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CHAPTER IV

ENEMY TACTICS, ORGANIZATION AND EQUIPMENT

(A) Defenses Before Naha

1. The defense employed by the Japanese throughout the third phase of the OKINAWA operation may be called static. The enemy was dug in on the high ground south of the ASA KAWA in positions that commanded the lower ground adjacent to the river, the mouth of the estuary and the causeway. They were adequately supplied with automatic weapons which were well sited to cover logical approaches to their positions. These weapons were usually concealed in caves or covered emplacements and were mutually supporting.

2. Some AT mines were encountered but by far the greatest menace to tanks during this period were the numerous 47MM AT guns. these guns were usually emplaced so that at least two guns could cover the same area and were always protected by heavy machine gun fire.

3. When the river crossing was forced it was found that the defense along the south side consisted of a series of strong points which were well chosen and were mutually supporting. All enemy troops were found to have at least on alternate position and many had supplementary positions as well. One 47MM AT gun captured in this area was located in a cave and could be drawn back into a tunnel and moved to any of three alternate positions in caves that lead off from the central connecting tunnel.

4. During this time enemy artillery was quite active. Long range harassing fire was received from guns located on SHURI HILL mass. The fire was directed at OP's, CP's, and the main supply routes in the vicinity of MACHINATO air field. Although this fire was troublesome it was not particularly effective. Fire was usually received from single pieces with very narrow fields of fire. Tanks were taken under fire whenever they remained in exposed positions for any length of time.

5. During this period the enemy was observed to withdraw in the direction of the main NAHA-SHURI line when their forward positions became untenable.

6. The defense of the NAHA-SHURI line in the division zone of action centered around two strongly defended hills, SUGAR LOAF and CRESCENT. The Japanese had honeycombed these hills with tunnels leading from central living quarters to emplacements and positions on both the forward and reverse slopes of the hills. Artillery fire on these hills had little effect because the Japanese could retire into their tunnels and sit throughout the barrage unscathed. Direct fire from tanks at close range was effective in that point targets could be fired upon and many

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emplacements were destroyed and embrasures sealed in this way. The infantry assaulted these hills repeatedly only to be driven off, after reaching the crest, by grenades, mortar and small arms fire from the reverse slope defense. Hills could not be seized and held until the tanks were able to maneuver around to the rear and blast the defenses with heavy and accurate direct fire. After capture of these hills only sporadic resistance was encountered during the crossing of the ASATO GAWA.

7. When troops entered NAHA it was found to have been abandoned except for some snipers and light machine gun crews.

8. Throughout this phase a new method of destroying and damaging tanks was employed by the enemy. This form of attack, first encountered immediately after the crossing of the ASA KAWA, was the suicide satchel charge attack. The suicide attacker hid in a spider-trap foxhole or other well concealed positions until the tank was abreast of or just past his position. He then rushed out and attacked the tank with his satchel charge. There were two methods used, one to rush out and throw the charge at the tank or place it in the suspension system, and the other to strap the charge to the attacker who then hurled his body at the tank to insure getting a hit.

9. Mortar fire was employed extensively during this period by the enemy. Although it had very little effect on the tanks it caused numerous casualties among the accompanying infantry.

(B) Defenses on the OROKU PENINSULA

1. The landing on OROKU PENINSULA was virtually unopposed although the enemy had many well prepared positions covering the landing beaches. Rather than defend the beaches the enemy chose to defend a system of ridges located a short distance inland. These positions were defended in the usual fanatical Japanese fashion and most of the enemy held out in their holes and caves until killed, although a few retreated until the remnants of the defending force were compressed into a small pocket. Resistance was fierce until the last day when a few small bands surrendered and the rest were killed or captured.

2. Artillery fire during this period was almost negligible. A few dual purpose guns were employed against tanks in the vicinity of the airfield and some 8 inch naval rockets and spigot mortar shells were encountered. One 8 inch Howitzer or rifled mortar was used to shell the bridge from ONO-YAMA to the south bank of the KOKUBA GAWA. This weapon was also employed against tanks and succeeded in totally destroying two tanks with direct hits.

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3. AT mines were encountered in great numbers and were scattered haphazardly throughout the peninsula. Only a few patterned minefields were encountered but it could be said that the whole peninsula was minefield because single mines were used so extensively.

(C) Defenses before ARA SAKI

1. Although organized resistance was supposed to have been on the wane by the time we went into the lines, for the advance south to ARA SAKI, there were still large groups of enemy under unit command holding out in the series of ridges running perpendicular to the division front. The enemy resisted stubbornly from each ridge in the following succession: KUNISHI, MEZADO, and HILL 69, KUWANGA and KIYAMU. Finally the last organized resistance was broken on KIYAMU ridge in the vicinity of HILL 80. The enemy surrendered in unprecedented numbers and many committed suicide.

2. AT defense during this period consisted of mine and a few satchel charge attacks. No 47MM AT guns were encountered.

3. Sporadic artillery fire was received during this period from the YUZA DAKE hill mass.

(D) Passive Defenses

1. Mines

a. The most damaging and most widely used passive AT defense was the AT mine. Both standard and improvised types were found. The mines were not laid in fields except in very few instances, but single mines and scattered small groups of mines were liable to be encountered anywhere. The following types of mines were encountered:

(1) Horned mine: Both single and double horned mines were found but the great majority were single horned. The explosion of this type mine usually resulted in a completely destroyed bogie assembly. These mines were generally poorly concealed, probably because the horn must protrude from the ground in orde to insure crushing. This type of mine was most effective in mud, soft sand or under water where it was possible to conceal the horn without offering it any support.

(2) Pottery mine: This type of mine alone does not cause as much damage as the larger horned mi However, this mine is very effective because it is impossible to detect with an ordinary mine detector and must be located by probing, a slow and tedious process. Explosion of this mine usually results in

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one damaged bogie wheel and a broken track.

(3) Tape measure mine: This is the least effective of the standard type enemy mines when used by itself. Its small explosive charge results in little damage to the track and its metal case makes it easy to detect by sweeping. However, it is usually employed as a detonating device for a charge of picric acid placed underneath.

(4) Improvised mines: Many types of improvised mines were encountered; box mine shells and bombs were the most numerous. The shells and bombs are easily detected by mine detectors but the box type must be probed for. The usual weight of the box mine was about thirty pounds.

(5) Controlled mines: These mines were usually improvised from single horned mines with the horn removed and an electric detonator substituted. Their destructive effect was usually increased by placing a 50 gallon drum of oil or gasoline, a large caliber shell or a charge of picric acid in contact with the mine. These mines were not found in quantity but were very effective when used. They were detonated by the enemy hiding in a cave or covered foxhole. These mines were sometimes detected by tank crews because the lead wires were poorly camouflaged. These wires were then cut by machine gun fire rendering the mine ineffective.

2. Obstacles

a. Obstacles were constructed and used by the enemy with varying degrees of success. The following is a list of the types encountered:

(1) AT ditches: For the first time AT ditches used by the enemy were well placed tactically and well constructed. They averaged ten feet wide and ten feet deep and were usually dug in a low spot so that they filled with seepage water which caused the bottom to become muddy and made the filling of the hole more difficult. Nearly all were situated where it was impossible to employ a tank dozer to fill them.

(2) Road blocks: Road blocks constructed of rocks, coral and rubble were encountered but were usually ineffective because they could be pushed aside by the tank dozer. Fortunately they were not mined. Many heavy cratering charges had been employed to blast the roads in spots that were well chosen. Favorite spots were narrow defiles, roads cut in the face of a cliff and roads running through rice paddies. In most places the tank dozer was ineffective because

there was no place nearby from which to push in spoil for a fill. If an attempt was made to use the roadbed for fill the road itself gave away and soon was impassable.

