN Atoll, and the direct support of landing operations by two of these groups, beginning Dog Day.

(g) The simultaneous capture, by three naval attack forces, of the southern and northern portions of KWAJALEIN Atoll, and of MAJURO Atoll.

(h) The consolidation of the defenses of the captured positions, and the construction or rehabilitation of airfields for offensive and defensive uses.

Capture of ENIWETOK as a part of the MARSHALLS Operation was considered, but owing to uncertainties as to what part of the available troops the capture of KWAJALEIN would absorb, the operation against ENIWETOK was not prescribed in the major directives. However, tentative plans were drawn up and directives prepared for issue should success at KWAJALEIN prove rapid enough to justify the extension of the operation to the westward.

MAJURO Atoll was thought either to be entirely unoccupied, or to be occupied only by a small look-out detachment of the enemy. Therefore, in advance of the operation, no attacks were made on MAJURO, and our preliminary operations were confined to taking photographs for intelligence purposes.

PRINCIPAL TACTICAL PLANS

On December 1, 1943, very little information was available and few photographs existed showing the enemy situation on KWAJALEIN.

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LANDING OPERATIONS - MARSHALLS

From that time until the day of the attack several thousands of photographs were made by aircraft and by submarines, and visual reconnaissances were made by plane and submarine. From these a great deal of valuable information was obtained, and estimates of enemy strength and defenses made from them proved to be very accurate. It soon became apparent that the fixed defenses of KWAJALEIN Atoll were being increased, and it was believed that the garrison force had been somewhat strengthened. In particular, massive concrete walls were being built along the beach on KWAJALEIN ISLAND where it was intended to make the principal landing.

The tactical plan adopted for the capture of both the southern and northern halves of KWAJALEIN Atoll involved the following features in common:

(a) On Dog Day, the capture of small islands within artillery range of the main positions on KWAJALEIN and ROI-NAMUR ISLANDS, for the purpose of setting up strong concentrations of field artillery for assistance in the capture. The capture of islands near ship entrances to the lagoon, and the sweeping of the channels and anchorage areas in lagoons, to permit the early entry of fire support vessels, transports, and screening vessels.

(b) The employment of very heavy aircraft bombing and ship bombardments on Dog Day and Dog plus ONE Day, for the destruction of beach defenses, garrisons, gun positions, and stores, as preparatory measures for the main landings.

(c) Main landings on Dog plus ONE Day on KWAJALEIN and ROI-NAMUR ISLANDS, supported by the heaviest possible aircraft bombing and strafing, and ship and artillery bombardment. The landing on ROI and NAMUR ISLANDS were to be made from inside the lagoon. Alternate landing plans were also ready.

(d) The continued support of the advance of the troops by shore, ship, and aircraft bombardment. Ship and shore artillery were to fire day and night as required.

(e) During and after conclusion of the operations for the capture of the main positions, as troops became available, the capture of other defended islands; reconnaissance of all islands of the atoll; sweeping of all passes leading into the lagoon for mines; and a hydrographic survey of the atoll.

(f) The landing of the garrison forces and the reembarkation and withdrawal of the assault troops.

LANDING OPERATIONS - MARSHALLS

MOVEMENT OF TASK FORCE 51 TO OBJECTIVES

Dog Day for MARSHALLS was set at January 31st. After completion of the program of final rehearsals, the movements of the various forces, groups, and units of the Joint Expeditionary Force were carried out in accordance with the table set forth below. It speaks well for the high quality of our ships and personnel that, in spite of inadequate time for machinery and hull upkeep; of the newness of many of the ships; and the relative inexperience of personnel; every vessel arrived at destination exactly on scheduled time.

Table of Scheduled Movements of Joint Expeditionary Force Units

January 6	Northern Tractor Group ONE departed SAN DIEGO for NAWILIWILI, KAUAI, for fuel; to arrive January 17.
January 6	Northern Tractor Group TWO departed SAN DIEGO for NAWILIWILI, KAUAI, for fuel; to arrive January 17.
January 13	Northern Attack Force (TF 53) departed SAN DIEGO for LAHAINA ROADS for fuel, to arrive January 21st.
January 19	Southern Tractor Group ONE departed PEARL January 19 to arrive KWAJALEIN ISLAND 0500, January 31, small craft fueling enroute from LST.
January 19	Southern Tractor Group TWO departed PEARL January 19 to arrive KWAJALEIN ISLAND 1000, January 31, small craft fueling enroute from LST.
January 19	Northern Tractor Group ONE departed KAUAI to arrive ROI ISLAND 0430 January 31, small craft fueling enroute from LST.
January 19	Northern Tractor Group TWO departed KAUAI to arrive ROI at 1400, January 31, small craft fueling enroute from LST.
January 21	MAJURO Defense Group departed PEARL to arrive MAJURO 0900, February 1st.
January 22	Southern Attack Force departed PEARL to arrive KWAJALEIN ISLAND 0600 to 0830, January 31, fueling enroute.

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LANDING OPERATIONS - MARSHALLS

- January 22 Northern Attack Force departed LAHAINA ROADS, 35 miles behind TF 52, to arrive ROI ISLAND 0500 to 1200 January 31, fueling enroute.
- January 22 DesDiv 96 departed FUNAFUTI to join MAJURO ATTACK GROUP on January 27.
- January 22 Southern Defense Group and Northern Defense Group departed PEARL in company to arrive KWAJALEIN and ROI ISLANDS, respectively, at 1000 February 2.
- January 23 Attack Force Reserve and MAJURO Attack Group departed PEARL in company to arrive KWAJALEIN Atoll 1200 January 31 and MAJURO Atoll 0500 January 31, respectively, fueling enroute.
- January 25 MAJURO Garrison Group departed PEARL to arrive MAJURO 0800 February 3.
- January 28 Southern Garrison Group and Northern Garrison Group departed PEARL in company to arrive KWAJALEIN and ROI ISLANDS, respectively, 0900 February 5.
- February 5 Northern Garrison Group TWO departed MAKIN to arrive ROI February 7.
- February 10 Five ENIWETOK garrison units departed PEARL and to 18 RUSSELL ISLANDS to arrive ENIWETOK on various dates from February 20 to February 27.

LANDING OPERATIONS - KWAJALEIN

Capture of CECIL PASS ISLANDS.

The CHANNEL ISLAND Transport Group (OVERTON and MANLEY), beginning about 0430 on January 31, landed one-half of one reconnaissance troop and one-half of one infantry company on CARTER ISLAND and a similar force on CHAUNCEY ISLAND, to clear CECIL PASS for the entrance of mine sweepers. The CARTER ISLAND unit completed the capture of the island by 1200, 31 January, against very minor opposition.

The group that landed on CHAUNCEY ISLAND had intended landing on CECIL ISLAND, but missed the objective in the dark. They encountered about 130 Japanese on CHAUNCEY, armed with a few machine guns and rifles, who had gone ashore from a beached patrol vessel. Our forces passed the length of the island and killed about 60 enemy, but missed the remainder, who apparently had concealed themselves in the undergrowth. As soon as daylight showed our forces that they were on the wrong island, they reembarked and captured CECIL ISLAND without opposition.

The reconnaissance troop then reembarked on the OVERTON, leaving the infantry to hold the channel islands.

On February 1, the enemy remaining on CHAUNCEY opened machine gun fire on our troops on CECIL ISLAND. After gunfire preparation by the OVERTON, the reconnaissance troops, on February 2, again landed on CHAUNCEY ISLAND and re-captured it, killing the remaining force.

Capture of CARLSON and CARLOS ISLANDS.

After preparatory bombing and bombardment, the 17th RCT made battalion landings in LVT's at 0910 on January 31 across the seaward reefs at the northern ends of CARLSON and CARLOS ISLANDS. One battalion was held in reserve. The landings were not opposed. Opposition after landing was minor, part of the defending troops having been removed to KWAJALEIN ISLAND the previous day. Capture of CARLOS was completed at 1300 and CARLSON at 1200, January 31st.

Four battalions of 105mm, and one battalion of 155mm howitzers were then landed on CARLSON in DUKW's and from beached LST's. All guns were sited, and all of them registered on KWAJALEIN ISLAND the same day. The speed and effectiveness with which the SEVENTH Division Artillery was moved and operated, not only on this, but on all days of the operation, merits the highest possible praise.

LANDING OPERATIONS - KWAJALEIN

On January 31, the reserve battalion, and on February 1, the battalion which captured CARLSON ISLAND, were moved to CARLOS, and the 17th RCT prepared to act as the division reserve for the main landings on KWAJALEIN or, if not required as reserve, for other services. An overhaul base for LVT's and DUKW's was set up on CARLOS.

During the afternoon of January 31, Transport Division FOUR which had carried the 17th RCT, and also a considerable number of LST and smaller craft, anchored inside the lagoon near CARLSON and CARLOS ISLANDS and continued unloading. They were somewhat harassed during the night by ineffective enemy artillery fire from KWAJALEIN and BURTON ISLANDS. Patrols of waters near the reefs leading from KWAJALEIN were established.

Capture of KWAJALEIN ISLAND.

At 0930, February 1, the 32nd and the 184th RCT's landed abreast in battalion columns at the western end of KWAJALEIN ISLAND. The landing was not opposed. Opposition was slight for the first 300 yards of advance. Our troops pushed forward 1300 yards the first day. By nightfall of February 1st, about 11,600 troops had been landed across the reef at the western end of KWAJALEIN ISLAND, landings being effected at all stages of the tide. The LVT's and DUKW's on this and succeeding days conclusively proved their worth for landings made across coral reefs. On this day all transports, plus destroyer screen and small craft, anchored in the lagoon. Patrol of all passes into the lagoon was established.

During the following days our troops made steady and methodical progress against a desperate defense by the enemy. Considerable called gunfire and bombing was employed, together with much shore artillery fire. The defense works were formidable and well organized. Our troops used all available arms to advantage, and in a very business-like manner, mopping up as they moved forward. Our own losses were small. The capture of KWAJALEIN ISLAND was completed at 1525 February 4, though for several more days a few snipers were killed each day.

Capture of Islands from BYRON to BENNETT.

BURTON, BEVERLY, BERLIN, BENSON, and BENNETT ISLANDS were all organized for defense, and had varying numbers of troops, while BYRON, BUSTER, BURNET, and BLANKENSHIP ISLANDS had on them, at one time or another, small armed parties of the enemy. BURTON was a seaplane base, BERLIN a small craft repair base, BENSON a radar station, and BENNETT a stores island with nine large magazines and storehouses. All of these islands, from Dog minus ONE Day onward, were methodically worked over by ship bombardment and bombing. After the capture of KWAJALEIN, some of our field artillery was moved to

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the northern end of the island; from this position and from CARLSON ISLAND, the small islands within range received preparatory and called fires as required.

In accordance with (COMMANDER SOUTHERN ATTACK FORCE) mailgram Attack Order A8-44, and after preparatory fires, the 17th RCT on February 5, at 0930, made simultaneous formal battalion landings on the northern end of BEVERLY ISLAND and the southern end of BERLIN ISLAND. There was small opposition on BEVERLY, and moderate resistance on BERLIN. Resistance was soon overcome, and troops then captured BENSON ISLAND against slight opposition. All three islands were in our hands and troops reembarked on February 5th.

Before dawn of February 5th, the SEVENTH Reconnaissance Troop landed from the OVERTON on the southern end of BENNETT ISLAND without opposition. Organized resistance from prepared positions was encountered after moving forward about 150 yards, and assistance was called for. The 17th RCT promptly sent medium tanks and two infantry companies as reinforcements, and capture of the island was completed by late afternoon of the same day.

Capture of Remaining small islands.

At dawn of February 5th, one reinforced infantry company in LST 242, loaded with LVT, and with one supporting LCI gunboat, departed from CARLOS ISLAND for the examination and capture of CHESTER, CLARENCE, CLEMENT, CLIFFORD, CLIFTON, and COHEN ISLANDS. This operation was completed the same day. The only opposition encountered was on CLIFTON ISLAND, where about one hundred enemy were found who had landed from three small vessels which had previously been damaged and beached. Resistance was soon overcome.

Also at dawn of February 5th, a similar force in LST 272, with one supporting LCI, landed and searched BASCOME, BARNEY, AUGUSTINE, and ASHBURY ISLANDS, encountering no resistance. ARNOLD ISLAND was found not to exist.

By nightfall of February 5th, the 26 islands of the southern half of KWAJALEIN Atoll, on 12 of which opposition had been encountered, had been captured.

Evacuation of Assault Troops and Landing of KWAJALEIN Garrison Force.

The evacuation of assault troops and the landing of garrison forces were initiated promptly upon completion of the capture of KWAJALEIN ISLAND. A complicating circumstance was that, in January,

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after troop loading plans had been made and some transports loaded in HAWAII and SAN DIEGO, orders were received to transfer from Task Force 51 to the South Pacific, directly from KWAJALEIN, one AGC, 13 APA, 4 AKA and 3 LSD, with 216 LVT's and their Marine Corps crews. This meant that all of these vessels had to be completely unloaded on islands of KWAJALEIN Atoll, except for part of the ammunition and rations on AKA's. Many of the assault troops reembarked with their equipment in different vessels from those they arrived in. For the return to PEARL, it was considered justifiable to exceed the designated troop loading of transports by 20%. AP's and XAP's which brought the garrison forces in were also used for returning part of the assault force to PEARL.

Departure of vessels for the South Pacific started on February 4th, and the last of these vessels for the South Pacific departed on February 6th. The first units of the assault troops left for PEARL on February 3rd, and the final units not forming part of the Garrison Force or the ENIWETOK Expeditionary Force, sailed for PEARL on February 16th.

All of the troops and cargo of the garrison forces which formed a part of Task Force 51, except the CAPE CONSTANTINE, were unloaded by February 15th. The CAPE CONSTANTINE did not complete unloading until February 22. Ships were returned to PEARL, except that two were assigned for moving equipment from the GILBERTS to KWAJALEIN and MAJURO.

Consolidation of KWAJALEIN Defenses.

On February 8, command of KWAJALEIN Atoll was assumed by (the Atoll Commander) and the island command of the ROI-NAMUR and the KWAJALEIN ISLAND Areas by a Captain, U.S. Navy and Brigadier General, U.S. Army, respectively. At that time assigned troops were deployed and were in process of establishing planned defenses. (Commander Joint Expeditionary Force) retained responsibility for the coordination of defense operations; and continued to maintain carrier air patrols and to maintain surface forces in readiness until sunset on February 24. At that time, the Atoll Commander assumed responsibility for the air defense of the atoll and ships in the vicinity; and the SOPA at KWAJALEIN responsibility for the off-shore naval defense with forces available; supported by forces under command of the Commander Central Pacific Force. Commander Central Pacific Force Operation Plan CEN 3-44 became effective, and CTF 57 assumed responsibility for the defense and development of the atolls, and for extending control over the remainder of the MARSHALL ISLANDS.

Fighter airplanes began operating from the airfield on ROI on February 13. Transport land planes began operating from the field

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on KWAJALEIN on February 24. The Atoll Commander reported that, beginning February 23, ROI would be ready for additional planes; and that KWAJALEIN on February 28 would be able to take 48 fighters, and on March 7, would be able to take 75 bombers.

ASSEMBLY, ORGANIZATION, AND EMBARKATION OF JOINT EXPEDITIONARY FORCE, PREPARATORY TO (MARSHALLS OPERATION).

As in the (GILBERTS) Operation, training of ships and troops, and the final embarkation, were conducted at widely separated points. At SAN DIEGO, the FOURTH Marine Division was given elementary and basic amphibious training beginning in December in Transport Divisions 24, 26 and 28. Final rehearsals were held in January. Many of the ships in these divisions were new, and had received little previous training. In the final rehearsals of the Northern Attack Force, it was possible to assemble part, but not all, of the supporting combatant forces, for example, only a small proportion of the supporting carrier aircraft were available. In HAWAII, most, but not all of the troops of the Southern Attack Force, it was possible to make but one troop landing, and one additional partial debarkation of troops into boats for a simulated landing. Most of the support vessels and aircraft participated, but part of the aircraft operated from shore instead of carrier decks, thus creating artificial conditions. Owing to the inadequate numbers of assault transports for the operation, it was necessary to employ one AP in the Southern Attack Force, 1 AP in the Northern and 2 AP and 1 AK in the Expeditionary Force Reserve Group. These vessels had not previously participated in amphibious landings, either training or combat.

Careful and detailed rehearsals of scheduled attacks against defended positions are considered to be a most important feature of the preparation of assault forces for amphibious operations. Combat operations of this nature are complex. Elementary and basic amphibious training provide only for the improvement in technique of the individual, and of battalions or sometimes regiments. On the other hand, the assembly of a large amphibious attack force brings together numerous units of different arms which may never have operated together or have had contact with each other. Since a very high degree of coordination is required for a successful assault, the activities of each of these elements must be carefully dovetailed with those of the numerous other previously unrelated elements. Personal cooperation between strangers is involved. Detailed supervision is required if a smooth working team is to be produced, and this supervision is exercised by a relatively small number of experienced personnel. Battle rehearsals provide the means for amalgamating the varied elements of assault task forces into cohesive organizations.

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and of testing and perfecting the numerous detailed plans that have been drawn up. The final rehearsal period in this, as in previous operations, was too short.

Garrison Forces, hastily assembled just prior to the capture of new positions to which they are assigned, must perfect their organization, and learn their teamwork, after they arrive at their destinations. This remark applies both to Army and Navy Garrison Forces. Commanders and staffs, appointed shortly before embarkation, have little opportunity for absorbing essential information concerning their units, reorganizing them into operational teams streamlining their equipment, arranging for the necessary flow of supplies, preparing administrative and operational plans and orders, and preparing embarkation and loading plans. As a result, the Garrison Forces, in the execution of their tasks, are confronted with difficulties which do not confront more permanent organizations.

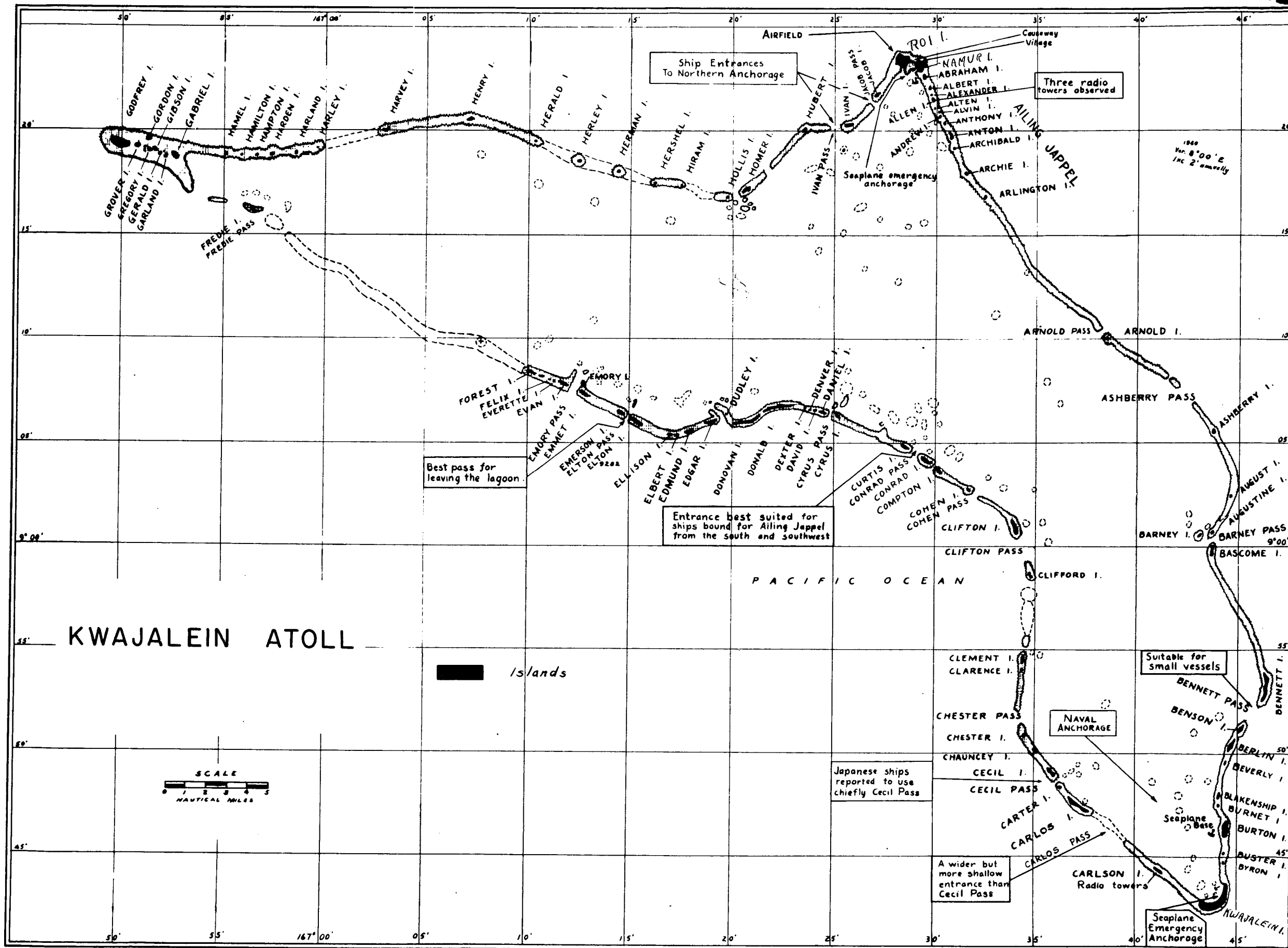
: NORTHERN SECTOR: SOUTHERN SECTOR: TOTAL

<u>Estimated Enemy Strength:</u>	3800	:	4800	:	8600
Enemy Dead	3472	:	4650	:	8122
Japanese Prisoners	99	:	48	:	147
Korean Prisoners	165	:	125	:	290
TOTAL	3736	:	4823	:	8559

10. OWN CASUALTIES AT CONCLUSION OF ASSAULT PHASE.

: NORTHERN SECTOR: SOUTHERN SECTOR: TOTAL

Killed in Action	129	:	157	:	286
Wounded in Action	436	:	712	:	1148
Missing in Action	65	:	17	:	82
TOTAL	630	:	886	:	1516



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LANDING OPERATIONS - KWAJALEIN

From: Commander Fifth Amphibious Corps.

Southern Landing Force.- The attack in the South was divided into three principal phases. In Phase One the 7th Division Reconnaissance Troop (reinforced) was to land prior to dawn on CECIL and CARTER Islands and secure CECIL PASS. At H-hour two BLT's of RCT 17 were to land on CARLOS and CARLSON, securing these islands as position areas for the division artillery. Phase Two consisted of the capture of KWAJALEIN by RCT 184 and RCT 32 supported by artillery from CARLSON. In Phase Three it was planned to seize BURTON, BENNETT and other islands which lie in the Southern sector of responsibility.

The 7th Division Reconnaissance Troop (reinforced) landed at about 0630 on the morning of 31 January on CHAUNCEY and CARTER Islands. It quickly defeated the meager enemy resistance on these islands. The platoon that had landed on CHAUNCEY reembarked and landed on CECIL securing the latter island at 1246 without opposition.

BLT 1-17 landed on CARLOS at 0912, moved rapidly down the long axis of the island, securing it by 1310. BLT 2-17 landed on CARLSON Island at 0915. Only scattered enemy resistance was encountered, and the island was captured at 1220.

The 7th Division artillery began its ship-to-shore movement as soon as CARLSON was secured. The 31st, 48th, 49th, 57th Field Artillery Battalions (all 105mm), loaded in DUKW's, were ashore by 1458. The 145th Field Artillery Battalions (155mm) had landed two batteries in LCM's by 1700. The landing of the artillery was completed on the night of 31 January - 1 February, and all guns were in position, registered, and ready to fire before daylight, 1 February.

At 1000 and again at 1600 on 31 January, Beach Reconnaissance Unit No. 1 reconnoitered Beaches RED 1 and RED 2, KWAJALEIN under cover of naval gunfire. This unit returned to its ship with no casualties after having surveyed hydrographic conditions to within 300 yards of the beaches.

After harassing fire by artillery and naval gunfire throughout the night, Phase Two commenced on the morning of 1 February. The landings were preceded by heavy naval gunfire, air, and artillery preparations. The leading waves of RCT 184 and RCT 32 landed on KWAJALEIN on Beaches RED 1 and RED 2 respectively at 0930. Light opposition, chiefly small arms fire, was encountered on the beaches but the initial advance inland was rapid.

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By 1700 our troops had reached a line running through target areas 153, 154, 155, and 156, about one quarter of the way up the island from Beaches RED 1 and RED 2. By this time all three battalions of each regiment had landed.

After repulsing an ineffective enemy counter-attack on the night of 1-2 February, RCT 32 and RCT 184 jumped off in a coordinated attack at 0715, 2 February. This attack was preceded by air bombardment, naval gunfire, and artillery preparation and was also supported by tanks. Enemy resistance was reported as moderate to stiff throughout the day, and by dusk on 2 February the leading battalions had established their front lines along NORA Road. Two thirds of the island had been captured.

At 0715, 3 February the attack was resumed. Enemy defensive installations, though weak, were more numerous on the northern end of the island, and the advance was slow. By nightfall the attack had reached NATHAN Road, 800 yards from the northern tip of the island. RCT 184 had wheeled to the left, encircling enemy resistance in the vicinity of NOB Pier, and RCT 32 had assumed the entire front.

At 0715 4 February, RCT 32, after a naval gunfire preparation on the northern tip of the island, jumped off in the final attack. By 1530 all resistance had ceased and KWAJALEIN Island was secured. Mopping up continued.

RCT 17 had landed one battalion on BURTON Island at approximately 0930 on the morning of 3 February. Resistance similar to that on PORCELAIN was encountered on BURTON. At 1600, BLT 3-17 landed in support of the one battalion on BURTON. By dusk our troops occupied the southern half of the island. The attack was resumed on the morning of 4 February. By 1255 resistance had ceased and mopping up was completed by 1337.

Beginning with BUSTER and BYRON on 3 February the islands in Phase Three were captured by small infantry units working from LST's. BURNETT and BLAKENSHIP were occupied on 4 February. On 5 February the remaining islands in the Southern Sector were secured. Most of these islands were captured without opposition although resistance was found on BENNETT and CLIFTON. With the completion of the mission of the Southern Landing Force on 5 February, initial defenses were established and preparations were made for the reembarkation on 6 February.

Northern Landing Force.- The plan of the Northern Landing Force was divided into three principal phases. In Phase One the IVAN Landing Group, RCT 25 (reinforced) was ordered to land at

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H-hour, D-day on JACOB and IVAN Islands and at ABLE-hour (subsequent to H-hour) on D-day on ALLEN and ALBERT Islands, securing these islands for the division artillery. Phase Two, beginning on D plus 1 day, or as soon thereafter as ordered, consisted of the capture of ROI and NAMUR Islands by RCT's 23 and 24 respectively, and the capture of ABRAHAM by RCT 25. In Phase Three it was planned to seize the islands to the southeast and southwest of ROI and NAMUR, including HOLLIS and ARLINGTON.

The landing in Phase One began at 0952, 31 January. JACOB and IVAN Islands were secured by 1209 against meager resistance. BLT 2-25 and BLT 3-25 landed on ALLEN and ALBERT Islands respectively at 1515. These islands were secured by 1628. The artillery landed and was emplaced on these islands during the afternoon and night of D-day. ABRAHAM was captured by 2000 by elements of RCT 25.

RCT 23 and RCT 24 landed, after intense air, artillery, and naval gunfire preparations, on ROI and NAMUR Islands respectively at 1200, 1 February. The advance was extremely rapid on ROI and our troops had reached the seaward edge of the island by 1800. Heavier resistance was encountered on NAMUR but RCT 24 advanced rapidly, securing the island by 1300, 2 February, 25 hours after landing.

RCT 25 commenced Phase Three on 2 February, securing all islands in the east chain to include ARLINGTON and in the west chain to include HUBERT on that date. At 1105 3 February, HOLLIS was captured, thus completing Phase Three. All additional islands in the west chain to include COMPTON were seized by elements of RCT 25 by 7 February. On this date the capture of KWAJALEIN Atoll was completed.

At 0730, 8 February, Commander Central Pacific Force announced that the capture and occupation phase was completed and ordered the Commander KWAJALEIN Atoll, the Island Commander ROI and the Island Commander KWAJALEIN to assume command of the KWAJALEIN Islands Defense Forces, the Advance Base ROI and the Advance Base KWAJALEIN Islands, respectively, at 0800 that date. RCT 25 was designated as the temporary mobile garrison force and other elements of the 4th Marine Division were in the process of reembarkation.

Civil Affairs.- Marine Corps civil affairs units were attached to the landing forces at each objective. The principal duties of these units were to post proclamations, to collect all property of the enemy government other than military material and

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documents, to organize and utilize native labor, to take steps toward organizing military government, and to make preliminary surveys as to the future economic needs of the captured territory. These units were withdrawn upon completion of the assault phase when the garrison forces assumed their duties.

From: Report of War Department Mission for Commanding General Central Pacific Area dated March 1, 1944.

As a result of the Tarawa operations, the attacks on Roi, Namur and Kwajalein Islands, in the Kwajalein Atoll, comprised an intense preparation, of three days' duration, using bombs from 100 to 2000 lbs. and short range naval gunfire from 5" to 16", with 60% delay and 40% instantaneous fuzes in both types of munitions. In addition, field artillery was landed on neighboring islands and harassing and barrage fire were employed before and after the landings, which were substantially unopposed. Resistance after penetration of the shoreline was comparatively weak and the operations were completed with relatively light losses. Examination of the fortifications after the operations indicated that the defenses had been predicated chiefly on defense against heavy air raids, as shown by the number, size and strength of air raid shelters provided, with only nominal defenses against sea attack. These defenses included no offshore mines, obstacles or wire, and only weak and intermittent obstacles and wire along the shore. There was, however, an extensive trench system, with rifle and machine gun emplacements, which, supplemented by pill boxes and bunkers, constituted the main surface defenses of the islands. There were also a number of dual purpose twin 5" guns, together with smaller AA and anti-boat guns, ranging from 20mm to 3" caliber. The concentrated and continuous bombing and bombardment effectively neutralized and almost totally destroyed the fortifications at Tarawa, and comparison with those at Kwajalein and the effects of the bombardment upon them, led to the conclusion that the same type, relative intensity and duration of preparation at Tarawa would have been effective in neutralizing its defenses.

Kwajalein itself was the largest island attacked and was about 5,000 yards long by 300 to 600 yards wide, shaped like a crescent. The Marshall Islands are extremely flat, maximum elevation being about 20 feet, and are so flat that maps of the region show no contours.

Kwajalein had an air strip only about 3,000 feet long by 300 feet wide. Roi and Namur, the other two important island in Kwajalein Atoll, were connected by a causeway and low ground, and together formed a rectangle about 800 yards by 2,000 yards. Roi had three airstrips of 3,000 to 4,000 feet length, in an

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LANDING OPERATIONS - ROI-NAMUR

interconnected figure-4 pattern.

Commander Northern Attack Force - ROI and NAMUR.

Several plans for actual landings on various objectives in the Marshall Islands were studied during November. In December a firm decision was received that Group THREE would lift the FOURTH Marine Division and attack the Northern part of Kwajalein Atoll while Group ONE made a simultaneous attack on the Southern part of the Atoll and Group TWO simultaneously occupied Majuro Atoll.

Plans for the attack were prepared and a rehearsal was held at San Clemente Island on January 2 and 3, 1944, simulating as closely as possible the planned attack on the Northern Islands of Kwajalein Atoll. For this rehearsal most of the combatant ships which were assigned as Fire Support ships for the actual attack were present and fired on San Clemente Island as were the carriers assigned to the task force who also rehearsed their roles in providing air support. This rehearsal indicated the desirability of certain changes in the plan for the attack and resulted generally in an excellent understanding of the main feature of the plan by all vessels concerned.

The initial landings were made on D Day (January 31, 1944) in close conformity with plans. The initial tractor group, composed of nine LSTs, and Transport Division TWENTY-SIX with Combat Team TWENTY-FIVE embarked, arrived in their respective areas off MELLU Island, Kwajalein Atoll, shortly before daylight. Fire Support Units meanwhile were taking station to the eastward and westward of NAMUR and ROI Islands and off ENNUEBING, MELLU and BOGGERLAPP Islands. Fire Support Units commenced bombardment at daylight. Bombing by aircraft from Task Group 58.2 and Carrier Division 22 commenced shortly after daylight. Troops were transferred from transports to LSTs and there were embarked in LVT2s. LVT2s and LVTAs were launched from the LSTs and proceeded to the line of departure about five thousand yards off ENNUEBING and MELLU Islands. This line was marked by Commander Destroyer Squadron ONE in PHELPS. When the boat waves were formed at the line of departure they were despatched by Commander Destroyer Squadron ONE by flag hoist signal. During this stage there was sporadic fire from one shore battery on the west coast of ROI Island. This was soon silenced by gunfire from the fire support units.

The wind, 19 knots from 056° true, caused considerable chopiness and swells of some height which made boating difficult and somewhat reduced the speed of LVTs, particularly when proceeding to windward. This resulted in the first waves leaving

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the line of departure about forty-five minutes later than originally intended. The first landings were planned to be made simultaneously on ENNUBBING and MELLU Islands. The planned landing was made on ENNUBBING with very little resistance after an intensive bombardment and bombing. The landing on MELLU was made on the south shore, rather than the north shore as originally planned, because of heavy surf found on the north shore. This resulted in a slight delay in the landing on MELLU. This landing was accomplished otherwise in accordance with plan with light opposition. This landing was also preceded by bombardment and bombing.

At 1035, when ENNUBBING Island had been reported secure, minesweepers proceeded into the lagoon through North Pass and made initial sweeps of the intended boat lanes and anchorage areas in the northern end of the lagoon. No mines were found but numerous coral heads were located. It had been planned for PHELPS to enter the lagoon by this pass but one of the minesweepers reported a least depth of fifteen feet in this pass so PHELPS, drawing eighteen feet, proceeded into the lagoon by the pass to the westward of MELLU Island. Smoke was laid by small boat and aircraft to protect the minesweepers. The sweepers encountered some fire from various islands but were not hit.

As soon as the landings were made on ENNUBBING and MELLU Islands, boat waves commenced forming off ENNUBBING Island for landings on ENNUMENNET and ENNUBIRR Islands. PHELPS proceeded to the line of departure which was inside the lagoon about five thousand yards from these Islands. The boat waves proceeded through North Pass and formed at the line of departure marked by PHELPS. There was considerable delay in the boats reaching the line of departure due to the low speed of the LVTs proceeding against the wind and to the inexperienced LVT drivers permitting their vehicles to drift down wind while waiting for waves to form up. While this was taking place, ENNUMENNET and ENNUBIRR Islands were subjected to heavy bombing and bombardment.

At about 1300 Transport Division TWENTY-FOUR and TWENTY-EIGHT with Combat Teams TWENTY-FOUR and TWENTY-THREE, respectively, embarked and the remaining LSTs, with LVTs embarked, arrived and transfer of troops from transports to LSTs was commenced.

At 1435 the boat waves were formed up at the line of departure and the first waves started for ENNUMENNET and ENNUBIRR. Landings were made on both islands as planned nearly simultaneously about 1515 against light opposition and the Islands were quickly secured.

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Meanwhile 75mm artillery was being landed on ENNUEBING Island and 105mm howitzers and ammunition were being landed on MELLU Island. Landing of artillery on ENNUMENNET and ENNUBIER now commenced. Landing this artillery and ammunition continued through the night.

At about 1820 a shore to shore assault on ENNUGARRETT Island from ENNUMENNET Island was launched according to plan, and ENNUGARRETT was in our hands by 2000. This attack was also preceded by an intense bombardment and bombing.

Throughout the day ROI and NAMUR Islands were subjected to accurate and deliberate bombardment and bombing. During the night of January 31-February 1, PORTERFIELD, HOPEWELL and ELLET kept up an intermittent bombardment of these islands. This night bombardment was intended to harass the Japs and prevent any rest during the night, rather than to produce actual destructive effect. It was directed at areas in which it was possible any concentration of personnel might be made and against the southern beaches to support the demolition parties during the period when they were operating.

During the night of January 31 the LSTs of the initial group remained at anchor inside the lagoon, gassing their embarked LVTs and otherwise preparing for the main assault on February 1. These LSTs were screened by a number of light craft. Transport Division TWENTY-SIX and the Force Flagship lay to, outside the lagoon, near MELLU Island, Transport Division TWENTY-SIX disembarking artillery and supplies during the night. Other units of the force proceeded to sea for the night, returning to the attack area at daylight.

It had originally been planned to launch LVTs from LSTs outside the lagoon on D-plus one day and have the LVTs proceed under their own power to the line of departure inside the lagoon about five thousand yards from ROI and NAMUR Islands. Because of the difficulty the LVTs had experienced on the previous day in reaching the line of departure from outside the lagoon, the plan was changed and all LSTs were sent inside the lagoon near the line of departure for launching their LVTs. This greatly facilitated forming the waves of LVTs at the line of departure, which as before was marked by PHELPS, with Commander Destroyer ONE embarked dispatching the waves by flag hoist signal. The plan used was not entirely new but was part of an "Alternate Rough Weather Plan" with which all were familiar.

At daylight on February 1 bombardment and bombing of ROI

LANDING OPERATIONS - ROI-NAMUR

and NAMUR by all supporting units was recommenced. The intensity of the bombardment was stepped up gradually and during the hour immediately preceding the landing, reached an extremely high pitch.

After some delay in forming the LVT waves, all were ready and the first wave was dispatched from the line of departure at 1112. Except for this delay and certain other minor variations, the main landing was made on the south shore of ROI and NAMUR Islands at 1157 in accordance with plan, with four Battalion Landing Teams landing abreast on a beach of approximately 2000 yards. Little opposition was encountered on the beach and the entire island of ROI was secured before dark on February 1. On NAMUR Island little opposition was encountered on the beach but considerable opposition developed on the Northern part of the Island. About one half of the island was secured by dark on February 1. By 1418 on February 2 all organized resistance on NAMUR had been overcome.

During the afternoon of February 1 all transports entered the lagoon and anchored and unloading commenced. Minesweepers commenced sweeping the anchorage areas and channels in accordance with plan and hydrographic survey was commenced.

On February 2 the first of the Garrison Forces arrived and commenced to unload. Other elements of the Garrison Forces arrived on February 5 and February 7. Unloading Transport Division TWENTY-SIX and TWENTY-FOUR less DOYEN, and the Garrison elements proceeded as rapidly as was possible, throughout. Transport Division TWENTY-EIGHT was not completely unloaded, since a considerable part of the supplies and equipment was not needed by the 23rd Regimental Combat Team in its quick capture of ROI Island.

On the night of February 1-2, Battleships, Cruisers and Carriers, suitably escorted, remained underway in the near vicinity. On February 2, Battleships and two Cruisers entered the lagoon and anchored while Carrier Division 22, escorted by 2 cruisers and appropriate destroyers, remained underway to provide Combat Air Patrol and Anti Submarine Patrol over the area.

The hospital ship SOLACE arrived on February 3 and departed the following day with 362 wounded on board.

CALLAWAY, SUMTER, WARREN and BIDDLE of Transport Division TWENTY-SIX and ELMORE and WAYNE of Transport Division TWENTY-FOUR finished unloading and sailed, suitably escorted, on February 4 for FUNAFUTI for duty in the South Pacific. On February 5 Commander (NORTHERN ATTACK FORCE) shifted his flag from APPALACHIAN to MARYLAND and on the following day DUPAGE, ALMAACK, AQUARIUS, EPPING FOREST, GUNSTON HALL and LINDEWALD, all now unloaded, sailed

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LANDING OPERATIONS - ROI-NAMUR

with APPALACHIAN and suitable escort, for FUNAFUTI and the South Pacific. On this same day LSTs 119, 38, 122, 220 and 271 and YMS 263 were sent to MAJURO for duty.

The FOURTH Marine Division with supporting units from Task Force FIFTY-THREE proceeded with the later phases of securing the smaller and less important islands of the Northern part of the Kwajalein Atoll. This was completed on February 7.

With as little interference as possible to unloading, the reembarkation of the 23rd Regimental Combat Team in Transport Division TWENTY-EIGHT plus DOYEN was commenced on February 3 and completed on February 8, on which date these ships were sailed for Pearl Harbor. As rapidly as LSTs and ships which had brought in the Garrison Forces were unloaded, the 24th Regimental Combat Team and other elements of the FOURTH Marine Division were embarked for withdrawal from the Atoll. An exception to this was the 25th Regimental Combat Team which was left as a Garrison Unit at Kwajalein Atoll. Units of the FOURTH Marine Division departed for Pearl Harbor in YOUNG AMERICA and ROBIN WENTLEY on February 12, in LSTs 222, 121, 43, 45, 126, 274 accompanied by CAPE SAN MARTIN towing ANDERSON and LCI 450 on February 14, and in TYPHOON GOLDEN GATE and CAPE GEORGIA accompanied by MARYLAND on February 15.