(3) Blown bridges: Nearly all bridge spans were damaged and in some cases the abutments were blown down.

(E) Active Defenses

1. Artillery

a. Next to mines the greatest threat to tanks were artillery and anti-tank guns, types encountered are shown in the following list:

(1) 47MM AT gun (new type): This modern type AT gun is a very effective weapon when employed against the medium tank. The only place on the tank that will stop the projectile is the front slope plate and this is due to the angle at which the plate is set rather than the thickness of the armor. There is a small explosive charge in the projectile which detonates on impact and aids in forcing it through the armor. This gun was usually placed in a typical Japanese position with a very limited field of fire and emphasis placed on concealment. The positions were usually on reverse slopes sited so as to be able to fire into the rear of tanks as they passed through a narrow defile or the mouth of a draw. In most cases the guns were in caves or tombs and could be moved through tunnels to alternate firing positions. The guns were emplaced so as to be mutually supporting and were covered by small arms and machine gun fire. Artillery and other indirect fire weapons were of little value against these positions.

(2) 47MM (old type) and the 37MM: These guns were employed tactically much the same as the new 47MM AT gun. While not as effective as the new gun these weapons still constitute a threat to tanks as they will penetrate the hull, sponsons and turret at close range.

(3) 75MM: No AT projectiles from this type gun struck any of our tanks. This type weapon firing HE can cause a tank to withdraw from an exposed firing position. On occasion fire from this caliber gun damaged suspension systems, periscopes, hatches and tank guns and caused minor wounds among the crews.

(4) 105MM: These guns were used against tanks both as a direct fire or indirect fire weapon. Fortunately these guns when in a direct fire position

were discovered and destroyed before any damage could be inflicted on our tanks. When firing indirect fire the weapon was ineffective due to the inability of the enemy to make rapid shifts of fire. Consequently when the tanks were fired upon they would shift their position a few yards, upset the enemys calculations, and thereby avoid being hit.

(5) 150MM: This caliber gun firing long range direct and well observed indirect fire often ma forward firing positions untenably for tanks. They fired harassing fire against tanks moving up to or bac from the front lines and on tank assembly positions. A near miss on on of the tanks penetrated the armor beneath the sponson and caused wounds among the crew.

(6) 8 Inch Rifled Mortar or Howitzer: A gun of this type made several direct hits on two of o tanks which were completely destroyed. Damage was th result of concussion and not penetration.

(7) Mortars: Tanks were continually harrassed by mortar fire from all types during the opera tion. Damage to tanks was very slight but they took a heavy toll amond the accompanying infantry.

(8) AT Rifle Grenades and Hand Thrown Hollow Charges: Rifle grenades were used very rarely by the enemy and hand thrown hollow charges were not used at all although many were found. The hollow charge grenade penetrated two, one and one half inch plates of armor spaced one and one half inches apart, before being stopped by the second plate.

(9) Suicide Satchel Charge Attacks: A number of suicide attacks were made on the tanks by individual soldiers with satchel charges either strap to their back or carried in their hands. Most of the are cut down by small arms fire or by fire from tanks Those that did succeed in getting close enough to hurl themselves at the tank usually caused quite a bi of damage, especially to the suspension system.

(F) Damaged and destroyed tanks.

1. The following is a list of tanks damaged and destroyed by enemy action. It is to be noted that this battalion welded old track blocks on the sponsons, turret and front slope plate to act as extra armor.

(a) By 47mm AT guns:

Tank No.	No. of Hits	Hit No.	Where Hit	Damage
1	2	1	Suspension	Bogie Wheel Damaged
		2	Side	Ammunition Stowage Damaged
2	2	1	Turret	Destroyed Radio
		2	Turret	Damaged 75mm gun breech mechanism.
3	4	1	Side	Ammunition stowage damaged
		2	Side	Ammunition stowage damaged
		3	Side	Ammunition stowage damaged
		4	Side	Ammunition stowage damaged
4	3	1	Turret	Penetrated turret.
		2	Turret	Penetrated turret.
		3	Turret	Blew track blocks off turret
5	1	1	Bogie Wheel	Damaged bogie wheel, penetrated hull
6	2	1	Turret	Penetrated turret
		2	Turret	Penetrated turret, damaged 75mm gun guard.
7	1	1	Bogie Wheel	Ruined
8	4	1	Turret	Knocked off vision cupola
		2	Sponson	Knocked off track blocks
		3	Sponson	Knocked off track blocks
		4	Sponson	Knocked off track blocks
9	3	1	Turret	Penetrated turret, sheared bolts in gun shield.
		2	Turret	Penetrated turret, sheared bolts in gun shield.
		3	Turret	Penetrated turret, sheared bolts in gun shield.
10	7	All	Slope Plate	Cracked final drive, track blown off slope plate.
11	2	1	Slope Plate	Track knocked off slope plate
		2	Slope Plate	Track knocked off slope plate

Tank No.	No. of Hits	Hit No.	Where Hit	Damage
12	1	1	Suspension	Bogie Wheel ruined. Hull penetrated, ammunition stowage damaged.
13	1	1	Suspension	Bogie wheel ruined, hull penetrated, ammunition stowage damaged.
14	2	All	Sponson	Set off ammunition, tank burned, completely destroy
15	1	1	Rear Plate	Set engine afire, tank burned, completely destroy
16	1	1	Rear Plate	Set engine afire, tank burned, completely destr
17	1	1	Rear Plate	Set engine afire, tank burned, completely destro
18	3	1	Turret	Pistol port blown off
		2	Turret	Pistol port blown off
		3	Drivers Hatch	Drivers periscope housing damaged
19	1	1	Suspension	Broken volute spring.

(b) By Artillery of all types.

Tank No.	No. of Hits	Hit No.	Where Hit	Damage
1	1		Rear Deck	Punctured Radiator
2	1		Suspension	Track broken, bogie assembly blown off.
3	1		Suspension	Bogie assembly blown off, penetrations under left sponson, engine mounts broken
4	1		Suspension	Support roller blown off, 2 bogie assemblies damaged track blown off, auxillary generator knocked out, engine mounts broken
5	1		Rear Deck	Radiator punctured, clyinder block cracked
6	1		Rear Deck	Radiator punctured
7	1		Slope Plate	Track blocks knocked off slope plate
8	1		Suspension	No damage
9	1		Rear Deck	Punctured radiator

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Tank No.	No. of Hits	Where Hit	Damage
10	1	Sponson	Blew off track block
11	1	Suspension	No damage
12	1	Suspension	Ruined one bogie whee.
13	1	Suspension	No damage
14	1	Suspension	No damage
15	1	Rear Deck	Damaged Radiator
16	1	Power Train Carrier Housing	Destroyed by burning
17	3	Suspension and Lower Hull	Destroyed by burning

(c) By AT Grenades.

Tank No.	No. of Hits	Hit No.	Where Hit	Damage
1	1	1	ponson	Track Block Blown Off
2	3	1	Turret	Fouled Elevating Mechanism of 75mm Gun
		2	Turret	Penetrated, No damage
		3	Sponson	Penetrated, No damage
3	1	1	Sponson	Blew Track Block Off Sponson
4	1	1	Sponson	Blew Track Block Off Sponson
5	1	1	Sponson	Blew Track Block Off Sponson
6	1	1	Sponson	Blew Track Block Off Sponson
7	1	1	Sponson	Blew Track Block Off Sponson
8	1	1	Sponson	Blew Track Block Off Sponson
9	1	1	Sponson	Blew Track Block Off Sponson.

(d) By Mortars.