Commencing on February 7 various auxiliary and combatant units used the ROI anchorage as a base for fueling, transfer of planes, ammunition and equipment and for rest and rehabilitation. This required the use of landing craft which might otherwise have been employed in unloading ships carrying Garrison Force equipment. It delayed somewhat the unloading of these ships but it is believed to have made possible the execution of subsequent operations against ENIWETOK and TRUK at a materially earlier date than would otherwise have been possible, the importance of which far outweighed any delay in unloading that may have been caused.

At about 0245 on February 12 approximately 12 Japanese sea-planes made an attack from about 22,000 feet on the airfield on ROI Island. These planes approached from between 300° and 330° true and were tracked in by radar from about 100 miles at a speed of about 150 knots. They made no effort to attack shipping in the lagoon which was enveloped in smoke but delivered an accurate attack on the airfield causing about 30 deaths, 300 casualties and considerable loss of material. No damage was done to the runway itself, which received planes from SARATOGA the same day.

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LANDING OPERATIONS - ROI-NAMUR

Had night fighters been available, the attack could have probably been frustrated with considerable loss to the enemy planes. Recommendation was made by Commander Task Force FIFTY-THREE (then Commander Task Group 51.2) that night fighters be provided and orders were issued to provide same.

The Northern Tractor Group sortied from San Diego in two units: the Advance Unit sortied January 5, the Rear Unit sortied January 6. The composition of the two units was as follows:

<u>Advance Unit</u>	<u>Rear Unit</u>
5 LST's	10 LST's
2 YMS's	7 LCI's
1 DD355	2 YMS's
	2 DD's
	1 DMS

The Transport and Carrier Groups sortied from San Diego on January 13. These groups were composed as follows:

<u>Force Flagship</u>	<u>Transport Screen</u>
AGC1 APPALACHIAN (FF)	DD688 REMEY(F)
	DD351 MACDONOUGH
<u>Transports</u>	DD410 HUGHES
<u>TransDiv 24</u>	DD398 ELLET
APA41 DUPAGE(F)	DD445 FLETCHER
APA54 WAYNE	DD349 DEWEY
APA42 ELMORE	DD350 HULL
APA 1 DOYEN	DMS8 STANSBURY
AKA16 AQUARIUS	DMS18 HAMILTON
	APD14 SCHLEY
<u>TransDiv 26</u>	<u>Carrier Group</u>
APA35 CALLAWAY(F)	<u>CarDiv 22</u>
APA52 SUMTER	CVE26 SANGAMON (F)
APA53 WARREN	CVE27 SUWANEE
APA 8 BIDDLE	CVE28 CHENANGO
AKA10 ALMAACK	<u>Carrier Screen</u>
LSD 4 EPPING FOREST	DD348 FARRAGUT (F)
<u>TransDiv 28</u>	DD345 MONAGHAN
APA34 BOLIVAR(F)	DD353 DALE
APA51 SHERIDAN	
APA32 CALVERT	
AP102 LASALLE	
AKA 7 ALCYONE	
LSD 5 GUNSTON HALL	

LANDING OPERATIONS - ROI-NAMUR

The Support and Oiler Groups sortied from San Pedro on 13 January. This group was composed as follows:

Support Group

Battleships

BB43 TENNESSEE (F)
BB46 MARYLAND
BB45 COLORADO

Cruisers

CL60 SANTA FE (F)
CA28 LOUISVILLE (GF)
CL63 MOBILE
CL80 BILOXI

Oiler Group

AO49 SUAMICO
AO50 TALLULAH
AO73 MILLICOMA

Screen

DD417 MORRIS (F)
DD411 ANDERSON
DD413 MUSTIN
DD414 RUSSELL
DD682 PORTERFIELD
DD585 HARADEN
DD557 JOHNSTON
DD681 HOPEWELL
DD360 PHELPS

From: Commander Eniwetok Expeditionary Group
(Commander Group Two, Fifth Amphibious Force).

On 2 February 1944 despatches indicated that an attack on ENIWETOK was to be conducted by an attack force under my command.

This atoll had been under continuous bombing attacks during the period of assault on KWAJALEIN and many sets of photographs had been taken. These showed that most of the above-ground installations on all three main islands had been destroyed. Very careful study of these photographs disclosed considerable increase in the foxhole and trench systems on ENGEBI Island, but failed to disclose any indication of troops on PARRY Island beyond the location of a few new foxholes in the vicinity of the storehouse area. On ENIWETOK Island approximately 50 new foxholes were discovered and minor indications of small enemy forces near the southwest end of the island.

In the preliminary planning, therefore, the assumption was made that Jap forces on PARRY and ENIWETOK Islands would be of minor strength and the following decisions were made: (a) On DOG Day, enter the lagoon and establish artillery on RUJIYORU and the adjacent island to the west. (b) On DOG plus ONE Day to assault ENGEBI with two BLT's of the 22nd Marines abreast and one BLT of the 22nd Marines in reserve.

LANDING OPERATIONS - ENIWETOK

(c) On the day subsequent to the completion of the capture of Engebi, presumably Dog plus Two Day, to assault Eniwetok Island with one BLT of the 106th Infantry and one BLT of the 106th Infantry in reserve. This assault was to be made without the assistance of shore-based artillery. (d) Subsequent to the assault on Eniwetok Island, but on the same date if the situation permitted, to assault Parry Island with one BLT of the 106th Infantry supported by one BLT of the 22nd Marines. To assist in this assault, artillery was to be emplaced on Eniwetok Island.

The initial target date recommended was 12 February 1944. This was later changed to 15 February and finally established as 17 February. After discussion of the problem with CTF 51, preparation of plans was commenced.

Preliminary supporting measures for this operation included a continuation of air strikes against Ponape, Jaluit, Kusaie, and Wake in addition to the almost continuous strikes against Eniwetok itself. Commencing on Dog Day heavy carrier force strikes against Truk, Tinian, and Saipan were conducted by Task Force Fifty. These strikes were extremely effective in safeguarding the operations at Eniwetok, which were concluded without any interference from Japanese planes, surface vessels, or submarines.

There was no opportunity for any preliminary rehearsals as all units of the force were not assembled in Kwajalein until 13 February, two days before the prescribed date of departure. Most of the units involved, however, were well trained and experienced, and subsequent developments indicated no great disadvantage resulted because of lack of rehearsal. The LCI Group and Control Group of the Kwajalein Attack Force were assigned to the Eniwetok Attack Force, and instructions were issued that their procedure should follow as closely as possible that used by them in the several operations at Kwajalein. The DUKW drivers and other trained personnel of the Kwajalein Attack Force were also loaned to the Eniwetok Attack Force to assist in landing the artillery, and their assistance proved invaluable.

This force comprised units of the Army, Navy, Marine Corps, Coast Guard, Public Health Service, and Coast and Geodetic Survey, and the successful accomplishment of our task was made possible by their fine spirit of cooperation and team work.

Composition of Attack Force.

- (a) Flagship Group
1 APA

LANDING OPERATIONS - ENIWETOK

- (a) Flagship Group (cont'd.)
Headquarters Support Aircraft Eniwetok
- (b) Transport Group
Transports - 5 APA, 1 AP, 2 AKA, 1 AK, 1 LSD
Scout Detachment - 2 APD
Control Unit - 2 SC
LST Unit - 9 LST
LCI Unit - 6 LCI
Demolition Unit
Transport Screen - 10 DD
- (c) Expeditionary Troops
Landing Forces
22nd Marine Regiment (reinforced)
106th Infantry Regiment (reinforced less 2nd BLT)
5th Amphibious Corps Reconnaissance Company
Company "D", 4th Marine Tank Battalion (Scout)
Provisional Amphibian Tractor Battalion (less 1 LVT Group)
7th Infantry Division
Company "A", 708th Amphibian Tank Battalion, 7th Infantry Division
Provisional DUKW Battery, 7th Infantry Division
Eniwetok Garrison Forces
Mobile Troops - 106th Infantry Regiment (less 2nd BLT)
Advance Base Engebi
3rd Army Defense Battalion
47th Army Engineer Battalion
Other units as assigned
Advance Base, Eniwetok
10th Defense Battalion
Acorn 22, plus attached units
GroPac #5
- (d) Fire Support Group
3 OBB, 3 CA, 7 DD
- (e) Escort Carrier Group
3 CVE, 4 DD
- (f) Carrier Task Group
1 CV, 2 CVL, 2 CA, 1 CL(AA), 8 DD
- (g) Minesweeping Group
2 DMS, 3 AM, 2 YMS

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LANDING OPERATIONS - ENIWETOK

(h) Service Group

2 AT, 2 XAO

(i) AT Group

1 DD, 2 AT

All units sortied from KWAJALEIN 15 February, the Southern Group in the morning, the Northern Group that afternoon. The Southern Group consisted of nine LST's carrying LVT(2)'s, LVT(A)'s, 75mm and 105mm artillery, all with attached personnel; six LCI gunboats; two liberty ship tankers; two minesweepers subchasers, YMS and tugs assigned for the operation, and appropriate destroyer screen. The Northern Group included transports, battleships, cruisers, Carrier Division TWENTY-TWO, destroyer screen, and three minesweepers, one AM and two DMS.

Bombardment of ENGEBI by COLORADO and LOUISVILLE, of the islands flanking DEEP ENTRANCE by PORTLAND and TRATHEN, and of the southeast tip of ENIWETOK by INDIANAPOLIS and HOEL, was initiated promptly at 0700 YOKE DOG Day, 17 February. There was no enemy return fire. At the same time minesweepers of the Southern Group entered WIDE PASSAGE ahead of the LCI-LST column. At 0822Y, near Point DOG, SAGE swept a mine and movement of the Southern Group was delayed until the mine was destroyed and further sweeping operations conducted.

At 0915 YOKE TENNESSEE leading the Transport Column and preceded by minesweepers entered DEEP ENTRANCE. Flanking fire by 40mm batteries was placed on PARRY and JAPTAN Islands by leading battleships and destroyers, but there was no return fire. (Subsequent interrogation of prisoners disclosed the fact that instructions had been issued that no one would fire at entering ships or disclose his presence during the entrance of our force). No mines were encountered in this channel, and no difficulty was experienced in passage to the northern end of the lagoon through a 400 yard channel marked by minesweepers and which, as a precautionary measure, had been dragged by them to a depth of 40 feet. By 1034 YOKE all vessels had entered the lagoon safely and were proceeding to their initial anchorages. As the transports approached their area, AA fire was reported by planes from a hulk near RUUNITTO Island. This hulk was bombed, strafed, and fired on by ORACLE and PHELPS, but the initial report is believed to have been in error as no Jap personnel have as yet been found on that or adjacent island and inspection of the hulk showed no signs of recent use.

A seaplane base in the lagoon was established the afternoon of DOG Day west of PIIRAI Island, with YMS 383 acting as tender

LANDING OPERATIONS - ENIWETOK

and eighteen improvised mooring buoys planted. Seaplanes from battleships and cruisers operated from this base through DOG plus FIVE Day, furnishing spotting services and anti-submarine patrols. Planes were fueled initially by a cruiser inside the lagoon, and later by parent ships when not engaged with fire support duties.

During the afternoon of DOG Day the landing of artillery on RUJIYORU and the adjacent unnamed island to the westward was effected as planned. 75mm and 105mm batteries were registered on ENGEBI prior to sunset, and fired all night at that island. Reconnaissance troops who landed ahead of them found no Japs on these islands. The transports of Division TWENTY transferred assault troops of the 22nd Marine Division to LST's and all ships concerned with the assault on ENGEBI moved up to an anchorage west of that island. PORTLAND and INDIANAPOLIS entered the lagoon and commenced scheduled and harassing fires on ENIWETOK and PARRY Islands which continued from these and other ships and from the air until the separate assaults were made on them.

Minesweeping continued in the southern portion of the lagoon and a total of 28 moored mines of horned type were swept and destroyed. These mines were in fairly good condition and it was estimated that they had been in the water less than six months. Instructions were issued to do no sweeping south of Latitude 11° 21' 30" thereby maintaining this portion of the Jap mine field as security for the lagoon. These sweeping operations were conducted for a period of two days before it was finally assured that the mine hazard there had been eliminated. Meanwhile other minesweepers had been engaged in sweeping and dragging areas required by transports and fire support ships for their assault on ENGEBI. Of particular value were Areas BAKER and CHARLIE, which were dragged on DOG Day under cover of battleship gunfire and which permitted the fire support ships, on DOG plus ONE Day, to take very close and advantageous positions for their pre-assault supporting gunfire.

Promptly at 1700 YOKE DOG Day the beach reconnaissance party closed ENGEBI, supported by fires from COLORADO, TENNESSEE, HEERMANN, MCCORD and LCI 365. This mission was accomplished smartly and without casualties. Personnel approached within fifty yards of beaches BLUE THREE and WHITE ONE. Boat lane buoys were planted, and shoal spots buoyed. No beach mines were seen, and none were encountered by assault troops the next day. There was sporadic machine gun fire from the beach. Information obtained by the reconnaissance party was delivered to assault and fire support units that night.

LANDING OPERATIONS - ENIWETOK

During the afternoon of DOG Day destroyer fire was placed on the two islands flanking ENGEBI to destroy any enemy batteries which might enfilade the boat waves the following morning.

The preliminary DOG plus ONE Day air and surface bombardment of ENGEBI was carried out on schedule. TENNESSEE and PENNSYLVANIA moved into areas BAKER and CHARLIE respectively at dawn, into water which had been dragged the previous day, and delivered most effective flanking fire against the lagoon beach defenses of ENGEBI. The first wave of Marines landed on ENGEBI at 0842 YOKE, three minutes ahead of schedule, against light beach opposition, and made rapid progress to a point about 100 yards inland, where the Jap resistance became more stubborn. Fire support was provided from 75mm and 105mm artillery and from the destroyers HAILEY and MCCORD.

The principal Jap defenses consisted of rifle and machinegun fire from deep and cleverly camouflaged foxholes and from well concealed mortars and howitzers. Jap troops in the foxholes permitted the first waves to go through them and then took up their fire from the rear of the advancing troops. Rapid and determined progress was made, however, and at 1600 YOKE ENGEBI was reported secure except for mopping up operations.

By late morning of DOG plus ONE Day troops of the two scout companies had occupied MUZINBARRIKKU and BOGON Islands, finding no Japs thereon, and cutting off escape by Japs from ENGEBI east or west.

Reembarkation of LVT(2)'s, LVT(A)'s, medium tanks, and 105mm artillery was rushed. Before dark the transports, LST's and LCI's carrying troops and equipment for the assault on ENIWETOK sailed for the southern anchorage area. Medium tanks were reserviced and sailed south loaded in LCM's. 105mm artillery was reloaded into LST246 and sailed south.

As previously stated, it had been decided to assault ENIWETOK Island on the day following capture of ENGEBI Island using one BLT of the 106th Infantry for the assault and the other BLT of this regiment in reserve. Close reconnaissance of this island by planes during DOG Day and DOG plus ONE Day had again failed to disclose signs of any large force being present there. However, a Cincpac despatch dated 15 February 1944 contained information from a prisoner of war captured on ENGEBI, and by documents captured on ENGEBI. These reports led to the belief that there were at least 600 troops on ENIWETOK and approximately double that number on PARRY. It was further learned that the headquarters of Major General Nishida, commanding the First Mobile Sea-Borne Brigade were on PARRY.

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Decision was therefore made to land on ENIWETOK Island on Beaches YELLOW ONE and YELLOW TWO with two BLT's of the 106th Infantry abreast and one BLT of the 22nd Marines in reserve. The gunfire plans were also modified and the supporting gunfire greatly increased. The previous decision to take this landing on DOG plus TWO Day was adhered to.

RCT 106 landed at 0916 YOKE DOG plus TWO Day, 19 February. The preliminary air and surface bombardment was effective, and losses at the beach were light. Within the first hour troops had moved across to the seaward side of the island and had deployed for their attack toward both ends. The method of defense employed by the Japanese here was similar to that employed at ENGEBI, except that on this island, one of the highest in the MARSHALLS, the foxholes were extremely deep and well recessed. Many of them showed signs of having been constructed for a considerable time and were covered with coconut log roofs over which vines and other natural growth formed a perfectly camouflaged cover. Many of these foxholes were interconnected and it was from a set of these foxholes that a counter attack by about 30 Japs was initiated on DOG plus TWO Night, which resulted in several casualties to BLT 3/22 in the vicinity of the battalion command post.

The 3rd Battalion, 22nd Marines, was landed at 1330 YOKE and was employed at the southern end of the island until the afternoon of DOG plus THREE Day. By late afternoon one battery of 105mm guns was ashore, and all light tanks in the transports had been landed. At 1900 YOKE, all islands in the Atoll were reported secure except ENIWETOK, PARRY, and JERORU Islands. (JERORU was captured by Scout troops 21 February). A total of 97 natives was found in the atoll. Several were reported killed by Naval gunfire.

During DOG plus TWO Day four LST's arrived with personnel and equipment for ENGEBI Island, and proceeded at once to unload. Two LCT's arrived this day also, proving to be invaluable in unloading operations.

On DOG plus TWO Day further information was received from documents captured on ENGEBI, outlining in considerable detail the troops and defenses on PARRY Island. These reports confirmed the fact that there was a garrison there of about twelve hundred men of the First Mobile Sea-Borne Brigade. One of these documents, dated February 8, 1944, contained the following defense plan. "General Policy. At the edge of the water scatter and divide the enemy infantry in their boats - attack and annihilate each one. Launch cleverly prepared powerful quick thrusts and vivid sudden attacks, and after having attacked and having destroyed the enemy

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landing forces, first of all, then scatter and break up their groups of boats and ships. In the event that the enemy succeeds in making a landing annihilate him by means of night attacks."

The progress on ENIWETOK Island indicated that the 106th Infantry would not be available for the assault on PARRY and it was therefore decided to utilize the 22nd Marines for this assault. Orders were also issued for the Separate Pack Howitzer Battalion to reembark from the first island west of RUJIYORU Island and land on JAPTAN Island for bombardment of PARRY Island from that position.

At daylight, DOG plus THREE Day, 20 February, MORMACPORT, CAPE STEVENS, and CAPE TRINITY arrived and proceeded to ENGEBI. MORMACPORT and CAPE STEVENS returned to ENIWETOK the next day and anchored off ENIWETOK with the SANTA CRUZ, WILLIAM ALLEN and SOLACE which had just arrived.

Progress of troops on ENIWETOK Island on DOG plus THREE Day, 20 February, continued to be slow. Mopping up operations were in progress on the southwestern end of the island, but the assault was still proceeding on the northeastern end. A decision was therefore made to delay the assault on PARRY Island until 0900 YOKE DOG plus FIVE Day, 22 February, in order (a) To rehabilitate and reorganize BLT 3/22 which had been in action for three successive days. (b) To reembark, repair, and service medium tanks and rest their crews. (c) To make light tanks, which were still engaged on ENIWETOK, available for the assault on PARRY Island if required. (d) to provide one BLT of the 106th Infantry as support reserve in the event it was required. (e) To allow additional time for air and surface bombardment of PARRY. It was further decided to utilize both scout reconnaissance companies as a part of the reserve and also to have two rifle companies of the 10th Defense Battalion embarked at the line of departure and available for use if needed.

Arrangements for the accomplishment of this change in plans were effected rapidly and efficiently. Two BLT's of the 22nd Marines were reembarked at ENGEBI and moved south, ammunition redistributed, water containers refilled, the Separate Pack Howitzer Battery sited and registered on JAPTAN, the remainder of the 105mm battalion sited and registered on ENIWETOK, etc. Eleven medium tanks were made available for the attack. An urgent request was made to CTF 51 for additional hand grenades and percussion detonating caps, which were promptly supplied by air.

Bombardment of PARRY Island by surface ships and aircraft continued all DOG plus FOUR Day and all the following night. As

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at ENGEBI and ENIWETOK the bulk of this fire was from sufficient range to give a plunging effect and destroy the foxhole and trench systems. During this bombardment practically all remaining ammunition in the attack force was utilized, withholding only sufficient to meet the scheduled and call fire demands during the following day. 75mm batteries from JAPTAN and 105mm batteries from ENIWETOK pounded PARRY all night.

It was realized that smoke, blowing directly toward landing boats from Beaches GREEN TWO and THREE on PARRY Island during the assault would create a serious problem for boat waves. ORACLE was therefore directed to proceed from the line of departure at daylight 22 February, and lay a line of buoys with yellow flags to mark the dividing line between landing teams along the proper courses to the beach. This mission was accomplished successfully, buoys being laid to within 500 yards of the beach.

Preliminary air and surface bombardment of PARRY Island started at dawn, DOG plus FIVE Day, 22 February. For this fire the TENNESSEE and PENNSYLVANIA were moved into a very advantageous position approximately 1500 yards to the north of the beaches where they received a minimum of smoke and dust interference. From this range they were able, not only to deliver effective main and secondary battery fire, but to cover the areas thoroughly with their heavy automatic weapon batteries as well. Strafing was not included in the air strike as it was considered ineffective against the type of foxhole defense the Japs were using. During the period just preceding the landing, one SBD from the SANGAMON, carrying the artillery observer for the 75mm battery, was seen to emerge from behind the smoke cloud and crash into the water near the south tip of PARRY. The plane was afire and it is presumed that despite all warnings, this plane had flown through our own artillery barrage and been hit.

The first wave landed on PARRY at exactly 0900 YOKE as scheduled, against light beach opposition and with few casualties, and penetrated quickly to about 150 yards inland. Some boats from the succeeding waves went astray in the smoke and landed on Beach ORANGE ONE to the south of the pier, which caused an unexpected widening of the front. This was soon corrected, however, and as soon as the medium tanks had landed and taken their assigned positions the attack proceeded in accordance with plan.

Stubborn resistance was encountered, particularly in the southern portion of the island. On this island both land mines and anti-tank magnetic mines were encountered. Fortunately, the land mines had been planted along only one beach, just north of

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LANDING OPERATIONS - ENIWETOK

the one used by our troops. Many of the Japs killed had both types of mines hung to their waists or legs, presumably to use as opportunity offered.

As the initial boat waves approached the beaches LCI 365, 440, and 442 supporting the right flank were hit by 5 inch fire from HAILEY, fire support destroyer on this flank. Thirteen were killed and forty-six wounded. In spite of this unfortunate incident all three gallant ships fired their rockets before clearing the area. They were made seaworthy by repair personnel from CHICKASAW and MOLALA, and left 26 February for PEARL via KWAJALEIN. I cannot praise too highly the resolution and devotion to duty displayed by the officers and men manning these ships.

By 1330 YOKE our troops had overrun the north end of Parry and were mopping up. The attack continued toward the south, aided by excellent support.

Practically continuous starshell illumination was maintained over Parry throughout the night. This proved extremely effective and is recommended for use in subsequent operations. The illumination disclosed one group of eleven Japs approaching for a counter attack. These were quickly annihilated. Except for this single threat all remaining Japs stayed quietly in their foxholes until the dawn mopping up operations were resumed.

This ended the combat phase of the operation and I cannot praise too highly the performance of all hands. Men, equipment, and ammunition had been used to the limit. Casualties, although not excessive, had been considerable. Some of the troops had been employed in two major assaults and some in three, with only a day of rest between. In spite of this the fighting spirit, determination, and combat efficiency was of the highest order and I feel that no words of praise on my part can do them complete justice.

AMONG THE HIGH LIGHTS OF THE MARSHALL ISLANDS CAMPAIGN IN ADDITION TO THE EXCELLENT PLANNING AND EXECUTION OF THE OPERATION WERE:

- 1 - MAKING KWAJALEIN ATOLL THE OBJECTIVE THUS BY-PASSING THE ENEMY'S DEFENSIVE POSITIONS ON THE EASTERN RIM OF THE MARSHALLS, NEUTRALIZING THEM BY REPEATED AIR AND SURFACE BOMBARDMENT AND SEVERING THEIR EFFECTIVE COMMUNICATIONS WITH HIS SUPPORTING POSITIONS TO THE WESTWARD.
- 2 - THE FLEXIBILITY IN PLANNING AND EXECUTION WHICH PROVIDED FOR THE CORPS RESERVE AND OTHER UNITS NOT REQUIRED FOR THE SEIZURE OF KWAJALEIN ATOLL TO RAPIDLY EXPLOIT THIS SUCCESS BY THE EARLY CAPTURE OF ENIWETOK.

CHAPTER II

AIR SUPPORT

Marshall Islands Operation - January 1944.

From: Commander Support Aircraft (Kwajalein).

Training

Training of aircraft squadrons in combined operations with landing craft and ground forces in specific preparation for (MARSHALLS OPERATION), was commenced on 19 December 1943, approximately one month prior to final departure from Pearl Harbor. These exercises included all the features of typical landings with the exception that no live ammunition was used. In addition to participating in flight operations, many pilots and squadron intelligence officers visited the Amphibious Training Base at Waianae and took part in landing craft and ground force maneuvers in order to familiarize themselves with the equipment used and the general conduct of the surface operation.

Rehearsal And Critique

On 13, 14, 15 and 16 January 1944, Rehearsal exercises were held at MAALAEA BAY, MAUI, and KAHOOLOWE Island. The Air Plan for these exercises duplicated the plan for the (MARSHALLS) operation with the exception that live ammunition was to be used only on two days out of the four days of exercises -----.

This Rehearsal brought to light certain weaknesses, and a general conference of representatives of the aircraft squadron commanders was held immediately thereafter. This led to clearing up any matters which were in doubt and gave a clear understanding of the entire project. A summary of the conclusions reached at this conference was later delivered to Commander (of a carrier Task Group) as that Task Group departed prior to the conference and consequently was not represented. These conferences and critiques are essential to the final execution of the Air Plan since they anticipate complications and eliminate any necessity of subsequent lengthy radio transmissions which otherwise would be required to clear up misunderstandings.

Chronological Summary Of Air Operations - 31 January 1944.

D - Day

During the period 0633 to 1820, aircraft of (Carrier Task Group) reported to Commander Support Aircraft for assignment. The activity of these aircraft is discussed below under the heading of the particular function to which they were assigned:

Combat Air Patrol - No enemy airborne aircraft encountered.

Anti-Submarine Patrol - One submarine contact investigated bearing 255° 15 miles from USS ROCKY MOUNT. Planes worked with DD.

AIR SUPPORT - KWAJALEIN

Results negative.

SUPPORT AIR GROUP - These aircraft made 187 sorties against enemy installations and shipping during the day, dropping approximately 93 tons of bombs and firing approximately 134,000 rounds of 50 caliber and 140 rockets. These sorties were divided as follows: (The term "SORTIE" as used throughout this report means one complete attack by one aircraft).

- 42 in support of troops landing on CARLSON
- 9 in support of troops landing on CARLOS
- 44 in preparation of KWAJALEIN for landing
- 23 in preparation of BURTON for landing
- 11 in preparation of BENNETT for landing
- 58 against enemy shipping and small craft in the lagoon.

The primary missions went to support the H Hour landings on CARLSON and CARLOS; to prevent enemy interference with these operations from other islands and to prevent the movement of enemy forces by small craft from island to island. Strafing and bombing were coordinated with the movement of our troops and with our naval gunfire through Commander Support Aircraft. After beachheads were obtained on CARLSON and CARLOS, all bombing and strafing was directed against positions from which enemy might otherwise have initiated action against the beachheads and against targets which had not been reached by naval gunfire.

Miscellaneous Flights.

In addition to the above mentioned flights, the following were also made on this date and daily thereafter:

(a) Air Coordinator. This function was carried out throughout the day by the Air Group Commander and Squadron Commanders from ENTERPRISE. The Air Coordinator kept Commander Support Aircraft advised of the surface situation and directed certain air attacks.

(b) Air Observer. Army observers were kept aloft throughout the day for the purpose of keeping the Army advised of the ground situation through the Support Aircraft organization.

(c) Photographic. Various photographic missions were flown throughout the day.

(d) Smoke. Smoke-laying planes were on station during part of the day but no occasion for their use arose.

Aerology

Despite the weather, which consisted of light rain showers and

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AIR SUPPORT - KWAJALEIN

squalls from 0315 to 1345, the missions required were carried out precisely and efficiently. However, ceilings prevented the use of more dive bombing, and some flights were cancelled because of weather.

1 February 1944 D + 1

During the period 0718 to 1859, aircraft of (Carrier Task Groups) reported to Commander Support Aircraft for assignments. Arrival on station was delayed slightly by light showers and squalls which prevailed from 0305 to 0850.

Combat Air Patrol - No enemy airborne aircraft encountered.

Anti-Submarine Patrol - One submarine contact investigated bearing 160° 5 miles from ROCKY MOUNT; results - negative.

Support Air Groups - These aircraft made 238 sorties against enemy installations and shipping during the day, dropping approximately 119 tons of bombs and firing approximately 176,600 rounds of 50 caliber and 125 rockets. These sorties were divided as follows:

- 96 in support of troops landing
- 33 in preparation of BURTON for landing
- 57 in preparation of BENNETT for landing
- 40 in preparation of BERLIN for landing
- 6 against enemy installations at BEVERLY
- 6 against enemy shipping in lagoon.

During this phase air attacks were coordinated with artillery fire from howitzers established on CARLSON on the previous day, as well as with naval gunfire. The maximum ordinate of this artillery fire was approximately 3500 feet and the rate of fire was 120 rounds per minute at times. Aircraft movements were controlled with a view to minimizing mutual interference. Artillery and naval gunfire were lifted only when heavy air bombardment was required on targets which had not proven vulnerable to naval gunfire or artillery. At other times, air attacks were made on targets which could be approached without flying through gunfire.

Land Based Aircraft - 6VB(H) of Task Group 57 also reported to Commander Support Aircraft for assignment in support of the landing on KWAJALEIN and delivered 12 tons of bombs against installations on that island.

2 February 1944 D + 2

During the period 0709 to 1815, aircraft of (Carrier Task Groups) reported to Commander Support Aircraft for assignments.

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AIR SUPPORT - KWAJALEIN

Combat Air Patrol - No enemy airborne aircraft encountered.

Anti-Submarine Patrol - No submarine contacts made.

Support Air Groups - These aircraft made 110 sorties against enemy installations; of these 70 were against areas on KWAJALEIN in support of our troops which had landed there the previous day. 40 tons of bombs were dropped and approximately 20,800 rounds of 50 calibre were fired. 40 sorties were made against BURTON dropping 23 tons of bombs and firing approximately 21,400 rounds of 50 calibre. The majority of these attacks were directed against gun positions on the northeast section of KWAJALEIN, as those guns were reported to be firing on our troops. Guns at BURTON which fired on our destroyers were also bombed and strafed. Targets were also developed through information received from prisoners of war captured on the previous day.

3 February 1944 D + 3

During the period 0652 to 1857, aircraft of (Carrier Task Groups) reported to Commander Support Aircraft for assignments.

Combat Air Patrol - No enemy airborne aircraft encountered.

Anti-Submarine Patrol - Investigated submarine contact bearing 215° 15 miles from KWAJALEIN. Worked with USS STACK and dropped depth charges on possible submarine. Results negative.

Support Air Groups - These aircraft made 132 sorties against enemy installations. The majority of the major strikes were against BURTON in support of the first troops to land on that island. Remainder of strikes were against any enemy activity which was reported on BEVERLY, BERLIN, BENNETT, BRYON and BUSTER. 33 tons of bombs and approximately 88,000 rounds of 50 caliber were expended. Weather conditions were excellent for bombing, as no squalls or rain appeared as had been the case on the previous days. Air activity was limited, however, by the successful occupation of many of the target areas by our troops.

4 February 1944 D + 4

During the period 0645 to 1800, aircraft of (a Carrier Task Group) reported to Commander Support Aircraft for assignments (The Other Carrier Task Group) departed this area on the evening of 3 February 1944.

Combat Air Patrol - No enemy airborne aircraft encountered.

Anti-Submarine Patrol - No submarine contacts.

AIR SUPPORT - KWAJALEIN

Support Air Groups - Support aircraft were available throughout the day, but the ground situation was such that only one attack was called for. This attack was made by 5 aircraft against a strong point on BURTON which had been holding up the advance of our troops; 3 and 3/4 tons of bombs were dropped in 2 runs by 5 VTB. Shortly afterwards it was reported that all organized resistance on BURTON had ceased. A similar report was also made from KWAJALEIN at 1530 and no further targets were available for support aircraft operations. Consequently, the operation was reduced to routine Combat Air Patrol and Anti-Submarine Patrol, effective 5 February 1944.

Recapitulation

During the 5 days reported on, a total of 672 sorties were made by aircraft in the Southern half of KWAJALEIN Atoll, an area which was fairly congested with our own ships, small boats, landing craft and ground forces. Combat losses amongst our own aircraft during this period were two F6F (HELLCATS). The first was a forced landing in the water, apparently the result of enemy gunfire, and the pilot (Ensign GRAHAM, VF 24) was recovered. The second plane was caught in the explosion of an ammunition dump at BENNETT Island and the aircraft was demolished in the air. The pilot (Ensign CLEM, VF 24) was not recovered.

Support Air (Troop Support) Operations

The schedules developed by Commanders (of Carrier Task Groups) to carry out the requirements of the Air Plan were furnished to Commander Support Air in advance. This greatly facilitated the work of Commander Support Aircraft, because these gave full information not only of the number of planes to report on station, but also of their bases, radio calls and estimated arrival and departure time. These schedules were carried out as planned with minor exceptions resulting from operational losses and weather conditions. It is well to note here that a great advantage is obtained by having the maximum number of planes for any one mission come from the same carrier. This results in the pilots being briefed identically and preserves the normal leadership and coordination of the Air Group or Squadron. A striking group made up of small numbers of aircraft from different carriers lacks uniform briefing and coordination, and should be avoided if possible.

The reports made by the Flight Leaders to Commander Support Aircraft were in general orderly and precise. The form of report specified in the Air Plan must be followed in order to prevent misunderstandings and resultant unnecessary radio transmissions. The importance of the "On Station" report cannot be overestimated because, until it is received, effective use of the aircraft cannot be made.

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The Air Plan provided that attacks could be directed either by Commander Support Aircraft from the Headquarters Ship or by the Airborne Coordinator. The decision which to use was made on the basis of which had the best information available on the particular attack to be made. For example, when attacks were to be closely coordinated with naval gunfire and artillery, Commander Support Aircraft was in better position to direct the controlling gunfire. On the other hand, attacks synchronized with the positions of landing craft could best be handled by the Airborne Coordinator who had the landing craft in sight. Every effort was made to give all information required for an attack. The remaining time would permit the flight leader to transmit further instructions to his flight and to take up position for attack. During these periods, transmissions not directly concerned with the attack were ordered off the air, if necessary.

In addition to the specific instructions for attacks (details of which are described in the paragraphs headed "TARGET DESIGNATION"), a reasonable amount of general information concerning the movement of ground forces was broadcast to the pilots from time to time. The purpose of this was to enable them to keep their maps up to-date and to convey pertinent information back to their bases in order to facilitate the briefing of pilots coming out on later missions. Positions were given by (MARSHALLS OPERATION) grid coordinates which preserved a reasonable degree of security. These transmissions were made on 5135 kilocycles and 140.58 megacycles (VHF Channel #1.). Without going into details on communications, it is considered that the operations could better be conducted on one frequency, but this was not possible in this operation as some FM's and F4F's were not able to cover the medium high frequency. This necessitated repeating instructions over two frequencies and required greater use of VHF than intended. The problems encountered by the carriers in meeting the frequencies requirements are not known at this time, but there is no question that keeping approximately 500 aircraft transmitters and receivers up on the proper frequencies was a substantial job and one that was well executed.

Combat Air Patrol

In view of the fact that no enemy airborne aircraft were encountered during the period reported on, it is not possible to comment on the effectiveness of this activity. Generally speaking, however, the patrols arrived promptly and observed good discipline, both flight and radio. Some slight confusion arose from the original requirement that pilots on Combat Air Patrol use a different call when they completed CAP and shifted to Support Aircraft duties in order to expend their ammunition prior to returning to base. This was partially remedied by removing the requirement that they change the name in their call, and by only requiring them to shift the number in their call from after the name to before it. The apparent purpose of this was

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to avoid confusing CAP aircraft with fighters available for Support Air Operations. Such a device is not necessary if the control elements of Fighter Direction and Support Aircraft aboard ship properly coordinate their efforts and information. The system of distinguishing between VF, VSB and VTB by assignment of groups of numbers, and between carrier groups by different names is sufficient.

Miscellaneous Operations

In addition to Support Air, Combat Air Patrol and Anti-Submarine Patrol a number of other missions were flown. They are enumerated below:

(a) Airborne Coordinator. A senior Naval Aviator was in the air at the scene of the operation continuously during day-light and was charged with the responsibility of keeping Commander Support Aircraft advised of developments on the surface and of directing many of the air attacks. This duty was an extremely important one and was carried out by the Air Group Commander (ENTERPRISE) assisted by the three Squadron Commanders from the same carrier. They were able to maintain a continuous picture of the surface activity and keep both Commander Support Aircraft and incoming flight informed on the progress of our troops and the status of available targets. They also put strike groups on to targets and reported the results of attacks. Commander Support Aircraft furnished them with information received from other sources, so that they would have all data available which might be of assistance in directing an attack. It is believed that the experience gained in this operation points toward turning over the larger portion of attack direction to the Airborne Coordinator.

Targets: Selection and Designation

Support Air attacks may be divided into two distinct categories. The first is the attack immediately prior to a landing. In this the target area is confined to only those positions which prejudice the success of the landing. This limitation of area, combined with a very definite limitation in the time allowed for the attack, make a precisely aimed attack impossible. The area under attack becomes so obscured by bomb blasts, dust, etc., that points of aim are not visible after the first few explosions. This type of attack, however, serves its purpose which is to blast out a clear area for the landing, and the volume of bombs used makes up for the inherent inaccuracy.

The second type of attack is the one which occurs after landing and in which complete accuracy is required to destroy certain objectives without risk to our own forces. It is in this type that the selection of targets is important. Many sources of information

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were available in (the MARSHALLS OPERATION). The basic target maps were kept up-to-date through information from the Air Coordinator, the Air Observer (airborne), the Air Liaison Officer (ashore), prisoners of war, intelligence, photographic coverage, etc. In addition the schedule of naval gunfire and artillery was applied to the target maps in a manner showing the amount of each allocated to the individual areas, so that heavy air bombardment would not be thrown against areas which were to be saturated with gunfire, unless specifically called for. The result of this compilation of data was a list of targets, in order of priority, for air attacks. This proved extremely useful because, although it was expected that enough requests for bombing would be initiated ashore to utilize all available aircraft, this did not prove to be the case, and it was necessary to initiate the action from information on hand in the Headquarters Ship.

In order to designate the target selected, it was located on a replica of the pilot's target map and the coordinates determined. This information was then furnished to the flight leader in the following form:

Objective - Island - Coordinates - Target Area - Time of Mission.

The use of both the coordinates and the numbered target area was considered advisable as a double check on the position being properly described and understood. This information was often supplemented further by the Airborne Coordinator who was frequently asked to keep a sharp lookout in certain areas for targets believed, but not known to be present. The Airborne Coordinator also was of great assistance in bringing pilots on to the objective, by pointing out the target with reference to the point of impact of the first bomb dropped.

Another effective method of locating hidden objectives was for the bombing or strafing flight to make a low altitude flight across the designated area before climbing to attack altitude. This method is only for use where anti-aircraft fire has been silenced.

No target marker panels or colored smoke were used to designate targets, but these methods should be further developed for future use.

It is believed that Support Air Operations contributed to the success of (the MARSHALLS OPERATION) but not entirely in the manner in which it was originally designed to function. Its use during the amphibious phase was correct, but during the assault phase it is not considered that the desires of the Commander Landing Force were sufficiently expressed. Consequently, many attacks were made with the hope, rather than assurance, that they would be of benefit to the troops. Subsequent reports indicated these attacks were beneficial, but the fact that few requests for air bombardment were made by the

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Landing Force brings up the possibility that the Battalion Commanders may not have seen sufficiently familiar with, or confident in the use of this relatively new weapon. On the other hand, it may be that the Battalion Commanders are not in a position to request air attacks through their Air Liaison Officers, because of the necessity of devoting their full attention to the direction of their troops. This problem has previously been recognized and may be solved by extending the planning of air attacks beyond the presently used limit, i.e., the landing of troops on the objective. For example, there appears to be no reason why attacks such as the H HOUR or W HOUR attacks may not be planned in advance to cover the movement of troops from one land area to another which is known to be a strong point. Such an attack would be made on signal in accordance with plans made and agreed upon previously. The (MARSHALLS) operation has conclusively proven that air support can be given effectively and precisely; its fullest exploitation, however, is yet to be realized.

From: Office of the Assistant Chief of Air Staff Intelligence
(Marshall's Operation).

The 7th Air Force Operations from D-7 through D day had as specific objectives: (1) from D-7 to D-3, to deny Mille and Jaluit as air bases to the enemy and to destroy aircraft and air facilities at Maloslap, Wotje, Roi and Kwajalein - if the field there was operational. (2) From D-3 to D-day, to assist other forces in keeping Wotje and Maloslap inoperative. (3) To attack enemy shipping as a target of first priority at all times during the period. From 7 December, 1943 to 31 January 1944, which was D-day for the Kwajalein landing, there were 1,876 bomber sorties, one third by heavies, during which 1,600 tons of bombs were dropped, two thirds by heavies.

ROI - NAMUR

From: Commander Northern Attack Force - ROI and NAMUR
(Commander Group Three, Fifth Amphibious Force).

Commander Support Aircraft was embarked on the Headquarters Ship USS APPALACHIAN under the command of Commander Attack Force.

Air Operations were carried on from the C.I.C. room adjoining Flag Plot during the cruising period and moved to the Joint Operations room at General Quarters D Day morning.

Either the Force Air Officer or the Commander Support Aircraft remained on the bridge with Commander Attack Force throughout the operation which resulted in close coordination of the air with all other operations.

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A Carrier Group for Northern Attack Force.
(SANGAMON, SUWANEE, and CHENANGO).

CarDiv 22 joined the force during the latter part of the training period and participated in maneuvers. Enroute to the objective this division furnished anti-submarine patrol and combat air patrol during the last days of approach to the objective.

Beginning D Day CarDiv ¹²22 furnished the anti-submarine patrol and CarDiv 12 (ESSEX, INTREPID and CABOT) combat air patrol over the target area.

Throughout D Day and D plus ONE Day flights for call strikes were furnished on schedule every hour on the hour. CarDiv 12 furnished approximately two-thirds of these call flights.

Scheduled strikes coordinated with the assault boats approaching beaches, were furnished by CarDiv 12, both on D and D plus ONE days.

The pilots of both groups seemed to have a thorough appreciation of the problems of the aircraft support mission. Their radio discipline was worthy of note.

Anti-Submarine Patrol - Six anti-submarine sectors centered on target, covering a fifteen mile radius to seaward, were patrolled throughout daylight hours by six VBs or VTPs until the objective was secured. Thereafter the number of anti-submarine patrol aircraft and sector sizes were varied to conform to aircraft availability. On D plus ONE Day at 1925Y a submarine contact was reported by radio from "Flight 253" in a position latitude 09°-10'(N) longitude 168°-35'(E). The following morning at daylight a prowling Hunter Killer group was established during daylight consisting of three Avengers whose function was to cover an area beginning at the limit of the above mentioned anti-submarine sectors and extending ten miles to seaward.

No positive submarine contacts were made by the anti-submarine patrol of Hunter Killer or the off shore destroyer screen although a probable contact was reported by the destroyer screen subsequent to the initial report cited above and was investigated continuously for a two-day period with negative results. Thereafter the prowling Hunter Killers were discontinued and the Hunter Killers were placed in Condition of Readiness 12.

Episodes of Interest - On D Day when the attack on ENNUMENNET and ENNUBIRR was delayed, the VF, VB and VTB for the planned strike were already on station. The Commander Support Aircraft could have held the planes on station for just long enough to cover the new time of landing but at the serious expense of disrupting the landing schedule of the Carrier Group and thereby making it impossible to maintain the schedule throughout the day. The added consideration that the

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attack might be further delayed decided the Commander Support Aircraft in favor of having the planes dispose of their bomb loads on targets of opportunity. It was planned to use the next flight of VB and VTB call aircraft in support of the attack on ENNUMENNET and ENNUBIER during the period while the boats were 3000 to 800 yards from the beach. Apparently no VF would be available for strafing. Prior to the time of the attack a combat air patrol of twelve planes was relieved, but being short of fuel was returned to parent ship. Shortly thereafter the squadron leader of INTREPID VF in charge of newly arrived combat air patrol volunteered his services for making the strafe asserting he and all his flight had been briefed and knew what to do. The air search screen was clear. They made the attack expending one-half ammunition as directed and returned on combat air patrol station in ten minutes from the time they started the initial dive.

Due to the sound decision in relieving planes in ample time to meet landing schedules in the above instance and throughout the operation, the carriers were able to maintain the schedules set up and planes were always on station when due. It is apparent that the Commander Support Aircraft must never, except under the most extraordinary circumstances, yield to the temptation to hold planes beyond their scheduled time of departure. The resulting disorganization of the carrier's schedule might easily have disastrous effect on the operation.

The efficient use of the relieved anti-submarine patrol is worthy of comment. Throughout D Day, relieved anti-submarine patrol planes, for the most part TBFs with four 325 lb. depth charges with both hydrostatic and instantaneous fuses, were directed to drop them on the Southeastern part of Namur Island which was covered with trees and underbrush. These charges were very effective in stripping off this cover.

After our troops had landed on ENNUGARRET ISLAND and our intention to land on the Southwestern beaches of Namur became apparent, a movement of enemy troops to this area was reported. Even some effort on their part to wade to ENNUGARRET was reported. At the particular time there were no planes on station. However, at that instant a flight of six TBFs reported from anti-submarine patrol. They were directed to drop in the area of the reported troop concentration and the depth charges were falling within three minutes of the time Commander Support Aircraft first received the report. No further report of troop concentration came from that area and when our troops landed, the underbrush and tree foliage were completely cleared away. Actually the report of troop concentration was never confirmed but the value of depth charges in trees and brush was conclusively proven.

D plus ONE Day Strikes - In order to prevent high landing team losses, on D plus ONE Day it was determined to bomb the South beaches

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on Roi and Namur simultaneously while ship gunfire, rocket fire from landing craft, and artillery fire from MELLU, ENNUEBING, ENNUMENNET, and ENNUBIER was in progress. All pilots had been thoroughly briefed in the plans and maximum ordinates of the trajectories of all the bombardment fire coordinates and had been shown, during briefing, and given complete charge of synchronizing this bombing during the period the leading waves of landing craft were between 3750 and 750 yards from the south beaches of the target. The Air Coordinator was directed to conduct this bombing in a methodical and accurate manner, but warned not to go below 2000 ft. Priority of targets was assigned on these beaches. (On D Day a 2000 lb. bomb strike, six on the Southwest point of Roi, six on the Southeast point of Namur had served to satisfactorily pulverize pillboxes on those dangerous crossfire positions.) A heavy rain squall closed the target from the Air Coordinator and support aircraft at the time bombing should have started. However from the Flag Bridge of the Headquarters Ship it was apparent that the support aircraft could make their strike from Point William to westward of the target as the weather was breaking in that area, whereas Point Easy, to the east, where all the support aircraft and Air Coordinator were located was completely closed in. Accordingly the Commander Support Aircraft in Joint Operations was informed of this situation and in three minutes time the striking group was on its way to Point William. A thorough, accurate, and continuous bombing attack was delivered during the critical approach phase. All bombs were expended. It was timed by the Air Coordinator in an outstanding manner. Bombing ceased when leading wave of boats was approximately 750 yards from the beach.

When the leading wave of landing craft was 500 yards from the beach a prearranged display of six Mark 6 parachute flares was released from the bomb bay of the Air Coordinator's TBF. This prearranged signal, known to all fire support ships and shore based artillery, initiated a shift of gunfire inland. The first four waves of assault troops landed and advanced standing up. The enemy's shore defenses were stunned and disorganized.

Simultaneous employment of naval gunfire, Marine artillery, rocket barrages, and aerial bombing demonstrated its effectiveness. That it will be even more effective in the future, we must provide for use of aircraft rockets and many 2000 lb. bombs during the critical phase.

From the standpoint of Air Support Control, the operation was carried out in an effective and orderly manner. This was due to the care used in training, briefing, coordination of effort with other departments brought about by the drills mentioned in Appendix 2, and last but not least, to the excellent leadership of the Commander Support Aircraft, who had all support aircraft eagerly working toward making the maximum contribution to the success of the whole operation.

SECRET

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It cannot be too strongly emphasized that the effects of bombing and gunfire are complementary. Each can contribute destruction of certain elements of defense, personnel, and structures. Properly timed and coordinated the power of the combination, used to prepare the objective for assault, later in direct close support of the landing and still later in support of the advance of the troops, is multiplied several fold. The air support must be considered as an indispensable element of attack in amphibious operations and it constitutes a powerful weapon in the hands of the Attack Force Commander to support the forced landing on hostile beaches.

Summary of Air Bombardment (Northern Attack Force).

	No. of Sorties	Ammunition
D Day	223	149 tons
D plus 1 Day	<u>122</u>	<u>66 tons</u>
	345	215 tons

AIR SUPPORT - ENIWETOK

Occupation of Eniwetok Atoll - February 1944.

**From: Commander Eniwetok Expeditionary Group.
(Commander Group Two, Fifth Amphibious Force).**

Air support during the Eniwetok Operations was provided by Task Group 58.4 with SARATOGA, PRINCETON, and LANGLEY, and Carrier Division 22 with SANGAMON, SUWANNEE, and CHENANGO. Air support operations were controlled from the CAMBERIA.

During February, Task Group 58.4 conducted preliminary air strikes on principal islands of Eniwetok Atoll. These strikes destroyed all buildings of consequence, rendered the airfield at ENGEBI temporarily useless, and demolished at least one of the two coastal defense guns on the northeast corner of that island. The airfield was pitted with bomb craters and at least fourteen enemy aircraft were destroyed on the field as a result of these attacks. In addition excellent aerial photographs were taken and delivered to the CAMBERIA by message drop.

Task Group 58.4 operated in the northern semicircle from Eniwetok Atoll, between radii fifty and one hundred miles, from DOG Day until departure on DOG plus ELEVEN Day. During this period, this group made scheduled air strikes on ENGEBI, ENIWETOK, and PARRY Islands, provided own air patrols, maintained a combat patrol over the Atoll, and conducted morning and afternoon two hundred and fifty mile searches, covering an eighty three degree sector adjacent to and north of the land based air search.

Carrier Division 22 operated in the eastern semicircle from ENIWETOK Atoll inside a fifty mile radius, from DOG Day until departure on DOG plus SEVEN Day. This group provided own air patrols, provided air striking groups as directed by Commander Task Group 58.4, and maintained anti-submarine patrols in designated sectors in vicinity of the Atoll.

MANILA BAY relieved Carrier Division 22 on DOG plus EIGHT Day and provided air patrols until departure on DOG plus ELEVEN Day, at which time patrols were assumed by planes from ENGEBI field.

Photographic reconnaissance had revealed the existence of many open type targets and a few pillboxes or covered emplacements on the islands to be attacked. In order to obtain maximum bombing effect against these open type targets, it was decided to arm VTBs on bombing missions with 12-100# G.P. bombs or fragmentation clusters. This loading proved to be very effective. Pilots methodically covered target areas by employing the intervalometer.

Methodical area bombing of the landing beach and vicinity by

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flights of VTBs armed with 100# bombs or fragmentation bombs immediately prior to the landing of the assault troops is recommended as a method of direct support of probably greater value than close gunfire support or VF strafing. A proposed procedure for conducting the foregoing is as follows:

(a) Provide a predetermined number of VTBs in two flights, armed with 100# bombs or fragmentation clusters, in vicinity of target prior to the hour of landing of assault troops.

(b) At three minutes before landing, when first wave is approximately 500 yards off shore, air coordinator drops a cluster of parachute flares. Naval and artillery gunfire ceases.

(c) At two minutes, first flight of VTBs conduct attack. Planes fly in line abreast parallel to landing beach at designated distance between planes, flight leader flying along landing beach, other planes taking distance inboard. Planes drop bombs at specified intervals, using the intervalometer, and covering the beach area and an equal distance on either side. The depth of coverage inboard will of course depend on the number of planes available and the penetration inboard desired.

(d) At one minute before wave lands, repeat attack with second flight of VTBs, employing procedure similar to (c) above.

The foregoing method of close direct support should prove more effective than naval gunfire during this phase of the assault because of the more precise coordination possible and the probable greater value of the anti-personnel bomb in keeping the enemy under cover.

Too many planes were aloft in the vicinity of the targets. Normally airborne were the following: An air coordinator, two artillery spotters, an air liaison officer, and, at times, ships' spotters. All planes endeavored to remain as close to the target and at as low altitude as possible in order to more accurately observe. Although all planes were cautioned to remain clear of artillery fire from adjacent islands, one plane was apparently demolished by artillery fire and all personnel in crew killed.

A partial solution toward decreasing the number of planes in the vicinity of the target follows:

- (1) Require planes not definitely assigned to observation or spotting to remain clear of the target area. This applies particularly to curious A/S patrol pilots.

The air observers were placed on the support air request frequency:

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- (1) In order to permit other stations on this circuit to maintain a continuous "bird's eye" picture of the situation and
- (2) Because a separate circuit was not available. This arrangement was not entirely satisfactory because the air observer necessarily utilized the circuit so much of the time that it was not available to other stations on the circuit.

Front line panels were not large enough to be readily seen by air observers and attack groups. On occasions the troops advanced and did not change their front line panels accordingly. This was apparent particularly on ENIWETOK Island where in one instance the air observer prevented naval gunfire, requested by shore liaison party, from firing within areas occupied by own tanks. This is an important point and should not be overlooked in future operations.

All air observers should be embarked in the same carrier and should be placed on a watch and watch schedule during daylight hours. The ~~SND~~ type plane was found to be the most suitable for the purpose with the air liaison officer embarked as passenger. The air observer must be familiar with the plane's radio installation.

Not enough information concerning the situation was passed on to air observers and to the supporting carriers. This applied particularly to such information as was known concerning parts of islands held by own troops, positions of front lines, and any other pertinent information.

Operation Of Seaplane Base

A seaplane anchorage was established at ENIWETOK Atoll during the assault phase of the operation. The anchorage was established in order to relieve the parent ships from the trouble of basing their aircraft aboard, reduce fire hazard and still provide all the aircraft services required.

The organization functioned as follows:

(a) Establishment: The seaplane anchorage was established in the lagoon at a sheltered point on the east shore about six miles south of ENGEBI Island. YMS 383, with the Senior Aviator of the PORTLAND embarked as "Commander Seaplanes", served as Seaplane Headquarters Ship. Flight crews were berthed and messed on board this ship without difficulty despite its diminutive size. Three boats (2 LCS(S) and 1 LCP) were provided for anchorage security patrols and for transportation of flight crews. Eighteen seaplane moorings were laid out -----

----- in about 10 fathoms of water in the anchorage area. These moorings consisted of 300' wire cables, various types of buoys and 100# or 200# anchors.

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(b) Fueling and repairs: Planes were fueled and minor repairs were effected by the PORTLAND and INDIANAPOLIS, stationed in the southern lagoon area, about 15 miles from the seaplane anchorage. Sea conditions in the southern lagoon area were generally unsatisfactory for seaplane operations due to the rough water and swells. The only lee in this area was in the shelter of PARRY Island which location was unavailable for fueling since the island was under attack. Normally planes landed and were hoisted aboard fueling ships satisfactorily but experienced difficulty in taking off. Both fueling ships had one handling truck equipped for handling OS2U's. On DOG Plus ONE Day the INDIANAPOLIS equipped one of her catapult cars so that she could catapult OS2U's.

(c) Operations: After the initial launching from parent ships on DOG Day planes were based at and operated from the seaplane anchorage. Seaplane services were provided as requested by parent ships and by the Attack Group Commander. During the six day period that the seaplane anchorage was in operation, the following services were provided:

(1) Two sectors of A/S patrol were covered continuously during daylight from DOG plus ONE through DOG plus FIVE Day. Two additional sectors were covered on DOG plus THREE and DOG plus FOUR Day. Searches for a missing plane were conducted on DOG plus FOUR and DOG plus FIVE Day.

(2) Spotting planes were furnished during daylight to parent ships on all firing missions and the destroyers as requested.

(3) Air liaison plane, on call, usually made two flights daily.

Comments and Recommendations: A seaplane anchorage for basing VOS/VSO aircraft during an operational assault phase is recommended in order to relieve parent ships from caring for planes while carrying out gunfire missions. Such a base can be maintained for a limited period only, because of rapid deterioration of planes and need for upkeep. The following recommendations are submitted for consideration in planning seaplane establishments in future operations:

(a) Provide a suitable seaplane headquarters ship, preferably a seaplane tender. This ship should have sufficient space for properly berthing and messing flight crews and relief flight crews as necessary. This ship should have adequate radio facilities for guarding at least two medium high frequency aircraft circuits plus VHF (or TBS) communications with ships present.

(b) Provide facilities for fueling seaplanes at the

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seaplane anchorage. This will eliminate interference with firing schedules of parent ships or other combatant ships designated to fuel planes and will permit planes to fuel in sheltered water. Also planes will be able to fuel after evening patrol and be ready for flight at dawn the following morning. If a seaplane tender is not available, it is believed that an LSD, an LST, or a similar type vessel, could be satisfactorily utilized for rearming and refueling planes by using portable pumps and gasoline in drums. However, provision must be made for hoisting in planes either on fueling ship or on parent ship occasionally for minor repairs and for patching holes in floats. This latter item is important since many holes are received from A/A fire in the main floats of observing planes during observation flights. In this connection, a SOC, forced down during the (GILBERTS) operation was satisfactorily hoisted aboard the LSD-1, where it remained all night suspended from the crane and securely lashed to the sides of the deck.

(c) Provide sufficient and adequate boats for security patrols and for transportation of crews to and from planes. The boats provided in this operation were adequate. However, padded rearming boats are recommended for the purpose.

From: Commander Support Aircraft Eniwetok.

CSA, under (COMMANDER ENIWETOK EXPEDITIONARY GROUP) commanded all support aircraft on station at objective, including: Combat Air Patrols; Anti-submarine Patrols; Troop Support Aircraft; and Liaison Planes.

Prior to reporting on station and after departure for base, aircraft were under command of their respective carrier group or unit commanders.

As aids in employment of Support Aircraft, CSA had: Air Liaison Parties with Regiments and Battalions of Landing Force; Air Support Communication Team embarked in CAMERIA; and standby team in LEONARD WOOD (APA-12); SC-3 Radar and Radio equipment and personnel landed on ENGEI Island which could be coordinated with Air Liaison equipment and personnel for use of CSA ashore in event of emergency; Airborne Air-Coordinator; and Airborne Air-Liaison Observer.

Throughout the assault phase the two carrier groups maintained their own ASP. ASP sectors were established for ENIWETOK Atoll. An airborne Air Coordinator was on station over ENIWETOK lagoon during the assault phase. The Air Coordinator was a Group Commander or one of the Squadron Commanders of T. G. 58.4.

The Air Coordinator directed the strike and troop support missions on order from CSA. This officer also provided the CSA with valuable observations on the tactical situation and also on weather conditions

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in the area. Communications were very satisfactory with all Air Coordinators except the first one on D-Day.

When the first wave of landing craft was 800 yards from the beach in the landings on ENGEBI, ENIWETOK, and PARRY Islands, the Air Coordinator was to drop 12 parachute flares from 2000 feet altitude. This served as a signal for Naval gunfire, artillery and air support. It was most satisfactory in the first two landings but in the PARRY landings the flares were apparently dropped at too low an altitude.

There were two direct strike missions against ENGEBI Island called for in the air plan, one on D-Day and one preceding the landing on D + 1 Day. Both were executed on schedule. 104 sorties were flown against ENGEBI Island, making 90 strafing runs and dropping 40 tons of bombs. There were no calls for troop support missions on ENGEBI. 1 Regimental and 3 Battalion Air Liaison Parties established satisfactory communications and maintained excellent radio discipline.

1 SAG bombed a barge on the beach of RUUNITTO Island on request from (COMMANDER ENIWETOK EXPEDITIONARY FORCE) on D - Day. 6 sorties were flown against this objective dropping 2 tons of bombs.

On D + 2 Day the strike (on ENIWETOK) was coordinated by the Air Coordinator. Naval gunfire was lifted for strafing attacks 50 minutes before the landing for a period of 15 minutes. When gunfire was resumed dive bombers launched an attack, which was continued until the first wave of boats approached to within 800 yards of the beach line. During the latter part of the approach 2000 lb. bombs were dropped, the bombing being conducted simultaneously with Naval gunfire. The Air Coordinator released 12 Mark VI parachute flares when the leading wave of boats was 800 yards from the beach. Before troops landed on ENIWETOK Island 106 air support sorties were flown, making 32 strafing runs and dropping 52.4 tons of bombs. It appeared that strafing runs exploded some enemy land mines.

One Regimental and 3 Battalion Air Liaison Parties established communications on ENIWETOK Island. They made 28 requests for missions. 24 of these requests resulted in troop support missions. 159 sorties were made in fulfillment of these missions making 206 strafing runs and dropping 17.5 tons of bombs. 18 of the missions were in support of the Third Battalion and 6 in support of the First Battalion of 106th Infantry Regiment.

The missions not granted were refused by CSA for the following reasons:

- (a) Friendly tanks were at times observed in requested target areas by Air Coordinator or Air Observer;
- (b) Air Liaison Officer was unable to give definite information as to front line situation;

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- (c) Failure to lift artillery and Naval gunfire before planes had to return to base; or
- (d) Insufficient margin of safety allowed.

Front lines were designated:

- (a) By reference to target areas on gunnery and air target maps published by Fifth Amphibious Force and used by Land, Air, and Naval Forces;
- (b) By reference to natural landmarks;
- (c) By display of fluorescent yellow pannels on beach and ground, and on tops of tanks. In one instance, the panels were left on beach after the advance of troops causing a great deal of confusion.

Before the landing on PARRY Island on D + 5 Day, 9 SAG, 2 X-ASP, 2 X-CAP, and 4 strike groups coordinated by Air Coordinator strafed and bombed the island. On D + 5 Day 2 strike groups were coordinated by Air Coordinator in strafing and bombing attack just prior to the landing similar to strike on ENIWETOK Island, with the exception that strafing was omitted due to interference from artillery fire, bombing, however, was conducted simultaneously with Naval gunfire and artillery. The maximum ordinate of artillery was 4000 feet. A total of 219 sorties were flown, making 210 strafing runs and dropping 98.8 tons of bombs. 1 Regimental and 3 Battalion Air Liaison Officers established communications and one mission was requested. The mission was refused due to interference from artillery fire.

The Air Liaison observers made many reports on the ground situation which were of value to CSA. The Air Liaison Observers employed the same net used by CSA to communicate with the Air Liaison Officers and carriers.

Marine and Army Officers trained in artillery spotting were flown over the target area ----- on request from CSA. CSA had no direct means of communication with the spotting planes, these planes being controlled directly by the artillery batteries on shore. One spotting plane was shot down by fire from undetermined origin with pilot and spotter both lost. This was on D + 5 Day off southern tip of PARRY.

Two smoke planes were over target area on D - Day. They were not employed and (THE CARRIER GROUP) was notified that no further smoke planes would be required unless requested by CSA.

Conclusion

It is considered that the air support of ENIWETOK Expeditionary Group was on the whole satisfactory. The close support of ground

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troops by aircraft at request of ground commanders is believed to have been very effective. It is further considered that the maximum employment of aircraft in support of amphibious operations has not as yet been fully realized.

AIR SUPPORT - ROI-NAMUR

From: Commander Carrier Air Group Nine - ROI & NAMUR.

The entire air plan on the day of landing is constructed around the time of landing, the crucial point of the entire operation. Flights are arranged in order that H hour occurs about midway of the period of the flight to allow for maximum leeway on either side. However, H hour both at Tarawa and Roi was changed so that the flight was required to remain even beyond that allowed extra time and was very nearly forced to return. If such was the case and had incoming flights been detained for even a short time by the unfavorable weather, no air support would have been available. This is exactly what happened at Tarawa regarding the fighters from the large carriers and when the landings were actually made no fighters were available to strafe the beaches ahead of the landing boats. The restrictions in carrier operations should be thoroughly appreciated by those directing these operations if the proper support is to be obtained.

It is also believed that an alternate plan should have been put into effect once the - - - - - threat of enemy air opposition was dispelled. As long as enemy air opposition is imminent the practice of sending groups of different carriers into the target together is thoroughly concurred in, but once enemy air opposition is destroyed a stagger of groups should be made to prevent staging in planes, to prevent ground personnel extinguishing fires, repairing communications, etc. Only one plane, a dive bomber, was seen in the air after 0800 of D-2 day yet there was a period of 3.5 hours (0930-1300) on this day in which only the CAP was over the target and on D-1 day a period of 2.5 hours (0900-1130) when no strikes were over the target.

Strikes during this operation were observed to be very effective and much greater damage resulted than on any of our previous operations. It is believed that this was the result of each bomber picking an actual target and not "area bombing". On support missions the CSA instructed the Air Coordinator to destroy specific targets within certain areas. This was a vast improvement over the former method of merely directing bombers to bomb certain areas as was done during (GILBERTS) Operations. At this point it might be said that photographs taken after each strike are invaluable for target designation and the excellent results of our bombing and strafing was due in large measure to the volume and calibre of aerial photographs and the efficiency of our ship photographic unit.

With regards to target designation from photographs it is believed that much higher efficiency will result if the target be divided and one carrier group attack the same area without an overlap into another group's area or vice versa.

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If the latter occurs, targets which have been assigned one group from their latest photos may possibly have been destroyed by another preceding carrier's attack group and a general milling around for targets of opportunity result, or again the assigned area may be bombed as in the case of dive bombers whose altitude will prevent the observation that the target has been destroyed by another group and a wasted bomb result.

There is a distinct need for course rules in the vicinity of targets especially so when the target is small such as was the case both during (GILBERTS) and (MARSHALLS) operations. Cruiser and battleship planes are the greatest hazard as they are not on the carrier air groups frequencies and hence have no idea what is taking place. This fact however apparently does not cause them alarm and they continue their one man or two man war, strafing and bombing everything and anything, seriously interfering with the attacks of carrier groups.

It is felt that initial points being only 5 miles distant from the target were too close, as groups circling these points interfered with others deploying to attack. It is recommended that initial points in the future be 10 miles distant.

From: Commanding Officer, USS SARATOGA (CV).

The Air Coordinator on the small front covered by these operations can observe and fully inform the Commander Support Aircraft as to the position of the invasion boats and can also carry out his additional mission of directing the bombing and strafing attack.

The Air Coordinator flew an F6F-3 and was accompanied by a TBM-10 carrying the flares to drop on signal (when boats were 500 yards from the shore) which stopped all firing by ships and artillery. Due to the smoke from the bombardment and the predominating light wind it was impossible for the Air Coordinator to be in a position to see the boats, and give the signal so all concerned could see it. The signal to the TBM was given over VHF and also by lowering the landing gear of the F6F. This worked very well. Air Coordinator had to release the flares early in one case because gunfire was coming too close to our boats. It is therefore suggested that the additional plane always accompany the Air Coordinator.

From: Commander, Air Group TWENTY THREE - ENIWETOK.

Dropping of Unexpended Bombs. On numerous occasions during the

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subject and previous operations bombs which failed to release over the target were dropped in the water enroute to base. On any base where no enemy aircraft opposition is encountered, planes which have bombs left should climb to altitude, and release high so that anti-aircraft fire will not have a chance to concentrate on them. A bomb drop almost anywhere on an island base will hit something of value to the enemy, but bombs do no damage when dropped in the water.

VF Planes Carrying Bombs. Whenever there is no enemy aircraft opposition, and when area bombing is desired, VF can carry bombs to augment the VB - VT attack, and place those bombs in the target area. Skip bombing by VF on pin point targets is much more accurate than glide bombing.

Strafing of Trenches and Anti-Aircraft Positions. Strafing of trenches and anti-aircraft positions must be made from a steep dive of at least 60° in order to pin point the strafing into the trenches from a vertical position. Flat strafing runs on zig-zag trenches only take the sand away from the edges. Fire should be commenced at 4000 feet with Revised Boresight Pattern #2, where dispersion is 67 feet, firing six guns, and fire should be continued to 1000 feet where dispersion is 5.1 feet. Firing must be done in bursts to prevent overheating of guns.

Strafing of Enemy Positions in Coordination With Ground Troops. Several strafing runs were made on enemy troops and positions in conjunction with the attack by own troops and tanks on a very small rectangular area of approximately 280 yards by 125 yards. Grid charts of the island were first consulted, and the area assigned by the Support Aircraft Commander was identified. Next, planes descended to 200 feet over the area and marked the exact location of own tanks by visual means. Finally, planes climbed to 2000 feet over the target, and pushed over in a steep dive. Fire was commenced at 1500 feet, and the dive "pulled through" so that the firing was stopped at the extreme edge of the area at about 50 feet of altitude. Support Aircraft Commander stated that attacks were successful. It is believed that strafing and skip bombing in conjunction with attack by own ground troops has not been used to its fullest advantage. The following suggestions are offered for consideration:

- (1) Pilots must have grid charts of area and study every detail of the contours of terrain.
- (2) Pilots must fly at low altitude over area and identify all enemy positions on the charts by sight contact.
- (3) Pilots must know the dispersion of their bore-sight pattern from 4000 feet on down.

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(4) If area strafing is called for, the problem is comparatively simple. Pilots identify areas and check our front line and tank positions. Tanks should advise whether steep strafing or flat strafing should be done. Thereupon each plane makes his dive singly and with much deliberation, taking into consideration the altitude to commence firing and the dispersion at that altitude.

(5) If pin point strafing of gun positions is called for, pilots should identify the position from low altitude. Tanks should give pilots information concerning the direction of the openings in the gun emplacements, if it is enclosed. Thereupon, pilots should make individual, flat strafing runs, firing toward the opening. If gun position is not enclosed, dives should be steep, and firing commenced at 4000 feet.

Duties of Air Coordinator.

(1) Know every detail of area to be taken, by study of charts and flights over the target area.

(2) Know the capabilities of the pilots in the air support groups.

(3) Spot the bomb drops for the air support groups. This induces a spirit of competition to pilots, and results showed that bombing improved considerably.

(4) Coordinate attacks of Support Air Groups when Support Aircraft Commander is busy in some other capacities.

(5) Spot targets for Support Aircraft Commander to give to ships and Support Air Groups.

(6) Make strafing or bombing runs on specific targets when ground troops experience unusual difficulty at any given point, and no support air group is present.

Use of Radio. It is imperative that flight and division leaders have good radio communication with Support Aircraft Commander; otherwise a day's operations with poor radio reception slows up the entire landing operation. When own troops have landed, any plane that cannot hear the targets assigned by Support Aircraft Commander should return to base without dropping bombs or making strafing runs.

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In conclusion, support of landing operations by aircraft is a phase of our amphibious operations which requires more detailed study, training, and planning. It is believed that amphibious operations can be speeded up tremendously by well-coordinated attacks by aircraft, by study of targets, by good radio communications, and by coordination of tank and plane attacks.

Pilot Fatigue. It is interesting to note that during the subject operation, and all previous operations, the older pilots, and those with experience, always had to substitute for the youth and inexperienced who cracked first when the going got tough. This refutes the theory which is advocated by a great many that all one needs in this fighting game is a youngster with spirit and enthusiasm. Combat flying requires the same amount of experience and common sense as a professional ball club. The pilot who is matured and has the will to win always holds up where youth and enthusiasm fail.

THE GENERAL PLAN FOR THE CONTROL OF SUPPORT AIRCRAFT WHICH WAS SUCCESSFULLY USED IN THE GILBERTS OPERATION WAS EVEN MORE EFFECTIVE DURING THE MARSHALLS CAMPAIGN. SALIENT FEATURES WERE:

- A - THE EMPLOYMENT OF THE AIR CO-ORDINATOR IN THE AIR OVER THE OBJECTIVE DURING DAYLIGHT.
- B - THE COORDINATED TRAINING AND THOROUGH BRIEFING OF PILOTS FOR THE MISSIONS UNDERTAKEN.
- C - INSTRUCTIONS TO DESTROY SPECIFIC TARGETS RATHER THAN TO CONDUCT "AREA BOMBING".

CHAPTER III

NAVAL GUNFIRE

Marshall Islands Operation - January, 1944.

From: Commander Joint Expeditionary Force.
(Commander Fifth Amphibious Force).

Plans

In the formulation of plans there existed the following advantages over (GILBERTS OPERATION).

- (a) More time than was available for (GILBERTS OPERATION).
- (b) Lessons learned from (GILBERTS OPERATION).
- (c) More appreciation by all hands of the problem involved gained by experience.
- (d) More equipment and material available.

The following disadvantages existed:

- (a) Over-emphasis of certain problems which experience at TARAWA had exaggerated in the minds of those concerned. This caused general doubt regarding the effectiveness of our weapons and tactics, and much time and effort was expended on dubious and fruitless schemes.

The following essential features were incorporated in the bombardment plans:

- (a) Prolonged Bombardment. Air bombardment of all MARSHALL Island objectives was commenced upon activation of airfields obtained by means of the (GILBERTS) Operation. This bombardment was accelerated to a peak, in frequency and in bomb loads dropped, on about Dog minus Ten day and was maintained at a high level from that time until end of Dog Day. Principal attention was given to MILLE, JALUIT, WOTJE, and MALOELAP during the early phases in order to neutralize these bases and deny their use to enemy aircraft, as well as to deceive the enemy as to our ultimate objective. Surface bombardment of main and secondary objectives was delivered by new battleships and destroyers on D minus Two and D minus One. From then on, main and secondary objectives were kept under continual air and surface bombardment (of varying intensity) by Task Forces 52 and 57 until captured. This procedure was calculated to wear the enemy down and give him little opportunity to repair damage, replenish food, water and ammunition.

- (b) Choice of Range - To knock out beach defenses which stand up, direct hits by accurate, deliberate, pointer fire at close

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range (2000 yards or less) are necessary. A more plunging fire from moderately long range is required to destroy structures and personnel back of the beaches or those on the beach which are relatively low and flat. Both types of fire were incorporated in the plans. Air bombardment was considered secondary in the preparatory fires on beach defenses for the actual landing.

(c) Choice of Projectiles, Bombs, and Fuzes - After much research and consultation with ordnance experts the following policy was adopted:

(1) Armor-Piercing Projectiles - To be used only against exceptionally thick and strong structures, and then only when a reasonable percentage of direct hits is obtainable.

(2) Common - Same as for armor piercing.

(3) High-Capacity and AA Common - For all other purposes. Percentage of point-detonating fuzes to be 75% when covering an area, and 25% for all other purposes. Air bursts to be used only when requested by shore fire control parties or against enemy troops actually observed in the open or in open trenches.

(4) White Phosphorous - To be used for smoke screen before H-Hour or for aid in spotting own salvos. To be used for same purpose, after H-Hour, only when requested by shore fire control parties.

(5) - - - - -

(6) Aircraft Bombs - Majority to be 500# G.P. bombs, fuzeed in a ratio of about (3).01 second fuzes to (1).025 second fuze. Against heavy concrete buildings that offer easily identified targets dive bombers would be used carrying 1000# S.A.P. bombs fuzeed with .025 second delay fuzes. It was considered that the 500# G.P. bomb offered sufficient destructive effect against most targets and when used in the Avengers affords a satisfactory volume of bombs to ensure a reasonable chance of direct hits in heavily fortified areas.

(d) Timing of close support fires - These fires should start at about H minus 30 and continue at the landing beach until the last possible moment. This is when the first wave is about 300-500 yards from the beach for 5" and smaller calibers, and about 1000 yards from the beach for larger calibers. There should be no cessation of the fire even at H-Hour but it should be shifted to the flanks, or lifted to the back areas, for a period of time which varies with the speed of advance of the troops and the contour of the island. It was decided that close-in naval gunfire

and artillery fire support would offer the best cover for the landing waves. Therefore the air strike in direct support of the landing was to be started and completed well before the first wave of boats reached the beach, the travel of boats from the line of departure to the beach being covered by ships gunfire and artillery fire. All conflicting gunfire was to be checked during the air strike (H-35 to H-20, W-50 to W-25).

(e) Time of commencement of scheduled fires - was scheduled at the first crack of dawn, using star-shells as necessary for spotting. This tends to protect the transports and other ships from coastal batteries.

(f) Artillery - was to be a new and extremely important element after D-Day. Provision was made for artillery officers to spot from cruiser spotting planes. Artillery was landed upon and set up on ENUBUJ Island on D-Day and registered on KWAJALEIN Island before sunset. The artillery aided in the preparation for and support of subsequent landings, and preceded the troops advance. Plans were made to eliminate mutual interference between artillery, naval gunfire and bombing.

(g) LCI Gunboats - Twelve of these were available (recently converted so as to enable them to fire 40MM .50 caliber and 4."5 barrage rockets as well as the 20MM originally installed) and were used to support every landing. The tactical plan for these gunboats was to slightly precede the first wave on each side of the boat lane firing rockets at 1100 and 800 yards, and machine guns when within range. To avoid blanking the fire of supporting destroyers, cruisers, and battleships it is necessary for the LCIs to remain close to the boat lanes at all times.

(h) Night Activities - At night it was considered necessary to:

- (1) Furnish intermittent fire all night to harrass the enemy and reduce his activities.
- (2) Furnish illumination for the aid of advancing troops ashore.
- (3) Prevent movement of enemy from island to island across the reefs.

Task (1) can be accomplished by any type vessel which has the ammunition, preferably a battleship. A destroyer is the most suitable type for (2), while LCIs are quite suitable for (3).

(i) Rolling Barrage - just ahead of the troops is best accomplished by the artillery. Naval gunfire was scheduled to supplement this and call fires were continuously supplied in addition.

(j) Areas of responsibility - for each ship were established by assigning adjacent target areas to a ship for a long period of

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time. In (GLIBERTS OPERATION) ships exchanged areas frequently in order to ensure that all areas would be covered to some extent even if one or more firing ships dropped out for any reason. By not exchanging targets better accuracy of fire was achieved and definite areas of responsibility established for counter-battery and target of opportunity fires.

(k) Permissable zones of fire - In (GILBERTS OPERATION) there were several instances after our troops had landed when ships observed excellent targets of opportunity, but were unable to obtain, from the troop commander, permission to fire in time to do so effectively. To overcome this, KWAJALEIN Island was divided into 5 zones, each approximately 800 yards long.

(l) Protection of transports - in unloading areas was provided by stationing destroyers between the transports and the beaches to lay smoke and provide counter-battery fire if needed. Smoke laying aircraft were to be available during Dog and Dog plus One Day.

(m) Greater safety of fire support heavy ships - was provided by assignment of screening destroyers on a one-to-one basis and increasing maneuvering room so that ships could steam at a moderate speed while firing. In the firing schedule "Mean Lines of Fire" were specified in order to reduce ricochet danger and cross fire, and to get the best enfilade effect.

(n) Aerial spotting for shore fire control parties - was provided for using observation aircraft. In (GILBERTS OPERATION) shore fire control parties had usually been unable to find a suitable observation point due to flatness of the areas. The need for aerial observation had therefore been felt.

(o) Shorts in the water - are necessary when shotting perpendicular to the beach at the beach defenses in order to place the MPI of the salvo on the target. An effort was made to indoctrinate personnel in this principle because the general attitude is to avoid "wasting shots" by putting some in the water.

(p) Protection of Beach Reconnaissance and Demolition Parties - was planned by use of intensive close range fire during such activities.

(q) Replacement ammunition - was provided as follows:

- On LSTs - for destroyers and LCIs.
- On LSDs - depth charges.
- On AKAs - for cruiser main batteries.

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Reloading of all vessels, after the assault was completed, was accomplished from ammunition ships and lighters at MAJURO.

- (r) Fire support for Sweepers - inside lagoon was provided for.
- (s) Interchange of Destroyers - between screen and fire support group was planned in order to:
 - (1) Have maximum possible number of vessels in screen at all times; and
 - (2) Replace fire support destroyers getting low on ammunition.
- (t) Grid system - To ensure that all hands used the same coordinates a standard grid system for the MARSHALL Islands was prescribed by JICPOA.
- (u) A combined sequence of events - was issued showing how the air support, artillery and naval gunfire fitted together into one overall program.

(v) Delay of H-Hour - after firing schedule has begun will result in a period of silence unless some provision is made to avoid this. A simple solution was adopted, i.e., to repeat all fires for the otherwise silent period exactly as scheduled, but with a greatly curtailed allowance of ammunition. For instance, if at H minus 60, H-Hour is delayed 30 minutes, the firing scheduled for H minus 90 to H minus 60 is merely repeated with whatever ammunition can be spared.

(w) Shore fire control communications - were improved by assignment of only six good frequencies to each attack force. This necessitated assignment of a frequency as well as a ship to each shore fire control party when required and appeared to many to be undesirable. It worked out very well however. No difficulty was experienced in getting the frequency assignment to those concerned. With only a few assigned frequencies all sets could be accurately and reliably calibrated. Communication was almost invariably established quickly and was uniformly loud and clear without excessive interference.

Of outstanding value was the close range firing of the MISSISSIPPI and PENNSYLVANIA on D-Day and D plus One directed at the landing (Red) beaches. As a result of this excellent preparation all defensive installations on Red Beaches and vicinity were completely demolished. The main landing was accomplished unopposed and the troops advanced three hundred yards or more before enemy fire was encountered.

Very little armor-piercing and common ammunition was used. It was found that the high-capacity had sufficient penetrative

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power for the structures encountered.

Very little white phosphorous ammunition was used, and this was not particularly effective or necessary.

No serious mutual interference between artillery, planes, and naval gunfire was experienced, even when all three were in action in the same general area at the same time.

The artillery performance was excellent. It was setup and adequately registered by sunset of D-Day. From then on it fired continuously and accurately until the last island was captured.

Many 325# Mk 47 depth bombs fused with either the AN-M103 or the AN-Mk 219 fuse were dropped by planes of the anti-submarine patrol when relieved from patrol station. Bombing was conducted on call from the Air Ground Liaison teams or at the direction of Commander Support Aircraft. All ammunition storage on BENNETT Island is believed to have been destroyed in this manner. A few duds were observed but it is unknown whether they were caused by faults arming of fuses or by the limit-case construction of the depth bombs.