Tank No.	No. of Hits	Hit No.	Where Hit	Damage
1	2	1	Turret	None
		2	Track	Broken
2	3	All	Front Slope Plate	Blew off Ball Mount and Bow Gun, Sprung Assistant Driver's Hatch.
3	6	All	Sponson	Blew off track blocks
4	1	1	Side	Blew Track Off, Broke accelerator linkage
5	1	1	Through Hatch on disabled tank	Destroyed instrument panel

(e) By Mines.

Tank No.	Damage to Tank
1.	Suspension Damaged, Engine Mounting Broken
2.	Track Broken, Bogie Assembly Blown Off.
3.	Two Bogie Wheels Damaged, Rear Idler Cracked, Trac Broken
4.	Track Broken, Engine Mounts Broken.
5.	Bogie Assembly Damaged, Track Broken
6.	Track Broken, Rear Idler Damaged, Bogie Assembly Damaged.
7.	Damaged Bogie Assembly, Broke Track
8.	Power Train Assembly thrown out of Alignment. Engine Mounts broken, Suspension Damaged.
9.	Suspension Damaged, Final Drive Cracked.
10.	Damaged Suspension, Cylinder Block Cracked.
11.	Track Broken, Two Bogie Wheels Damaged
12.	Bogie Assembly Damaged, Track Broken,
13.	Track Broken
14.	Track Broken, Bogie Assembly Ruined.
15.	Track Blown Off, Bogie Wheel Flattened, Engine Mount Damaged.
16.	Bogie Assembly Blown Off. Track Broken.
17.	Track Blown Off, Two Bogie Wheels Damaged.
18.	Bogie Assembly Ruined.
19.	Bogie Assembly Blown Off. Track Broken.
20.	Bogie Assembly Blown Off, Track Broken.

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Tank No.	Damage to Tank
21.	Track Broken, Final Drive Cracked.
22.	Track Broken, Bogie Assembly Blown Off.
23.	Track Broken, Bogie Assembly Blown Off.
24.	Track Broken, Bogie Assembly Blown Off.
25.	Bogie Assembly Blown Off, Engine Destroyed, Track Blown Off.
26.	Dozer Blade Damaged.
27.	Track Blown Off.
28.	Track Blown Off, Bogie Assembly Blown Off.
29.	Track Blown Off, Bogie Assembly Blown Off, Hull Sprung.
30.	Bogie Assembly Blown Off, Track Broken.
31.	Bogie Assembly Blown Off, Track Broken.
32.	Bogie Assembly Blown Off, Track Broken.
33.	Bogie Assembly Blown Off, Track Broken.
34.	Bogie Assembly Blown Off, Track Broken, Front End Sprung.
35.	Track Blown, Bogie Assembly Blown Off, Engine Destroyed.
36.	Track Blown, Damaged Bogie.
37.	Track Blown Off.
38.	Track Blown Off, Front End Sprung.
39.	Track Blown Off.
40.	Track Blown Off, Power Train Damaged.
41.	Threw the tank on its back and it was destroyed burning and exploding ammunition. Total loss.
42.	Sprung the hull, damaged the power train and tor the engine from its mountings. Total loss.
43.	Sprung the hull, damaged the power train and tor the engine from its mountings. Total loss.
44.	Sprung the hull, damaged the power train and tore the engine from its mountings. Total loss.
45.	Sprung the hull, damaged the power train and blew the engine through the top of the compartment. Total loss.
46.	Damaged suspension system and abandoned. Destroyed at night by enemy demolitions.

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(f) By Satchel Charges.

Tank No.	Damage to Tank
1.	Blew off first bogie assembly.
2.	Temporarily disabled - track damaged.
3.	Attempted attack - charge missed tank.
4.	Three charges - all attackers killed before throwing charge.
5.	Disabled - abandoned - blown up by Japanese during night.
6.	Disabled - abandoned - blown up by Japanese during night.
7.	Attack attempted - agent killed before any damage was done.
8.	Attack attempted - agent killed before any damage was done.
9.	Attack partially successful - blew off escape hatch jammed turret and damaged 75mm ammunition.

(g) By Abandoning.

Tank No.	Damage to Tank
1.	Abandoned on reef when coral gave away. Impossible to retrieve.
2.	Abandoned on reef when coral gave away. Impossible to retrieve.
3.	Abandoned on reef when coral gave away. Impossible to retrieve.
4.	Abandoned on reef when stuck in a large shell crater Impossible to retrieve.
5.	Trapped on narrow road when tank in rear was destroyed by an 8 inch howitzer hit and blocked the road. Destroyed at night by enemy demolitions.

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2. The following chart is a recapitulation of destroyed and damaged tanks due to enemy action during the period 10 May 45 to 21 June 45. The average daily number of tanks in operating condition was thirty-seven, the aver number under repair was seven.

	Number of Hits	Tanks Hit	Tanks Damaged	Tanks Destroyed	Tanks Repaired
47mm AT gun	42	19	15	4	15
Mines, all types	46	46	40	6	40
AT Grenades	11	9	9	0	9
Artillery	15	15	15	2	13
Mortars	13	5	5	0	5
Satchel Charges	5	5	5	0(a)	5

(a) Two tanks were destroyed at night by enemy demolitions as a result of these attacks.

CHAPTER V

ESTIMATED RESULTS OF OPERATIONS

1. Although no area can be secured by tanks alone it is estimated that in 85% of the area heavily defended by the enemy a combined tank-infantry attack was used to reduce the defenses. In cases when tanks and infantry were not used together the terrain was such that it was impractical and impossible to use tanks.

2. Enemy Casualties:

a. Killed: 6000 - 6500

This figure was determined from actual counted dead, estimated number killed in the open but not actually counted, and estimated number killed and sealed in caves by tank gun fire.

b. Captured: 18

3. Operational and Material Damage to Enemy:

1	6 inch gun
1	150mm gun
2	120mm dual purpose
1	105 gun
1	105 Howitzer
6	77mm Howitzers
1	75mm gun
6	3 inch guns
12	47mm AT guns (new and old types)
16	20mm guns
9	HMG's (13mm)
36	LMG's
3	Guns, calibre unknown
43	knee mortars
7	81mm mortars
1	90mm mortar
2	rocket launchers (8 inch)
1	tank, medium
2	trucks (with personnel)
4	ammunition dumps (large size)
3	fuel dumps

4. Own Loses:

a. Killed in Action:

1	Officer
10	Enlisted

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b. Wounded in Action.

18 Officers
106 Enlisted

c. Missing in Action

None

CHAPTER VI

COMMENTS AND RECOMMENDATIONS

1. By S-1 (Personnel):

(I) Personnel:

(a) COMMENT:

Previous recommendations made in the special action report OKINAWA OPERATION, PHASES I AND II, remain the same as follows:

(1) Increased number of reconnaissance and liaison personnel.
(2) Increased number of radio repairmen.
(3) Providing for an ammunition section.
(4) Replacement of captains by majors as tank company commanders.
(5) Providing for adequately trained replacement personnel.
(6) The addition of a tank staff section to corps and higher echelons.
(7) Providing for automotive mechanics to repair the battalion's wheeled vehicles.

2. By S-2 (Intelligence):

(1) Personnel:

(a) COMMENT:

A number of over-lays and sketches were desired for submission to division and for the information of subordinate units with the battalion. No personnel are allotted to this section who are qualified to do this type of work.

RECOMMENDATION:

At least one draftsman competant to work with over-lays, sketches and maps should be added to the T/O for this section.

(2) Aerial Photographs:

(a) COMMENT:

Next to a visual reconnaissance, aerial photographs prove to be the most satisfactory and most often used method of determining the suitability of the terrain for tank attack. The high obliques furnished this organization each day covering area in enemy hands adjacent to our front lines were extremely valuable when used in conjunction with the map.

RECOMMENDATION:

All tank battalions should be furnished these high obliques as rapidly as they are available. A minimum of one complete set is required, but in order to supply each company commander with photographs of the area in which he is to operate, at least three full sets should be issued to the battalion.