The LCI gunboats performed their duties well and were a valuable aid in supporting the landings and guarding the reefs at night. No Japs are believed to have successfully negotiated the passage between any two islands watched by the LCIs.

Star-shell illumination to assist the troops was provided at both Kwajalein and Ebeye Islands by destroyers and cruisers. Searchlight illumination across Kwajalein Island was provided on request one night. This was found not to be helpful to the advancing troops and drew considerable fire from the enemy batteries. This fire was silenced and no damage was received by our ships but the experiment was considered a failure and no more searchlight illumination requested.

No serious fire was received from shore batteries. What little there was promptly silenced. No smoke laying to protect transports was found necessary. No interference to fire support ships was experienced from submarines.

Gunfire spotting by observation planes was excellent but several plane casualties were experienced. One plane flying at an altitude of about 1500 feet passed through the curtain of shore artillery fire, was hit and crashed in flames into the sea. There were no survivors. Another observation plane made a forced landing after the pilot was hit and apparently killed either by anti-aircraft fire or shrapnel fragments. Plane capsized on landing and

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the radioman was recovered. Another went out of control and crashed with no survivors, cause unknown. Engine failure accounted for forced landings of 2 others one of which was salvaged. A total of 4 observation planes were lost in the operation. Shore fire control parties were able to do their spotting without assistance of aircraft due to the complete denuding of the islands' foliage.

The fire support of the beach reconnaissance parties was so effective that they were able to approach to within 300 yards of the beach twice on D-Day in broad daylight without casualty and without opposing fire.

Replacement ammunition program was found adequate and no serious shortage of ammunition was experienced at any time. Sweeping operations were unopposed so it was not necessary to send destroyers into the lagoon to support the sweeps.

Call fires were delivered in outstanding manner. Two battle-ships, two cruisers and sixteen destroyers delivered fires controlled by shore fire control parties expending for such fires a total of 350 rounds 14", 350 rounds 8" and 7000 rounds 5" ammunition. Communications were very reliable. Total weight of ammunition fired at the Southern Kwajalein Islands:

Naval Projectiles	3964 tons
105 mm Artillery (Estimated)	1105 tons
155 mm Artillery (Estimated)	256 tons
Bombs	287 tons (this does not include that prior to D-Day because figures are not available).

From: WDGS Operations Division Information Bulletin.

The bulk of the artillery support was conducted during the first four days. A total of 73,500 rounds of 105mm and 5,200 rounds of 155mm ammunition was fired.

Effect (Southern Islands)

Photographs reveal, much better than words, the utterly devastating effect of the aerial, ship and artillery bombardment of Kwajalein and Ebeye Islands. Destruction on other islands was less severe, in proportion to the tonnage of explosives delivered. On Berlin many concrete structures (resembling pillboxes) were observed and were destroyed by the all-night firing of the IDAHO

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main battery, and by the cruisers. Later inspection revealed that these were mainly concrete water tanks and rectangular blockhouses of recent and excellent construction. No general devastation was evident here but each target had been selectively destroyed in an outstanding manner including the marine railway, machine shops, etc. On BENNETT the ammunition dumps and magazines had been selectively blown up, probably entirely by bombing. Practically nothing remained except large craters caused by the tremendous explosions of the magazines' contents.

The damage is so intensive that it is difficult to determine just which type of explosive missile is responsible for each sample of destruction. In the Red Beach area practically everything is reduced to rubble, so that it is even impossible to visualize what 90% of the original installations consisted of.

The types of projectiles and bombs used appeared to be effective against the structures encountered. Most of the blockhouses and pillboxes were of older type and constructed of inferior concrete. However, there existed a few, of excellent quality and massive construction, which were penetrated by 14" high capacity projectiles. Some air raid shelters which did not suffer direct hits were later blown open by troop demolition crews using dynamite "satchels", and by throwing demolition charges into openings.

The airfield was not much damaged as very little firing had been scheduled at it. The greatest damage was at the western and northern tips of Kwajalein Island and the whole of Ebeye Island. The remainder of Kwajalein Island was so devastated however that no structures nor equipment remained usable except a few anchors at the boat yard near Center Pier. Some large buoys there also appeared salvageable.

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Bombs and Other Aircraft Ammunition Expended

	.50 Cal.	Tons Bombs	Rockets	Remarks
KWAJALEIN	100,000	98	96	40-250# GP inst; 8-2000# .025; 23-1000# GP 01; 21- 500# .025; 63-500# GP inst; 40-350# DE Inst.
BURTON	60,000	87	80	24-325# GP inst; 36-250 #GP Inst; 12-1000# GP .01; 6-500# GP .025; 18- 500# GP Inst.
CARLSON	30,000	12		5-1000# GP .01; 9-500# #GP .025; 27-500# GP Inst;
CARLOS	20,000	9	72	9-500# GP .025; 27-500 # GP inst.
BENNET	66,000	16		24-325# GP inst; 30-250# GP inst.
BEVERLY	20,000			
BUSTER	10,000	4		12-325# GP inst.
BYRON	9,000	2		12-325# GP inst.
BERLIN	56,000			
SHIPPING	55,000	18	80	
TOTALS	426,000	287	328	

Unless otherwise noted all bombs dropped were 500# GP bombs fused with .01 second delay fuses.

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Expenditure of Ammunition, Kwajalein.

Ship	Day	16 HC	14 HC	14 AP	8 HC	8 AP	5/51 HC	5/51 C	5/51 AAC	5/38 C	5 SS	5 WP
MASSACHUSETTS	D-1	298						1852				
WASHINGTON	D-1	104						740				
NEW MEXICO	D		36					13		11		
NEW MEXICO	D+1		382			7				8		
MISSISSIPPI	D	469		30		675		780				
MISSISSIPPI	D+1	276				186						
IDAHO	D	400						600				
IDAHO	D+1	260						67				
IDAHO	D+2	46						113				
PENNSYLVANIA	D	400		5				1568				
PENNSYLVANIA	D+1	424						1493				
MINNEAPOLIS	D				243			607				
MINNEAPOLIS	D+1				162			100				
MINNEAPOLIS	D+2				6			52				
NEW ORLEANS	D				129			559				
NEW ORLEANS	D+1				135			98				
SAN FRANCISCO*	D+1				100							
MURRAY	D to D + 1							170	64	18		
SIGSBEE	D+1							621	264	3	14	
SIGSBEE	D+2							165	112		14	
JOHN RODGERS	D+3							178				
TRATHEN	D+3							4				
KNAPP	D-1							30				
INGERSOLL	D-1							90				
HAILEY	D+2							644				
BAILEY*	D+1							216	149		2	
MEADE*	D+1							570	185	12		
RINGGOLD*	D+1							650	290			
HAGGARD	D+2							532				
SCHROEDER	D+2							851		192	9	
SCHROEDER	D+3							659				
HARRISON*	D+4							324	25	41		
Total number		402	2693	35	795	868		14346	1089	305	39	
Total weight (tons)		382	1717	26	103	21		287	29	6	1	

Grand total 2671 tons

* estimated.

NAVAL GUNFIRE - ROI-NAMUR

From: Commander Northern Attack Force, Roi-Namur.
(Commander Group Three Fifth Amphibious Force).

Training

General - Training for the Fire Support Group assigned to (COMMANDER NORTHERN ATTACK FORCE) (less INDIANAPOLIS) for the assault and occupation of the north end of KWAJALEIN Atoll was completed in the SAN CLEMENTE Island, CALIFORNIA, area. Every effort was made to conduct the rehearsals in a realistic manner. The bombardment plans used for the landings on SAN CLEMENTE were similar in form and content to those finally issued for the assault on KWAJALEIN. The islands of ROI and NAMUR, as well as the adjoining islands south of them (initial objectives) were superimposed upon the SAN CLEMENTE charts. The same code names were used as were later employed in the actual operations. The practice targets were laid out in the same relative positions as were the actual targets later. Since, for instance, most of the enemy installations on ROI Island skirted the air field, the "Roi Island" on SAN CLEMENTE showed its target areas around the edges of the air field. Relative distances between the various islands were scrupulously kept in mind.

Training of Shore Fire Control Parties - The naval gunfire liaison officers (naval officers) and the forward observers (Marine officers) were members of the 1st Joint Assault Signal Company. All forward observers (spotters) were trained artillerymen and had been previously trained in their artillery speciality. The training of the complete shore fire control parties was completed during the period December 10th - January 13th under the direct supervision of the Commander Group Three, Fifth Amphibious Force. All the above assigned officers participated in the exercises and rehearsals conducted at Aliso Canyon and San Clemente. Communication drills were held during the training period and were also engaged in while enroute to Pearl Harbor. All training was conducted in as realistic manner as possible with nets, call signs and code names similar to those later used in the actual operation. In advance of the landings on the enemy held islands in the Kwajalein Atoll, it was believed that few "call" fires, controlled by the shore fire control parties, would be required. This was evident from the small size of the objectives in comparison with the large number of troops to be landed. However, the training for the shore fire control parties was given with the idea that they would be continuously needed and employed after the landing. In a manner of speaking, the shore fire control parties were "insurance" for the success of the operation, as regarded naval gunfire. They were completely ready if and when required.

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Bombardment Plans

The Bombardment Plans were completed on January 8, 1944, after careful study of all intelligence information available and due consideration of the plan of attack of the landing forces. They were specifically coordinated with the Commander of the Northern Landing Force and with the Air Support, Artillery, and other associated plans. Instructions were issued that the plans would be subject to variations required by the late receipt of additional intelligence information. The bombardment plans were formulated and distributed in two complete sets; one for Dog day and one for Dog plus one day, each complete in itself with maps, time schedules, detailed procedures and communications enclosure.

Ammunition Expenditure Control - Ammunition allowances, as prescribed by the Commander Fifth Amphibious Force, were employed. A certain number of rounds of each caliber was required to be on hand on each class of vessel at the end of Dog day and Dog plus one day. The schedule of fires, made out on a time basis, coordinated with the times of landings at various places, were on broad, general lines so that the Fire Support Unit Commanders could use their initiative and judgment in deciding which caliber to use, what rate of fire to prescribe, and what range to employ within limits prescribed by Commander Fifth Amphibious Force. Specific provisions were made for the immediate times of making landings. In general, all ships were to step up the rate of their fires to give positive support to the landings being made at any one time.

Destroyers Close Support - Because of the size of small islands of the atoll, destroyers were principally assigned to maintain neutralization and render direct support for the troops landing on these islands. These destroyers were prepared to cover the boats in landing and to deliver call fires in addition to their neutralization fires. Destroyers were also assigned to positions inside and outside the lagoon to perform similar functions assisted by LCIs for close in support on the main objectives. In addition, destroyers were assigned harassing missions for night fires on the main objectives and the mission of preventing enemy reinforcements of adjacent islands.

LCIs Close Support - LCIs were assigned to protect assault waves making all initial and main landings. These LCIs, more properly called gunboats, had been altered to provide a tremendous amount of fire power. Their general scheme of employment was to precede and protect the assault waves, using 40mm and 20mm guns. When 1000 to 1100 yards from the beach, they were to fire 4 $\frac{1}{2}$ " Beach Barrage Rockets and continue with 40mm and 20mm. Each LCI had been provided with ten (10) Type 8 Rocket Launchers (12 rockets to each and continuously re-fillable) and a generous supply of

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rockets. These LCIs played an important part in the final assault on the main objectives, Roi and Namur Islands.

Call Fires - All assault battalions of the landing force were assigned direct fire support ships. The Force Commander, through the naval gunfire support common channel, was prepared to shift assignments of ships to assault units or augment those previously assigned.

Designation of Time of Attack - Attack times of the landing force were designated as follows: How hour for landing on ENNU-BING and MELLU (initial landings). Able hour for landing on ENNU-MENNET and ENNUBIRR (initial landings). Baker hour for landing on ENNUGARRET (initial landings). William hour for landing on ROI and NAMUR (main landings).

Fire support schedules were drawn up to indicate approximate times, but fires were not to be lifted until troops were 500 and 300 yards from the beach, depending respectively whether fire was delivered perpendicular to the beach or in enfilade on the beaches. Designation of the lifting of fires was to be announced over the naval gunfire common channel (2504 kcs) and/or over the TBS channel. For the main objectives, designation of the location of troops approaching the beach was to be made by parachute flares dropped by airplanes. In this way, support was planned to be supplied without interruption until the troops were almost on the beaches. Then, of course, fires were to be checked or lifted to prevent firing into own troops.

Shore Fire Control Party Assignments - One trained naval gunfire liaison officer was assigned to each regiment. The regimental naval gunfire liaison section consisted of one officer with extensive previous combat experience and five enlisted men. Equipment for the regimental party consisted of one TBX radio and two SCR 536 radios. The Joint Assault Signal Company assigned each battalion one shore fire control party complete. Each battalion party consisted of one naval officer and seven Marine enlisted men for the naval gunfire liaison officer's section, and one Marine officer and seven Marine enlisted men for the forward observer's party. Each battalion naval gunfire liaison officer was equipped with one TBX radio and one SCR 536 radio. All SCR 536 radios were matched within the net of each regiment. Support ships were in direct communication with their assigned party and with the Force Commander via the naval gunfire support common channel. In other words, all fire support ships and all shore fire control parties, as well as regimental naval gunfire liaison officers, were all in instant communication with each other on the naval gunfire support common channel. The details of conducting fires were handled on separate circuits between the individual shore fire

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control party and its assigned fire support ship.

Joint Operations Control - Coordination between the Air Support Commander, the Force Operations Officer, the Force Gunnery Officer, the Force Air Officer and the Landing Force Operations Officer (D-3) was maintained throughout the operation. These officers dealt directly with the Force Commander and the Commanding General and their respective chiefs of staff.

William hour was postponed and fire was maintained throughout the morning on the main objectives with increased rate of fire immediately before the landing of the troops. A supposed counter-attack from Namur Island to Ennugarret Island was quickly frustrated by a combined air strike and gunfire from Fire Support Unit One and PHELPS upon orders of the Task Force Commander through the naval gunfire common channel.

During the final approach to the beaches on Roi and Namur Islands the LCIs furnished effective support with 20mm and 40mm guns, and with the $4\frac{1}{2}$ " beach barrage rockets. The detonation of these rockets, all seemingly on the landing beaches and adjacent enemy trenches, was heard distinctly at a great distance from the impact area. It is believed that many Japanese who were crouching in the trenches just inland from the landing beaches were killed by these rockets.

Recommendations:

That naval gunfire lines of fire be considered so that the known dispersion in range of naval gunfire may be capitalized upon in enfilading enemy targets. Also the excellent deflection performance of naval guns must be considered, and it must be realized that naval gunfire can be placed very close to own front lines when the line of fire is parallel to the front line of the troops.

That LCIs (converted to gunboats) be used in all landings to precede and protect the assault boat waves. The use of rockets is particularly recommended since their psychological effect alone is tremendous. Their destructive effect has been well demonstrated.

That all fire support ships be cautioned to base their close support not on the rigid time schedule (furnished as a guide only) but on the position of the leading assault boat waves. Fire should continue on the landing beaches until leading assault waves are 500 or 300 yards from the beach, depending upon whether the line of fire of supporting ships is respectively perpendicular to the beaches or parallel to them (in enfilade).

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That air observers and close support destroyers report the position of assault waves so that supporting fires can be checked or lifted by the Task Force Commander in order to avoid firing into own boats, but at the same time to provide safe and effective support up to the last possible moment before troops land.

That destroyer gunfire be employed to keep the enemy awake and harassed during all the nights of the assault phase (most of the captured Japanese on Roi and Namur Islands were in a state of near collapse from the steady incessant attention that was paid them, day and night during the entire assault). Starshells should be fired to silhouette enemy movements and to confuse him, but should not be placed where they will interfere with own units, for example, demolition parties destroying beach mines and defenses.

General Information - Approximate combined area Roi and Namur Island - 1,520,000 square yards.

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Number of projectiles fired by (NORTHERN ATTACK FORCE).

Caliber	Number Rounds
5" (Incl. WP & Ill.)	18,559
6"	3,337
14" HC	783
16" HC	862
16" AP	20
Total rounds fired, all calibers	25,004

- Weight of projectiles fired - 4,502,275 lbs.
Weight of projectiles fired (in tons) - 2,251.14 tons.
Ratio of projectiles weight to island area - 3 lbs. per sq.yd.

- Approximation of duds fired -

Caliber	ROI	NAMUR	BEACH & WATER	TOTAL
5"	385	200	145	730
8"	4	---	1	5
6"	10	2	3	15
14" HC	1	3	1	5
16" HC	5	4	2	11
16" AP	1	---	1	2
Totals	406	209	153	768

Average ratio of fire -

(Daytime) D Day (8 hours)	23.4 rounds per minute.
(Daytime) D+1 Day (5 hours)	40.9 rounds per minute.
(Nighttime) D to D+1 Day (6 hours)	4.1 rounds per minute.

In addition to above ammunition expended, LCIs fired the following total ammunition during the operation:

50 Cal.	56,285	40 mm	13,065
20 mm	23,700	4 1/2" Rockets (smoke)	144
	4 1/2" Rockets (TNT)	2,541	

From: Commanding General Fifth Amphibious Corps.

Naval gunfire had been used effectively in operations prior to (the MARSHALLS OPERATION), but never in Pacific operations had it been of such duration and intensity. From D minus 2 days until the operation was completed, supporting ships shelled important objectives and defensive installations on Kwajalein Atoll with direct, deliberate fires from extremely close range. It is recommended that similar or more intensified naval bombardment be used in future operations. The Commanding General 4th Marine Division estimated that 50 to 75 percent of the enemy on (ROI) and (NAMUR) had been killed by air bombardment and naval gunfire. With better control of the ships by shore fire control parties, with the further improvement of fire control methods, and with more discriminating and effective use of naval

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gunfire, it is felt that the same result can be obtained with less expenditure of ammunition. Accurate intelligence maps and information are extremely important in this connection.

Support ships fired effectively at night with aid of searchlights and star-shells. Ships also assisted ground forces in night patrols and defense by furnishing illumination as requested. It is recommended that this technique be given further study by responsible commanders.

In the landing, naval gunfire was continued until the first wave was 300 yards from the beach. It was then lifted to the flanks and inland. Artillery fire continued until the first wave was 200 yards from the beach. This procedure proved safe and highly satisfactory. Such carefully planned fires are essential to troops landing against opposition. It is recommended that when such similar fires can be delivered with safety, that plans be drawn up accordingly.

Capture of Eniwetok Atoll.

From: Commander Eniwetok Expeditionary Group.
(Commander Group Two, Fifth Amphibious Force).

Gunfire support was, in general, executed as planned. With the exception of scheduled fire revision to provide a heavier bombardment into the wooded areas on Engebi, and the additional landing support by PHELPS and HALL not prescribed by plan, DOG and DOG plus ONE Days' firing followed the schedule almost like clockwork. Captured documents, prisoner and native reports made it necessary to modify considerably the plans for assault and gunfire support on Eniwetok and Parry Islands. The unexpected enemy strength on these two islands called for a heavier preparation bombardment, and more intense close support prior to the landing. Because of its large area, the fire on Eniwetok Island was directed principally against the areas where intelligence indicated enemy activity. Captured documents including defense plans, and further prisoner's reports, confirmed the belief that the PARRY Island defenses would be stronger than those of Eniwetok. The fox hole and trench type of defense, described elsewhere, stressed the need for plunging fire, which was utilized to the maximum extent during the preparatory bombardment of Parry Island. An unconfirmed report from the Marine burial detail stated that roughly 60% of the 1027 Japanese buried on Parry Island had been killed by bombardment.

This operation stressed the fact that gunfire plans must be simple and flexible, capable of change as required to meet new and unexpected conditions. In addition, it demonstrated the fact that our gunfire support ships are rapidly gaining sufficient experience to enable them to carry out such changes quickly, efficiently, and without detailed orders.

NAVAL GUNFIRE - ENIWETOK

Summary

Ammunition expenditures:

	<u>Engebi</u>	<u>Eniwetok</u>	<u>Parry</u>	<u>Total RDS.</u>
16 inch	497	---	143	640
14 inch	954	---	751	1705
8 inch	673	1094	896	2663
5 inch	4641	4348	9950	18939

Approximate

Area covered 220 acres 130 acres 200 acres

The above figures do not include white phosphorous, 20mm and 40mm and starshell expenditures.

Spotting: In practically every battleship and cruiser gunfire support mission, air spotters were used. When requested and if availability permitted, air spotters were provided for destroyers. Ships' gunnery officers questioned after the action reported that communications with spotting planes were extremely satisfactory and spotting by ships' aviators excellent. In flat, wooded targets of the type encountered, air spots were found to be very beneficial. Definite targets were difficult to find, even from the air, but air spotters ensured that the ships for whom they were spotting thoroughly covered the areas specified. A diversion was added each time an air spotter observed Japs in the open. Air bursts were requested and ships complied immediately. Air spotters reported that requested air bursts were rapidly delivered and destroyed the enemy in every case witnessed.

Two Army and two Marine artillery spotters were embarked in the SANGAMON prior to departure of the Task Group for Eniwetok Atoll. During daylight when shorebased artillery bombardment was being used, two of these spotters were maintained aloft as spotters for these batteries.

Observation - Until occupation of Engebi, Eniwetok, and Parry Islands was completed, an air observer (air liaison officer) was maintained aloft practically all of the time during daylight hours. The Air Liaison Officer endeavored to keep the Attack Group Commander advised of the current situation as viewed from the air.

Air observers cannot see well camouflaged targets even from low altitudes. Targets in wooded areas are especially difficult to detect until naval gunfire has cleared away the top cover of palm fronds. In this action, the enemy had many rifle and machine gun pits in the sand dunes along the lagoon beach. These pits were built in under a cover of mangrove trees that fringed the beach, and were impossible to see from the air. However, the observer can see open pits and shelters, and gun emplacements not camouflaged. Observers and spotters

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can place themselves in a position to see when smoke from fires is blinding surface forces.

- - - - - at Eniwetok - - - -
the spotters for the Army's 105's were spotting "errors" while the spotters for the Marine's 75's were spotting "corrections". With adequate preliminary training, it is believed that one artillery air spotter could have controlled both batteries provided one spotting procedure, preferably the latter, had been used.

IN THIS CONNECTION THE JOINT CHIEFS OF STAFF HAVE DIRECTED THAT IN SPOTTING NAVAL GUNFIRE THE NAVAL PROCEDURE AS OUTLINED IN CSP 2156(B) IS TO BE USED BY BOTH SERVICES.

The techniques, improvements, and lessons learned in naval gunfire support of landing operations on atoll islands were embodied, where applicable, in the gunfire support plan for the capture of Eniwetok Atoll. The salient features of these are restated as follows:

- (a) The necessity for slow, deliberate destructive fire at very close range against landing beach installations and defenses, was established at Tarawa and proven at Kwajalein.
- (b) The employment of artillery, while requiring an additional day's delay in the main assault, compensates for this delay by providing additional fire support, relieves much of the burden from naval support, and allows naval gunfire ample time to systematically destroy resistance to landing. The value of artillery support was demonstrated in all landing assaults since Tarawa, including the Eniwetok operation.
- (c) The use of LCI(L)s for close range support of the leading assault wave, by rocket barrage and 40mm fire, has now become an almost standard procedure in the boat approach phase, since their first employment in atoll landings at Ruotto-Namur and Kwajalein.
- (d) The ability of reconnaissance boats to approach with safety to within 100 yards of a well defended beach under the cover of close supporting naval gunfire, was first proven at Kwajalein and again demonstrated successfully at Eniwetok in the pre-landing reconnaissance of the beaches of Engebi Island. Information obtained from this reconnaissance gives reassurance to boat wave commanders, locates obstacles and difficulties likely to be

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encountered in the assault landing, and is a recommended phase of pre-landing preparation whenever any doubt exists about beach conditions.

New problems, ideas, and lessons arise from each operation as a result of mistakes made, different conditions existing, and increased experience. The problem of coordination between naval and artillery gunfire and aerial bombing, strafing, and observation continues to remain unsolved in some respects, particularly as concerns safety to planes. Strafing cannot be safely conducted at any time during delivery of naval gunfire or artillery fire. Bombing does not require cessation of naval gunfire but artillery fire should be ceased. Observation planes for spotting and liaison must sacrifice a desirable observation position in order to be safe from the danger of artillery high angle fire. If a close inspection of the ground activity or defenses is desired, gunfire in that area must be checked to permit the plane to get close enough for the scrutiny expected.

For coordination of naval and artillery fire with aerial bombing and strafing the following is recommended:

(a) During preparation bombardment phases of the attack, cease naval and artillery fire, particularly the latter, to allow bombing pilots and opportunity to deliver their attack without anxiety for their safety from own fire. This also allows smoke and dust to blow away for a clear view of the target and gives naval gunfire a rest. During a strafing attack, all naval and artillery fire must be stopped in the areas under aerial attack.

(b) During the close supporting phase of gunfire for the boat approach, commence bombing when the boats leave the line of departure and continue in conjunction with naval gunfire until safety to the boat wave requires discontinuance. If strafing is desired, this must be conducted before the boats leave the line of departure so that naval and artillery gunfire can be checked during its delivery. The decision of whether or not to conduct strafing will be dependent on the type of defenses, and unless the effectiveness of strafing is at least equal to that of gunfire in destroying personnel, strafing should not be delivered during this phase. If artillery is available for close support, a choice between this fire and bombing must be made and will depend on the relative effectiveness of each on the defense system present. Artillery fire and aerial bombing can rarely be safely conducted simultaneously. Naval gunfire and aerial bombing and strafing were coordinated as recommended above during the landing phase on Eniwetok Island with success. On this occasion there was no artillery supporting the landing.

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Prior to the Eniwetok operation naval gunfire's problem had been to destroy heavy defenses, mostly above ground, such as pillboxes, blockhouses, and bomb shelters, visible from ships at close range. With the few exceptions on Engebi Island, this type of target was not presented at Eniwetok, but instead foxholes and underground trench systems, camouflaged by lantanna and tree foliage, honeycombed these islands. Close range direct fire cannot be effectively delivered on underground defenses, such as these, because they cannot be seen from ships and the flat trajectory of close range fire does not allow the projectiles the angle of fall necessary for the required plunging fire into this type of defense. After visible targets had been destroyed at close range, ships increased their range to obtain a more plunging fire, utilizing air spotters to select and spot fire on suitable targets. For future bombardment against underground defenses such as were found at Eniwetok, preparation fire must be delivered at sufficient range to produce a plunging fire, and for this a large volume of five inch fire is recommended as more effective in producing sufficient direct hits into foxholes and trenches.

A large amount of white phosphorous was delivered on Parry and Eniwetok Islands, but its effect has not been revealed by prisoners of war from these islands. White phosphorous is believed to be an effective anti-personnel weapon. It is recommended that further experiments be conducted to determine its relative value as such compared with air bursts, and that a criterion be established for future guidance in its most efficient use.

The night illumination of Parry and Eniwetok Islands by starshells and searchlight, after occupation and prior to completion of capture, was highly effective in preventing the enemy from massing for a night counter-attack and from moving in the open to obtain food, water and ammunition. Control of this illumination by competent and experienced shore fire control parties is essential, since improperly directed illumination can silhouette own troops or otherwise benefit the enemy. Use of a searchlight by a ship delivering gunfire is believed to have a highly demoralizing effect on enemy personnel in that they realize the light is searching them out for deliberate and destructive fire. Illumination is recommended for future employment under similar conditions. The disadvantages of starshell illumination by naval vessels under these conditions suggests the desirability of developing a flare rocket which can be delivered from small boats or LCI(L)s. Normally destroyers will not be able to maneuver inside a lagoon at night to select advantageous range and position for starshell fire. Expenditure of illuminating projectiles and added erosion of naval guns is not considered justified merely to provide light on an island where the same results are believed

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possible from a rocket or similar less costly and more convenient method. A further advantage of a rocket flare would be the greater brightness, and larger parachute for longer burning period that can be developed while illumination projectiles are limited in these respects. If feasible, rocket or mortar flares fired by the troops ashore would ensure delivery where and when desired by those who desire its benefits.

A 3.25 INCH ROCKET FLARE, CANDLE POWER 430,000, BURNING TIME 23 SECONDS, RANGE 3000 YARDS IS UNDER DEVELOPMENT.

It has been obvious in this and previous operations that, with few exceptions, naval liaison officers and shore fire control party spotters do not know as much about naval gunfire as their duties require. It is recommended that every effort be made to give these officers an opportunity to go aboard battleships, cruisers and destroyers during gunnery practices to become acquainted with the problems and capabilities of naval gunfire applicable to use in supporting troops. Whenever possible, the naval liaison officer and shore fire control party spotter to whom a ship is to be assigned for call fire duties, should personally meet the ship's gunnery officers in order to answer any questions or matters of procedure likely to arise during action later. Whenever this was done in the past, excellent coordination between ship and supported battalion resulted.

In spite of the ideal opportunity offered on Eniwetok Island, little use was made of call fire from destroyers assigned this mission. Because of the large size of Eniwetok Island, the preparation fires had been primarily concentrated on the areas where intelligence and observation showed enemy activity, and on the beaches and initial deployment areas. This was also done on the assumption that the support from assigned call fire destroyers would be utilized after the landing to prepare the way for the ground forces as they advanced from the landing area toward each end of the island. Call fire support destroyers established communication with their assigned shore spotters, and were in excellent position available at all times for any support requested. Although suggested to ground forces by both Commander Attack Force and Commander Landing Force, and frequently recommended to shore spotters and naval liaison officers by the call fire destroyers, requests for naval gunfire were not received until very late in the afternoon. Fire requests thereafter required an almost continuous fire, but because only area fire was requested when definite targets were often available, and because it was delivered, on request, much too far in advance of the front lines, the full effect in aiding troop advance was lost. It is considered that the failure to properly avail themselves of naval gunfire support materially delayed the progress of troops on Eniwetok Island.

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Several different systems have been tried in past operations to keep a running record of ammunition expenditures and amounts remaining on board. A simple system is necessary. Percentage reports, and reports based on bombardment allowances are unsatisfactory and misleading. In the Eniwetok Operation, ships reported the total amounts remaining on board of (1) main battery HC (2) AA common, and (3) other types if an expenditure had been made of any of these since the last report. These reports were made after completion of scheduled fires and upon release from a call fire mission. This system worked very satisfactorily and avoided complicated calculations and reports. Its continuance is recommended.

Area bombardment of Eniwetok Island by LCIs using rockets, conducted for fifteen minutes after the landing as described in the narrative, suggests the possibility of future use of this weapon in preparation bombardment under conditions where its use will be effective. On February 29th, 100 rockets were fired on Elugelab Island from an LCS to determine their effect on the undergrowth and typical atoll island terrain. Small brush fires were started and four foot diameter craters of one foot depth were produced by the rockets. Of added interest is the fact that although fired by experienced personnel, approximately 20 percent of the rockets striking land were duds. The rockets were fired at maximum range of 1200 yards with a 47 degree elevation of the racks. This type of bombardment would only be of value for plunging, area fire where defenses consist of open trenches and foxholes, and where accuracy is not expected. The continued use of rocket barrages on the beaches just prior to a landing is recommended.

THE SPECIFICATIONS FOR THE FUZE FOR THE BEACH BARRAGE ROCKET REQUIRE 80% FUNCTIONING FOR ACCEPTANCE. CURRENTLY THE PERCENTAGE OF FUNCTIONING IS ABOUT 90. AT AN ANGLE OF FALL OF 10 DEGREES THE FUZE WILL PROBABLY BE A DUD.

From: Commander LCI(L) Group - Kwajalein.

0600 31 Jamuray arrived transport area off Carlson Island. At 0800 departed from transport area for line of departure. "H" hour changed from 0830 to 0930. At 0855 all ships headed in towards the beach on Carlson Island. Three LCI(L)s grouped on each side of boat lane just slightly ahead of first LVT wave. All ships commenced firing 40MM guns two thousand yards from beach. While approaching the eleven hundred yard mark from the beach ranging shots were fired from the launchers set at 45°. On reaching the eleven hundred yard mark all ships fired all rockets set at 45°. On reaching the eight hundred yard mark from the beach all remaining rockets set at 30° were fired. The resulting barrage caused by some six hundred 4.5" barrage rockets was terrific. After

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firing all rockets all ships proceeded to flank of beach and fired their 50 Caliber, 20 MM, and 40 MM guns. Ceased firing at 0935. Commenced firing again at targets on the beach at 0940. Ceased firing at 0955. From 1000 to 1810 patrolled the right flank of the Carlson Island Beach. At 1810 proceeded into lagoon via Cecil Pass. Three ships patrolled between Burton and Kwajalein Island and three patrolled between Carlson and Kwajalein to prevent any enemy movement between these islands at night. No enemy movement took place. Ammunition expended for day on Carlson Island as follows:

LCI(L) 77 - 117 Rockets	LCI(L) 78 - 120 Rockets
701 Rounds 40 MM	384 Rounds 40 MM
700 Rounds 50 cal.	114 Rounds 20 MM
1,080 Rounds 20 MM	
LCI(L) 79 - 84 Rockets	LCI(L) 80 - 117 Rockets
400 Rounds 40 MM	300 Rounds 40 MM
480 Rounds 20 MM	20 Rounds 20 MM
LCI(L) 366 - 79 Rockets	LCI(L) 437 - 72 Rockets
70 Rounds 40 MM	410 Rounds 40 MM
150 Rounds 50 Cal.	
58 Rounds 20 MM	

No smoke rockets were employed due to the strong wind blowing from the northeast direction.

From: Report of War Department Mission.

Rocket barrages (4.5 BR) were laid down from LCIs during the approach to shore of the first wave. While impressive to observe, their effects could not be determined directly and the scarcity of tails on and near the beach, coupled with such observations and reports as were obtained, indicated the probability that many of them struck in the water. The continued and increased use of rockets is, however, advocated, with the suggestion that training be stressed so that they will be fired more deliberately and with greater care to insure that they detonate among the lines of beach defenses. Provision of adequate sighting equipment also would materially improve accuracy of rocket fire.

THE LCI(L) GUNBOAT HAS PROVED ITS VALUE FOR THE DELIVERY OF CLOSE SUPPORT FIRES IN THE CENTRAL, SOUTH, AND SOUTHWEST PACIFIC AREAS. MEANS FOR INCREASING THE ACCURACY OF ROCKET FIRE BY THE USE OF RANGE FINDERS AND SIGHTS ARE UNDER DEVELOPMENT BY THE BUREAU OF ORDNANCE.

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NAVAL GUNFIRE - DESTROYERS

Destroyers

From: Commander Destroyer Squadron One - (ROI - NAMUR).

Close in fire support ships should actually get in close - point blank range. The positions of the LAVALLETTE and JOHNSTON on Dog Plus One Day (1 February), one on each side of the boat lanes and approximately 2000 yards from the beach, was ideal, and their fire was considered very effective. Not only is such fire destructive to the enemy but it is bound to give a boost to the morale of the landing troops as they pass by on their way in.

From: Commanding Officer USS SIGSBEE (DD502) - Kwajalein.

Japanese shore battery opened fire on this ship. Ship presented an excellent target as the 36" searchlight was turned on and ship was anchored. The SIGSBEE was also silhouetted by the moon and by starshells from Enuguj Island. Observed at least seven near misses. Each splash landed closer to the ship. Immediately ceased illumination and sounded general quarters. Slipped anchor and cleared area promptly. Made complete report to Commander Task Force 52 by TBS.

From: Commanding Officer USS MORRIS - Roi - Namur.

"W" hour was set at 1000 and accordingly the MORRIS, PORTERFIELD and HARADEN were on station at 0840 (all times local + 12 zone). This ship commenced fire on time and after having fired for thirteen minutes word was received over the Bridge Radio (Voice Circuit) that the time of "W" hour had been retarded one full hour, setting the new time at 1100. Fire was immediately ceased and all ships withdrew from the area, returning at 0940 at which time fire was resumed. While making the approach for the new "W" hour word was received by radio that the Jap forces were massing on the southeastern tip of Namur for a counter attack on Ennumennet Island which had been captured by our forces the preceding day. The order was given over the same circuit to neutralize this area immediately. As was previously stated, the area where the Japs were reported to be massing for a counter attack was the area which had previously been assigned the MORRIS plus PORTERFIELD and HARADEN. Consequently when fire was commenced at 0940 the main objective was changed from shore installations to troops and disrupting a counter attack. This ship ceased fire at 1015 at which time word was received that all possibility of a counter attack from the southeastern tip of Namur had been eliminated. The MORRIS then resumed her station in the screen of the heavy units in Fire Support Group One.

NAVAL GUNFIRE - DESTROYERS

From: Commander Northern Attack Force - Roi and Namur.

(USS - - - - - DD) however, left Fire Support Area No. 5, prematurely, at 0825, which was just 2 hours and 9 minutes before the troops landed on Mellu Island at 1035. This was a serious error in judgment on the part of the Commanding Officer. If strong enemy opposition had actually been on the island, they would have certainly taken cover during the firing of (USS - - - - -), and just as surely they would have come out of their shelters during the exceedingly long absence of 5 inch support. Previously considered "non-existent" batteries, even if just machine guns, could have then opened up and perhaps jeopardized the success of the entire operation. As it turned out, of course, there was no opposition on the island, but the fact remains that (USS - - - - -), with her 5 inch guns and close range machine guns, was not at hand, and the assault waves moved forward covered only by LCIs. It is absolutely vital that fire support units remember that they are supporting the landing of foot troops. Everything must be coordinated to get them ashore safely. If a ship is assigned to render close support until 5 minutes before the troops land, the commanding officer of the ship concerned must remain and provide that support, even if the landing time is delayed for hours at a time, unless specifically ordered otherwise by superior authority.

From: Commanding Officer USS HAGGARD (DD) - Eniwetok.

It is fortunate that our fire was not needed in the occupation of this island. We were firing at a lee shore with a high wind and a heavy swell, both running parallel to the beach. The water was several hundred fathoms deep right up to the reef, making anchoring impossible. An attempt was made to run parallel to the shore line at five knots, but rolling as much as 30° made this undesirable. Higher speed was not practicable because of the short length of the fire support area at the close ranges desired. It was therefore necessary to run almost directly toward and directly away from the island at one-third speed on one engine (for steering control) which, although it gave the short ranges desired and reduced the roll, made it impossible to have more than two guns bearing on the target for any appreciable length of time.

From: The Commanding Officer, USS TRATHEN (DD) - Eniwetok.

TRATHEN anchored about 1,600 yards from Eniwetok. From sunset until sunrise the island was subjected to fire ranging from one 40MM single fire up to concerted main battery, 40MM and 20MM salvos. It is not believed that any combinations lying between those two extremes was overlooked. As on the previous night, various combinations of starshell, AA common, common and white phosphorous were used in the five inch salvos. White phosphorous

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appeared to be a good fire starter while concentration of 40MM fire also produced a surprising number of small fires.

It might be noted in passing, that while the white phosphorous had its well known incendiary effect on the enemy installations it also seemed to have a particularly good morale effect on our own crew, probably due to its spectacular burst and resulting fire. At any rate, no matter how tired the crew was, a white phosphorous burst on the beach always produced enthusiastic comment. Whenever a fire was started, the area around it and particularly immediately upwind was well raked with 40MM and AA common in an attempt to liquidate possible survivors of the fire.

Both white phosphorous and illuminating projectiles were fired to act as incendiaries. Of these the white phosphorous was by far the most effective although fires were started by each.

(RECOMMEND THAT) All shore fire control parties be required to have a general idea of the position of shoals and reefs around their objective plus approximate draft and turning circle of fire support ships which are working for them. Time lost in shifting position of fire support ship should always be considered.

From: Commander Cruiser Division 13 - Roi and Namur.

The fire support area assigned was such that four ships could not be profitably employed at any speed greater than steerageway. For this reason, and with permission of CTF 53, the latter's schedule was so modified that except in periods of intensive fire only two ships were employed at a time. This did not change the weight of fire assigned any target. With two ships in the area at a time a speed of 5 - 8 knots was used. With only 3 destroyers for A/S patrol this was not a great protection, but it was better than having the ships lie to.

We have not yet evolved a satisfactory method of informing the FS ships as to the location of the first boat wave. Intensive fire was to be delivered from about N-8 to N-3 D-Day, yet there was no one who informed the fire support units of the action of the wave and there was uncertainty as to when to begin this fire. A series of colored flares such as was used most effectively to indicate that the boats were 500 yards from the beach would be of inestimable value.

As at Tarawa the fire support areas were such as to cause ricochets from each fire support unit to fall in the area assigned the other unit. It is regretted that the LOUISVILLE was damaged by a 'near miss' from some ship in FSU 2 Fire was checked for some ten minutes during the approach of the first wave, by orders

NAVAL GUNFIRE - CRUISERS

of CTF 53. It is at this time that trouble from own ricochets is most probable because all ships are in close to the beach and the trajectories are very flat. The areas were arranged so as to permit all ships to enfilade, as nearly as possible, the assigned targets. The arrangement of Fire Support areas at Roi was such as to make the fire of the support units most effective. If, to obtain such results, we are to use similar arrangement in future operations, we shall probably continue to be troubled by ricochets. The resultant conclusion seems to be that if we want the most effective fire from the opposite sides of narrow necks of land we must, if necessary, accept the possibility of damage to our own ships by ricochets.