(b) COMMENT:

The large scaled vertical aerial photographs marked with target areas were used with great success in the command post and for a situation map. In briefing company commanders and platoon leaders for the attack these photographs were of great help in terrain identification.

RECOMMENDATION:

The above mentioned aerial photographs with a scale of approximately 1:5,000 should be furnished prior to a landing and throughout the operation in sufficient quantity to issue one to each company and to the S-3 section.

(c) COMMENT:

Although the hig obliques were the most valuable photographs and the target area marked vertical photographs next in value, stereo pairs which were furnished were invaluable for information as to the type of terrain and the steepness of the hills. This applies particularly prior to a landing phase.

RECOMMENDATION:

Stereo pairs should be furnished in the amou of at least one set to the battalion, when available.

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(d) COMMENT:

High altitude photographs were useful in determining the texture of the ground when no other types of pictures were available.

RECOMMENDATION:

At least one copy of all photographs should be allotted the tank battalion at all times and more when possible so that each company may have a set for their use in the field.

(3) Maps.

(a) COMMENT:

As in previous phases of this campaign difficulties were encountered in obtaining a sufficient number of maps for the battalion particularly when a new series was issued. Certain reference points differed on each series of maps and as the road net and terrain lines were improved with each new issue, confusion occurred when all tank liaison teams were not able to use the same type map.

RECOMMENDATION:

All maps to the battalion should be issued in 100 copies.

(b) COMMENT:

Use of both the 1:25,000 and 1:10,000 maps proved that while the 1:25,000 was more satisfactory for company commanders, executive officers, the battalion command, the battalion staff and liaison teams with infantry battalions and above, the 1:10,000 was better suited for use in the command post and in the field by platoon leaders and individual tanks unless the situation was extremely fluid. If greater detail could be supplied on a 1:10,000 map their value would increase.

RECOMMENDATION:

Both the 1:10,000 and 1:25,000 maps should be issued to all tanks, liaison teams and officers requiring maps.

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(c) COMMENT:

The metric system used for contours was less satisfactory than the use of feet to which we are accustomed.

RECOMMENDATION:

In the future maps should be contoured in feet rather than in meters.

(d) COMMENT:

Roads and trails shown on the maps differed greatly from the map interpretation when encountered on the ground particularly in regard to width and usability. The road-trail network materially assists not only in identification of the position but in the formulation of the operational plan for each days attack. The majority of the roads encountered were fill roads through rice paddies, and the shoulder to shoulder width of trails and roads was not in accord with road and trail marks on the maps.

RECOMMENDATION:

Some method should be used to mark maps so that information as to the average usable width of road-beds and trails can be easily determined by a study of the map.

3. By S-3 (Operations):

(1) Equipment.

(a) COMMENT:

(1) The present medium tank of the M-4 series proved to be incapable of stopping the high velocity 47mm anti-tank projectile. Only the front slope plate was able to deflect this projectile. In order to counteract this weakness, steel tank track was welded to the sponsons and tank turret in hopes that it would deflect this projectile or cause it to be erratic in flight.

(2) The medium tank's ground pressure, or flotation was too great to allow the tank to travel in some necessary places where tank support was needed.

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(3) A larger caliber gun with increased muzzle velocity and larger shell would be more suitable for the reduction of reinforced concrete emplacements and natural rock fortifications. The howitzer with its low muzzle velocity and inaccurate fire as compared to a gun is not desired.

RECOMMENDATION:

That the forty-five ton tank M26E3 be provided tank battalions for the following reasons:

(1) Better ground clearance.
(2) Heavier armor.
(3) Higher velocity and larger caliber gun.
(4) Less ground pressure.
(5) Better fording ability.

(b) COMMENT:

Presence of battalion command tanks in the field was constantly required. Often more than one company was employed in one maneuver. Even if only one company was involved in a maneuver, a battalion command tank was invaluable, (1) in coordinating tank companies, (2) in reassigning tanks when the terrain dictated their release from the attack, (3) in providing tanks in the field with support from other arms when necessary, (4) in releasing the tank company commander from worry over reserves, over-extension and immediate supply. The battalion command was able to maintain familiarity with the terrain and the problems of the attack and not to merely rely on oral reports and maps and photographs.

RECOMMENDATION:

Elements of the battalion command and staff should be constantly in the field in tanks when more than one tank company is involved in the division attack. More battalion command tanks should be authorized in the T/O so that a section of two tanks can be employed rather than a single tank.

(c) COMMENT:

The direct vision cupola was used for the first time by members of this battalion under combat conditions. It was a great improvement over the previous type of turret vision.

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RECOMMENDATION:

The tank driver should be equipped with a small direct vision cupola if one could be designed.

(d) COMMENT:

Several times during the operation Japanese were observed who disappeared before the guns could be trained on them, into defilade behind small hills, bunkers or trench systems so that the direct fire of the tanks would not reach them. Among these were men carrying satchel charges who were attempting to close in on the tanks. All types of 75mm fire such as richochetting M-48 set on delay, and setting M-54 on time fire in order to get an air burst, were used in attempts to kill the hidden enemy, with success in only a few cases.

RECOMMENDATION:

The two inch mortar in the tank turret now used only for smoke should be supplied with HE ammunition in order to take care of enemy in defiladed positions who are within close range of the tank.

(2) Organization of tank battalion:

(a) COMMENT:

During this operation the inadequacy of the strength of the present tank battalion, both in regards to personnel and the tanks themselves, was clearly demonstrated Quite frequently the demands for tanks by the infantry was such that they had to be allotted where it was thought that they would be most vitally needed. Some units at times received far less than they could use. Operational losses and losses resulting from enemy action deplete the present sized tank battalion during the combat to such an extent that it is no larger than two understrength companies. With the present three company battalion at full strength it is not possible to adequately support more than three battalio of infantry in the assault over fair terrain even if the tank reserve is committed. Under normal conditions the division's front has four infantry battalions in the assault and the present sized tank battalion does not permit adequat tank support to all of them simultaneously. So that the infantry can be furnished adequate tanks support a change in the structure of the tank battalion is necessary.

[redacted] 632

RECOMMENDATION:

That the tank battalion be increased to four line tank companies of eighteen tanks each.

(b) COMMENT:

The present formation of the line tank company into four platoons and three command tanks in tactically unsound and uneconomical.

RECOMMENDATION:

That the line tank company be composed of:

(1) Three platoons of five tanks each.
(2) Two command tanks.
(3) One additional company headquarters tank with a bulldozer attachment.

(c) COMMENT:

The three tank platoon proved to be inadequate because the base of fire and maneuvering element does not exist within the structure of that platoon. Platoons consequently could not be employed separately except in narrow defiles where the terrain forced tanks to move in column without fire support.

RECOMMENDATION:

Tank platoons should be increased in size to five tanks to provide a base of fire for the maneuvering element and to free the platoon leader so that he can take up a position wherever his presence is needed.

(d) COMMENT:

The Japanese defensive system employing caves is impervious to any weapon except direct fire weapons, which can seal up their entrances, demolitions which can destroy their entrances, and flame throwers which can reach into the depth of the caves. The high capacity, long range and armor of a flame throwing tank makes it an excellent weapon as was proven on this operation.

RECOMMENDATION:

A flame thrower company of sixteen tanks should be added to the T/O for the tank battalion. This company should be organized into four platoons of four tanks each with adequate maintenance personnel and spare tank crews.

(3) Engineer.

(a) COMMENT:

During the present operation the great quantities of mines encountered made it necessary for each tank company to have attached to it a mine disposal squad. It is apparent that mines will be encountered in even greater quantities in future operations. The formation of a mine removal group to augment the capabilities of the tank battalion is indicated.

RECOMMENDATION:

That a platoon of mine removal personnel be added to the T/O of tank battalions and it should be composed as follows:

(1) Five mine removal squads of seven men each, one squad to operate with each tank company.
(2) Mine removal officer and three staff grad NCO's in platoon headquarters for organization and instruction.

(4) Target Designation.

(a) COMMENT:

(1) It was very difficult to locate specific targets such as a single machine gun which the infantry wished to indicate to the tanks. The following methods were used with varying success:

(a) Oral designation over tank telephone.
(b) Marking by tracer.
(c) Marking by rifle smoke grenade.

(2) Not any of these ways presented an adequate or good solution. They had the following faults. In the

case of (a) the tanks could not be contacted quickly enough and the oral designation was usually poorly prepared. In the case of (b) the tracers designating the targets could not be picked out from the other tracers being fired. In the case of (c) the range of rifle smoke grenade was not great enough to reach the target and the grenade is so bulky that infantrymen often failed to carry them.

RECOMMENDATION:

(1) Oral designation of targets should be by the "clock" system and practice should be undertaken before the campaign.

(2) Tracer fire should be clip fired from a BAR with one tracer following the other, and the tanks should be preqarned immediately prior to firing.

(3) A better projectile should be designed to take the place of the rifle smoke grenade which would sacrifice smoke quantity and have greater range.

(5) Supply and Evacuation.

(a) COMMENT:

Tanks often retrieved wounded through their escape hatches in open fire swept ground, carried stretchers to the rear on tank hulls and have protected stretchers parties by sheltering them from small arms fire. Ammunition and water have often been supplied when other vehicles are unable to reach front line units.

RECOMMENDATION:

An armored full-track vehicle should be developed to take over supply and evacuation functions in areas which are under fire.

(6) Field Expedients.

(a) COMMENT:

Roads built through rice-paddies or swampy areas on fills were frequently destroyed or cratered. As these were still under fire and were the only routes of approach for tanks it was necessary to repair these by hauling in fill and dumping it in the hole. Attempts to use the road bed failed because it quickly turned to mush when the crust was broken. Bundles of light pine logs were tied together

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with a diameter of the logs about 4 inches and that of the bundle itself three feet. These were lashed to the front slope plates of the tanks which ran up to the hole and cut the lashing by primacord detonated electrically from inside so that the bundle still tied together fell off the tank and into the hole. After every two or three bundles the tank dozer advanced and straightened them around so that more could be added to the stack. When sufficient logs were added to the hole a thin covering of dirt was scooped up by the tank dozer from the road bed itself and added to the logs. A very satisfactory crossing was constructed on numerous occasions in this manner.

RECOMMENDATION:

(1) Some training in this method of filling in a hole should be undertaken prior to a campaign, and if no material is expected to be present such log bundles should be carried to the scene of operations.

(2) In view of the fact that logs were often an unsatisfactory fill, armored dump trucks, armored bull clams or some other protected device for hauling fill should be available to haul dirt, rubble, or stone.

(b) COMMENT:

Mine fields were often encountered which were under heavy fire and which covered the only route of tank attack. The infantry were unable to advance without the tanks, and engineers were unable to remove the mines for the tanks until the infantry had cleared the area and knocked out the enemy positions. A piece of equipemtn was devised to handle this job, consisting of a tank dozer with half inch armor plate salvaged from LVT's welded to the side arms of the dozer so that the personnel worked inside an armored box as they probed for mines and removed them. It was found that the magnetic mine detectors could be operated out ahead of the blade but the detecting element of the sweeper had to be held at least two and one half feet away from the metal of the tank. By using an elongated handle set at ninety degrees with a circular head on the detector, men could operate it from inside the armor plate.

RECOMMENDATION:

An armored box working on the tank dozer hydraulic system should be provided to assist in removing mines under fire. The one devised is satisfactory on roads

and extremely level ground and leaves much to be desired in the line of protection and in speed of operation. A separate letter will be submitted on this subject.

(7) Communications.

(a) COMMENT:

The following recommendations made in the special action report OKINAWA OPERATION, PHASES I AND II, remain unchanged.

(1) Addition of a wire section to the tank battalion.

(2) Replacement of some SCR 510's, Jeep mounted, by SCR 508's mounted in cargo carrier M29C

(3) Development of a small portable FM radio to contact the SCR 508.

(b) COMMENT:

The range and durability of the SCR 508 proved adequate in the terrain over which we were operating although at times a relay station had to be set up on high ground between the division command post or the tank battalion command post and the front lines in order to maintain contact. The SCR 509 had a range which was good considering its size and purpose and its durability was rated as fair. It suffered from rough handling by radio teams using it in the front lines who could not avoid exposing it to the elements and knocking it around when carrying it under fire.

RECOMMENDATION:

It is urgently recommended that an electronic voltohmmeter be included as essential equipment in the T/A for the battalion headquarters maintenance shop, so that each set can be brought quickly to perfect combat efficiency for the following day's action without loss of time in sending the entire set to higher echelon maintenance units.

(c) COMMENT:

It was found very often that the individual circuits within the cable assembly for the SCR 509-510 were broken, cause unknown. The subsequent taping of the cable after

repair increased the possibility of the entrance of moisture to the remaining circuit.

RECOMMENDATION:

All cable assemblies for this set should be listed as spare parts and made easily accessible to repair units.

(d) COMMNET:

Automotive spare parts trailers (1 ton, 2 wheel) are now being used by communications repair sections of two tank companies. This provides a mobile independent unit in which can be mounted a test bench, work bench, and battery charger. It also provides dry and adequate storage space for the equipment necessary for company maintenance which is easily accessible and not subject to the hazards of frequent handling which is so detremental to delicate radio equipment such as tubes, crystals, etc.

RECOMMENDATION:

Some type of light mobile unit such as the above mentioned one ton parts trailer should be provided for each company as a communications trailer.

(e) COMMENT:

The phone supplied in an armor plated box on the back of the tanks, was more durable and had more volume than previous telephones. However, the infantry often failed to take advantage of it, particularly replacement personnel.

RECOMMENDATION:

Better instruction of the infantry-tank telephone to infantry troops and to replacement drafts before they are committed in combat would alleviate this difficulty.

(f) COMMENT:

The infantry frequently failed to replace the telephone after use, resulting in damage to it. Sometimes this was impossible as for example when a man is wounded while talking over it, or pinned down by fire until the tank moves out.

RECOMMENDATION:

A self-winding reel for the telephone cord should be developed and installed inside the armor plated box.

(g) COMMENT:

Many infantrymen were wounded or killed while using the tank telephone, or were unable to get to it and use it because of heavy fire. This was not always the case in jungle or heavy brush but was almost invaribly true in operations over cleared ground.

RECOMMENDATION:

A light frequency modulated radio as suggested above in comment (a) to be used with assault infantry platoons.

(8) Tactics:

(a) COMMENT:

(1) Two general forms of attack took shape on this terrain:

(1) Neutralization by tank gun fire and other supporting arms so that tanks and infantry could move forward together and seize lightly fortified ground. If extensive dug-in positions are occuppied by sizeable and determined enemy forces, the neutralization looses its effect when the infantry nears the Japanese emplacements and the fire must be lifted. In this case fire sweeping our forces from several directions makes the ground untenable and the loses heavy.

(2) Destruction of emplacements is the second method of attack. In this type of advance the tanks move beyond our front lines and seek to destroy by direct fire of 75mm guns all apertures, cave entrances, installations and emplacements. Reverse slopes must be covered whenever possible, and all forward slope positions within visibility up to 1500 yards. After this process is complete the infantry then advance under neutralization fire.