Battleships

From: Commanding Officer USS MARYLAND - Roi.

Fire support areas were located in the best available areas but numerous ricochets fell in both fire support areas 2 and 4 from ships on opposite sides of the islands.

This ship noted that at ranges under 4,000 yards shells would ricochet off the island. This was observed on the SG radar whose beam was on that of the FC and so could follow the flight of the 16 inch projectiles both in direct flight to impact and thereafter in ricochet flight and splash. The last splash was occasionally observed as far as about 9,800 yards from the ship.

The policy of devoting one full day to gunfire in preparation for landings proved satisfactory and is recommended for future operations.

Transport areas were considered too close to fire support areas to permit full use of enfilade fire on landing beaches. It is recommended that transports be so located that they do not embarrass fire support groups maneuvering to gain most advantageous positions.

The necessity for hauling out of the fire support area three times a day to pick up and re-service ship's planes interrupted the smooth execution of the bombardment schedule. An AV or AVD in a protected anchorage or sea area would be of very great assistance in freeing the firing ships of this task.

AT ENIWETOK A SEAPLANE BASE WAS ESTABLISHED IN THE LAGOON EARLY IN THE OPERATION SO THAT FIRE SUPPORT SHIPS WERE NOT REQUIRED TO LEAVE STATION TO RESERVICE SPOTTING PLANES.

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NAVAL GUNFIRE - BATTLESHIPS

From: Commanding Officer USS PENNSYLVANIA (BB) - Kwajalein.

It was found that enemy fortifications, barricades and guns can not only be neutralized, but actually destroyed by naval bombardment with high capacity ammunition, if the range is short enough to use individual guns and fortifications as points of aim. This was done at ranges of 2000 to 4000 yards with surprisingly successful results. It is recommended that future bombardments be conducted at similar close ranges wherever and possible.

The fine spotting of air spotters, and the above mentioned lack of serious enemy opposition to spotting planes, added greatly to the success of the entire mission. This operation shows, as have others in the past, the indispensability of the spotting planes for battleship gunfire. They are useful not only in spotting fall of shot, but in picking out targets that cannot be seen from the bombarding ships. However, it was necessary to interrupt the firing schedules several times to recover, regas, and catapult planes. The assignment of an escort carrier to each battleship division would eliminate this as well as a serious fire hazard on board the battleship.

From: Commanding Officer USS TENNESSEE - ENIWETOK.

For this operation TENNESSEE was attached to Fire Support Section Two with missions of destructive fire and later of supporting fire prior to and during the landings made on Engebi Island and again upon Parry Island.

The support fire for each landing was delivered from positions at anchor on the flank of the boat lanes and very close in (800 yards in the Parry landing) to the landing beach. From this position, the effectiveness of the fire in support of the actual landings appeared to be greatly increased. It was possible to maintain fire on the remains of the undergrowth at the inboard edge of the beach even after the troops had started to land. Deliberate 40MM fire was maintained for this purpose after 5"/38 fire had been checked. It is considered that this fire was very successful and that closely controlled 40MM fire offers possibility of development for this purpose due to the ability to quickly spray a considerable area of beach line directly ahead of the approaching boat lines. Again there were a few instances of 14" HC ricochets from the flat sand at ranges of 4,500 yards and below. After structures with vertical walls of sufficient height to offer a substantial target have been destroyed, the 14" is considered to be a more destructive against a dug in enemy at ranges above 7,000 yards than at shorter ranges. It has been learned from interview with ship's aviator upon his return from these operations that frequently, after shells had fallen on what appeared to be underground

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positions, numbers of the enemy would emerge, running to the beach on the disengaged side of the island and on out into the ocean. It is believed that in another such operation the expenditure of a limited number of rounds of 5" along the beach on the disengaged side would be justified.

This operation showed even more vividly than ever before, how important our own spotting planes are, or if escort carrier planes should be assigned to a battleship for spotting duty, the necessity of scheduling conferences and drill between plane and ship personnel. The greater part of the bombardment on Dog and Dog plus One Days was fired at target areas somewhat obscured by smoke and dust and at times it became necessary to check fire until firing could be resumed safely. While using our own plane for spotting, results were highly satisfactory. Later, although their services were greatly appreciated, spotting and communications by other planes, not attached to this ship, were not completely satisfactory. A great deal of drill, school, and study has been held with our own spotters. The entire program is laid out, maps and pictures studied together until the air spotters and gunnery department work as a well coordinated team. This is not possible when using air spotters from other ships. An escort carrier assigned to each battleship division would suffice, if time and opportunity for conferences between air spotters and gunnery personnel were available prior to embarking on each operation.

Relief magazine and handling room crews were again used with satisfactory results. A magazine ventilating bill was used, as at Kwajalein, every available opportunity being used for such magazine ventilation. There were no personnel casualties due to heat prostration, ether fumes or exhaustion. On Dog Plus Three, Four and Five Days the schedule of fire was maintained by two turrets, the other two turrets setting condition One Easy. Shifts between turrets were made hourly.

On numerous occasions small boats and LCTs were observed passing directly across the line of fire of this vessel during periods of schedule fire. On two (2) occasions it was necessary to request destroyers, entering the lagoon, to pass astern rather than across our line of fire. In each instance it should have been apparent that the PENNSYLVANIA was engaged in a fire mission. The ships and boats concerned had a clear view but proceeded, in the case of the boats, to areas in the line of fire, necessitating numerous check fires. In the case in question no difficulty was experienced in meeting the schedule. However, should a heavy fire schedule be assigned over a short period of time such actions might very easily defeat the purpose of an entire fire mission. It is recommended that instructions be included in future orders,

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ordering boats and ships to use every effort to keep clear of areas in question.

From: Naval Gunfire Officer, Fifth Amphibious Corps.

Extract: On the night of February 22 there were no casualties in the 22d Regiment although many Japanese were killed. The Regimental Commander gave a great deal of the credit for this to the starshells that were fired intermittently all night by the destroyers. He believed them to be the answer to the problem of Japanese infiltration at night and was very enthusiastic about their use. In no sense of the word did he consider it a waste of ammunition.

Major - - - - - reported starshells were a Godsend during night. They exposed some Japs, who were disposed of, and prevented infiltration. Believe starshells were more effective than searchlights.

Comment: Illumination by both starshells and searchlights provided assistance to the troops by checking enemy infiltration, by providing observation for the advance of our troops and by providing observation for the ships to give gunfire support to the advance. Starshells and searchlights will be always available to the troops when the supporting ships are within proper range of the beach to use them.

UNDER THREAT OF ENEMY AIR ATTACK OR WHEN WITHIN RANGE OF HOSTILE POSSIBLY MOBILE ARTILLERY, IT WOULD NOT BE WISE TO TURN ON SEARCHLIGHTS.

Recommendations: That each JASCO be given a thorough and rigid course in training prior to any operation with the emphasis placed on procedure drills with actual ships to increase the success of the communications over (MARSHALLS OPERATION).

That all regimental and battalion commanders be thoroughly schooled in the use of Naval Gunfire as an excellent supporting weapon prior to each operation.

That the Landing Force Commander let the Attack Force Commander know his requirements for night gunfire support early enough to allow action to be taken prior to dark, since the request may cause movements of ships after dark which is extremely hazardous in restricted waters.

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NAVAL GUNFIRE

SALIENT FEATURES OF THE EMPLOYMENT OF NAVAL GUNFIRE DURING THE MARSHALLS CAMPAIGN WERE:

- A - IT WAS DELIVERED ON A LARGER SCALE THAN IN ANY PREVIOUS AMPHIBIOUS OPERATION.
- B - A CONTINUOUS BOMBARDMENT OVER A PERIOD OF SEVERAL DAYS WAS FIRED ON SEVERAL OBJECTIVES.
- C - GUNFIRE SUPPORT SHIPS MOVED IN TO SHORT RANGES FOR DELIBERATE DESTRUCTIVE FIRES AND IN ONE CASE A BATTLESHIP AT ANCHOR INSIDE THE LAGOON SUPPORTED THE LANDING AT A RANGE OF 800 YARDS.
- D - THERE WAS EXTENSIVE USE OF LCI(L) GUNBOATS ALSO EQUIPPED WITH ROCKETS FOR CLOSE SUPPORT.
- E - A HIGH DEGREE OF FLEXIBILITY IN THE APPLICATION OF NAVAL GUNFIRE WAS ATTAINED.
- F - NAVAL GUNFIRE WAS CONTINUED ON THE LANDING BEACHES UNTIL LEADING ASSAULT WAVES WERE 300 TO 500 YARDS FROM THE BEACH BEFORE IT WAS LIFTED TO THE FLANKS AND INLAND.

CHAPTER IV

INTELLIGENCE

Marshall Islands Operation - January, 1944

From: Commander Joint Expeditionary Force
(Commander Fifth Amphibious Force).

The preparation and dissemination of intelligence material for (MARSHALLS OPERATION) followed much the same pattern as was used for (GILBERTS OPERATION) with improvements based on experience gained during that operation. The material prepared and issued followed as closely as possible that listed as essential in the report of (GILBERTS OPERATION) and it is felt that it was adequate. - - - -

NOTE: THE LIST OF MATERIAL REFERRED TO ABOVE MAY BE FOUND IN CHAPTER IV OF THE PUBLICATION "AMPHIBIOUS OPERATIONS DURING PERIOD AUGUST TO DECEMBER, 1943" WHICH WAS DISTRIBUTED BY THE COMMANDER IN CHIEF U.S. FLEET.

As in the (GILBERTS OPERATION) the Joint Intelligence Center, Pacific Ocean Areas, was particularly helpful in the supply of information and in the reproduction of a vast amount of material and photographic work.

The aerial reconnaissance coverage received after January 1st was excellent in quality, quantity and areas covered. It left little to be desired. Also of particular importance were the photographs taken by carriers on Dog Minus TWO Day; negatives were dropped on the ROCKY MOUNT on Dog Minus ONE Day. They were interpreted and the detailed information distributed that same day to forces making the Dog Day Landings; and on Dog Day to forces making the Dog Plus ONE Day attacks. The photographs, mostly obliques were most helpful.

An important factor in the preparation of intelligence material was the equipment available in the Force Flagship (ROCKY MOUNT). The map reproduction unit and photographic laboratory proved invaluable during the entire operation. Prior to the actual operation by the use of these facilities a large amount of reproduction work was accomplished which, due to the limited time available, probably could not have been done by the usual facilities available ashore. During the operation a large amount of material was produced. This included photographs developed from negatives received from photo planes, copies of photographic prints received from planes, enlargements of important photographs, photographs of shore installations during and after the assault, beach reconnaissance photographs, public relations photographs - - - - -

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As an indication of the amount of printed material produced it is estimated that since the arrival of the ROCKY MOUNT at PEARL on December 27th, 150,000 sheets have been printed.

Difficulty was experienced in obtaining the services of persons who had knowledge of the MARSHALL Islands. This difficulty was occasioned by the fact that few persons other than Japanese have been allowed in the MARSHALLS since occupied by the Japanese. Seven GILBERT Island residents of mixed native and white blood were finally obtained. They all had spent some time in various MARSHALL Atolls. All spoke the language, but their knowledge of the atolls dated back a number of years and was hazy as to details. However, they did provide some new information of value and were helpful in navigation of the lagoons at KWAJALEIN and MAJURO. Their principal value was as interpreters. One or more were assigned to each task force commander and to assault troops at each (ENIWETOK) objective. Based on the information gained from the natives at MAJURO through the interpreters, that atoll was not bombarded to any great extent and much damage to shore installations and topography was prevented. Upon completion of the assault phase of (KWAJALEIN) four interpreters were transferred to the atoll commanders for use during the occupation phase and thereafter as long as their services are considered necessary. Three were ordered to Group TWO, FIFTH Amphibious Force, for use during the (ENIWETOK) Operation, and later assignment to the Atoll Commander.

No artificial underwater obstructions or mines were found on any of the beaches or approaches thereto.

Beach Defenses

In general the beach defenses were considerably weaker than expectations based on photographic interpretation and past experience of TARAWA and other captured atolls.

The principal defensive installations consisted of barbed wire strung on coconut logs which were set in the ground at an angle of about 30° to the vertical and inclined to the seaward. Many of these logs were not firmly imbedded and not more than four strands of barbed wire were used which was widely spaced and lightly attached. In many places wire had not yet been strung and reels of barbed wire was found nearby indicating that the preparation of the defenses was in progress just prior to the attack.

Immediately inland of the beach defenses were found strong points which consisted of an intricate pattern of trenches and M.G. and Mortar positions. There were numerous 13 MM M.G.'s and small Mortars. However, large artillery pieces were not to be found. A few small pieces (similar to a Mountain gun) were located.

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In a few areas the barbed wire and trenches were supplemented by sections of concrete wall not more than four feet in height and in many cases not more than eighteen inches thick, and up to forty feet in length with about three feet space between adjacent sections.

In some cases elementary tank traps of the trench type were located behind the wire. These consisted of a trench about eight feet in width and 6 feet in depth with steep sides. It is not believed that either the wire or the trenches would prove to be a serious obstacle to medium tanks.

There were surprisingly few concrete pillboxes found on beaches and these almost without exception had been demolished by naval gunfire.

Double purpose twin 5 inch guns were found and there were also 40 MM mountain guns, small Mortars and 13 MM dual purpose machine guns. Most of these had been put out of action by preliminary naval bombardment.

Numerous dummy installations were found intended to represent emplacements, coastal and machine guns, pill boxes, etc.

Preliminary studies had located practically all beach defenses of any importance and the only error was in the over estimation of their strength.

In no case was serious resistance encountered on landing which indicated both the effectiveness of the gunnery and air bombardment as well as the essential weakness of the beach defenses.

From: Assistant Chief of Staff, G-2
Fifth Amphibious Corps.

Immediately after the GILBERTS Operation indications were that the Jap expected MILE and JALUIT were next. Jap troops at KWAJALEIN were rushed to these two bases. Rapid improvements in defensive installations were continually noted there. The fact that they were the closest MARSHALLS bases to the newly won TARAWA and MAKIN undoubtedly must have furthered these expectations. When the great blow came well inside his strong MARSHALLS perimeter defenses and on the ends of islands (except ROI-NAMUR), it can safely be said that tactical as well as strategical surprise were in a large measure achieved against the Jap. The vast quantities of cement, gravel, sand, reinforcing steel and some lumber encountered at (KWAJALEIN) points to a contemplation of additional defenses which had not been started or completed. Undoubtedly the repeated bombing by air and bombardment by surface forces of (OTHER ISLANDS) to neutralize the air strips there not only had a demoralizing effect on the

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Jap but also left him confused and unable to estimate where the landings, which he must have then realized were imminent, were coming. In short it is believed that this strategical surprise was so complete that the Jap probably did not know on what islands actual landings were to be made until D-Day itself, when our transports and landing craft were visible to him off shore.

Activities in connection with the (MARSHALLS OPERATION) were begun concurrently with the assault phase of (the GILBERTS). Photographs of tentative (MARSHALLS) objectives were not taken until (the GILBERTS) was under way, and were not delivered to this Headquarters until later. Hence, the initial intelligence activities were preliminary and tentative in character. Preliminary estimates of enemy strength in the MARSHALLS were prepared and preliminary studies of key atolls were disseminated to higher echelons and to the staff sections of this Headquarters. The collection of information involved 32 atolls and islands, of which five (5) were held in force by the enemy and therefore considered of outstanding importance. During this early phase, no contact was made with the 4th Marine Division, the 7th Infantry Division, and other subordinate units which were attached at later dates.

Liaison With Higher and Subordinate Units.

Inasmuch as the Corps lacked the means of conducting direct reconnaissance of the objectives, close liaison was maintained with Central Pacific Force, the Joint Intelligence Center, Pacific Ocean Areas, and the FIFTH Amphibious Force. Specific requests were made for submarine and aerial reconnaissance, and for the provision of hydrographic information.

Throughout the (MARSHALLS) preparations close contact was maintained with the G-2 of the 7th Infantry Division and the S-2 of Tactical Group ONE, and information compiled and evaluated was transmitted as rapidly as possible. The G-2 of the 7th Infantry Division was an almost daily visitor at Corps Headquarters before the departure of troops and there were no delays in transmitting information to that organization. In the case of the 4th Marine Division, there were inevitable delays in transmission owing to the fact that the Division remained in California until its departure for the theatre. The lack of close contact with the D-2 of the Division was a distinct handicap in the solution of problems and to the close coordination desired. Nevertheless, several officer-messengers from the Corps carried intelligence data to California, and representatives of the Division carried intelligence data on their return to the Division.

In addition to maintaining as direct a contact with lower units as possible, the Corps G-2 acted as an intermediary in the interest

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of filling the specific requests of these units for special maps, photographic enlargements, relief maps, aerial mosaics, and similar materials. Relief maps were obtained from the Joint Intelligence Center, Pacific Ocean Areas, and were furnished to the 4th Marine Division and the 7th Infantry Division, respectively, at the rate of one per transport or a total of 12 per division. - - - - -

It is evident that some unit commanders do not appreciate the importance of combat intelligence and the functioning of their respective intelligence officers. One regimental R-2 was used in the capacity of the regimental anti-termite officer during the day and at night worked on intelligence matters. An intelligence officer on the staff of a commander exists for only one purpose and that is to collect, evaluate and disseminate combat intelligence and keep his commander informed of the enemy and his capabilities. As soon as all unit commanders realize that the intelligence officers of their staffs are indispensable to proper staff functioning and that they play an important role in the success of an operation, we will become better informed of the enemy and consequently achieve greater success.

It is recommended that prison ships for POW's be designated prior to D-Day and that all hands be properly informed.

In this operation there was considerable confusion regarding the ships to which POW's should be sent. POW's were occasionally sent to ships which had no provision for handling them. The situation was clarified after D plus 1, but should be clarified before D-Day.

It is recommended that language personnel be assigned to prison ships, especially during the trip back to PEARL.

In many cases, interrogators have had insufficient time to gather up all "loose ends" of an interrogation on the beach. The interrogation should be completed and the report made up during the return trip.

From: Commander Northern Attack Force
(Commander Group Three, Fifth Amphibious Force).

During the final two training exercises in the San Diego area, opportunity was afforded to organize the Intelligence Section for the execution phase of the operation. Officers were assigned the following duties:

Maintain Intelligence Journal

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Maintain Intelligence Work Sheet
Maintain Situation Plot
Man communication facilities
Write reports

The Intelligence Section of the FOURTH Marine Division provided officers to perform similar duties; the general principle being that the Naval officer assigned would concentrate principally on the naval phase of the operation, and the Marine officer would concentrate on the ground phase. The Naval and Marine officer assigned to similar duties would operate as a team, each being able to take over the other's duties if required.

It was during this training stage that it became obvious that a duplicate situation chart should be maintained in the Flag Plot. During the final training exercise, it was demonstrated that an airborne observer, with a direct communication circuit to the War Command room, could provide extremely valuable information. It was therefore decided that trained Marine observers would be detailed to this duty during the operation.

After departure from San Diego, a running enemy situation plot was maintained and daily charts prepared. An analysis was made and kept current of the status of enemy forces and their availability to oppose (the MARSHALLS). Periodic reports were submitted on these subjects. On "D" day and thereafter until the situation ashore was consolidated, a current situation plot was maintained and all enemy information was logged and classified into work sheets. The absence of enemy air and naval opposition afforded little opportunity to demonstrate the value of the system, but it is believed that had such opposition developed, a rapid evaluation and estimate of the situation would have been possible. The air observer proved extremely valuable. Detailed information of the situation ashore was relayed into the ship's inter-communication system within five minutes of its occurrence ashore. An outstanding example of the effectiveness of this hook-up was the concentration of all available fire power on the southeast tip of Namur within approximately ten minutes of the report of an enemy counter-attack developing there toward Ennugarret.

When the Marine Division Intelligence Section moved ashore, the situation was stabilized to such an extent that the Group THREE Intelligence Section could maintain intelligence functions without difficulty. Prior to that time, the cooperation of the Marine Intelligence section in keeping information flowing was invaluable.

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Capture of Eniwetok Atoll - February 1944

From: Commander Eniwetok Expeditionary Group
(Commander Group Two, Fifth Amphibious Force).

Prior to 30 January 1944, only one photographic mission had been sent over ENIWETOK Atoll. This was the VD3 mapping run of 28 December 1943, flown at an elevation of 20,000 feet. Subsequent photographs were taken on the carrier strikes by Task Group 58.3 (BUNKER HILL, MONTEREY, and COWPENS) on 30 and 31 January, and 1, 2, and 3 February; and by Task Group 58.4 (SARATOGA, PRINCETON, and LANGLEY) on 6 and 12 February. Interpretation of this coverage was made by Commander FIFTH Amphibious Force and Commander Group TWO, Fifth Amphibious Force, at KWAJALEIN.

These pictures revealed a considerable number of new trenches, dugouts, and machine gun emplacements on ENGEBI, the destruction of all buildings on PARRY and ENGEBI, and some new track activity on the southwest part of ENIWETOK Island. The additional information gained was incorporated partially in the intelligence annex, and partially in additional intelligence maps, which were distributed to the groups and ships concerned.

Additional intelligence of the latest enemy activity was obtained from the photographic coverage by Task Group 58.4, 16 February. Some of the prints were dropped on the USS CAMBERIA the afternoon of the same day; the remainder the next day. New intelligence maps of ENGEBI and ENIWETOK, which showed additional dugouts and trenches on the lagoon shore of ENGEBI, the destruction of the two coast defense guns at NEWT POINT, efforts on the part of the Japanese to repair the runway, and continued activity on the southwest part of ENIWETOK Island - new fox holes, dugouts, supply caches, and track activity - were prepared and distributed to units and ships concerned immediately on arrival at ENIWETOK.

The information obtained from photographs taken on the 17th revealed 11 new open machine gun emplacements and additional trenches in the northern part of PARRY and two coconut log pill boxes in the vicinity of the pier on the same island. This intelligence was sent by despatch to vessels of the fire support units. - - - - -

Photographs failed to reveal the true strength of the enemy on ENIWETOK and PARRY Islands. Three reasons are advanced for this failure:

- (a) The majority of Japanese troops arrived less than six weeks before the assault. Therefore building and track activities were light. After the first carrier air attack the enemy lived in holes in the ground.

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(b) The defenses built were largely reenforced rifle pits covered over with galvanized iron, scrap lumber, and coral rubble. All of these positions were below the general surface of the ground, whether containing a rifleman, machine gun, artillery piece, or supplies.

(c) Natural camouglage afforded by heavy mangrove bushes, thick vines, and palm fronds obscured these positions from aerial observations.

The installations above the ground were interpreted with a high degree of accuracy. These included coastal defense guns, AA artillery, and airfield facilities.

The last minute photographs taken on 16 and 17 February by Task Group 58.4 revealing the latest Japanese installations were of great value.

During the ENIWETOK assault the JICPOA team was invaluable in locating promptly information of value in planning the successive assaults.

It is recommended that an organized JICPOA team be attached to each attack force.

Until the capture of KWAJALEIN, ENIWETOK Atoll had been a rear area for the enemy. This probably accounts for the comparatively weak permanent defenses found on the islands of this atoll. Its capture was made at a most opportune time as concerns preparedness and resistance to landing assault. Plans for rapid strengthening of defenses were already underway, as evidenced by the large amount of concret, mixers, reinforcing steel rods, three heavy anti-aircraft guns, twenty-eight 20mm guns and similar material which the enemy had delivered to ENGEBI Island not long before our assault. The captured plans for the defense of PARRY Island, a copy of which is included in this report, showed that this island was intended by the Japanese to become a stronghold. Particularly interesting is that it showed that the enemy has learned of our lagoon beach scheme of landing attack. These plans show that the lagoon beaches would be the more strongly defended.

Enemy personnel strength, estimated from the number buried, was as follows: ENGEBI Island - 1200, PARRY Island - 1300, ENIWETOK Island - 900, total on atoll 3400. Practically all these personnel were Japanese Army units.

Many of the permanent defenses on ENIWETOK, PARRY and ENGEBI Islands, visible from the air, were destroyed prior to DOG Day, by

the many aerial attacks on these islands commencing prior to the assault on KWAJALEIN Atoll. These attacks had destroyed all but a few of the buildings, all planes, and several gun emplacements including at least one of the two coast defense guns on the north tip of ENGEBI Island.

ENGEBI Island Defenses

This island, containing the air strip, was the most heavily defended of the three. Gunfire and bombing obliterated many of the defenses prior to the landing, so that a complete and correct description of the initial defense systems is not possible. Two 4.7" coastal defense guns of British design were mounted in earthworks on the north tip of the island. The range scales of these showed a maximum range of 8,400 yards. Many of the heavy AA guns plotted on intelligence charts were non-existent. One 5 inch heavy AA gun was found on the landing beach, unmounted and apparently just received in shipment. Many new and unmounted 20mm guns were found in a warehouse. The number of light and heavy machine guns and mortars employed by the enemy is not known, but there was great and frequent evidence of their use which constituted the main resistance after naval bombardment terminated.

The older and better prepared trenches and dugouts were on the northern and eastern beaches. These were protected by coconut log barricades. Many of these were covered by light wood and sheet metal, and in many cases interconnected by underground tunnels. The more recent trenches and foxholes showed signs of hurried construction and again demonstrated that the enemy had knowledge of our lagoon beach scheme of landing by their location to protect these beaches. No blockhouses such as found on KWAJALEIN and TARAWA were built on ENGEBI Island. Dugouts of coconut logs with earthwork embankment were found, as were concrete pillboxes. Resistance of these to penetration and blast as compared with the defenses found at KWAJALEIN and TARAWA, was weak. The concrete was one foot or less in thickness and not reinforced. Concrete was not commonly used for defense construction. New trenches and foxholes were poorly reinforced and dugouts were flimsily constructed and protected. Generally speaking, defenses as known by the TARAWA example, did not exist on any of the ENIWETOK Atoll islands.

PARRY Island defenses

With very few exceptions, the defenses of this island consisted of foxholes and trenches. As on ENGEBI, the older of these were well constructed, lined with coral rock, and covered the sea beaches to the island, while defenses protecting the lagoon beaches were new, hastily constructed and less effectively camouflaged. Many of these foxholes and trenches were so effectively camouflaged by natural

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foliage and lantanna growth as to be invisible from the air. Ground troops encountered their greatest difficulty in locating these underground defenses, which in addition to their natural foliage camouflage, were generally roofed over with sheet metal, light wood planking and coral rubble. A few dugouts were observed and were of the same construction as those on ENGEBI Island. Enemy guns found were mostly small arms, light and heavy machine guns and 80mm mortars, the number of which is not known. Two 70 to 75mm mountain guns and a few 37mm anti-tank guns constituted the "heavy" gun defense of this island. In general the strength of this island lay in the large number of personnel (1027 were buried by March 4th) and the large number of well dispersed and camouflaged trenches and foxholes in which the enemy remained protected from all gunfire and bombing not making direct hits into these.

ENIWETOK Island defenses

The remarks on defenses for PARRY Island apply also for ENIWETOK Island except that the trench and foxhole systems were better constructed and even better camouflaged from ground observation than those of PARRY Island. As on PARRY, these underground defenses constituted the previously unexperienced problem presented to naval gunfire and troop movement. Enemy weapons used in defense were the same type as those on PARRY Island except that no mountain guns were found. New construction on ENIWETOK Island was discovered to have started after the capture of KWAJALEIN and consisted of concrete pillboxes on the southwest tip of the island, and hastily constructed additional foxholes.

Enemy smoke generating equipment was encountered for the first time by this amphibious group at ENIWETOK. At least 2000 metal jug-shaped containers weighing about 80 pounds were found on each WHITE ONE, ENGEBI Island. These were in a large pile, apparently having just arrived in shipment. The "jugs," about 2½ gallon size, are easily ignited by striking the cap on their top, allowing air to enter and commence the reaction. The smoke produced by these is excellent. The smoke is a thick, white sulphur compound, and suffocating to anyone remaining in it for any length of time, but otherwise not injurious. Immersion of the smoke "jug" in water will not discontinue the generation of this smoke.

Although not a part of the naval gunfire problem, land mines were intended by the Japanese to play an important part in the defense of PARRY Island. A large number of the two commonly used portable type mines were found not only on the ground but also on the bodies of enemy dead. Those found on the ground were the circular, disk-shaped, metal covered type and were concentrated at the northern tip area of the island on the lagoon side beach.

Others were found scattered and in small concentrations in other areas. Some of these were buried just under the surface, some hidden by lantanna and palm frond, and some lay out in the open in plain sight. The canvas covered portable magnetic mine was also found in abundance. Both types were found on enemy dead, lashed to their legs and carried in pockets, having apparently been issued for individual use to cover retreat. Referring to the captured Japanese defense plans for PARRY Island attention is invited to the "X" symbols in the water area off two sections of the lagoon beach, and to the rectangle symbols off the north and eastern beaches. It is believed that these symbols indicate planned locations for anti-boat mines and tetrahedrons. Land mines were first encountered on ENIWETOK Island, but their use was not as extensive as on PARRY Island. A new installation of these, however, was found on ENIWETOK. The mine was placed on top of three 70mm cartridges employed to intensify the explosion resulting if the mine was detonated.

CHAPTER V

LOGISTICS

From: **Commander Joint Expeditionary Force.**
(Commander Fifth Amphibious Force.)

(The MARSHALLS) Assault and Garrison Forces loaded under the direction of Commander Task Force 51 were embarked in one hundred twenty three ships. Of these, fifty eight ships carrying assault forces and thirty ships carrying garrison forces were loaded in the HAWAIIAN AREA under direct supervision of Commander (Southern Attack Force), thirty three ships carrying assault forces for (ROI-NAMUR) were loaded on the WEST COAST under the supervision of Commander (Northern Attack Force) and two ships carrying garrison forces were loaded in the SAMOAN AREA.

The Southern Landing Force, composed of the Seventh Infantry Division Reenforced; the Majuro Landing Force, consisting of Corps Reconnaissance Troops and one reenforced battalion of the 106th Infantry; and the Reserve Landing Force, consisting of the 22d Marine Regiment Reenforced and the 106th Infantry Regiment Reenforced (less 1 BLT), were loaded in the HAWAIIAN AREA. Loading was planned and executed in accordance with Force Circular Letter 4 AL-43 and loading directives. After conference with Commanding General, Fifth Amphibious Corps, Commander (Southern Attack Force) organized temporary Transport Divisions and LST Groups and allocated them for the transportation of the 7th Division and the several Regiments. Each troop unit was required to submit a complete list of equipment to its superior unit. Each echelon of command struck out unnecessary items included in such lists and consolidated equipment lists were presented to the Commanding General, Expeditionary Troops, for approval. That Authority issued approved final lists after rigidly limiting equipment to items believed to be essential to performance of the tactical missions. Similar lists were presented by the Garrison Forces and the Commanding General, Expeditionary Troops, made arrangements for interchange of equipment between assault and garrison forces to avoid duplication and reduce shipping requirements.

The logistics plan required that troops carry 42 days rations, 5 days water, 10 units of AA and 105mm howitzer, 8 units of other classes of ammunition and 30 days of all other supplies. It was decided that if units embarked in APA's were to carry such quantities of supplies combat loading would not be practicable. Accordingly it was decided to load APA's and 'tween decks of AKA's with initial combat equipment and supplies, to place the bulk of remaining supplies for each regiment in the holds of the AKA's, and to carry loose emergency supplies of all classes on LST's. This resulted in a combat load of about 600 short tons in each APA and AKA with an additional 1000 tons of maintenance supplies in each AKA and emergency supply on LST's. LST's of the LVT Groups carried an average load of 350 tons.

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The four LSTs of the Field Artillery carried an average load of 850 tons. The following table shows distribution of supplies of the Seventh Division by Classes:

Rations:

- 2 days emergency on individual
- 4 days emergency in bulk on LST's
- 6 days emergency, palletized, in APA's
- 30 days, bulk, in AKA's

Water:

- 1½ days in 5 gal. cans on LST's
- ½ day in 5 gal. cans on APA's
- 3 days in 55 gal. drums on APA's

Ammunition (except Artillery, Tank and AA)

- 1 u/f on individuals and combat vehicles
- 2 u/f bulk, on LST's
- 1 u/f bulk, on APA's
- 3 u/f palletized, on APA's
- 1 u/f bulk, on AKA's
- Explosives on LST's and AKA's

Ammunition (Field Artillery)

- 8 u/f for embarked 105mm, bulk, on LST's
- 8 u/f palletized, for four 155mm howitzer embarked, on AP
- 2 u/f palletized, 105mm howitzer, on AP
- 8 u/f palletized, for 8 155mm howitzers embarked, on AKA.

Ammunition (Tank)

- 2 u/f in Tanks
- 3 u/f, bulk, on LST's
- 3 u/f palletized, on APA's

Ammunition (Anti-Aircraft)

- 2 u/f 90mm, palletized, on AKA
- 3 u/f 40mm, palletized, on APA
- Note: Remainder of AA ammunition to follow in Defense Group convoy.

Petroleum Products

- 1 day in 5 gal. cans on LST's

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Petroleum Products (cont'd.)

- 1 day in 5 gal. cans on APA's
- 3 days in 5 gal. cans, palletized, on APA's
- 5 days in 55 gal. drums, top stowed in AKA's
- 20 days in 55 gal. drums, in holds of AKA's

Medical

- 3 days on individuals
- 10 days palletized on APA's
- 20 days palletized on AKA's

Class II

- 4 days bulk, on LST's
- 2 days bulk, on APA's
- Balance on AKA's

Signal

- 10 days with troops
- 30 days maintenance on AKA's

Chemical - (Mortar)

- 1 u/f with troops
- 3 u/f palletized, on LST's
- 4 u/f palletized, on APA's

Chemical - (Grenades)

- 5 u/f H.C., colored, with troops
- 5 u/f " " , bulk, on LST's
- 2 u/f WP with troops
- 3 u/f WP bulk, on LST's
- 5 u/f WP bulk, on APA's

Flame Thrower Fuel

- 2 u/f with individuals and combat vehicles
- 2 u/f on LST's
- 3 u/f on APA's

Reconnaissance troops were loaded in two APD's, three companies of Medium Tanks in three LSD's, one company of amphibious tanks (LVT (A) 1) in one LST, four amphibian tractor (LVT) Groups in eight LST's four batteries 105mm howitzers in DuKW's in four LST's and two DuKW

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Detachments of Service Companies (supply) in two LST's. In the advance Transport Unit, Division Artillery Headquarters and four 155mm howitzers were loaded in President Polk and eight 155mm howitzers were loaded in Virgo. The three APA's of the Advance Transport Unit were each combat unit loaded with a battalion landing team. In other Transport Divisions battalion landing teams were similarly loaded in three APA's and the fourth APA and the AKA were loaded with various regimental troop units. Division Headquarters (except for Command Section on Force Flagship) was loaded on the Flagship of Commander, Transport Group. Arrangements were made to embark certain tactical units and extra personnel from the Garrison Forces on assault ships. These personnel constituted the ship platoons and shore parties.

The 22d Marines were combat unit loaded in Transdiv Twenty with a battalion in each of three APA's, regimental units in President Monroe and one AKA, all with about ten days supplies. The remainder of the required supplies were loaded in the holds of the AKA. The 106th Regimental Combat Team was similarly loaded except that the battalion which constituted part of the Majuro Attack Force was loaded in Cambria, an APA, complete with its share of all supplies required by the Logistics Plan. Cambria carried one thousand tons.

Commander (Southern Attack Force) loaded on AKA's, LST's and LSD's, naval bombardment ammunition for replenishment of fire support ships. This loading was coordinated with the troop loading plans. A schedule showing types and amounts so loaded is attached hereto.

Assault Force - Loading.

The first tentative loading directive - - - - - was issued on 21 December setting forth tentative dock assignment and loading dates of the Transport Divisions and their respective Regimental Combat Teams. Every effort was made at all times to communicate such information as was at hand to all concerned immediately. This practice created the necessity of issuing some fragmentary orders and many changes to previous orders but it is felt that the confusion was far less than attends when the higher echelons wait until all matters are settled before issuing orders. Force Circular letter 4 AL-43 provided that Regimental Commanders, upon receipt of approved equipment lists would confer with their Transport Division Commanders who would allocate personnel and cargo to ships of the Division in such manner as to (1) support the tactical plans of the former and (2) provide for balanced unloading. The next step was for the battalion landing team commander or the senior troop officer embarking on each ship to confer with the Commanding Officer of the ship who was responsible for proper loading plans for his ship.

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Force Speedletter 00372, - - - - - set up a time schedule based on the loading dates, setting the date by which all such steps must be completed.

An attempt was made to embark LVT's at Wainae but it was found that surf conditions there rendered such an operation impracticable.

The LSD's were loaded at buoy in Pearl Harbor using ship's boats.

The APD's were loaded at DE docks, Pearl Harbor.

One day during which dock space was available was allowed for assembly and spotting of cargo for each of the large ships. Each of these ships was allowed two days at the loading dock for loading of cargo. Two days were allowed for the loading of each LST. APD's and LSD's were allowed one day for loading. The ships which were to participate in the final rehearsal departed on January eleventh and loading continued on other ships. Port and harbor facilities at Honolulu and Pearl Harbor were taxed to the utmost during the period January 17-22. During this period all troops who had participated in the rehearsal, except the 22d Marines debarked, returned to base camps for rehabilitation, and then reembarked on their ships; cargo adjustments were made on these ships; the 106th Regiment Reinforced was loaded and troops embarked in Transport Division Thirty; Feland and Centaurus were loaded and troops embarked; Seventeen XAP and XAK and thirteen LST's of the Garrison Forces were being loaded.

The loading in all cases was performed by troop working details, ship's crews manning winches and instructing in holds. Port authorities at Honolulu and Pearl Harbor furnished dock equipment and operating personnel and technical assistance. Each troop unit had a Transport Quartermaster who dealt directly with the Ship's Transport Quartermaster.

NAVAL AMMUNITION RESUPPLY FOR FIRE SUPPORT SHIPS

<u>Type</u>	<u>No. rounds each supply ship</u>	<u>Replenishing ships</u>	<u>Supply Ship</u>
8"	450	MINNEAPOLIS, NEW ORLEANS, SAN FRANCISCO	THUBAN, VIRGO CENTAURUS
5"	500	McKEE, STEVENS, BAILEY, FRAZIER, HALL, MEADE, MURRAY, HARRISON, RING GOLD, SIGSBEE	D day LST 34, 246, 29, 218, 481 D+2 day-LST 23, 484, 214
40mm	6000	Above and LCI's 77, 78,	D-day LST 78, 242

CHRYSLER

5-6

SHIP	UNIT	OFF.	ENL.
Overton	Prov. Recon. BN. TR. "B" 7th Div.	6	149
Hanley	Prov. Recon. BN. TR. "A" 7th Div.	6	149
Kane	Corps Recon. Co.	7	119

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Type	No. rounds each supply ship	Replenishing ships	Supply Ship
20mm	12,960	79, 80, 366, 437, 365,	243, 240, 31
50 cal.	60,000	438, 439, 440, 441, 442	D+2 day - LST 227
4.5	240	Any of above.	ASHLAND, BELLE GROVE
Mousetrap	64		
MK7 Depth	143		
MK6 Depth	120		

Total Ammunition Resupply Available KWAJALEIN Area

6"	1350 rounds
5"	4000 "
40mm	36,000 "
20mm	77,000 "
50 cal.	360,000 "
Mousetrap	1440 "
MK7 Depth Charge	286 "
MK8 " "	240 "

From: Assistant Chief of Staff, G-4 V Amphibious Corps.

The Corps Administrative Order was predicated upon CincPOA and CincPac Serial 000204 dated 5 January, 1944, CincPOA and CincPac Operation Plan No. 16-43. Section I of the forementioned CincPOA and CincPac Operation Plan specified the service responsibility and also the quantities of maintenance supplies to be carried by the assault and garrison troops. It further defined the supply levels at each base, method, and resupply. Section II referred to method and responsibilities for transportation; Section III, hospitalization and evacuation; Section IV, construction; and Section V pertained to miscellaneous matters. The contents of all of these sections of CincPOA and CincPac Operation Plans were incorporated in the Corps Administrative Order Number 1-44 dated 5 January, 1944 which coupled with Corps General Order Number 19-43, SOP Administrative, completed, in general, the logistic support plan for the (MARSHALLS) operation. The Corps Administrative Order and Annexes, Number 1-44, is submitted as part of the Corps Operation Plan, Number 1-44, January 5, 1944.

Provisions were initiated to support the situation by securing the following data in sequence:

a. List of units and strengths of:

- (1) Assault Force.
- (2) Garrison Force.

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- b. Plan of supply support from CinCPOA.
- c. Assault and garrison forces were provided with Corps SOP, GO No. 19-43 and Corps Supply Plan, GO No. 41-43.
- d. Corps, assault, and garrison force communication officers plan for loading of certain "Base" communication components in assault transports to facilitate shift of communication responsibility after assault phase.
- e. Assault and garrison forces submitted the following:
 - (1) List of major organizational equipment to be taken.
 - (2) List of crew served weapons to be taken.
 - (3) List of vehicles, special and general purpose.
 - (4) List of tanks.
 - (5) List of supplementary equipment (Engineer, roadmaking, construction, water distillation, special equipment).
- f. Initial report of shortages of critical major items:
 - (1) Individual weapons.
 - (2) Crew served weapons.
 - (3) Ammunition.
 - (4) Special purpose vehicles.
 - (5) General purpose vehicles.
 - (6) Special ordnance supplementary equipment.
- g. Assault forces submitted requirements for altering or supplementing organic equipment such as armored cabs for tanks, flame throwers for LVTs and tanks, "A" Frames and similar items.
- h. TQMs met, oriented, and instructed TQMs of tactical units.
- i. Assault and Garrison forces submitted Class III supply requirement estimates.
- j. TQMs obtained assignment of shipping for assault and garrison forces.
- k. TQM recommended unit assignments for shipping.
- l. Assault and Garrison forces submitted overall requirements for special materials they intended to requisition and secure approval to take.
- m. Corps Engineer submitted plan for water supply of target areas.
- n. Issued Corps Administrative Order.
- o. Date set for turn in of completed stowage plans.
- p. Published plan for supplies of island bases to be maintained by garrison force commanders.
- q. Readiness reports listing the following were secured:
 - (1) Individual weapons.
 - (2) Crew served weapons.
 - (3) Ammunition.
 - (4) Special purpose vehicles.
 - (5) General purpose vehicles.
 - (6) Special or supplementary equipment.

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- r. Final reports of critical major shortages of equipment were secured:
- (1) Individual weapons.
 - (2) Crew served weapons.
 - (3) Ammunition.
 - (4) Special purpose vehicles.
 - (5) General purpose vehicles.
 - (6) Special or supplementary equipment.
- s. Assault and Garrison forces were directed to submit lists of equipment and supplies expended and/or transferred (left) during stay at objectives - also were requested to recommend changes in allowances and expenditure rates.

Screening of major items of equipment, supplementary and special equipment. - Assault units were instructed to submit a list of vehicles, weapons, and supplementary or special equipment that they proposed to take with them for the operation. Such lists were obtained, carefully checked, and approved or disapproved upon the basis of available shipping and critical needs. Reduction of vehicles to be taken was affected by mutual consent. Special and supplementary equipment for Army units and non-TBA equipment for Marine units was screened as to necessity and approved or disapproved after conference with the principals involved. In general, every effort was made to confine material for the operation to such items that were absolutely essential.

Resupply Phase. - Thirty days of consumable supplies for 17,000 troops were shipped from the Hawaiian Area on 10 February. The Marine Supply Service is arranging further shipments to accomplish maximum and minimum levels of supplies -----

Resupply for first ninety days is on an automatic basis, thereafter on the basis of weekly and monthly logistic reports.

From: Commanding General Fifth Amphibious Corps.

All of the supplies taken were not used; however, it is impossible to predict, before a battle, just how long it will be necessary to continue the attack. In view of that fact it is believed that alterations will necessarily be made prior to each attack according to previous lessons learned and intelligence information available. It is essential that adequate supplies be carried to meet the maximum enemy effort - not the minimum.

It is recommended that standard units of fire be established for both Army and Marine units. The present units of fire differ and lead to some confusion in planning and during the operation.

There were some indications that there was not the necessary close liaison between some of the landing force commanders and

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the transport commanders during the unloading phases. This liaison is vital and essential to the furtherance of the attack. However, in this operation the supplies moved in an efficient and orderly manner to the beaches. There appeared to be no serious congestion at the beaches but in some instances there was not enough dispersed.

In the unloading phase the theory behind prompt and efficient supply is to consider the ships as mobile depots and establish the usual supply channels and procedure of securing supplies between the ship and the shore. The plan must be flexible enough to furnish supplies when and where needed by the attack forces.

In this operation the movement of supplies was an improvement over any previous amphibious operations to date.

Waterproofing of equipment was improved somewhat over previous operations, but there is considerable room for improvement on present methods and need for additional waterproofing materials.

Pallets proved satisfactory and are considered necessary. Their use will be continued.

Roi - Namur

From: Commander Northern Attack Force.
(Commander Group Three, Fifth Amphibious Force.)

This force lifted the Fourth Marine Division (reinforced) plus naval elements, totalling 1,143 officers, and 20,072 enlisted men, and loaded about 15,000 long tons of equipment, supplies and vehicles.

The general loading plan was established early and was carried out, but the details of loading were changed frequently as occasion arose. The overall scheme may be outlined as follows:

Four (4) APAs and one AKA constituted a transport division, lifting the personnel, equipment and supplies of a regimental combat team. There were three such transport divisions: 24, 26, and 28 lifting respectively the 24th, 25th and 23rd Marines. Each battalion landing team embarked in one (1) APA, the fourth APA lifting the regimental support group and headquarters, and the AKA lifting a few personnel and a great part of the supplies of the regiment.

The Division headquarters embarked in the APPALACHIAN.

Artillery - The 105 mm artillery embarked in the EPPING FOREST, the weapons with a supply of ammunition for each being preloaded in 14 LCMS.

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All light artillery (75mm pack howitzers) was preloaded in LVT(2) in three LSTs.

Armor - All medium tanks (15) were preloaded in LCMs in the GUNSTON HALL. All light tanks (36) were loaded in APAs. The SCHLEY embarked the scout company of the Fourth Medium Tank Battalion.

The First Armored Amphibian Battalion embarked its 75 LVT(A) (1)s in LSTs. The 180 LVT(2)s of the Fourth and Tenth Amphibian Tractor Battalions were embarked in LSTs. Naval ammunition, equipment and vehicles were loaded wherever space permitted.

Note: The loading plans for the garrison forces of Roi and Namur were made by Fifth Amphibian Force and the loading was affected at Pearl Harbor except for an initial supply of argus which was deck loaded on LSTs at San Diego, initial supply of bombs into AKAs at San Diego, and some construction and argus equipment into transports at Lahaina.

The boats suffered severely in the (MARSHALLS) landings because of reefs and coral heads. Since unloading was conducted day and night, many boats became unserviceable from damaged screws and shafts, and engine breakdowns were numerous. The assault transports left their better boats with the boat pool, but generally not more than 40% of the pool's LCMs were operative, and the repair facilities could not repair the boats as fast as they were damaged. Damaged LCMs were towed by workable boats to a large extent. This record parallels previous experience with LCMs which are not suitable for this lighterage job.

Every report following a landing operation stresses the slowness of unloading supplies over the captured beach. Past experience indicates that the beaches can rarely maintain the unloading pace set at the ships. To increase the rate of unloading at the beach to match the ships' rate of unloading, much more equipment is required, particularly cranes, bulldozers, trucks, and such structures as piers and causeways. There are now sufficient landing craft to keep pace with the ships, much more and better water transportation (lighters) would be also necessary.

The following figures are estimated, using cranes at beaches and dumps:

One LCT should take about 2 hours loading at the ship, 45 minutes to travel to the beach, two hours to unload and another 45 minutes to return to its ship, or a round trip every six hours or so, spending one-third of its time beached.

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An LCM should spend about one-eighth of its time unloading and an LCVP about one-tenth by similar reasoning.

A $2\frac{1}{2}$ ton truck should take 10 minutes to load, 10 minutes to reach its dump, 10 minutes to unload, 10 minutes to return to the beach, spending one-fourth of its time receiving cargo.

Therefore, one crane on the beach should be able to handle 3 LCTs or 8 LCMs or 10 LCVPs, and 4 trucks should work with each crane.

Assuming that 6 LCTs, 60 LCMs and 200 LCVPs were active in unloading a force large enough to lift a division, 30 cranes on the shore, an additional 30 at the dumps, and 118 trucks appear necessary.

Realizing that this figure could not be attained in the near future, and that its necessity is reduced by the use of man power, dragging pallets by tractors, and storing supplies near the water, it is suggested that half the above figure be used in the next operation, about 30 cranes and 60 trucks. For (ROI - NAMUR) 6 cranes and 26 $2\frac{1}{2}$ ton trucks were available in the assault phase, and only one crane operated on the principal beach, Roi. The number of cargo nets available should be greatly increased so that loose cargo may be kept in nets from the hold to the dumps.

The CT-9 Trackson crane, a tractor with revolving crane, is the best type for beach work. It is small, handy and fast, and can lift all but very large loads. There are heavy cranes allotted to the CB battalion which may perform the heavier lifts for evaporators, generators, or other heavy pieces. Those belonging to the garrison force should land with those of the assault force so as to be available for unloading APAs and AKAs. The equipment with each crane should include wire straps, pallet slings and bridles, and chime hooks for drums. An Acorn has seven CT-9 cranes, the landing force will have a variable number of similar cranes; therefore, there should be some additional 15-20 cranes with operators at the unloading officer's disposal. As to other equipment, by combining the bulldozers and trucks of the landing force and garrison force, there should be sufficient to meet almost any conditions of unloading.

To increase the quantity of water transportation available, in every case where an LSTs weather deck is not used for LVTs, an LCT should be carried, and all LSTs should side-carry pontoon gear which could quickly be assembled into such structures as wharves, causeways, and self-propelled pontoon barges. Flat top lighters of some 250 tons capacity, equipped with a light crane should be towed to the objective, arriving with the garrison forces. Small YTs could be lifted into the area on these lighters loaded

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for side launching.

LSTs are of use in unloading rolling stock, but are inefficient as compared with LCTs for loose cargo-pallets, drums, dunnage, crates, cloverleaves, boxes, etc. Their employment for unloading transports should be decided by the unloading officer. Self-propelled pontoon lighters lifted by LSTs seem to offer the best solution to the lighterage problem and would supplement what LCTs can be brought in. (These were employed and should prove useful in future operations).

Based on experience in the (MARSHALLS) Operation, there is justifiable need for a provision ship and water ship at the objective. In (the NORTHERN ATTACK FORCE) there were 10 LSTs, 12 LCI's, plus numerous YMSs and SCs which were not self-sufficient in water and provisions. Trying to take care of the more essential needs of these small vessels from the relatively few large ships available caused some confusion in the harbor, particularly when it is realized that destroyers and destroyer escorts also looked to larger ships for fresh provisions. The net result was that the larger ships were cut down in their provision supply to dangerously low wartime levels.

From: Island Commander - Roi Island.

Roi Island was attacked by aircraft on 12 February, 1944, Condition Red (complete alert) was sounded for Roi and Namur at 0204, and the first bombs exploded at 0249. Best estimate is that twelve planes took part, releasing bombs from 14,000 to 21,000 feet in four flights of probably three planes each, the flights arriving over the target at five minute intervals. There was no strafing and all bombs were aimed at Roi. The supply compound was nearly destroyed, one of the ammunition dumps was blown up and living quarters of some units were destroyed. Rolling stock of the Construction Battalion suffered moderate damage. Casualties were moderate.

Eighty five percent of all Island supplies ashore were destroyed. The initial supply of ships service stores stock, clothing and small stores was lost entirely. Provisions, with the exception of a seven days supply of X-rations, were wiped out. One bomb dump and much ammunition was lost. Fuel supplies left on the beach by the 4th Marines were hit and burned. Total personnel casualties numbered approximately 500. Twenty six killed, a few missing and of the balance 320 were evacuated.

Conclusions and Recommendations: The enemy's success on this raid can be attributed to the fact that too many men and too much material were unloaded on the beach on too early a date. This was accentuated by the fact that a great proportion of the precious little land available was occupied by the assault forces with

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enormous quantities of their supplies, that every effort was being made to unload ships at the maximum rate, and that only one small beach area was available for unloading. As a result, large numbers of men were crowded into small bivouac areas, huge quantities of stores, munitions, and equipment (much of which was in excess of immediate needs), were piled high in confined dispersal space, thus providing a perfect target for the enemy's excellent and precise bombing.

In similar future operations, to avoid this situation, it is recommended that the garrison forces to be landed after the assault, be limited to the Construction Battalion, the Defense Battalion, the Argus Unit and the Beachmasters party, with the necessary equipment to build the airstrip, effect initial sanitation, defense, and air warning measures, and prepare living and dispersal areas for the personnel and material to follow. Overcrowding can be avoided and preliminary passive defense measures can be expedited if units such as the Acorn, Casu, Gropac, Air Group personnel, etc., with the bulk of their stores and equipment, are held back until approximately the third echelon. As soon as the strip is operational, a night fighter detachment should be brought in. A complete service squadron is not required to maintain a handful of night fighters. If this procedure is followed, it is believed that permanent base facilities can be completed just as soon if not sooner than is now possible, and that men, material and equipment will be less subject to enemy attacks in an undispersed condition.

Capture of Eniwetok

From: Commander Eniwetok Expeditionary Group
(Commander Group Two, Fifth Amphibious Force).

The necessity for expeditious unloading following the capture of an atoll is vital and must be established as a task of importance, second only to that of assault. This will become more evident as we penetrate deeper into enemy areas, where the probability of being able to neutralize his surface, submarine, and air attacks during the unloading phase becomes more remote. The MAJURO Operation was an excellent example of what careful advance planning can do. There, six cargo vessels were unloaded in a total of six days, and the air field was in operation eleven days after the commencement of work. The defense battalion was set up and ready to function within two days after arrival. Considering the fact that the ENIWETOK Operation was an unexpected one and it had been impossible to effect loading of ships in accordance with the most effective unloading requirements, the unloading performance and establishment of the bases at Engebi and Eniwetok was outstanding.

LOGISTICS - ENIWETOK

An LCI was made available as headquarters ship for the traffic control officer and boat pool officer. It anchored close to the beach in the boat lanes and all boats, after discharge, reported here for orders on their outcoming trip.

The beaches encountered in Eniwetok Atoll, although narrow, were fairly good for landing craft. For the LSTs, however, it was necessary to blast out coral heads to provide a suitable approach and landing area.

Recommendation.

A demolition detail and adequate supplies of blasting materials must be provided in each attack force.

Prior to the departure of the transports and ASHLAND, practically all their operable boats were utilized for the formation of a boat pool which consisted of 16 LCM(3)s and 40 LCVPs at both Engebi and Eniwetok. In addition 2 LCTs were provided and authority was granted to temporarily retain 3 LSTs in addition to the 4 directed to remain there. This was a very generous allowance, and although more boats could have been effectively used, was considered adequate.

Two pontoon barges, pre-assembled in one-by-seven sections, were provided by cargo vessels. Inexcusable delay was experienced in assembling these and their power units. For operations of this nature it is believed that these barges constitute a very effective means of meeting the unloading problem. It is practicable to carry one of these barges completely assembled under the jumbo boom of each cargo vessel, thereby eliminating the delay of assembling in the unloading area. In addition, when LSTs are loaded at a navy yard, for an assault operation, each should be provided with at least 4 one-by-seven sections hung on the side similar to the pontoon causeways. This was done for the MAJURO Operation and did not interfere with the deck loading of LCTs on the same vessel.

Recommendation.

In the unloading area provide maximum number of available landing craft and LCTs.

Make available one LCT for each cargo vessel being unloaded at any one time.

Carry on each cargo vessel one completely assembled three-by-seven pontoon barge under each jumbo boom.

Provide, with each LST, one LCT and in addition at least 4 one-by-seven pontoon sections hanging on the side, except where pontoon causeways are provided.

LOGISTICS - ENIWETOK

Loading of Ships - Basic requirements must be considered during loading, in order that proper sequence of unloading may be attained.

Primary consideration must be given to the beach requirements - bulldozers, caterpillars, cherry pickers, trucks, communication equipment, gasoline, and living equipment for beach working parties. Without this all work will bog down. If practicable, this material should be loaded into one LST provided for the purpose - if necessary, taking one of the defense battalion LSTs for this purpose.

THIS PUTS ALL EGGS IN ONE BASKET

If practicable, heavy bulky cargo should not be stowed in forward and after hatches.

The quantities of material shipped in the initial phases should be drastically reduced, and limited to essentials for which there will be an actual need in the first two or three weeks.

The effectiveness of LSTs for unloading purposed could be greatly increased by the addition of two cherry pickers to their equipment.

Unloading of Drums - The unloading of fuel and oil in drums is a special problem, and more effective means should be provided for its accomplishment. In this operation nearly 30,000 drums were unloaded. Some of the unloading vessels had three-barrel, and one of them had eight-barrel chime hooks. The time per hoist was approximately the same in all cases.

The plan of unloading drums into "barrel corrals" in the water ----- is considered very practicable and is strongly recommended. A similar scheme to this was employed successfully in APAMAMA ----- . In this instance oil drums themselves were secured together to make the boom; but the preparation of this boom was slow and required an exorbitant amount of line. A bomb ----- would be simple to construct and easy to stow, and sufficient numbers of these should be included in the equipment of all drum carrying cargo vessels to handle their entire drum cargo.

Another important advantage of the so-called "barrel corral" is the storage. These corrals can be anchored close inshore in the lee of the island concerned, thereby greatly reducing the congestion on shore, and completely eliminating the fire hazard therefrom. To permit ready identification, drums should be given distinctive circumferential markings to not only indicate the type of liquid carried, but also, in the case of gasoline, its age.

LOGISTICS - ENIWETOK

Recommendation.

That "barrel corral" equipment and four-drum and eight-drum chime hooks in sufficient quantities be provided each cargo vessel carrying drums; that drums be appropriately marked to indicate contents, and also the age of gasoline.

Congestion on Shore - Previously, recommendation has been made to the effect that supplies delivered in the early stages of occupation be reduced to the bare minimum. This recommendation cannot be too strongly emphasized. The reason for this recommendation was very apparent at Engebi. This was a small triangular island of approximately one mile on each side and with a great portion of its area committed to air field and associated activities. By the time approximately 3,500 men of defense battalions, Casu, Argus, GroPac, etc., had been placed ashore with their equipment, and the unloading of thirty days provisions, ten units of fire, gasoline, bombs, etc., had been completed, there was hardly a square yard on that island which was not occupied by something. In spite of great care and ingenuity exercised by the island commander in dispersal, a bomb hit almost anywhere was liable to start a serious fire. Some of the equipment and supplies had already been located on adjoining islands and eventually greater dispersion of this type will be effected, but things of this sort take time and equipment for the preparation of the areas, etc., which cannot be spared in the early occupation phase.

At Engebi the seriousness of the fire hazard in particular was realized and after consultation with the island commander the decision was made to load approximately 8,500 drums of gasoline in two LSTs as floating storage until such time as safe storage was available on shore. Several units fire for the 155mm battery of the 3rd Army Defense Battalion were also placed aboard one of the LSTs remaining.

After occupation of an atoll by our forces, the Japs have shown a consistent tendency to select the seized island as a bombing target and not the ships which may be anchored nearby in the lagoon. This has been noticeable at Tarawa, Roi, and just recently at Engebi. In order to simplify the unloading phase, to provide greater security during the early stages of occupation, and to prevent the danger of serious fires and explosions during this period, the following is submitted:

Recommendation

That at least one LST for each island occupied in an atoll be provided as floating storage for provisions, ammunition, and bombs. These LSTs should be combat loaded prior to their arrival

LOGISTICS - ENIWETOK

so that items are easily accessible. Each should be able to provide approximately ten days requirements during the early occupation phase.

That a system of off-shore "barrel corrals", be adopted at each base.

Fire Hazard on Shore - In the early stages of occupation of an atoll the fire hazard is very great, due to the unavoidable congestion near the beach areas. Upon inquiry at Engebi it was learned that only one fire pump had been received. Immediate steps were taken to see what could be done with the help of forces afloat to improve this situation, and as a result of this investigation decision was made to land temporarily the two large portable Chrysler pumps and available hose from one of the fleet tugs attached to the atoll. Provide at least four pumps of this type for each island base.

THE COMMANDER ENIWETOK EXPEDITIONARY GROUP RECOMMENDS THAT FOR AN ASSAULT OPERATION CARGO VESSELS AND LSTS BE LOADED WITH SECTIONS OF PONTOON BARGES TO SPEED UP UNLOADING. COMMANDER NORTHERN ATTACK FORCE AT KWAJALEIN RECOMMENDS PONTOON BARGE SECTIONS TO BE CARRIED BY LSTS AND FLAT TOP LIGHTERS TO BE TOWED TO THE OBJECTIVE TO ARRIVE WITH GARRISON FORCES. AS LANDING CRAFT ARE DESIGNED PRIMARILY FOR COMBATANT PURPOSES, THE EARLY USE OF PONTOON BARGES AND LIGHTERS FOR CARGO HANDLING FOLLOWING CLOSE AFTER THE ASSAULT IS INDICATED. THE LARGER THE LANDING FORCE IN ASSAULT, THE HEAVIER THE FOLLOWING LOGISTIC LOAD, AND THE GREATER THE NEED FOR LIGHTERS, PONTOON BARGES, PONTOON CAUSEWAYS AND DOCKS.

COMMANDER ENIWETOK EXPEDITIONARY GROUP RECOMMENDS THE USE OF AN LST AS A FLOATING STORAGE FOR PROVISIONS, AMMUNITION, AND BOMBS. THE FOLLOWING EQUIPMENT TO PROVIDE FLOATING STORAGE WHICH IS IN PRODUCTION CAN BE USED TO INCREASE LOGISTICAL MOBILITY IN AMPHIBIOUS OPERATIONS.

COVERED LIGHTERS (2000 TON STEEL) (YF) FITTED TO PROVIDE FLOATING STORAGE FOR: GENERAL PURPOSE, NAVY GENERAL STORES ARMY ORDNANCE AND GENERAL SUPPLIES, PLATES, SMALL BOAT PROPELLERS AND SPARES, AVIATION STORES, DRY PROVISIONS, CLOTHING AND SMALL STORES.

BARRACKS BARGES (APLS) FITTED WITH: REFRIGERATION SPACE, EVAPORATOR AND DISTILLER PLANT, BERTHS FOR QUARTERING 796 (INCLUDING CREW),

CONCRETE FUEL BARGES, 55,000 BBL CAPACITY (YOS AND YOGS) FITTED FOR THE STORAGE OF FUEL OIL, DIESEL OIL AND AVIATION

LOGISTICS - ENIWETOK

GASOLINE.

From: Commanding Officer USS CALVERT.

Twelve (12) davit boats were rail-loaded with equipment and 417 troops in forty-five (45) minutes.

Hatch boats required one (1) hour and fifty-six (56) minutes to lower. This included 13 LCV(P)s, 2 LCP(L)s, 1 LCM(3) and 1 LCC. Forty-five minutes of this total was devoted to hoisting and lowering the LCC.

Total time was 3 hours and 1 minute to debark all of Landing Team 3 and 8½ tons of assault equipment. However, 1 hour and 44 minutes of this total were spent lowering four 37mm guns, and their units of fire which were stowed in separate holds and necessitated hand carrying from hold to hold and being made up in proper sling loads.

Time Analysis: The following statistics are submitted to reveal exactly how many hours each hold of an Assault Transport Attack actually operated.

D/1 Day:

No. 1 hold: 1 hour 59 minutes.
No. 2 hold: 47 minutes.
No. 3 hold: 6 hours 27 minutes.
No. 4 hold: 3 hours 36 minutes.
No. 5 hold: 3 hours 29 minutes.
No. 6 hold: 3 hours 23 minutes.
TOTAL: -19 hours 38 minutes to
discharge 110 tons.

D/2 Day:

No. 1 hold: 3 hours 20 minutes.
No. 2 hold: 6 hours 6 minutes.
No. 3 hold: 6 hours 42 minutes.
No. 4 hold: 3 hours 56 minutes.
No. 5 hold: 2 hours 31 minutes.
No. 6 hold: 55 minutes.
TOTAL: - 23 hours 30 minutes
to discharge 225 tons.

Loading Cargo: -

(1) From December 20 to 26, the First Lieutenant, the ship's Troop Quartermaster and the embarked unit's Troop Quartermaster were in conference planning the loading of the ship.

(2) On December 26, loading began. Cargo arrived on the dock not in order of priorities. This caused wasted time and extra work for the winchmen and hatch parties to sort cargo on the dock and in the ship.

(3) On December 27, the Division TQM added 83 long tons or "B" rations (low priority), and 30 coil concertina, 3 pallets barbed wire and 600 pickets with unknown priorities.

LOGISTICS - ROI-NAMUR

(4) On December 28, 45 pallets assorted ammunition (high priority), eleven $\frac{1}{2}$ ton trucks, two $\frac{1}{2}$ ton trailers (priorities unknown) were added. Removed were five LVT(2)s from the loading plan.

(5) On December 29, 525 tons of ammunition, with no priority or information as to its disposition, were added. Adding this ammunition necessitated unloading number two hatch in order to stow priorities above this ammunition.

(6) On December 30, two LVT(2)s were ordered unloaded, and added were 31,000 sand bags and 22 crated rubber boats.

Recommendation.

That an effort be made to complete with finality the loading plans before any loading begins. That cargo arrive on the dock in correct priority order. That large amounts of ammunition be carried by AKs, Ammunition ships, or ships able to stow it properly. The stowage of ammunition aboard this vessel was in violation of (certain Force and Fleet instructions). That Assault Transports not be loaded with more than will require 12 hours discharging, and with only equipment assigned to assault troops.

THE LOADING MUST CONFORM TO THE TACTICAL AND STRATEGICAL CONCEPT OF THE ASSAULT OPERATION IN PROSPECT. AMOUNTS OF SUPPLIES AND TYPES OF EQUIPMENT THAT WILL FIT ONE OPERATION MAY BE ENTIRELY UNSUITABLE FOR ANOTHER HENCE NO ARBITRARY LOADING LIMITS CAN BE ESTABLISHED.

From: Commanding Officer USS LEEDSTOWN (APA) - Kwajalein.

Although the gross unloading time of the LEEDSTOWN was 36 hours and 20 minutes, the major part of this time was used up in waiting for orders to land cargo and waiting for boats to return to the ship after they had been sent in to the beach getting underway and coming to anchor and one night underway at sea, boats broken down and boats diverted to assist other vessels. Total tonnage unloaded including troops and barracks bags - 736. No cargo remaining on board.

This vessel was very fortunate in obtaining four hydraulic jacks fitted with wheels and two hydraulic platform four-wheel trucks, the platform being three feet wide, six feet long and nine inches high. By prying the pallettes up three inches with special pries (made by ship's force) these trucks would slip under and the working party could haul them under the hatch ready for hooking on. These trucks make palletted cargo very desirable.

LOGISTICS - MEDICAL

From: Commanding Officer, USS MONROVIA - KWAJALEIN.

Collection and Utilization of the Blood Bank: - The formation of an emergency blood bank in anticipation of the treatment of serious war casualties when whole blood elements are needed seemed worthwhile and was instituted aboard this ship. The numerous time consuming laboratory procedures centering around the donor principally blood serology and type as well as time consumed in withdrawal are all eliminated when refrigerated blood is available for immediate use. On D-2 day 7 specimens of blood from the ship's company donors were drawn and preliminary laboratory examination proved them medically available as to type and blood serology (using Kahn test). The pool consisted of 500 cc each of 6 type "O" and 500 cc of type "B" blood.

Ships Beach Party Report: - At 1505 on D plus 3 the beach party medical section landed on Burton Island without opposition. These men acted as replacements for the medical section from PA3 which had landed during the initial assault five hours previously. Their casualty report at this time was: stretcher 10; ambulatory 9; dead 0; total 19. An evacuation center was immediately established and consolidation made with the army collection section (7th Div., 17th Infantry, 1st Bn.). All men were ordered to dig individual foxholes in the proximity of the evacuation center even though the front lines had been established 400 yards distant. A slit trench latrine was constructed near the beach and the beachmaster informed as to its location.

Casualties began to arrive at 1535 and continued to flow into the evacuation center until cessation of enemy opposition. The number was such that treatment and evacuation was prompt. Excellent cooperation was received from the beachmaster for transportation by DUKW's or LCPV's to the control vessel standing approximately 200 yards off shore. From here they were evenly dispatched to the transports during the first few hours, then later ordered directly to the hospital ship RELIEF. The time consumed for the trip never was more than ninety minutes. During the night opposition in the area increased by enemy snipers present within 100 yards of the evacuation site and mortar shells exploding in the near proximity. No injuries were received by the beach party personnel and their diligent work continued as before with thorough cooperation from every corpsmen.

From: Commanding Officer, USS HEYWOOD (APA).

The need for a supply of Army or Marine utility suits or other Army type clothing to clothe casualties, men returning from the beach without clothing, and prisoners was again evident.

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LOGISTICS - MEDICAL

From: Commander Joint Expeditionary Force - KWAJALEIN
(Commander Fifth Amphibious Force).

The casualties were light and no large numbers were received aboard the transports at one time. The following is a summary by days of casualties on board transports of Southern Attack Force:

	Bed Casualties	Non Evacuable	Total	Dead
D-Day	3	0	3	0
D+1	34	0	60	12
D+2	114	4	194	5
D+3	168	14	292	7
D+4	11	3	26	6
D+5	36	0	61	5
D+6	36	1	73	1

The hospital ship U.S.S. RELIEF reported to the Southern Attack Force at noon on D+3 and departed at 1600 on D+4. During her stay in the transport area she received casualties direct from the beach along with transferred casualties from the transports. Casualties evacuated aboard the U.S.S. RELIEF were, 225 ambulatory, 364 stretcher and 26 prisoners of war, a total of 615.

Following departure of U.S.S. RELIEF up to time of reloading combat troops on D plus six, 73 army casualties and 26 prisoners of war casualties were received on board transports for evacuation to PEARL.

A summary of casualties for the Southern Attack Force at time of withdrawal of combat troops on D plus six:

Killed in Action	129
Wounded in Action	436
Missing in Action	<u>65</u>
Total	630

The U.S.S. SOLACE reported to the Northern Attack Force on D plus three and evacuated 362 at that time.

After withdrawal of the APA's from the transport area of the Southern Task Force the flagship ROCKY MOUNT was designated as temporary hospital ship using air evacuation as necessary. This worked satisfactorily.

At times during the assault phase the seas were too rough to permit evacuation from the beaches to transports. When this occurred LST's were used for temporary aide stations, the medical and hospital corps personnel of the LST's were augmented from the transports.

LOGISTICS - MEDICAL

The need for an eye surgeon was acutely felt at times as there were many eye injuries. There was no eye surgeon among the transports or landing forces in the Southern Group. The Northern Attack Group had an eye surgeon with the landing forces. The use of eye surgeons aboard the Task Force Commanders Flagship as planned was not possible due to failure of the eye surgeon to arrive in time for the operation.

From: Commander Northern Attack Force -(ROI-NAMUR)
Commander Group III, Fifth Amphibious Force.

In keeping with the medical plan, the Force Flagship furnished the Attack Force Medical Officer with a landing boat which enabled him to keep abreast of a changing situation through the medium of this mobility. With dependable information, adjustments or action could be taken before the overtaxed communications system could come up with questionable information. This boat was also utilized to transport litters to the beach, evacuate casualties, transfer medical supplies, and transport medical personnel during the battle.

In warfare of this nature Field Hospitals may not be practical ashore during the fluid phases, depending upon the size and shape of the island and the presence and range of enemy artillery. However, the personnel are most useful in assisting ship's medical personnel in the care of casualties, as was the case in this operation where their professional skill and cooperation left nothing to be desired. When the fluid phases are over and the APA's depart, hospital facilities will be essential.

The Landing Force should carry only one type of litter. The metal pole litter is considered satisfactory except when mountainous terrain is to be traversed where Stokes litters are preferred because they can be slid down a hill or mountain side. A certain number of Stokes litters should be included under such circumstances.

Even greater emphasis should be placed upon the danger of consuming food, water, or beverages left by the enemy until fully approved by the Landing Force medical organization.

The APA's of this Force functioned with smooth efficiency. Their training, equipment, and general facilities permitted them to give definitive treatment, where necessary, during the fluid phase of the operation.

Alterations by ship's force can greatly improve the casualty carrying features of ships as is demonstrated in the DOYEN and SHERIDAN. However, it takes time, thought, and enthusiasm for this accomplishment.

LOGISTICS - MEDICAL

Tiering in LCVF's was accomplished but not used in the transportation of casualties from the beaches. Facilities for evacuation of casualties were never overtaxed.

LCVP's are better suited for transferring casualties from APA's to AH's than the ambulance boats carried by the latter because they have greater casualty capacity, they afford more protection from the sea, they can be hoisted to deck level to facilitate loading, and they have more speed.

A greater reserve of certain strategic medical supplies should be carried by LST's.

The dispatch reporting of casualties during this operation never presented a complete or accurate picture. The medical plan should clearly and concisely outline the data required in casualty reports from the ships and Beachmasters.

While only limited use was made of plywood transportation splints, they were favorably received and it is felt they have a definite place in this type of warfare.

Water is strategic and only clean containers should be used for its storage.

The value and use of salt by personnel operating in tropical climates cannot be given too much emphasis.

In the treatment of certain wounds it was necessary to remove portions of the patient's clothing. In some of these cases rather severe sunburns occurred for exposure, particularly of the arms and legs. This complicated the treatment, especially in fracture cases requiring casts.

The general efficiency in the care and evacuation of casualties from the front lines to the ships is worthy of comment. The resulting opportunity for early definitive treatment must be favorably reflected in the mortality rate.

Of the total of thirty-eight (38) Japanese and Korean prisoners of war received aboard the DOYEN, ten (10) were seriously wounded and fifteen (15) had relatively minor wounds. Seven (7) of the seriously wounded died and were buried at sea. Many of the prisoners were suffering from conditions attributable to blast effect, including inner ear infections resulting from ruptured ear drums. A total of six (6) intravenous infusions, six (6) units of human plasma and one (1) whole blood transfusion, from a Japanese donor, were administered. The injuries clearly indicate the effects of the terrific

LOGISTICS - MEDICAL

"mauling" the enemy received. The psychological effect on his will to fight and the physical strain on his ability to fight must have been great. The same amount of bombardment spread over a longer period might have caused even greater mental and physical deterioration.

The disposal of enemy dead ashore was a problem for the following reasons:

- (a) Some had been dead for several days prior to DCG Day.
- (b) Many were wholly or partly covered by debris in block houses, under bombproof shelter, etc., and were very difficult to remove.
- (c) The stench resulting from the putrefaction of mutilated bodies made the work very obnoxious.
- (d) The depth of the soil.

CHAPTER VI

SHIP TO SHORE MOVEMENT

Marshall Islands Operation - January - 1944.

From: Commander Joint Expeditionary Force - (Kwajalein).
(Commander Fifth Amphibious Force).

The system of beach obstructions and beach and reef mines, which the enemy had employed at Tarawa was a matter of very serious concern during the preparatory period for (MARSHALLS OPERATION). Underwater Demolition Units were hastily organized from Army, Navy, and Marine personnel having some familiarity with demolition work. These were given as much training as practicable. A Board was appointed to study the question, to obtain advice from all possible sources, and to recommend the procurement of special equipment. The Board also prepared several plans for the employment of these units, such use as might prove practicable. However, little confidence was felt that the Underwater Demolition Units would be of any great assistance and the beach mines and obstacles continued to cause apprehension.

Photographs delivered shortly before the Expeditionary Force departed from Hawaii showed, as indicated previously, considerable additions to the beach defenses on the west and south sides of Kwajalein Island. To obtain the latest possible information on beach defenses, it was arranged that carrier aircraft attacking Kwajalein Atoll on Dog minus Two Day would take oblique photographs at close ranges of all beaches on the islands on which landings might be scheduled, and to deliver the negatives to the commanders of Task Forces 52 and 53 on Dog minus One Day. These pictures arrived in time to be of very great value, and prints were delivered to all interested units. However, since they did not show conclusively the presence or absence of underwater obstacles and mines on the reefs, CTF 52 decided that it was necessary to conduct a close reconnaissance by boat parties of the landing beaches and reef conditions. Consequently, CTF 52 placed in effect his "Beach Reconnaissance Plan", Annex(L) to CTF 52 Attack Order No. A1-44, which had been distributed enroute. This plan involved sending four boats and two rescue boats, at high tide, over the reef areas that were to be crossed in landing, to positions as close as possible to the beach; this reconnaissance to be repeated by LVTs at low tide the same day (Dog minus One Day). While at first glance, the plan may give the impression of involving unwarranted hazard, this was not the case, in view of the very heavy and prolonged close gunfire cover that was provided by two battleships. One of the principal purposes was to discover mines and obstacles, in order to facilitate an attempt to destroy them during the night. It may be stated that these reconnaissances were carried out exactly as planned. Boats and LVTs went over all parts of the reef, took soundings, observed reefs and surf

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SHIP TO SHORE MOVEMENT - KWAJALEIN

conditions, and approached within three hundred yards of the beach. Not a shot was fired at them. As a result of the reconnaissance, it became reasonably certain that there were no mines and no reef obstacles present. It was therefore decided that it was unnecessary to send in the Underwater Demolition Teams in advance of the assault landings. It should be noted that the same plan of close beach reconnaissance was successfully employed prior to landings in Eniwetok Atoll, and may be considered standard procedure for future landings of a similar character.

Experience during the (GILBERTS) Operation had created the universal conviction that, for landing the assault waves over reefs and through beach obstacles, the employment of LVTs was essential. With the active cooperation of supply agencies of all services, enough of these vehicles were collected for both the Fourth Marine Division and the Seventh Infantry Division for lifting the first four assault waves. In addition, a considerable number of LVT(A)s were obtained for providing fire support for covering the advance inland of the first wave. The vehicles for the Seventh Infantry Division arrived in Hawaii too late to train special crews for them, and it became necessary to use tank operators as crews. In spite of the very short time for training, this employment of tank crews was fully successful.

The necessity for employing LVTs, to insure success in landing, imposed by beach and reef conditions met in the Central Pacific atolls, has greatly complicated the already complex ship to shore movement. LVTs in adequate numbers cannot be carried by APAs in which troops are embarked. Nor is it desirable or practicable to substitute LVTs for landing craft aboard the transports. On the other hand the LST, though slow, affords a fairly effective means of transportation for LVTs from port of embarkation to the landing area. This carrier would be excellent if faster and if the elevator were large enough to take LVT(2)s. This means of transportation for LVTs, also, forces a choice between two alternatives:

- (1) To embark assault troops in LSTs for the movement overseas or,
- (2) To transfer assault troops in the transport area from transports to LSTs for embarkation in LVTs.

To avoid breaking up Battalion Landing Teams and to permit battalion commanders to retain close supervision over and personal contact with their units until just prior to landing, the second of the above alternatives was adopted for (MARSHALLS OPERATION). The method of transfer from APA to LST was prescribed in detail and carefully rehearsed prior to the operation to insure rapid and orderly transfer both for day and night conditions. All supplies, ammunition and equipment other than individual weapons, light machine guns and 60mm mortars, were embarked and properly placed in pre-scribed LVTs aboard assigned LSTs prior to sailing from Pearl.

Arrangements for ship identification and details of rendezvous for APAs and LSTs for both night and day conditions were prescribed and all arrangements made to prevent confusion or loss of time in making this transfer. Upon completion of the transfer, LSTs proceeded to the vicinity of the line of departure and launched LVTs in accordance with the approved schedule.

Operation of Control Parties

An effort was made in this operation to maintain a more accurate control of boat waves, of troops who had just landed on shore, and of the flow of supplies embarked in boats, than had been attained in previous operations. The Chief Control Officer was an officer on the staff of Commander Fifth Amphibious Force; he was also appointed as Chief Beachmaster.

Three SC and two LCC were placed under the command of the Control Officer. The ships' personnel acted as assistants to the Control Party. To each of the SCs was assigned, in addition to the regular crew, a communication team consisting of one officer, four radiomen, and two signalmen. The following communication equipment was placed on each SC to augment the communication facilities already installed:

3 SCR 536	2 TCS
1 SCR 610	1 TBY
1 SCR 608	

In addition, SCs of the Control Group were each given one 1-meter rangefinder.

The Chief Control Officer was embarked in one SC, ordinarily at the Line of Departure. However, the Chief Control Officer was free to move to any point in the immediate vicinity, in order better to exercise his control. Embarked on his vessel were the following:

- (a) A representative of the Commander of the Landing Force, empowered to make decisions;
- (b) Commanding Officer of the LVT Battalion;
- (c) A representative of the G-4 Division of the Commander of the Landing Force, with authority to determine matters concerning the flow of supplies to the beach; and
- (d) A medical officer of the Landing Force concerned with evacuation of wounded.

A second SC was stationed continuously at the Line of Departure. On this vessel was embarked an officer from the staff of the Transport Group Commander responsible for executing the landing. This officer was charged with the duty of despatching waves on schedule, and as directed by the Control Officer or as requested by the Regimental Commander, as required by the tactical situation on shore.

SHIP TO SHORE MOVEMENT - KWAJALEIN

A third SC was assigned to the Regimental Commander in command of the landing at each beach, for the purpose of establishing a mobile temporary PC which could be in direct communication by radio and visual means with the Commander of the Landing Force, the troops embarked in LVTs and boats, and with the battalion commanders of troops who had already landed. As soon as the situation on shore permitted, the Regimental Commanders established their PCs on shore, and the SC previously used by them was then assigned for the use of the Commander of the Landing Force.

For each landing, the four leading waves consisted of LVT(2)s, supported by amphibian tanks. These waves were sent in on schedule. The remainder of the troops were embarked in boats and remained at the Line of Departure "on Call" from Regimental Commanders. The LVTs were debarked from LSTs stationed somewhat to seaward of the Line of Departure, at a distance sufficient to permit the formation of waves enroute to the Line. Troops which were embarked in boats from the transports formed waves in the Transport Area and then proceeded to the Line of Departure. Boat Wave Commanders, both of LVT and of boats, on arrival at the Line of Departure, reported to the Control Officer, and then took their allotted positions in the column of waves.