RECOMMENDATION:

(1) That the following aspects of destructive fire should be pointed out to infantry and tank units in training:

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(a) Infantry should not move out too soon and before the tanks have thoroughly cleaned out the area. It has happened that tanks are ordered to cease firing, particularly on reverse slopes, before the completion of their mission of destruction. Because these positions were temporarily neutralized, and no fire is being received from them, it does not necessarily follow that they are no longer occupied and able to offer effective resistance. When the word is passed to the tanks -"cease firing, you are holding up the advance of our troops", it is wise to be certain that they no longer have targets for their fire.

(b) Infantry should destroy immediately any remaining openings in the fortifications with flame-throwers and demolitions. Tanks cannot completely seal up all caves, and even when they are sealed up, the inmates may be able to reopen them. On SUGAR LOAF HILL a platoon relieving another, which had fired on the reverse slopes, received the report that all visible openings were closed, but was able to see the dirt being dug away from inside, and little slits opening up in closed cave mouths.

(c) Tanks should protect themselves from anti-tank weapons by use of covering platoons and supporting artillery when they turn to reach a reverse slope, or move so that their flanks are exposed. They may fail to use sufficient numbers of tanks for successful self-defense against AT weapons and satchel charge groups.

(d) Tanks should continue firing when visible activity ceases and not fail to close up the cave entrances and other openings because no enemy are observed in or near them.

(e) They should not neglect the targets on forward slopes at a greater range and concentrate solely on the positions at point blank ranges.

(f) Tanks should call on all resources such as bulldozers and engineers when the terrain appears to prohibit envelopment of a hill so that the reverse slope can be taken under fire despite the difficulties with the ground.

(2) That neutralization fire should be used to make a quick attack against light defenses for a faster advance.

(b) COMMENT:

Subsequent to the first few days of the attack in which a tank company was assigned to support the regiment in assault the division habitually assigned the tank battalion the mission of supporting the division attack. It was found in the first few days that assignment of one company to one regiment was not satisfactory because as the day developed that regiment frequently required either more tanks than company could supply, or on occasion less tanks. When an adjustment in the number of tanks was made by the tank battalion it was made more quickly and resulted in giving all units maximum tank support.

RECOMMENDATION

In future operations attack orders should continue to be written by the division so that the tank battalion supports the division attack, thus making it the responsibility of the tank battalion to supply adequate tanks and maintain adequate contact and liaison for all infantry units.

(c) COMMENT:

Although infantry units cooperated excellently in discussing tank missions and accepted the suggestions of the tank officers, a better procedure and a more standard procedure should be used in requesting tank support.

RECOMMENDATION:

The following formula should be established to provide tank support:

(1) The Tank Battalion S-3 should contact regimental and division "3" sections prior to the time they formulate their attack plan and inform them of the capabilities of the tanks on the terrain in their respective zones of action.

(2) After the issue of the attack order sufficient tanks should be assigned each regiment to support them in the best possible manner. In case this is beyond the capabilities of the tank battalion, G-3 should be consulted and the decision as to the main support mission decided by him.

(3) Requests for tanks from infantry units should include:

(a) The mission to be accomplished.
(b) The size of the unit making the attack.
(c) The size of the maneuvering infantry unit.
(d) The number of tanks they suggest from their knowledge of the terrain.

(d) COMMENT:

The problems of this operation served to confirm the theory that a base of fire for maneuver and the employment of tanks in mass is correct, and this doctrine must be carried out for a safe and successful prosecution of the attack. Terrain was often encountered where visibility from observation posts, both our own and enemy, exceeded a thousand yards. Infantry were forced by enemy artillery, mortars, and small arms fire to abandoned close-support tactics leaving tanks open to Japanese suicide attacks from spider holes and to anti-tank gun fire. Tank was forced to cover tank in order to protect each other from [illegible] and individual attacks.

RECOMMENDATION:

More time should be spent in training tanks and infantry in fire and maneuver across open terrain.

(e) COMMENT:

With the aid of tank support which destroyed all enemy positions on the forward slopes of well defended hill the infantry was able to reach the hill-crest without loss. However, after reaching the crest and masking tank fire they were assaulted and forced back by fire and attack from the reverse slopes of the hill and adjacent hills.

RECOMMENDATION:

Tanks must envelop each hill under attack before the infantry moves on to it in order to take the reverse slopes under fire. To do this they must be employed in mass for self-protection, they must move well ahead of their infantry support, and they must be given the support of artillery and mortar fire. There must be a reserve of tanks and infantry ready to help the tanks which envelop the hill which are in great risk of being cut off, and in danger from mines, terrain and anti-tank guns. If terrain

difficulties prevent envelopment, engineer assistance should be supplied to provide a route if it is possible.

(9) Artillery.

(a) COMMENT:

When an artillery battalion was assigned the mission of furnishing direct support to the tank battalion the results were excellent once the request was transmitted and contact established with them. An artillery battalion in direct support of a tank battalion fires only a few missions, each day, but these are urgent and important. This battalion is available throughout the night as a general support battalion and throughout the day is available for general support missions for about seventy-five percent of the time.

RECOMMENDATION:

An artillery battalion should be in direct suppo of the tank battalion whenever possible.

(b) COMMENT:

Frequently changing the assignment of the direct support battalion caused great confusion because of the accompanying shift of forward observers. By the time one set of forward observers had familiarized themselves with tanks, tank procedure, tank tactics, tank requirements, and their duties as a tank commander they were recalled to the artillery regiment.

RECOMMENDATION:

It is strongly recommended that two forward observers be added to the T/O of the tank battalion or be furnished by the artillery regiment for attachment in training and in combat.

(c) COMMENT:

The communications system once established with artillery was usually excellent, but each time a new battalion was assigned their radios had to have adjustments made particularly in the SCR 610's, so that they could operate on the tank-artillery common and it caused great confusion and excessive labor among the various communicatio

sections, as well as hampering tank operations in the field.

RECOMMENDATION:

(1) That a two man team equipped with a SCR 510 be furnished under the T/O for each of the two artillery observers requested above.

(2) That the battalion of artillery furnishing direct support should furnish a liaison officer and such wire communications as are necessary.

(3) That radio sets in all artillery FDO's should be ready to stand by on the tank-artillery common whenever necessary.

(4) That some preliminary training should be done together in order to perfect communications.

(5) That a frequency known as the tank-artillery common should be habitually assigned to tank and artillery units and this frequency must be one which is common to SCR 508, 510, 528 and SCR 608, 610, 628, used by tanks and artillery.

(10) Liaison.

(a) COMMENT:

Contact between infantry battalion and tanks was excellent throughout the operation using the SCR 509 and a liaison team of tank men. The liaison with the infantry companies was good when an SCR 509 manned by tank personnel could be brought forward to their CP and as long as the infantry company CP was in good contact with the infantry platoons. The fact that the SCR 509 was bulky and awkward to carry and dangerous to set up because of its size, which drew fire, hampered its effectiveness considerably in the front lines. Its range is more than adequate for work with assault infantry units, the size of a battalion or smaller.

RECOMMENDATION:

(1) Liaison personnel for use with infantry units must be provided in the tank T/O. They should not be drawn from spare tank crews but intensively trained for this important function.

(2) A radio similar to a SCR 509-510 must be immediately developed and produced which is light enough to pack forward to infantry companies and platoons even if

some sacrifice in range is necessary.

(3) Regardless of the size of units such as a tank battalion or group, consisting of more than one company, the tank company or tank platoon must maintain contact and liaison with the infantry assault platoons which he is supporting.

(b) COMMENT:

The following liaison personnel were supplied during this operation and it is impossible to perform the very difficult and important task of maintaining contact with the infantry with less men. The battalion furnished:

(a) The division command post a liaison officer, a three man team, and a SCR 508 jeep.