Two LCC were employed as flank guides for the leading waves of the assault. The LCC, under the direction of the Control Officer, controlled both the direction and speed of advance of the LVT, checking their approach to the beach by radar and bearings; in order to insure arrival of waves at the designated times. After the landing of the first four waves, LCC then took station about two thousand yards off the beach, in an area previously designated, and from this position directed and supervised the transfer of troops from landing boats to LVTs which had returned from their employment in the assault waves; and their subsequent despatch to the beach.

A very large number of LVT and boats were congregated at the primary and at the secondary Lines of Departure, but were at all times under excellent control. They were not fired upon by the enemy, because of the effectiveness of the preparatory and supporting gunfire from the ships. The movement of boats from the primary to the secondary Line of Departure, and thence to the beach, was conducted in a most orderly fashion. LSTs remained in the vicinity for debarking priority cargo and for servicing LVTs. High priority cargo, expected to be immediately required by the troops, had been loaded in these LSTs; from the LST the cargo was transferred to LVTs and sent in by the Control Officer on calls from the Beach. General unloading of cargo from the transports was not undertaken until a secure beachhead had been obtained, and suitable beaches found for landing.

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SHIP TO SHORE MOVEMENT - KWAJALEIN

Underwater Demolition

The following features were incorporated in the underwater demolition plans:

- (a) Last minute intelligence through aerial photographs and beach reconnaissance from boats.
- (b) Organization of joint "Underwater Demolition Teams" consisting of approximately 8 officers and 80 enlisted men each transported in vessels of the advance transport group.
- (c) Several alternate plans were provided as follows:
 - (1) Surface reconnaissance of Red and Green beaches night of Dog Day using rubber boats and supported by gunfire.
 - (2) Employment of remote control demolition equipment ("Drones" or "Stingray") to clear approaches to landing beaches just before the landing waves;
 - (3) Manual demolition during the night before the landings, using rubber boats and covered by diversionary gunfire;
 - (4) Manual method during the day just before sunrise under cover of smoke (and gunfire if necessary)
 - (5) Manual method concurrent with the landing using LCTs, LCVPs and rubber boats.
- (d) Equipment included:
 - (1) Standard demolition equipment and explosives
 - (2) Remote-controlled LCP(R)s filled with explosives and fitted with outriggers holding bangalore torpedoes.
 - (3) Aqueous snakes.
 - (4) Grapnel outriggers on bow of several LVTs to set off the underwater mines before the LVT passed over them.

Short range low obliques and very low altitude photographs of the reef approaches and beaches selected for the landing were taken on D-2 at low tide. These photographs disclosed no underwater obstacles or barriers on the reef approaches to the selected beaches and showed no evidence of anti-boat mines in those approaches.

A daylight beach reconnaissance was made on Dog day, at both high and low tides, of the reefs in the approaches to the beaches selected for the main landing on Kwajalein Island. The results of this reconnaissance checked with the photographic reconnaissance. No underwater obstacles, barriers or anti-boat mines were found on the reefs in the approaches to the selected beaches.

As a result of the photo and beach reconnaissance underwater demolitions were considered unnecessary and plans for the prelanding employment of Underwater Demolition Team No. 1 was canceled.

As a test of the remote control equipment (Stingrays) under combat conditions the employment of this equipment against Carlson

SHIP TO SHORE MOVEMENT - KWAJALEIN

Island beaches was attempted at dawn on Dog Day. Due to mechanical failures of equipment this test was unsuccessful.

On Dog plus One Day, Underwater Demolition Team No. 1 stood by near the line of departure and after the seizure of a beach head and for the next five days performed valuable service in the demolition of wrecks, coral heads and other underwater obstructions.

From: Commanding General Fifth Amphibious Corps.

In the north, the time of the principal landing was delayed 2 hours. If changes in H-hour are transmitted sufficiently in advance, the supporting arms, air, naval gunfire, can readjust their schedules to conform to the new time of landing. This was done properly on (KWAJALEIN).

It should be SOP to ascertain before an operation the debarkation interval, the time required to transfer to LSTs for each BLT involved, and other vital time and space factors. This information, though approximate, is essential if plans are changed or if any reserve elements have to be landed. Too few troop commanders are familiar with the term "debarkation interval" as employed in FTP 167. In the Northern Sector, W-hour was delayed 60 minutes because these factors were not accurately calculated. Troop officers failed to allow sufficient time for the LVTs to debark and to move from the LSTs to the line of departure and thence to the beaches. Efficient staff work and the closest possible cooperation with corresponding naval echelons is essential.

From: Commander Destroyer Squadron One - Roi-Namur.

The following recommendations are offered from the view point of the Control Officer at the Line of Departure:

More time should be allowed for boating the landing waves and in getting them to the Line of Departure. With air superiority and effective gunfire support it is not believed that there should be any objection to having a large number of landing craft around the Line of Departure.

The decision of the Task Force Commander to have a fairly senior naval officer in charge of the Line of Departure is sound. At times decisions have to be made that can best be made by the man on the spot, and if such officer is properly indoctrinated he will carry out the intentions of the Task Force Commander.

Wave Commanders of Landing Waves should exercise positive control of their waves in bringing them up to the Line of Departure, and in keeping them in proper alignment on the way in to the beaches.

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SHIP TO SHORE MOVEMENT - ROI-NAMUR

It is believed that a destroyer is the best type of vessel to act as Control Vessel due to its fire power and communication facilities, to be assisted by the LCCs. However during the last sixty minutes just prior to How Hour, it is not recommended that the control destroyer be assigned any gunfire mission other than counter-battery or targets of opportunity, as to properly control the landing waves and start them in correctly, it is essential that the control vessel be headed toward the beaches.

From: Commanding Officer USS PHELPS (Control DD at Line of Departure) Roi and Namur.

The landing waves were controlled at the lines of departure largely by the use of special flags, and three portable Newcomb announcing systems (bull horns). This latter equipment was most useful for many purposes throughout the entire operation, and it is strongly recommended that one of these portable bull horns be placed aboard every destroyer. We even prefer it to the more elaborate Operadio Battle Announcing System.

In addition to being a close fire support ship, PHELPS was also assigned to accurately mark all lines of departure. Since this required that the ship be kept headed toward the landing beaches in order to properly control the landing waves at the Line of Departure, difficulty was experienced in bringing the entire main battery to bear, and frequently resulted in only the forward mounts being on designated targets. Firing sharp on the bow caused some minor structural damage within the ship.

While marking the Lines of Departure inside the lagoon, it was considered best to anchor the ship. To ease any sudden stresses to the anchor chain, and also to obtain better train angles, the ship was maneuvered almost continuously with her engines.

At one stage of the landing on Ennumennet, machine gun splashes were observed close to a group of our landing boats. This caused us some concern, since we were uncertain as to whether or not our troops had landed on Ennugarret. We were ready to open fire; but continued observation indicated that the splashes were caused by our own boats testing their guns. It is recommended that landing boats be instructed not to test their weapons in this manner - such tests if necessary might better be conducted against the beach.

It is recommended that destroyers designated to mark lines of departure be scheduled to fire only against call and opportunity targets. It is important that such ships be kept headed toward the landing beaches; to swing around for sustained broadside firing is disadvantageous in forming up the landing waves. Firing close to ahead, particularly on older destroyers, causes considerable structural damage in the vicinity of the mounts.

SHIP TO SHORE MOVEMENT - ROI-NAMUR

It is believed that a destroyer is best suited to function as control vessel at the Line of Departure, due to its communication and fire power facilities. It was noted that landing boats tended to form up around the destroyer rather than the smaller SCs and LCCs. The two latter types are, however, also essential at the Line of Departure.

When landing against strongly fortified beaches, it is recommended that the control destroyer at the center of the Line of Departure, be supplemented by two other destroyers to be on station at the extremities of the Line of Departure. The Control Destroyer at the center can then keep properly headed to permit better control of the waves, firing as necessary at targets of opportunity on the bow. The other two destroyers to have more maneuvering latitude, while concentrating their entire broadsides on counterbattery, opportunity and close fire support.

From: Commanding Officer Transport Division Six -
Kwajalein.

The practice of wholesale changes of the various units assigned to transport divisions for each operation can be largely avoided and does not make for either smoothness or efficiency. It is all the more credit to the officers concerned that they were able to attain the perfect coordination so apparent in this attack. It was attained under some difficulty and a considerable expenditure of effort. In short, it was done the hard way. If we set our organization to do things the easy way we will have considerable more time, mental effort and physical effort to spend against the enemy.

The LST carrying any of the assault elements or their equipment, or stores, should be directly under the transport division commander for whom they are carrying. They may be assigned, of course, to special Task Groups for transit to and from the attack area, but once there they should be a part of each transport division. It is needless to point out the desirability of having the same LST do the same duty for the same division for each operation. The time and effort required in each operation to instruct new vessel and new officers in their duties when there are vessels and officers who are experienced in those duties available appears disproportionate and could much better be spent otherwise. At best there will be many new ships and inexperienced officers to indoctrinate.

The Army division transport quartermaster, assigned for this operation to the third SC boat, with his lists of supplies immediately available, should be in close physical contact with senior beachmasters on unloading beaches. If necessary for him to go elsewhere he should leave a qualified representative with lists on

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SHIP TO SHORE MOVEMENT - ROI-NAMUR

such beach. Much time was spent searching for certain types of supplies with LCVPs when such supplies were needed by troops on the beach. While the delay thus involved apparently made no great difference in these specific instances, such delay could be fatal if ammunition was needed quickly.

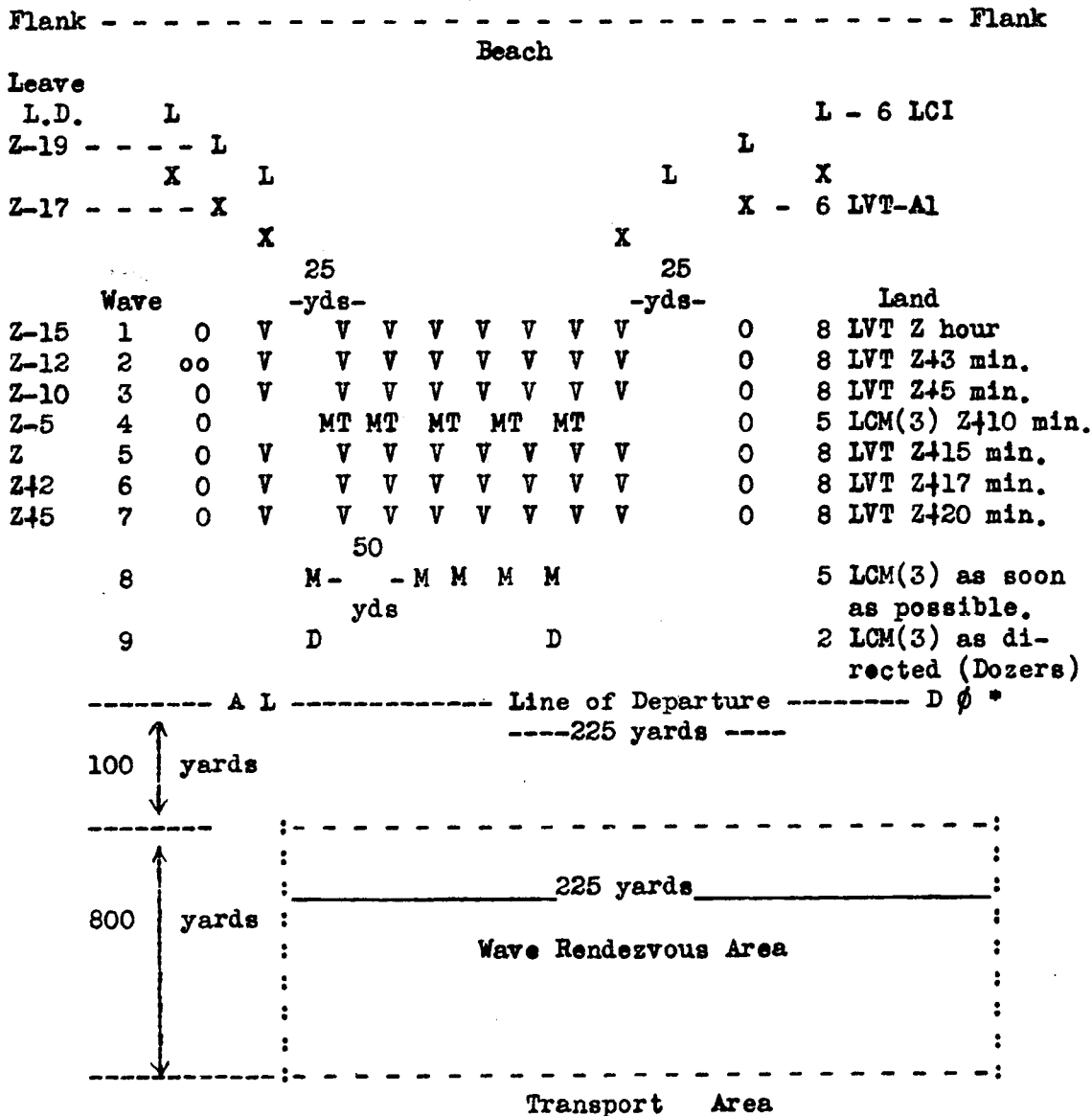
It is still not realized by the Army and the beachmasters that the transport division commanders must be informed and kept informed of everything that goes on on the beach and of projected operations. The loading of the tanks on Green Beach the night of D-2 day is one case in point, and the time the assaults on other islands were projected is another case. Both of these were of most direct interest to Transport Division 6 and 18, yet, speaking for 6, information of these operations was obtained by inference gathered from TBS interceptions. Again they made no real difference in this operation but such does not conform to sound principles of coordinated command and their lack can have serious results in future operations. Our system must be set up to avoid them.

From: Report of Beachmaster, USS NEVILLE - Eniwetok.

The success of landing supplies and supplying the front line troops throughout the operation should be attributed mainly to the excellent and unflagging work by the Commanding Officer of the 3rd Battalion of the 104th Engineer Shore Party and his officers and men. At no time during the operation was there any lack of cooperation between the Beach and Shore Parties, or any lessening of enthusiasm or of work done by the Shore Party. The beach upon which the supplies were landed was cleared, widened and improved by the shore party. This prevented confusion of the beach and accelerated the unloading of supplies.

SHIP TO SHORE MOVEMENT - ENIWETOK

Assault Landing Diagram USS NEVILLE - ENIWETOK



Glossary:

L - 6-LCI.	oo- Salvage boat.
X - 6-LVT A-1.	M - 5-LCM(3) with self-propelled cannon.
V - 48-LVT.	D - 2-LCM(3) with Dozers.
O - 14-LCVP Wave Guides.	A - Left line of departure.
MT - 5-LCM(3) with medium tanks.	
Ø*- YMS control boat.	

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SHIP TO SHORE MOVEMENT - ENIWETOK

From: Commander Transport Division 30 - Eniwetok.

Three LCIs in echelon on the right flank and three on the left led a formation of LVT(A)s disposed in echelons of five on each flank about 200 yards astern of the LCIs, the remainder five in line ahead of the first wave of LVTs.

The succeeding waves were despatched at 5-minute intervals up to wave ten which was held at the line of departure to avoid congestion on the beaches the troops not having yet cleared. These waves were released when beach conditions improved. Included were three waves of DUKWs loaded with the 104th Field Artillery. A series of squalls struck the area at this time, and permission was given the Unit Commander to reembark them if necessitating movement of YMS 262 to the Control position to act as anchor boat.

The unloading which followed the assault consisted of high priority supplies, mainly water, small arms ammunition and explosives, and medical supplies. A reserve was kept at the Control vessel, and as the demands for additional supplies increased the size of the reserves was increased.

From: Commander Transport Group - Eniwetok.

The process of supplying the beaches with the desired types of ammunition and water needed to carry on the fight ashore functioned smoothly. No details will be entered into beyond the general statement that the functioning of a proper supply service from ship to shore depends upon:

First: Careful initial loading of APAs so that all types of ammunition in adequate quantity are readily available at all times in the holds. Water in expeditionary cans and medical supplies must be similarly available.

Second: An adequate level of assorted supplies must be present at the control vessel in boats at all times. The presence of a logistic control officer on board the control vessel, familiar with the tactical and supply plans and needs of the troops in highly desirable.

Third: The early establishment of the mobile supply dump in boats at the control vessel is essential.

Fourth: Adequate communications between front lines, beaches, control vessel and Transports must be established and maintained.

The above general conditions were met during the assault on Engebi and the supply service met the demands.

THE THREE MAJOR ASSAULT LANDINGS IN THE MARSHALL ISLANDS
OPERATION AT KWAJALEIN, ROI-NAMUR, AND ENIWETOK OBTAINED
A HIGH DEGREE OF FLEXIBILITY IN THE SHIP TO SHORE MOVEMENT

SHIP TO SHORE MOVEMENT - ENIWETOK

BY THE USE OF CONTROL BOATS TO REGULATE THE FLOW OF EQUIPMENT AND SUPPLIES IN ACCORDANCE WITH THE TACTICAL SITUATION AND TROOP REQUIREMENTS ON THE BEACH.

THE CLOSE CONTROL OF BOAT WAVES AND PARTICULARLY THE CONTROL OF THE FLOW OF SUPPLIES AND EQUIPMENT TO THE BEACH AFTER THE INITIAL ASSAULT, WHICH WAS EXERCISED IN THESE LANDINGS MAY BE REGARDED AS SETTING A PATTERN FOR THE CONTROL OF THE SHIP TO SHORE MOVEMENT IN FUTURE LANDING OPERATIONS.

BEACH AND SHORE PARTIES

From: Commander Joint Expeditionary Force - Kwajalein.
(Commander Fifth Amphibious Force).

A special effort was made to organize, train, and coordinate the beach and shore parties well in advance of the operation. -----, an officer on the staff of the Commander Fifth Amphibious Force, under the direct supervision of the Chief of Staff, gave this matter his exclusive attention. ----- was then ordered as Chief Control Officer and Chief Beachmaster of the two Transport Groups of Task Force 52. Beachmasters were ordered to the staffs of Transport Division Commanders, and a beach organization set up in the transports of the force ----- . This organization was shown to be sound, as, in spite of the lack of experience of many of the personnel, beach and shore parties functioned better than on any other occasion within the force commander's experience, except in the case of the landing on Rendova Island.

With this system of permanently organized beach parties of naval personnel attached to ships, all of whom are subject to the close control of commanding officers and division commanders of transports, problems concerning the efficiency of beach parties should soon be solved. This would never be the case were beach parties to be separated from ships, and formed of green personnel who ordinarily live on shore. It is believed that the efficiency of shore parties will not improve until some measure of permanency be adopted for them as well. The force commander will shortly submit detailed recommendations on the subject, one of which will be that a certain number of permanent shore party nuclei be established under officers of adequate rank. These nuclei, supplemented during operations by guard and labor troops, should be able to find a satisfactory solution of the shore party problem.

Three SCs and four LCCs were fitted out with communications, radar, rangefinders, and loudspeakers for each of Task Forces 52 and 53, and the control parties trained in coordination with ships, boats, troop commanders, and beach parties. One SC acted as the senior control officer's vessel. On this vessel were embarked representatives of the Commander of the Landing Force. The third SC was placed at the disposal of troop commanders; on it were embarked the commanders of the assault regiments, together with certain members of their staffs. These regimental commanders thus were able, from the beginning, to maintain their Command Posts in close touch with the boat waves remaining near the Line of Departure, and in visual and radio touch with the battalion commanders of the assault waves that had already landed. Regimental Commanders moved ashore as soon as they could function effectively there; the SC was then turned over to the Commanding General of the Division. The LCCs were employed as guide and command boats for the first two pairs of assault waves, and later formed a second close-in Line of Departure

BEACH AND SHORE PARTIES

at which later waves of troops embarked in landing boats were reembarked in LVTs for ferrying to the beach. The control officer also was the senior beachmaster, the assistant beachmaster on shore being under his direct command. With radar, rangefinders, and communication facilities that were installed on the SCs and LCCs, extremely accurate control and timing of the landing waves became possible. Every thousand yards the boat waves were informed by voice radio as to how much ahead or behind schedule they were, and thus were able to correct their positions before arrival at the next one thousand yard point. It seems incredible, but it is a fact that, of six assault landings made by the landing forces of TF 52, three of the leading waves struck the beaches at exactly the time scheduled; one was one minute late, one was two minutes late, and one was three minutes late. Succeeding waves were as accurately controlled as the leading waves. With slight modifications, the control system used in the (MARSHALLS) Operation can be considered as standard for the future in this force. Recommendations will be submitted separately for an increased number of SCs and LCCs adequately fitted for controlling boat waves of the landing force.

Operation Of Beach And Shore Parties

Beachmasters were members of the staffs of the commanders of transport divisions. Ordinarily, the Beach Parties of a transport division consisted of the beach parties from two transports of the division. Nucleus Beach Parties, with assistant beachmasters, were sent in to the beach in the fourth wave of LVTs, in order to establish communications, to mark beaches, and to conduct preliminary hydrographic surveys of beach approaches. The remaining parts of the Beach Parties were despatched to the beach as soon as the beachmaster believed that they could function effectively.

In general, the Shore Parties employed by the Seventh Infantry Division were members of the garrison force which were to remain at the position. Thus, employment of Shore Parties did not reduce the number of assault troops. Shore Parties consisted generally of engineer detachments, supplied with a certain amount of engineering equipment and trucks, plus the members of an Army port battalion. Nucleus Shore Parties were landed in the fourth LVT wave; the remainder of the Shore Party was landed as soon as the situation permitted.

Great stress during the preparatory period was placed on close personal relations and cooperation between the personnel of the Beach Parties and Shore Parties. So far as practicable, Beach Party and Shore Party Commanders, and their principal assistants, were embarked on the same vessels. They prepared their plans in cooperation with each other. As a result, cooperation between the Beach and Shore Parties was excellent.

BEACH AND SHORE PARTIES

The assault on Kwajalein Island was made across Beaches Red One and Two. The majority of troops were landed across these beaches, but owing to the difficulties of the approaches, only such supplies were landed as were needed immediately by the troops. These supplies were, in general, water, ammunition, and emergency rations, and were selectively loaded in LSTs maintained near the line of Departure. Troops and supplies of this nature were landed across the Red Beaches at Kwajalein Island during the first two days of the assault.

Beach Green was adjacent to Beach Red, on the lagoon side of Kwajalein Island. As soon as the troops had advanced a sufficient distance, Beach Green and its approaches were surveyed by Beach Parties and roads were constructed to the beach by Shore Parties. The Underwater Demolition Team blasted out coral heads and wrecked boats in the beach approaches. Across Beach Green was landed most of the heavier equipment and the supplies which were required by the assault troops, and the first units of the garrison troops. This beach was rather difficult in many places, and landing boats, LSTs and LCTs suffered considerable damage in using it.

Eight pontoon strips were carried outboard in LSTs of TF 52. Two of them were used in the Dog Day landing on Carlson Island, later being moved to Kwajalein. The other six were first employed on Beach Green on Dog plus Three Day, and later moved to the long pier near the northeastern end of the island, after opposition had been overcome. These pontoon strips are of the utmost value, and their use greatly expedites the discharge of cargo both of the assault and garrison troops. One pontoon causeway crew was available. It is considered that one crew should be employed for each four causeways.

Throughout the four separate assault landings conducted by TF 52, DUKWs and LVTs were successfully employed in bringing in high priority supplies from LSTs. At high tide, the DUKWs were able to come in water-borne to a point where all four wheels rested on the sloping coral. At low tide, the water over the edge of the shelf on the seaward side was shallow in many places. Here these vehicles were frequently unable to climb up over the rim of the shelf. However, by backing off and trying other points near the edge of the reef, they were usually able to find a spot they could negotiate. Once all four wheels had traction on the reef they had merely to avoid coral heads and deep ruts on their way to the shoreline. From there they were handled like any large truck. In this instance, DUKWs proved to be invaluable in their employment for the rapid transfer to troops of supplies and ammunition immediately needed.

BEACH AND SHORE PARTIES

Medium tanks were landed in LCMs, most of them at about half tide. Most of the light tanks were landed just after high tide. All of these vehicles were carefully waterproofed and a large percentage of them got ashore successfully, in some cases even where the water was from four to four and one-half feet deep. Several of the tanks drowned on the edge of the reef; others drowned in large depressions in the reef caused by explosions of heavy caliber projectiles and large bombs. However, practically all of this equipment was salvaged and placed in use before the end of the fighting on Kwajalein. Reembarkation of the tanks into LCMs was carried out at practically all steps of the tide; inside the lagoon.

A nucleus Beach Party of the GROPAC went forward in the assault transports, and formed an integral part of the assault Beach Party. They thus became familiar with their duties, the situation, and the terrain. When the assault Beach Parties returned to their transports on reembarkation of the assault troops, the vacancies were filled by GROPAC personnel of the Garrison Force. It was thus possible to avoid having to break in a completely new Beach Party for unloading the bulk of the Garrison Force.

CHAPTER VII

LANDING CRAFT - LVTs

From: Commander Joint Expeditionary Force - MARSHALLS
(Commander Fifth Amphibious Force).

LVTs

Employment of LVTs by 7th Infantry Division

The 7th Infantry Division so organized its amphibian tractor units that it was able to retain desirable tank operational and maintenance procedure and technique and at the same time fit the organization to its new functions. Under the 708th Provisional Amphibious Tractor Battalion, four LVT groups were organized. These LVT Groups were designated respectively "Able", "Baker", "Charlie" and "Dog". Each group, consisting of 34 LVT's, was designed to land the first four waves of one Battalion Landing Team. One such group was assigned to two LST's, each LST being able to load 17 LVT's on the tank deck.

The assignment of LVT groups to LST's was permanent for the duration of the operation, both for movement overseas and throughout the initial and subsequent landings. This permanent assignment of LVT groups to specific LST's contributed a great deal to the high order of success achieved in the operation and maintenance of LVT's. For each group of LVT's assigned to two LST's, one LST was equipped as a maintenance shop. A supply of LVT parts and maintenance equipment together with the necessary shop personnel were loaded and set up in the designated LST. After each landing LVT's were returned to and reloaded in their assigned LST's for overhaul, servicing and necessary replacement of parts. A supply of gasoline in 50 gallon drums was maintained in each LST. Rotary pumps were used to pump gasoline from drums into 5 gallon cans for fueling.

After the capture and occupation of CARLOS Island, that island was used as an LVT base throughout the remainder of the operation. LVT's which could not be immediately repaired on the LST's and returned to service were landed on this island. A 10-ton wrecker and other heavy maintenance facilities were placed on CARLOS and all extensive or heavy repairs and maintenance were performed on that island. LST's assigned to the LVT Groups normally anchored in the lagoon in the close vicinity of CARLOS when not actually involved in operations. This facilitated repair and maintenance work, and simplified issuance of orders and preparations for the various landings which followed the initial Dog Day landings. All LVT groups were kept up to operating strength by the employment, when necessary, of spare LVT's carried on the LSD's.

LANDING CRAFT - LVTs

Within each LVT Group one LVT was employed solely for emergency maintenance and repair. This LVT carried extra gas and oil, a small supply of spare parts, a welding outfit, extra plating and a maintenance crew. It operated between the line of departure and the beach and rendered immediate assistance to any tractor in difficulty or which suffered damage which the crew itself was unable to repair.

For purposes of coordination and command, the Battalion Commander of the Amphibian Tractor Battalion was located in the flagship of the Transport Group Commander. His executive officer was located in the flagship of the LST Group Commander. By this arrangement the LVT Commander could maintain close, direct and personal contact with the troop and naval commanders with whom he had to work and, through his executive officer, issue instructions directly to his LVT groups. During the ship to shore movements the LVT Battalion Commander moved to the line of departure and remained on or in the vicinity of the control vessel. Through the control vessel he could readily communicate with the transports, the LST's or with the beach and from his position near the line of departure could observe and supervise the operation of his LVT groups.

By the methods and technique employed as outlined above, the 708th Provisional Amphibian Tractor Battalion operating in four LVT groups from eight LST's was able to execute five separate landings on schedule. No LVT's were swamped or lost in the surf. Two LVT's were swamped as a result of attempt to tow at a speed in excess of ten knots. None were seriously damaged by hostile fire. All LVT mechanical failures or hull damages were repaired and the tractors returned to service without delay. All LVT groups operated at full strength throughout the operation.

The principal difficulty yet to be overcome in the operation of LVT's from LST's is the procedure for reloading. This evolution is time consuming and the technique still unsatisfactory. At least two hours is required to reload 17 LVT's in an LST under good sea conditions. A number of improvements have been suggested but these remain untested or undeveloped. One improvement would be some type of temporary turn table located near the bow or the tank deck of the LST. Such a device would permit the LVT to reenter the ramp bow first and then be turned around on the turn table.

From: Commander Northern Attack Force - Roi and Namur.
(Commander Group Three, Fifth Amphibious Force).

During the training period, and also during the actual operation against the islands of Kwajalein Atoll, it was apparent that

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the present organization of LVT2s into Battalions attached to a Marine Division is not satisfactory when these LVTs are to be used as assault boat waves. The present organization involves three different chains of command in the control of the LVTs and their embarked personnel: first, that of the Amphibian Tractor Battalion itself with its company and platoon organization; second, that of the boat flotilla with its group wave and division organization which seldom can be matched up with the company and platoon organization of the Amphibian Tractor Battalion; and third, that the embarked troops which almost certainly cannot be made to parallel the other two. All three of these chains of command at various stages issue orders, advice and suggestions, frequently conflicting, to the individual LVT drivers with considerable resulting confusion. Previous use of LVTs of the cargo carrying type, and the training of the drivers, to date, has been such that they have been generally deficient in seamanship and the necessary knowledge and ability required to properly handle LVTs in the open sea or even in the choppy water of a lagoon whipped by a normal trade wind of about 20 knots. It is therefore recommended that LVT2s which are to be used for landing assault waves be considered as boats rather than vehicles, that they be manned by Navy personnel who have been trained in seamanship and boat handling as boat units at an Amphibious Training establishment, such as the Landing Craft School at San Diego, and that they be assigned to the vessels in which embarked just as LCVPs and LCMs are now so assigned. For LVTs to be used primarily for purposes other than that of landing assault troops, the present organization should be retained.

THE SOLUTION OF THE ADMINISTRATION AND CONTROL OF LVT2S
EMPLOYED IN A LANDING ASSAULT LIES IN THE TRAINING AND
INDOCTRINATION OF THEIR CREWS AND EMBARKED TROOP UNITS.

From: Commander Joint Expeditionary Force - MARSHALLS
(Commander Fifth Amphibious Force).

LVT(A) 1 (Amphibian Tanks)

One company of LVT(A)1's was employed by the 7th Infantry Division in (MARSHALLS OPERATION). This unit was Company A, 708th Amphibian Tank Battalion. It consisted of fifteen LVT(A)1's organized into three platoons of 5 Amphibian tanks each. The entire company was embarked in LST 224 and operated from that LST throughout the operation in a manner similar to that described above for the cargo type amphibian tractor units.

The normal employment for the amphibian tanks was to accompany and support the first wave. They were generally located on the flanks and in the center of the leading wave. In the main landing

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on KWAJALEIN one platoon was located on the right of the leading wave of the right assault battalion, one platoon on the left of the left assault battalion, and one platoon in the center between the two assault battalions.

The operation and maintenance of this amphibian tank company was highly satisfactory. Since no resistance was offered to any of the landings, the effectiveness of this type of amphibian tractor in rendering the support for which it was employed was not seriously tested.

From: Report on Kwajalein and Eniwetok Operations.
Prepared by a War Department Mission.

----- The flame throwers installed in the LVT, due to lack of time prior to sailing, were not sufficiently tested and waterproofed, and consequently failed to function. It is doubtful that this weapon has great applicability for use on the LVT, which is limited to water and beach operations. Certain qualified officers in this theater are of the opinion that flame throwers would be very useful on tanks, although only limited use was made during these operations. This fact was true because the tanks so equipped were not committed until the later stages of the assault. It was also expressed that if tanks were employed in close support of the infantry during the assault, a flame thrower would very usefully supplement the tank's fire power and increase its utility.

From: Commanding General V Amphibious Corps.

LVT's again proved themselves invaluable, in fact essential, in this type of operation. The reef around (KWAJALEIN ISLAND) necessitated the transfer of troops of the later waves from LCVP's to LVT's. Troops of the first four waves were beated in LVT's initially. In the Northern Sector, hydrographic conditions on the main objectives were more favorable. Troops could land dryshod from LST's on the lagoon beaches of (ROI) and (NAMUR). This fact was all the more appreciated because many LVT's had failed to return from their D-day missions and only the 1st wave on D plus 1 day was beated in them. Heavy surf and hazardous reefs had accounted for LVT losses in Phase I, but without the amphibian tractors the landings in this phase would have been much more difficult, perhaps impossible.

The LVT(A)(1) was exploited to the fullest extent by the 7th Infantry Division. These amphibian tanks provided excellent support for the initial waves both in Phase I and Phase II against small arms fire. They landed with the first wave of amphibian tractors

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LANDING CRAFT - LVTs

and rendered support as far as 200 yards inland. The LVT(A)(1) provides an excellent means of maintaining fire superiority during the interval between the lifting of artillery and naval gunfire and the time that the troops on the beach are able to employ their own organic fire power. In the Southern Sector, amphibian tanks were also used to capture some of the small islands where there were only scattered enemy.

The LVT(A)(1), because of its light armor, should not be employed as a tank. It can and should be used as a supplementary fighting vehicle, however. It can effectively support landings with fire from its 37mm gun and 3 .30 caliber machine guns. This fire can be delivered while the tractor is afloat when it is least vulnerable because of its low silhouette, and from the flanks where it would not be subjected to the heaviest enemy fire. When the tanks land, however, the LVT(A)(1) should be withdrawn from shore to prevent unduly high casualties. If enemy fire is limited to small arms, as was the case on the beaches in (MARSHALLS OPERATION) the use of the LVT(A)(1) ashore can be profitably extended.

The 7th Infantry Division suffered no permanent LVT casualties. This remarkable fact, while due in part to the lack of heavy caliber enemy fire, proves the durability of the amphibian tractor. No definite report has been received on the casualties of the 4th Marine Divisions' LVTs, but preliminary reports indicate that 195 out of 265 cargo type were operational at the end of the battle. Of the 70 casualties, 7 were lost for unreported reasons, 20 were missing, 17 had sunk the heavy surf, 2 had been shot in the engine, and 24 were under repair. Seven of their 75 LVT(A)(1)'s were lost for unreported reasons.

The LVT should be improved by additional armor, greater speed in the water, better means of unloading cargo, and more seaworthiness. Some improvement should be devised whereby the vehicle is less susceptible to swamping in rough water. In a rough sea the LVT can only make 3-4 knots instead of its rated speed of 5-6 knots. Even in its present state, however, the LVT is one of the most essential items of equipment for operations against coral atolls and should be supplied on the basis of requests from field units for all future operations.

From: Commander Joint Expeditionary Force.
 (Commander Fifth Amphibious Force).

SECRET

LANDING CRAFT - LVTs

EXTRACTS OF ORDERS GOVERNING
Transfer of Troops from APAs to LSTs for
LVT Landings, Southern Attack Force.

All equipment, supplies, and ammunition other than individual weapons, light machine guns and 60mm mortars, will be embarked and properly placed in the prescribed LVT's aboard the LST's prior to sailing. The individual weapons will be carried by troops on debarkation from the transports, and the 60mm mortars and light machine guns will be transported from APA's to LST's in ships' boats.

Upon rendezvous of APAs and LSTs in the transport area two LSTs for each designated APA, will take position 200 yards from the respective transports. For each APA the LST on the bow will contain the LVTs of the first two waves; the LST on the quarter will contain the LVTs of the third and fourth waves.

Troops will be transferred from APAs to LSTs by ships' boats. Davit boats, accessible for so loading, will be loaded at the rail. When loaded, boats as designated will proceed to port and starboard sides of assigned LST. Immediately upon embarking aboard LSTs troops will proceed by boat teams to the particular LVT which has been previously numbered and assigned. LVT crews, embarked aboard the LSTs, will be detailed to assist boat teams in embarking aboard the LSTs and guide them to their assigned LVTs.

The Transport Beachmaster, with the Communication and Hydrographic Sections of Beach Parties will be transferred from APAs to LSTs with the troops. These sections will be boated in the fourth wave of LVTs so as to provide early communications and survey of beach approaches immediately following the initial assault. Troop Commanders concerned have been informed of this provision. The nucleus of the Shore Party will also be boated in the 4th LVT wave.

LSTs will provide four nets, two for each side, for rapid embarkation of troops from landing boats to the LSTs. When loaded, LSTs will proceed to vicinity of line of departure and launch LVTs in time to meet the approved schedule.

Each Transport will provide boat group officers in ships' boats to command and deploy the LVT waves that form a part of their own boat groups. Boat group officers will not be embarked in LVTs.

DUKWS

DUKWS were employed by the 7th Infantry Division during (MARSHALLS) Operation for two principal purposes:

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LANDING CRAFT - DUKWS

- (1) To land artillery and artillery ammunition from LSTs and,
- (2) To land high priority supplies, ammunition and materials from LSTs.

Four battalions of field artillery (105mm howitzer) were embarked in four LSTs. To meet the requirements for rapid debarkation and emplacement of artillery called for by the tactical plans, artillery pieces and initial ammunition were embarked in the LSTs already loaded in DUKWS. On the tank deck of each of the four LSTs assigned to artillery were the following:

- (1) 12 DUKWS, each containing one artillery piece.
- (2) 3 DUKWS, each containing an "A" frame.
- (3) 2 LVTs, cargo type, for towing or assisting DUKWS on the reef.
- (4) 1 D-14 tractor or 1-2½ ton truck.

As soon as a beach head was seized on Carlson Island the artillery was ordered to land. The LSTs closed to within a short distance of the beach and launched their DUKWS. Artillery reconnaissance parties, landed with the assault troops, selected and marked suitable landing places for the DUKWS and selected gun positions and marked routes of approach thereto. By the use of "A" frames the artillery pieces were lifted from the DUKWS at the sites selected for emplacement. The tactical situation required the landing of large quantities of artillery ammunition. To accomplish this the LSTs were beached and the DUKWS used to shuttle between LSTs and designated dumps ashore until the required quantities of artillery ammunition were in position. The four battalions of artillery were able to land from the four LSTs and go into position very rapidly and well within the time limits required by the situation.

To meet supply demands prior to the establishment of normal shore party operation, high priority combat supplies of all types were placed aboard two LSTs (LSTs 31 and 78). During the early phases of each landing these LSTs were located near the line of departure. DUKWS transported in and operating from these LSTs were employed to despatch supplies ashore as needed. A representative of the 7th Division G-4 was boated on the control vessel at the line of departure. From this position he was in communication with the troops ashore and, through the control Beachmaster, could communicate with the LSTs. This system of early supply was found to be highly effective and assured the timely delivery of the proper supplies at the proper place and within a very short period of time.

The mechanical functioning of DUKWS was entirely satisfactory.

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Attempts to employ DUKWS for inter-island traffic were unsatisfactory because of low speed and unseaworthiness. On extended trips even within the lagoon, several DUKWS were reported swamped and lost. It is apparent that improvements are required in the rough water characteristics of DUKWS, if they are to be employed in the open sea, in assault operations.

From: Commanding General Fifth Amphibious Corps.

The 2½ ton amphibian truck (DUKW) also proved its worth in (MARSHALLS OPERATION). Four battalions of 105mm howitzers with their initial supply of ammunition landed very expeditiously in DUKWS on Carlson. The guns were driven to their previously surveyed positions and unloaded with A-frames. After the artillery was in position, DUKWS were employed as cargo carriers on other islands. The larger cargo space of the DUKW and the fact that it is easy to operate, make it a vehicle that supplements the LVT very effectively. It is ideal for carrying artillery. It is recommended that the 2½ ton amphibian truck be provided in greater number for future operations.

LCI(L)s (Gunboats)

LCIs proved themselves valuable support craft in the ship-to-shore movement. Their 40mms and 20mms enabled us to maintain fire superiority until the last instant before the troops landed. The rockets mounted on these craft, while lacking accuracy, were believed to have great morale effect.

SEE ADDITIONAL COMMENT ON LCI(L)S AS GUNBOATS IN CHAPTER ON NAVAL GUNFIRE

LSTs

LSTs were excellent for the attack of small, lightly defended islands. They were employed exclusively in the operations during Phases III, IV and V. Small detachments, one or two companies, landed on these islands from LSTs, cleaned out the Japs, reembarked, and proceeded to the next island. LCIs provided effective support for these landings.

The LST is also well adapted to carrying LVTs, as has been proved before. Troops had little difficulty in transferring in small boats from APAs to LSTs and thence into the LVTs.

From: Commander Joint Expeditionary Force.
(Commander Fifth Amphibious Force).