(b) The battalion furnished each regimental command post with an officer, at two man team, and a SCR 509 which were replaced by SCR 508 jeep when available.

(c) Tank companies furnished each supported battalion with a two man team and an SCR 509.

(d) Each tank company while supporting an infantry company supplied an SCR 509 and a two man team.

(e) Each tank platoon furnished a two man team for liaison with infantry platoons when necessary.

(f) Total liaison men in each company was therefore eighteen and in battalion nine. Total in battalion sixty-three enlisted, and four officers.

RECOMMENDATION:

The above listed personnel should be supplied in the T/O.

4. By S-4 (Quartermaster):

1. Previous Recommendations.

(a) COMMENT:

(1) Previous recommendations made in the Special Action Report, OKINAWA OPERATION, PHASES I AND II, remain the same in the following respects:

(a) Providing for an ammunition section within the battalion T/O.

[redacted]

(b) Recommendation for the five man gasoline cooker.
(c) Providing for an electrical machine shop, Signal 282/3.
(d) Assimilation of the Tank Maintenance Platoon, Ordnance Company with the Tank Battalion.
(e) Providing for a vehicle tank recovery in Headquarters and Service Company, Tank Battalion.

(2) Other recommendations have been modified in this special action report in the view of more experience. They have been covered elsewhere in this chapter.

(2) Ordnance.

(a) COMMENT:

Resupply of tank parts and accessories was totally inadequate during the Third Phase of the operation.

RECOMMENDATION:

A larger initial supply of fast moving spare parts and unit assemblies should be issued this organization before combat, and replacement of this stock be immediatlely available from higher supply echelons when needed. All items of accessories should be stocked by the supply services and made available upon request.

(b) COMMENT:

Spare parts for the bulldozer tank mounting were inadequate. Belts, "V" type, were the most expended items for the bulldozer tank.

RECOMMENDATION:

An adequate supply of all parts should be stocked by the supply services concerned.

[redacted]

[redacted]L

(c) COMMENT:

Carbon Dioxide, Oxygen and acetylene were extremely difficult to obtain. A total of 37 acetylene, 95 oxygen and 23 carbon dioxide cylinders were used during the operation. Maintenance work was often held up due to a lack of these gases.

RECOMMENDATION:

The following allowances should be authorized a tank battalion.

	Initial	30-day Repl.
Gas, CO_2, cylinder	7	100%
Gas, acetylene, cylinder	12	100%
Gas, Oxygen, cylinder	32	100%

(d) COMMENT:

The following ammunitionswas expended during this phase of the operation:

Shell, H.E. M-48 w/fuze M-48	25,578
Shell, H.E. w/fuze M-78	2,400
Shell, H.E. w/fuze M-54	9,046
Shell, Smoke M-49 w/fuze M-57	1,933
Shell, APC w/fuze BD M-66 A1,M-61 A1	2,059
Mortar, 2" Smoke	3,068
Cartridge, Cal. 30, AP belted	1,904,530
Cartridge, Cal. 30, ball carbine	6,020
Cartridge, Cal. 45, ball	7,000
Grenades, hand fragmentation.	725

Not greater than 2,500 rounds of the H.E., M-48 w/fuze M-54 was fired on time setting. The remainder was fired super-quick.

RECOMMENDATION:

The unit of fire should be changed to include a more appropriate quantity of high expolosive ammunition as suggested in the Special Action Report, OKINAWA OPERATION Phases I and II.

[redacted]

(e) COMMENT:

During the past operation, three tank recovery vehicles were laid up due to failure of the bronze wormwheel gear in the power winch of the recovery vehicle. No time should be lost by operational failures such as this when the retriever is so badly needed to recover tanks, and to assist in their repair.

RECOMMENDATION:

Steps should be taken to strengthen the bronze gear in the power winch assembly.

(f) COMMENT:

The one inch steel cable with rope core now used on the recovery vehicle frequently failed when put under a severe strain.

RECOMMENDATION:

The winch on the recovery vehicle should use one and one quarter inch steel cable with steel core.

(g) For comments on the mine exploder MiE3 see Annex A.

(h) For comments on the backscratcher see Annex B.

(3) Motor Transport.

(a) COMMENT:

A scarcity of spare parts for trucks 2 1/2 ton, 6 X 6 was experienced during the entire Third Phase of the operation. At one time fifty percent of our trucks were dead-lined due to brake lineing, ignition kits, carburetor kits, and axles not being available. In very few instances were all trucks operating at once.

RECOMMENDATION:

That a sufficient stock of all types of parts for trucks, 2 1/2 ton 6 X 6, be stocked and issued by the supply services concerned.

(b) COMMENT:

This organization brought two steam jennys along for the purpose of cleaning transmissions, engines and under-carriages of motor vehicles. These two vehicles have been deadlined since 15 May 45. Both vehicles could have been put back into operation if two heating coils could have been furnished by the supply services.

RECOMMENDATION:

It is recommended that a sufficient stock of all parts for the steam jenny be made available for issue by the supply services at all times.

(4) Clothing.

(a) COMMENT:

Jackets, combat winter, were used extensively, due to the chilly weather encountered on this operation and were found to be very satisfactory. Replenishments on these jackets were not available from the supply services. Combat trousers were not widely used as it was not cold enough. However, should this organization be called upon to operate in colder weather, the trousers would fulfill the necessary requirements.

RECOMMENDATION:

It is recommended that replenishments on combat clothing winter, in all sizes, be available upon request from the supply services.

(5) Fuel.

(a) COMMENT:

The following fuel and oil expenditures constitutes the average amount of fuel consumed by each tank during a day's operation:

Gasoline, 80 octane	75 gallons
Oil, SAE 50	1 1/2 gallons
Grease, G.P. #2	1 pound

[redacted]

(6) Maintenance.

(a) COMMENT:

Due to a lack of fast moving studs, screws, and bolts, a number had to be turned out in the battalion machine shop. Supply of steel stock was limited and inadequate inasmuch as there is no allocation of steel stock for the tank battalion in the TA.

RECOMMENDATION:

Adequate steel stock should be provided for in the TA and issued tank battalions.

(b) COMMENT:

It was necessary to do all five echelons of maintenance work in the field due to urgent need for tanks and the inadequacy of higher echelons of maintenance. Proper special tools would have saved many man-hours which could have been utilized on other jobs. Even if higher echelons were adequately equipped and staffed there are bound to be numerous occasions when emergency needs arise for echelons of maintenance for which there are no tools provided in the TA.

RECOMMENDATION:

Special tools for higher echelons of maintenance should be furnished the tank battalion.

(7) Medical.

(a) COMMENT:

Prefabricated heads obtained during the operation proved to be much more suitable than types constructed of rough lumber and other materials.

RECOMMENDATION:

(1) Prefabricated heads should be brought along by each unit.

(2) Sufficient screening be brought to take care of galleys and heads whenever the military situation permits their erection.

[redacted]

Chapter VI Annex "A"

MINE EXPLODER T1E3

(a) COMMENT:

1. (1) A practical demonstration was conducted by the First Tank Battalion, First Marine Division and this organization in regards to the feasibility of using the mine exploder T1E3 in this theater of operation.

(2) The mine exploder T1E3 is propelled alon the ground by a Medium M4A1 tank. There are no technical manuals available in this organization, concerning these two items, but the determined characteristics are listed below:

Characteristics of Medium M4A1 Tank

1. Weight - approximately 65,000 pounds.
2. Engine - Continental, model R-975-C1.
   a. rated horsepower - 385 at 2400 RPM
3. Ground pressure - approximately 11 pounds per square inch.

Characteristics of Mine Exploder T1E3

1. Weight - 65,600 pounds.
2. Propelling agency
   a. Chain drive from additional drive sprockets on tank.
   b. Two steel bars for pushing by the tank.
3. Steel Wheels - five per side.
   a. Diameter - six feet
   b. Width of each wheel - 3 inches.
4. Ground pressure - approximately 750 pounds per square inch.