While the employment of LSTs in harbor service is doubtless

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of great value, it must be pointed out that great numbers of these vessels are now required for transporting LVTs and DUKWs to be used in combat. The delivery program of LSTs for the immediate future is not adequate to meet the need for both water transport and combat needs and some other solution of the problem must be found. One solution is the enlargement of the delivery program of 500 ton flat-top barges and harbor tugs.

LCTs

Forty five LSTs proceeded to the operating area under their own power, and 15 LCTs were carried in LSTs. In the great distances of the Pacific Ocean, LCTs are useful only for harbor service; and once in a position, must remain there. For this service they are admirable, and many more could be employed; particularly as a large proportion of available LSTs are still being used in the Gilberts and the Marshall Islands for unloading ships. This use will continue until steps are taken to supply adequate numbers of powered pontoon lighters and flat-top barges and harbor tugs. This is a hard service for LSTs, as they are easily damaged in beaching, and their machinery is not too reliable.

TWO TANKERS, EACH EQUIPPED WITH A 160 TON CRANE HAVE BEEN DESIGNED TO HOIST LCTS ON BOARD LSTS FOR THE MOVEMENT OF LCTS OVER DISTANCES BEYOND THEIR CRUISING RADIUS.

Escort and Patrol Craft

Small craft employed in (MARSHALL OPERATION) which made their own way to destination were: 8 AM, 10 SC, 8 YMS, and 6 AT. In addition, 8 LCC were transported on APA or AKA.

AM, SC, and YMS were most useful for escort services, for patrolling lagoon entrances, for obtaining Hydrographic information, and for despatch duty. On completion of the operation, all except the AMs were retained in the Marshalls, as continuation of services of this character was necessary and will continue to be so. As mentioned previously, SCs and LCCs proved invaluable as Control Vessels. Many more craft of all of these types will be required in future operations.

SALVAGE

From: Commanding Officer USS CENTAURUS (AK-17) - Kwajalein.

That landing boat crews are not properly trained for this area. As an example, only one boat, LCM#1, on this vessel continued to operate through the entire period and suffered least

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damage. It was found that the coxswain in charge had engaged in the landing in North Africa and Sicily. The others have been trained to "gun" their boats up on the sand beaches found at Solomons Island, Maryland. Result was that most of the boats attached to this vessel were "gunned" up on a coral head. We shall profit by this lesson.

From: Commanding Officer USS WINDSOR - Kwajalein.

During the unloading operation on the lagoon side of Ennylabegan Island many boats were broken by surf or hung up on the coral. This necessitated hoisting boats aboard 34 times for repairs, primarily to screws, rudders and skeg shoes. 1 LCV(P) was badly punctured by coral and sank while being towed from beach to ship. All other damage to boats was such as could be readily repaired.

From: Commanding Officer USS CALVERT.

To tow disabled boats, a three legged bridle of 5/8" line fitted with hooks on two ends and an eye on the third end to be attached to the towed boat by putting the hooks in the pad eyes and over the sampson post. To cast off the boat, the hooks are lifted with the boat hook.

To pump water out of swamped boats, a pump larger than the handy-billy was used. This pump had a single cylinder gasoline engine, a 2" intake hose and a 2" discharge with a capacity of 20,000 gallons per hour. This pump is much faster than the handy-billy.

From: Commanding Officer USS FAYETTE (APA) - Kwajalein.

One of the most valuable things learned on the beach was the value of the amphibious tractor as a salvage vessel. During the night of February 3 the beachmaster enlisted the aid of the operator of one of these vehicles to assist in refloating two stranded boats. One boat landed with badly needed ammunition was stuck on the reef about two hundred yards from the beach. It was approached, unloaded, and pulled one hundred yards across the reef with ease although another small boat could not have approached within one hundred yards. An LCV(P) which had been broached on Green Beach IV for a considerable period was pulled off with no less speed.

From: Commander Northern Attack Force.
(Commander Group 3, Fifth Amphibious Force).

(Recommend) That the next operation include a definite plan for the maintenance, docking, and repair of amphibious craft by

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providing initially an open well LSD for immediate docking and emergency repair of damaged craft. A 350 ton pontoon type or other suitable floating drydock together with an LST converted to serve as a repair ship should arrive on D plus 2 day or as soon thereafter as the tactical situation is expected to permit their use. This will permit the immediate docking and repair of LCIs, YMSs, SCs, LCTs, and other small craft as they are damaged. A large part of the damage to ships during (MARSHALLS) Operations was the result of grounding on coral heads. Had the above facilities and spare parts been available, practically all needed repairs could have been made and ships placed in operation within twenty-four hours. It is most important that ships and craft remain in operation during and immediately after landing operations. The floating dock and repair ship will provide the means to insure that this can be accomplished.

Provide at least two (2) "Jaheemies" for repair and salvage work. The one available at Roi and Namur Islands proved invaluable in keeping small craft operating.

From: Commander Joint Expeditionary Force.
(Commander Fifth Amphibious Force).

While ATs were not required for the salvage or towing of large vessels, they were used for salvaging destroyers, LSTs, and LCTs fast aground on reefs; for laying buoys; for removing wrecks of enemy vessels and craft from anchorage areas and beaches; and for harbor tug services. However, small harbor tugs would be at least as useful for much of the tug work inside lagoons.

Operations in the vicinity of the atoll reefs, and in beaching, cause damage to numerous small vessels of such a nature as to require docking. A greater number of destroyer tenders, floating drydocks for ships and landing craft, and ARL repair craft should be available earlier in an operation. It is considered that one ARL, carrying on deck a pontoon dock that will take an LCT or an LCI, ought to be attached to each LST group as a unit of the Amphibious, and not of the Service Force. If it were possible to install one crane on an ARL capable of hoisting an LCM for repair on the top deck, the usefulness of the type would be increased.

CHAPTER VIII

COMMUNICATIONS

Marshall Islands Operation - January 1944.

From: Commander Joint Expeditionary Force.
(Commander Fifth Amphibious Force).

As in the case of (GILBERTS OPERATION), time available for training and organization was inadequate, largely due to delays and difficulties in obtaining personnel and equipment. Examples: (1) The Joint Assault Signal Company components, for use with transports which mounted the 7th Division, did not arrive until just prior to rehearsal. They were poorly trained and equipped. It was necessary to augment communication beach parties with experienced personnel available from transports which reduced experienced personnel available for transport channels. (2) SCR 608-610 equipments for Task Force 53 were not received until just prior to sailing. (3) Voice projector equipment for beaches and control vessels and crystals for TCP transmitters were not received. Uncertainty and confusion arises from dependence on last minute arrival of personnel and equipment from main land.

The practical experience gained by units of Task Force 52 during the rehearsal was invaluable. Communication rehearsal prior to main rehearsal should have been held and would have been held had assembly of units made advance drills possible.

Much can and should be done in communication organization and training prior to receipt of final communication plan. In the early stages of preparation, communication training and organization can be divided into the following general groups and accomplished separately: Air Liaison Parties; Shore Fire Control Parties; Beach Parties; Individual Ship Communications; Fighter-Director and Radar Groups; Shore Headquarters Mobile Communication Teams; Island Base Fixed Shore Installation Team; Support Aircraft Ship and Base Communication Teams. Each of the above is important and cannot be hurriedly thrown together without confusion and delay resulting at the objective.

Unification of communications by positive coordination and understanding among all the above groups should be heavily stressed and accomplished after preliminary group training. In preparations for future operations time for this should be provided. Coordination and understanding can only be achieved by having each group set-up and trained well in advance with all its own equipment assembled and tested. Then the final three (3) weeks before loading should be spent in actually setting up and operating all groups together in accordance with a single communication plan distributed well in advance. During and after these

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combined, unified, physical rehearsals, and prior to the main ship-board rehearsal, frequent conferences and coordinated study of the communication plan are essential.

Retention of present communication plans and doctrines is essential to rapid development of future operations. While there is no doubt the present plan can be improved, the need for standardization and rapid movement is so great that after publication of CenComTwo any further changes should be held up until development of radically new operations require major changes in the plan.

Within the amphibious forces, despite the greater size and complexity of the operation, communications worked better than for any previous known operation. It is therefore considered that further improvement must be achieved by better training and organization in accordance with present plans rather than by variations.

Communications during the bombardment and assault phase were more successful than for similar periods of any previous operation, despite the magnitude and complexity of this operation.

Fire control communications were conducted in accordance with Annex D of CentComOne. The value of a few good, clear channels was demonstrated. Flexibility and coordination were adequate. Communication with shore artillery on Carlson Island was established on SCR-608 channel and was invaluable.

Communication with and among landing force units was primarily via SCR 608-610 and SCR 300 channels. The reliability and security thus obtained was good compared to previous operations. The value of voice communications to obtain quick action was apparent. The need for common functional channels rather than complicated echelon communications during early stages was again demonstrated.

Support air communications were good. It is believed that the excellent timing and coordination of air support, gunfire and landing operations which were achieved show the importance of successful radio communication.

Functional SCR 608-610 voice channels among transports, control vessels and landing craft were invaluable and reasonably successful. Coordination was obtained by reducing the number of channels and improving circuit discipline. Further improvement in circuit discipline is needed, particularly with inexperienced personnel.

The TBS was not greatly overloaded during this phase, largely because of use of SCR 608-610 channels as provided. No interference from the Northern Attack Force was noted on the TBS or on

any other channels.

During unloading of garrison forces and materials, communications between ships, boats and beachmasters was established on SCR 609-610 channels as planned. Unloading was thereby expedited and confusion reduced. Warning Nets were kept reasonably clear for emergencies. There was a pernicious and growing tendency after the assault to use TBS for almost anything since it was quick and handy and seldom loaded. This was unfortunate and interfered with use of TBS by forces at sea within 15 miles. A common CW channel was established for all ships present at southern end of Kwajalein Atoll and the Base Commander set watch thereon. The value of rapid and reasonably secure voice communications on the SCR 608-610 among transports, cargo ships, LSTs, LCTs, LCI(L)s, despatch boats and other small craft during the consolidation phase was amply demonstrated. Some small craft having only usual 2716 kcs voice radio were handicapped. Loss of security by important plain voice transmissions on 2716 kcs was a continual problem. More SCR 608-610 equipments are needed to place in vessels not yet so equipped.

Rapid setting up of base communications ashore is essential. Failure of Base Communications at Kwajalein to function efficiently caused considerable delay and confusion. No satisfactory turn over of communications was made when assault troops withdrew and Garrison Forces took over.

Fortunately for all concerned Commander (SOUTHERN ATTACK FORCE) and USS ROCKY MOUNT were able to arrange for and furnish material and personnel for Island and Atoll Communications and to assist in handling radio traffic. Grave delays and confusion would have resulted had USS ROCKY MOUNT not been present and able to furnish services.

The need for a mobile, unified, communication unit, organized along the lines repeatedly recommended by various commands in the past, was outstanding. Base Communication Units should be thoroughly organized and trained in advance. They should be unified and must serve all elements ashore at any one point. An advance echelon with portable and mobile equipment should go in with the assault force and set up under direction of landing force commander. Experienced personnel who have done or seen the job done before should be used and then withdrawn. -----

As we move more rapidly westward, the speed with which we can establish air-warning, fighter-direction, and communication services to friendly aircraft becomes more important. Properly organized and equipped mobile units can supply such needs in a few days.

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At Kwajalein, on D plus 21, USS ROCKY MOUNT was still needed to provide communication services to airplane flights, local vessels and bases.

Placing and control of radar and fighter-director units should be planned and coordinated in advance. Both assault and garrison commanders should take initiative and assume responsibility for unified control and immediate establishment of necessary facilities. Experience has repeatedly proved that this is a local command problem first, a communication problem second, and an air problem only in so far as the first two problems are not solved.

Delays and confusion in establishing necessary services ashore during (MARSHALLS OPERATION) resulted in garrison forces relying on forces afloat to provide services long after assault was completed. If this is necessary, then fleet units should be provided with additional facilities. Perhaps an advanced base communication and headquarters ship is needed in addition to Task Force Headquarters Ships. A combination headquarters ship, tender, and repair ship for each island base would be very valuable.

Communications during approach and assault phases were better than in any known previous operation.

The present communication plan, CentComOne, is satisfactory. It should be brought up to date, reprinted and issued as CentComTwo as soon as possible. Thereafter few, if any, changes should be made until a radically new type of operation is planned. No changes should be made just prior to or during an operation. Wide distribution of Communication Plan with sufficient copies to reach junior officers and men most concerned is essential.

Communications during consolidation phase require improvement. This can be effected by organizing and training mobile communication units for each base, well in advance. Recommendations for such units have been made by many commands. Experienced personnel must be developed, used, withdrawn, and used again.

Additional TBS equipment is needed for AP, AK, LST, LSD, and for each vessel which operates with a large force during an overseas movement and assault. The single TBS channel for all vessels worked reasonably well. However, multiple TBS channels are very desirable as soon as sufficient additional TBS can be made available or when push-button change of frequency and dual receiving equipment is developed.

A lighter, more reliable radio than either the SCR 284 or the TBX, with greater frequency range and at least 10 watt output on voice, is required for amphibious operations.

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All TBY equipment intended for portable use should be replaced with SCR 300. TBY should be replaced by SCR 610 for semi-portable and mobile use.

From: Commander Support Aircraft Southern Attack Force.

Radio communications were considered excellent. Details on each net are as follows:

(a) Support Air Direction (5135 kcs). - In order to reduce the load on VHF, Support Air Direction was conducted primarily on this medium frequency, using VHF only as an emergency secondary circuit for this traffic. The usual tendency of pilots to prefer VHF was apparent in the beginning of the operation, and they often reported in on the VHF frequency without attempting to use medium frequency. This was overcome, and it is believed that the medium frequency proved its worth to the pilots. At least 65 per cent of the total traffic was handled on this net, and by the end of the operation the VHF emergency frequency was used only by aircraft, such as some F4Fs and FMs, which could not handle the lower frequency. In order to facilitate reception in the Headquarters Ship, two receivers were used, split phoned to earphones of the control officer and the recording radioman. One receiver was set permanently to the assigned frequency, the other tuned constantly to bring in aircraft which were off frequency. This system permitted good reception at all times. The Base Support Air Communication Party experienced difficulty in transmitting on D and D plus 1 days. A more powerful transmitter was used after D plus two days and better communication was effected.

(b) Support Air Direction Emergency (VHF 140.58 mcs) - Communications were very good on this net as is usually the case on VHF frequency using an SCR type 640-639 radio as indicated above. However, its use for Support Air Direction was limited as much as possible in order to leave it clear for other traffic.

(c) Local Air Warning (3670 kcs). - Communications on this net were good but failure on the part of some destroyers and destroyer escorts to guard it, as required by the Communication Plan, seriously impeded prompt action on submarine contacts. Shore stations, when established, also failed to guard this frequency which led to delay in receiving Air Attack Warnings.

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More communication watch officers and more communication yeoman are needed in ships and at bases. Many faults and delays in (MARSHALLS OPERATION) communications were traceable to lack of, or inexperience of, Communication Watch Officers and write up men. Internal distribution problems in many vessels and at shore stations caused more difficulties than lack of radio circuits or operators.

Amounts and complexities of radio and radar equipments increase rapidly. Our need for many more and much more skillful radio and radar technicians has become a command and operations problem, not merely a personnel or communication problem. It is fully recognized that man power is scarce and personnel increases in one branch simply rob another. The point to be realized by command is that the ratio of communication personnel to total personnel must be increased in our navy as it has been increased in other services and other nations in order to provide communication efficiency.

Support Air Observation (3082 kcs). - Communications on this net were good. Traffic was limited to reports from the Airborne Observer to the Headquarters Ship. The information on the tactical situation ashore which was sent over this net was of much value and consideration should be given to its wider employment in the future. This could be accomplished by supplying Regimental and Battalion Commanders with a portable receiver on which they could intercept these messages. Some difficulties were encountered with the transmitter in the Headquarters Ship, and it is a satisfaction to state that changing transmitters was accomplished with a minimum delay.

Support Air Request (3820 kcs). - This net was used for communications with the Carrier Task Groups and the Air Liaison Parties. In the early stage of the assault, the carriers did not reply on this frequency because of their desire to maintain radio silence. Later, however, it proved a satisfactory means of two way communications. Communication on this net with two Air Liaison Parties was not too satisfactory, due to improper and insufficient calibration of the portable transmitters. This is an old problem, but can be cured by further training of the personnel handling these transmitters and providing Air Lisison Parties with crystal controlled transmitters.

Marshall's Warning Net. (3000 kcs). Communications on this net were not satisfactory due to material problems. The net was planned to handle warnings between the Northern and Southern Attack Forces.

Inter Fighter Director (VHF 30.5 mcs). - This net was designed to enable Fighter Directors ashore or afloat to communicate with each other rapidly in plain language, using a very high frequency

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in order to maintain security. This frequency requirement limits the range of the net. Furthermore, since a second TBS is not available for issue to destroyers or to Fighter Directors located ashore, the Army type SCR 610 radio has been issued for use on the Inter Fighter Net. This equipment has been cursed and discussed ever since it was issued, because of its apparent unreliability and limited range. The limitations of this equipment are frequently forgotten. However, the ROCKY MOUNT worked the HAZELWOOD, strength three modulation three, for twenty miles during (MARSHALLS OPERATION). Those units that established satisfactory communications on this net report that the net is very valuable.

Fighter Direction - Island Objective (6525 kcs). - This net was of medium high frequency. This range of frequency was chosen to reduce congestion on the 4 VHF channels. The Fighter Directors report that they prefer VHF for reasons of reliability. They reported that many planes were off frequency on MHF and that tuning in these particular planes was difficult. They also reported that certain fighters such as FMs were not equipped with MHF equipment, hence fighter direction for these aircraft had to be done on VHF channels.

Fighter Director - Carriers. - The use of MHF for Support Air Direction transmissions and for fighter direction over the island objective reduced traffic on the VHF channels materially. This is very desirable. It is believed that most of the carriers experienced little over-loading of the VHF channels during this operation. The fact that few interceptions were necessary also accounted for the satisfactory situation of these VHF channels.

Support Air Request - Land Based. - This net was to have been used for communications between Commander Support Aircraft and CTF 57 who was responsible for land based bombers. It was guarded but no traffic was handled over it until the assault phase was practically completed.

The Air Liaison Parties were not trained sufficiently well to actually direct aircraft in support air missions. It is further concluded that general training of these teams was not satisfactory.

The Air Liaison Parties could have served the landing force better by monitoring the Support Air Observation Circuit and reporting the observations to the military unit to which the parties were attached. This would have been in addition to requesting support air missions.

Air Liaison Parties should guard only the Support Air Observation net and the Support Air Request nets. Actual direction of Support Aircraft over the Support Air Direction Net by Air

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Liaison Parties is not practicable when the objective under attack is a small island and so long as the personnel of these parties continue to be weak in training.

From: Headquarters Fifth Amphibious Corps-Report of
Signal Officer.

Prior to (MARSHALLS OPERATION), there was nothing in print pertaining to the use of headquarters ships. Estimates as to communication personnel requirements of ROCKY MOUNT were prepared from a study of blueprints and equipment installation. It became apparent during the rehearsal that ROCKY MOUNT was designed for joint use of only two operating staffs—one naval and one military. It actually contained, during (MARSHALLS OPERATION), four headquarters, namely, CTF 51, CTF 52, CTF 56 and CTG 56.1. ROCKY MOUNT was designed to facilitate joint operations. Internal communication facilities were installed to serve joint operational staffs. However, the various sections of the operational staffs operated independently rather than jointly. As a result, internal communications were somewhat faulty. This was not a technical fault but was attributable to improper use of good communication facilities.

The Support Air Observation net was an innovation on this operation. It consisted of an aircraft observer flying in a TBF, and an officer stationed in the Air Support Control. The observer reported on the progress of our troops on the landing and during the land phase of the operation. He reported enemy strong points and areas where resistance was met, such enemy activity as could be seen, and any other information requested. The officer in the Air Support Control assigned missions desired and passed on reports to all other sections on the ship as concerned. The information received over this net was excellent throughout the assault phase and kept the Southern Landing Force front line positions and general progress far ahead of any other source of information. It should be noted that both of the observers used by the Southern Landing Force were experienced Army Air Force Officers trained and rated as "Aircraft Observers."

The air liaison parties, during the operation, had less use for close support than anticipated, due to effectiveness of artillery, naval gunfire, and aerial bombardment in reducing most of the heavy points of resistance prior to the landings, or well in advance of the assault troops. During the operation, three A/L parties were inspected on Kwajalein only. All three parties were with the 32nd Infantry. They reported continuous and satisfactory communications, despite the wetting down of one truck, $\frac{1}{4}$ - ton, 4x4, which rendered it almost inoperative, and one SCR-193 which was put out of commission by salt water. They called for several missions, including the knocking out of a 3-inch dual purpose gun.

COMMUNICATIONS - MARSHALLS

It is of interest to note that the 7th Infantry Division employed plain language transmissions, using voice throughout the operation to the complete exclusion of CW and enciphered messages. This facilitated both transmission and receipt and provided unusually rapid and accurate communications.

Recommendation:

That division commanders, (Army or Marine Corps), be cognizant of their responsibilities in regard to:

- (1) Coordination of island base communication plans with assault and defense plans.
- (2) Loading plans for island base communication equipment and personnel.
- (3) Initiation of communication installations and initial communications.

From: Commander Northern Attack Force.
(Commander Group Three, Fifth Amphibious Force).

Communication equipments and personnel in the Headquarters Ship and Transports were barely adequate for battle requirements. There were no reserve equipments for intercepting other than the communication channels of our own forces, and there were insufficient reserve personnel properly to relieve personnel on watch. Visual silence conditions at night permitted visual personnel to obtain a reasonable amount of rest. Radio personnel, Communication Watch Officers, and Coding Officers on the other hand had to work for very long periods at high pressure, with only brief hours of rest, for a period of approximately fifteen days.

Communication equipments and personnel in LSTs, LCIs, LCTs, YMSs, and SCs were totally inadequate for their communication requirements. Those vessels were unable to guard the minimum Communication requirements of: Primary Fox, one MHF frequency, and one VHF frequency at the same time with available personnel and equipments. Guardship arrangements for Fox messages were unreliable under their operating conditions and were further handicapped by night visual silence. Vessels of this type should not be required to guard Fox schedules except when enroute between ports, but they should be furnished the equipment and personnel to do so as it will enable them to meet minimum communication requirements for amphibious operations. YMSs should have TCO (fixed frequency radio telephone) replaced by TCS (continuously variable CW or Voice radio) in order that they may be netted more readily with other Naval radio circuits.

COMMUNICATIONS - MARSHALLS

TCS radio equipment in LVT-2s and LVT(A)s were quickly drowned out by spray despite their having been provided with canvas covers. This type of craft is very wet and requires a watertight radio set.

The following are comments in general:

Urgently needed are shipboard types of radio equipment corresponding to Army sets currently used in amphibious Operations. These sets are: BC 639/640, SCR-608 and SCR-610. Although these sets are used aboard ship with success, they are characterized by one or more of the following faults: Inconvenient power supply needs, lack of dial locks, inadequate weather proofing, components not suited for use in salt air atmospheres, awkward antenna requirements, poor or non-existent shock mountings, mounting arrangements not suitable for shipboard use, and spares impossible to obtain through Navy channels. Shipboard types, provided either by new design or by modification of Army types, should be arranged to have these faults remedied.

A special system known as "Navajo Talk" was used successfully by the landing force; and for communications with the Attack Force Commander during the consolidation phase for rapid handling of classified plain language voice traffic. Specially trained Navajo talkers were used.

Due to pre-setting the SCR-610 frequencies of landing ships and craft for specific assault duties it was necessary to group them into four VHF voice nets for administrative communications during the consolidation phase. This had an advantage in that it reduced the amount of communications on any one net and made communications easier and more reliable thereon, but it required the larger ships to guard more frequencies and also necessitated considerable relaying and multiple circuit transmitting. It is believed that three VHF voice channels, one of which is a common channel to all ships, is an optimum allocation. It would be especially suitable if all ships were fitted with one installed SCR-608 or two installed SCR-610 radios, as the common channel could be guarded at all times by all ships for warnings, all ships present messages, and for urgent intercommunications.

COMMUNICATIONS - MARSHALLS

Communications During the Assault Phase.

Nets manned. - A total of 38 nets were manned of which approximately 50% were either backed up, manned in remote positions or had parallel control. It required 83 radiomen to man these circuits, including supervisors and call sign breakdown men. This number does not include any reserve. A functional breakdown of the nets follows:

- 8 Landing Force
- 9 Air, including fighter direction and air observation
- 6 Task Force and Inter-Task Force
- 3 Ship-shore Administrative
- 6 VHF (SCR-608/610 and TBS)
- 3 Fox Schedules
- 1 Naval Gunfire
- 2 Fleet Intercepts

Amount of Traffic Handled. - An average of slightly over 1000 messages per day were handled of which approximately 90% were radio. About 20% of this radio traffic was encrypted in a standard crypto system.

Communications During The Consolidation Phase.

Nets Manned. - Sixteen nets were manned during the consolidated phase. For the first few days of this phase, radio operators were still standing watch a little more frequently than watch-and-watch, but as consolidation of frequencies took effect, the radiomen gradually assumed a watch-in-three status. Nets manned during consolidation phase were:

- 4 VHF
- 4 Air, including Fighter Direction
- 3 Task Force and Inter-Task Force
- 3 Fox Skeds
- 2 Fleet Intercepts.

Miscellaneous Comments; Do's, Don'ts, and Wrinkles.

Small vessels can and do receive code as rapidly by voice as by CW, and it appears that with a small degree of training they would receive it much more rapidly. Communication drills should take cognizance of this.

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Net control of crystal controlled VHF FM equipment presents one of the problems in the use of this type equipment. To maintain sufficient flexibility for amphibious work, a large number of stations must be on one net. In order for them all to have ample communications strict net discipline must be established and observed.

Despite frequent conferences and the honest efforts of both parties, liaison, from a communication point of view, with the landing force after they had set up on shore, was still weak. This was particularly noticeable during the reembarkation phase when it was difficult to find out what units were reembarking and where, and whether or not they had communication facilities set up at the reembarkation points.

Positive waterproofing must be supplied for radio equipments used in boats and on shore.

Head Beachmaster, Assistant Head Beachmaster, Landing Force Commander, Assistant Landing Force Commander, and Advance Base Commander should land SCR-608 radio-equipped Jeeps as early as practicable. These Jeeps should be located in sheltered positions and used for liaison communications with one another, and for communications with Attack Force Commander. They should not be used as transportation vehicles.

Be sure all hands carry plenty of spare dry batteries for the SCR-610s. For a one week supply for each SCR-610 there should be ten BA39, six BA40, and one BA41 batteries in addition to those in the set.

From: Commander Eniwetok Expeditionary Group.
(Commander Group Two, Fifth Amphibious Force).

Communications were generally satisfactory throughout the operation. During the assault on Engebi the original attack plan was used. A regrouping of assault forces and supporting ships was necessary for the assaults on Eniwetok and Parry Islands. These changes made it necessary to modify the communication plan, utilizing the consolidation feature of CentComOne, and common frequencies. This modified plan functioned well except for occasional congestion on the VHF circuits.

Throughout the operation extensive and successful use was made of the VHF circuits, using SCR 608 and SCR 610 equipments. Four additional SCR 610 equipments had been obtained from ROCKY MOUNT at Kwajalein. These circuits made possible quick and positive communications with the varied units in the attack force, and with the beachmasters, control ships, and unloading merchantmen

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during the unloading period. It was necessary for CAMBERIA to supply merchantmen with SCR 610 equipments from the pool available.

Circuit discipline on these circuits during the assault phase was not good. Operators talked too fast, making many repeats necessary. Some of them had obviously received little or no training, in procedure or in use of the microphone. There was too much unnecessary testing.

Communication to and from CAMBERIA was generally satisfactory. Last minute alterations, repairs, and adjustments to antennae, transmitters, and receivers, made at Kwajalein just prior to the Eniwetok Operation, were effective in improving transmission and reception. In one case it was necessary to use a TCS set installed in a jeep on the forward well deck to obtain satisfactory communication on the landing force common frequency.

CHAPTER IX

MISCELLANEOUS

ARTILLERY

From: Commander Eniwetok Expeditionary Force.
(Commander Group Two, Fifth Amphibious Force).

The field artillery employed in the Eniwetok operation consisted of the Second Separate Pack Howitzer Battalion (12 75mm Pack Howitzers), which was Part of RCT 22, and the 104th Field Artillery Battalion (12 105mm Howitzers), attached to RCT 106. The firing batteries, plus additional personnel totalling about 325 officers and men from each battalion, embarked in two LSTs at Kwajalein and proceeded to Eniwetok for the attack.

The Eniwetok operation was divided into four phases. Artillery was employed in the first three of these phases, the fourth being mop-up by scout companies of all islands in the lagoon except Engebi, Eniwetok, and Parry.

The time of the initial landing for the first phase was set for 1230 17 February 1944, but due to delays, it was 1318 before the first Amtracks carrying the Reconnaissance Company, FIFTH Amphibious Corps, landed on Rujiyoru Island and the adjacent unnamed island to the northwestward with the mission of securing these islands for use by the artillery. At 1354 the Reconnaissance Company reported that these islands had been secured and were ready for the landing of the artillery. Both battalions of artillery landed in DUKWS from their respective LSTs. Some of the DUKWS carrying 105mm artillery were fitted with special A-frames for use in unloading after landing. The Second Separate Pack Howitzer Battalion landed on the first island west of Rujiyoru Island. The 104th Field Artillery Battalion landed on Rujiyoru Island. Guns, five units of fire, and gun crews were landed without difficulty. At 1602 all artillery had reached the beach and by 1630 was in position prepared to register on Engebi Island. Registration was carried out without ceasing naval gunfire and was completed at 1902. Air spotting was employed for registering both battalions. At 1950 night harassing fires were commenced against Engebi Island. The mean range for the Pack Howitzer Battalion was 6900 yards and 8100 yards for the 104th Field Artillery Battalion. Scheduled harassing fires throughout the night were executed at the rate of two rounds per gun per minute for five minutes every half hour as planned. The firing intervals were varied. High explosive shells, using fifty percent delayed fuzes and fifty percent quick settings, were used for these harassing fires.

Phase two of the assault commenced on the morning of 18 February. Preparation fires on Engebi Island commenced at W minus

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135 (0630). William Hour was set for 0845. Artillery fires were well executed and coordinated with naval gunfire and with the air strikes during this period prior to the landing. When the first wave of Amtracks was 500 yards from the beach a cluster of white parachute flares was released by the air coordinator from a plane on the seaward side of the island at an altitude clear of the smoke and dust clouds. These flares were easily seen and were a signal to the artillery to continue the maximum rate of fire, which had commenced at W minus 25 minutes, for exactly two more minutes following the parachute flare signal. Artillery fires were then shifted 200 yards inland where the maximum rate of fire was continued for three minutes over the underground installations of the enemy in that area. Three minutes after the first wave had landed, fires were again lifted inland to the edge of the woods at about the center of Engebi Island, and a maximum rate of fire was maintained here for a period of five minutes. From then on, call fires were executed under the direction of the forward observers with front line battalions. High explosive shells were used.

Each assault battalion had two forward observers from each of the supporting artillery battalions assigned to it. Throughout the day an artillery spotting plane for each battalion was on station. The employment of two artillery spotting planes on a target as small as Engebi Island was necessary for two reasons: First, the two battalions operated independently. Their fires were not controlled through a group fire direction center. Second, the Second Separate Pack Howitzer Battalion had been trained to spot to the target employing the navy system of spotting, while the 104th Field Artillery Battalion was trained in the army system of "sensing" bursts.

By 1450 there was no longer need for supporting artillery fire. The 104th Field Artillery Battalion commenced reembarkation in LST 29. This was completed during the night of 18-19 February. During the reloading period, one DUKW capsized and was lost. The Second Separate Pack Howitzer Battalion remained on the unnamed island north of Rujyuru Island.

Phase three opened with the attack on Eniwetok Island. The initial landings were made at 0918 February 19, 1944. No 105mm artillery was landed until 1740 at which time one battery of the 104th Field Artillery Battalion was sent ashore. This battery was set up in a restricted area directly on beach Yellow One and commenced registration on the northern areas of Eniwetok Island at 1805. Enemy opposition at the southern end of Eniwetok continued to be stubborn, making it impracticable to land additional artillery to support the attack on that island and to prepare for the subsequent assault against Parry Island. At 2225 on 19 February, in preparation for the landing on Parry Island, the Second

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Separate Pack Howitzer Battalion was ordered to reembark in LST 246, from their position on the island north of Rujiyuru Island, land with five units of fire on Japtan Island by 1200 February 20, and commence registration immediately upon Parry Island. The Reconnaissance Company of Fifth Amphibious Corps which had seized Japtan Island had been issued orders to make a reconnaissance for suitable beaches and positions for the Pack Howitzer Battalion.

By 1200 February 20, 1944 the Second Separate Pack Howitzer Battalion was in position on Japtan Island prepared to register fires on Parry Island. Meanwhile, on Eniwetok Island the situation had improved sufficiently to permit the landing of the remainder of the 104th Field Artillery Battalion. The additional batteries were set up near the position of the first battery and reinforced the fires against the enemy in the northern half of Eniwetok.

The Second Separate Pack Howitzer Battalion completed registration on Parry Island that afternoon, and commenced the execution of harassing fires. These fires were continued against Parry Island throughout 21 February. The 104th Field Artillery Battalion also completed registration on Parry Island, but on 21 February provided supporting fires for BLT 3/106 (which was mopping up on the north end of Eniwetok) as its principal task.

During the night of 21-22 February harassing fires against Parry Island were executed by both artillery battalions each using approximately 2400 rounds with fifty percent super-quick and fifty percent delayed fuzes. Two rounds per gun per minute were fired for five minute periods every half hour during the night. The firing intervals were varied and the times of firing of the batteries were staggered to give maximum harassing effect. White phosphorous was used as well as high explosive during these harassing fires.

Commencing at 0600 on February 22, the artillery battalions increased the rate of fire against the principal target areas on Parry Island in preparation for the landing. Commencing at 0835 and until the first wave was 300 yards from the beach, the maximum rapid rate of fire was executed against the beaches on which the assault troops were to land. Fires were then lifted inland towards the eastern side of the island behind the landing beaches, and continued for five minutes. Five minutes after the first wave had landed, fires were lowered to form a block across the island south of the landing areas in order to prevent the movement of enemy reserves toward the beaches. Some assault troops landed about 200 yards further to the south than planned. Artillery fires were immediately checked on group order to permit these troops to push rapidly inland. From then on, artillery fires were all executed on call. Artillery fire accurately placed ahead of advancing tanks and troops

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was a large factor in the quick capture of Parry Island.

Comments and Recommendations:

The 75mm and 105mm batteries employed in this operation were highly effective. The plunging fire from these guns is well suited for use against the fox holes with which the islands were pockmarked, although a large expenditure of ammunition is necessary to obtain hits. Harassing fires had the desired effect of preventing enemy movement at night, and white phosphorous projectiles started numerous small fires.

The shore based artillery was very effective after troops had landed, with call fires controlled by forward observers ashore. Artillery communications were good throughout the operation. Air spot was effective.

No difficulty was experienced in landing artillery on any island. One 105mm gun loaded in a DUKW was lost by capsizing during reembarkation from Rujiyoru Island. This excellent performance is largely due to the skilled DUKW drivers loaned for this operation by the Seventh Division, and to the A-frames installed on the DUKWS for handling the weight of the guns.

It is recommended that all artillery personnel be trained in the technique of landing in DUKWS as developed by the Seventh Army Division.

Separate air borne artillery observers were required for the Marine 75s and the Army 105s, because of the different spotting systems used.

It is recommended that a single system of spotting, preferably the Navy method as used by the Marine Corps, be adopted for use by both Marine Corps and Army artillery units.

From: Commander Fifth Amphibious Corps (Kwajalein).

In both the Northern and Southern Sectors all of the division artillery was landed on D-day on islands adjacent to the main objectives from which it could support the landings in Phase II and the capture of principal islands. This employment of artillery was a major factor contributing to the success of the operation. At Tarawa, where the artillery was first landed on the main objective, it had a very limited field of fire, was not massed, and, in some cases, could not even reach the beach. In (MARSHALLS OPERATION) on the other hand, the fields of fire were excellent, and the guns were registered and ready to fire before the main attack began. The infantry thereby had a tremendous amount of support readily

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available on call. Before W-hour the artillery pounded the landing beaches and the areas slightly inland. During the night of 31 January - 1 February it placed continuous, harassing fire on Kwajalein. After the initial landing artillery supported the advance with numerous called fires and rolling barrages which the infantry followed closely. On at least two known occasions artillery contributed materially to the defeat or breaking up of enemy counter-attacks.

It is strongly recommended that in future operations artillery be employed whenever possible as it was on (THE MARSHALLS OPERATION). In this manner it can be used to the fullest extent of its capabilities. It does not conflict with or duplicate naval gunfire in any sense. It supplements naval gunfire by providing accurate, high trajectory fire which can be easily massed and laid down immediately on call.

Troops should be trained not to rely too heavily on barrages and other forms of support. There may be times when the artillery is not available. In this event, the infantry will have to do the job alone.

SMOKE

From: Commander Joint Expeditionary Force (Marshalls)
(Commander Fifth Amphibious Force).

With the large number of vessels of the Attack Forces the sea areas in the immediate vicinity of the objectives were certain to be very crowded, and the coordination of ships' movements was foreseen as difficult, particularly at night. In view of the anticipated submarine menace, it was decided to move transports, small craft, and screens inside the lagoons as early as possible in the operation. To assist in the defense of these large numbers of vessels anchored in the lagoon, and thus unable to maneuver to avoid air attack, elaborate smoke plans were evolved, as indicated in the operation and attack plans. These plans were tested during rehearsals, and it was apparent that they would have considerable value, particularly at night. They were used during one air attack on Roi, and during other Red alerts at both Roi and Kwajalein Islands. With some small perfecting details, these plans may now be considered as standardized for future use in similar circumstances. However, it is desirable that the Navy supply a large number of Army M1 smoke boxes for future use, as those employed on this operation were all borrowed from the Army, there being no Navy stocks available in Hawaii.

From: Commanding Officer USS HEYWOOD (APA). -(Marshalls).

Smoke screens were provided for by the task group commander's

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Smoke Plan for ships in the transport area. Chemical smoke was to be made by smoke floats dropped from landing craft, smoke pots mounted in landing craft, and two Besler smoke generators on board. While at Kwajalein anchorage one smoke boat was maintained on station to windward with a boat officer, radio communications, and smoke pots ready. A second smoke boat stood by at ship. When anchored at Eniwetok both smoke boats were maintained in a state of readiness at the ship when not required for urgent use carrying troops or cargo. There were no air raids during the Eniwetok attack.

From: Commanding Officer USS PHELPS (DD) - (Roi-Namur).

The Attack Orders provided for three smoke missions during various phases of the landing. One of these missions provided for smoke coverage during mine sweeping operation, and entry into the lagoon involving PHELPS. The aircraft smokers commenced to lay the prescribed screen to blanket possible enemy fire from Roi, Namur, and Ennugarret. It was observed that the north east wind was carrying the smoke across the entrance passage, and PHELPS reported to the Force Commander that further smoking might complicate the navigational problems of entering the lagoon. It is firmly believed, however, that carefully prescribed smoke missions should be provided for all amphibious operations, to be placed in effect for protection if serious enemy gunfire is encountered.

From: Report on Kwajalein and Eniwetok Operations.
Prepared by a War Department Mission.

During certain phases of the operation, it is believed that smoke could have been employed by the ground troops with success. Upon questioning certain responsible Marine officers, it was learned that a reason for the lack of its use was the fact that large enough quantities had not been made available during training and consequently the troops were not sufficiently familiar with its tactical employment. The Navy had enough smoke available and a definite smoke plan for use in the assault if the necessity for it arose. Most effective use of smoke would be realized if the operational order contains a definitely coordinated plan for its employment by all elements of the force, including use by the ground troops after the assault landing.

TANKS

From: Commanding General Fifth Amphibious Corps - Eniwetok.

The technique of the infantry-tank teams pushing rapidly forward, closely followed by demolition and flame thrower teams is

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concurrent in by this Headquarters as sound. However, emphasis is placed on the fact that it must be a continuous movement in which light enemy resistance is neutralized and bypassed by the forward elements of the infantry-tank teams, then the supporting elements of the infantry equipped with demolitions and flame throwers reduce these isolated enemy positions before they can recover and fire on the rear of our troops moving forward.

This technique is particularly effective in searching out the real strongpoints and thereby avoiding holding up the attack by weak and scattered resistance. When a strongpoint is encountered, the infantry-tank team and demolition-flame thrower team become integrated and operate together until the strong point is reduced.

In reducing a strongpoint, emphasis must be also placed upon the value of supporting fires from air, naval gunfire and artillery. Field artillery continues to be the most reliable and effective weapon for neutralization purposes in close support of infantry. Proper use of supporting fires in reducing strongpoints calls for the artillery - infantry-tank team to be closely coordinated. The greatest neutralization value is gained by the infantry and tanks moving quickly into the neutralized area as artillery fires lift. The closer the advance behind our own neutralization fires the more the benefit derived from the neutralization. Team work, involving firing, must be practiced in training periods to develop thoroughly the use of combined arms.