(3) The demonstration was conducted on the steel decked dock of Brown Beach, (east side) on 18 June 1945. The tank was put into position directly behind the mine exploder and in this position a straight push of fifty yards lay ahead. In this straight push it was anticipated that some minor adjustments would have to be made. The two steel arms from the front slope plate of the tank (these arms extend beyond and slightly above the two tank drive sprockets) were bolted to the mine exploder body shaft, the drive chains were put in place, (from the two tank drive sprockets to the driven sprockets on either side of the min exploder body shaft) and the tank and exploder, in perfect alignment, were ready to start. The tank pushing and

driving the mine exploder moved out in first gear, approximately one mile per hour, and covered the fifty yards with little difficulty, but it was noticed that the ten steel wheels left very definite indentations on the steel dock deck. An attempt was then made to make a seventy-five degree turn, but one of the drive chains was broken. It was repaired and re-installed and another attempt to make the turn was made and the other drive chain was broken. It is pointed out that the tension on the chain was varied with both attempts. An attempt was then made to push the exploder without the aid of the chain drive, but it could not be moved. The demonstration was then abandoned because it could easily be seen that the exploder was far too heavy for use on this operation and from the Marine Corps point of view leaves much to be desired. The disadvantages of the mine exploder T1E3, as seen by this organization, are itemized below:

a. Bridges built by the enemy, captured intact and used by our forces are usually not sturdy enough to stand up under our M4 series tanks, let alone carry an additional 65,500 pounds.

b. Bailey bridges built by our engineers very seldom exceed the 40 ton capacity sizes, therefore, could not possibly carry sixty-eight tons (the combined weight of a medium tank and the mine exploder).

c. These exploders, no doubt, could be transported to the front by flat racks, but it is pointed out that it would take two tank recovery vehicles to load it aboard, and the same number to unload it. These recovery vehicles are usually critical items in an operation and cannot be spared. The time element, therefore, does not make this possibility feasible.

d. The roads built by the enemy are usually very narrow with a poor foundation. The only possible areas for the exploder to operate are on hard surfaced roads, due to its terrific ground pressure of almost 750 pounds per square inch. The roads built by the enemy are not well enough constructed to stand up under this type exploder.

(4) As the war progresses it is very evident that the Japanese are employing mines more extensively, therefore, ways of remedying this situation are continuously being sought. It is evident that a mechanized exploding device is urgently needed.

RECOMMENDATION:

(1) It is recommended by this organization that a mine exploding device be developed with the following characteristics:

a. That it be light as possible and still do the job efficiently.

b. That it be secured to the tank in the same order as the dozer, capable of being jettisoned, and installed quickly.

c. That as few machined parts as possible be used in order for the using arm in the field to quickly replace any damaged parts.

(2) It is also believed that the "flail" tank with a few improvements would be ideal for what this organization is seeking.

Annex "B"

BACKSCRATCHER

(a) COMMENT:

(1) During the early part of the Third Phase of this operation the tank battalion became interested in the Backscratcher device with the intentions of using it against numerous satchel charge attacks. The material including the mines were obtained from the Tenth Army Ordnance Section and the installation performed by the tank battalion maintenance section according to the Army Ordnance specifications.

(2) The Backscratcher consists of five M2A1 mines, which contain a projectile similar to a 60mm mortar shell. These mines are placed in welded brackets around the tank turret, and are fired by switches from inside the turret.

(3) The Backscratcher was designed to operate against enemy personnel attempting to climb on top of the tank.

(4) Although the Backscratcher was not tested in combat by this battalion it was checked by firing with an observer tank standing close by to watch the effect. The area around the tank firing the mines was well covered with fragments but the mines broke two periscopes on the tank from which it was launched.

RECOMMENDATION:

(1) Since the danger to tanks appears to be greatest from suicide attacks on the suspension system and since the top of the tank is fairly well covered by rifle and machine gun fire at all times, it is recommended that the elevation of the M2A1 mine launcher be lowered so that it detonates on impact with the ground closely adjacent to the tank. It is further recommended that more extensive tests be made of the device with the intention of defeating satchel charge attacks rather than blowing people off the top of the tank.

(2) An HE shell for the two-inch smoke mortar could also strengthen anti-suicide defense.

Robert L. Denig Jr.

ROBERT L. DENIG, JR.
Lieutenant Colonel,
U. S. Marine Corps.

ANNEX F

TO

SIXTH MARINE DIVISION

SPECIAL ACTION REPORT

PHASE III OKINAWA OPERATION

6TH ENGINEER BATTALION

[redacted]

[redacted]

S P E C I A L

A C T I O N

R E P O R T

SIXTH ENGINEER BATTALION,

SIXTH MARINE DIVISION

OKINAWA,
RYUKYU RETTO

[redacted]

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This report covers the action and recommendations of the Sixth Engineer Battalion in the fighting on OKINAWA from LOVE Plus 21 day, 22 April, 1945, through LOVE Plus 82 days. On this date, 21 June, 1945, OKINAWA was declared secured and Phase III of the operation was completed.

Paul F. Sackett

PAUL F. SACKETT,
Major, U.S. Marine Corps Reserve,
Commanding.

SPECIAL ACTION REPORT

of the

SIXTH ENGINEER BATTALION,

SIXTH MARINE DIVISION

for the Third Phase of the

OKINAWAN OPERATION

22 April to 21 June, 1945.

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SIXTH ENGINEER BATTALION SPECIAL ACTION REPORT

PHASE III, OKINAWAN OPERATION

CHAPTER I

GENERAL

This Special Action Report covers Phase III of the OKINAWAN Campaign. The report on Phases I and II has been previously submitted.

Phases I and II covered the period from "L-day" to "L-plus-20" or 1 April to 21 April, 1945. These phases covered the landing on YONTAN beaches, the capture of YONTAN Airfield and the drive northward to secure the upper end of the island and the rugged MOTOBU Peninsula. This turned out to be a war of movement and this battalion found itself sadly lacking in mobility: the battalion displaced forward on an average of every other day which meant the available transportation had to shuttle back and forth at night to move the gear forward. During these phases the engineers were responsible for maintaining 130 miles of MSR as well as repairing or replacing the numerous demolished bridges. There were ample water sources on this end of OKINAWA so that in spite of the frequent displacement of the regiments the troops were well supplied.

Phase III, the subject of this report, covers the period from 22 April to 21 June, 1945. Up to 6 May this battalion was bivouaced around GABUSUKU on the MOTOBU Peninsula. While the infantry regiments were engaged in mopping up the unorganized remnants, the engineers were engaged in maintaining about 75 miles of MSR which served the widely scattered battalions of infantry, as well as furnishing water. During this time part of the heavy equipment was overhauled preparatory to reengagement with the enemy in the south. On 6 May the engineer battalion completed its movement to an area in rear of the souther lines. The SIXTH Division was committed on the evening of 8 May, and from then on engineer companies were in direct support of the assault regiments while in the lines.

If the first two phases of this operation are described as a war of movement the third phase can certainly be called a "war of bridges". The ASA-KAWA, the ASATO-KAWA, the NAHA Canal and the KOKUBA Estuary (NAHA Harbor) were all major obstacles to the advance of the division and were tenaciously defended by the enemy. These streams were forced by first placing footbridges across ahead of the lines to allow the passage of the assault infantry. Bailey bridges were then erected to permit the passage of medium tanks: these bridges were generally erected under artillery and machine gun fire, and this battalion suffered many casualties while bridge building.

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The enemy made extensive use of Anti-tank Mines to delay the advance of our tanks. Since the enemy conducted his defense from caves and skillfully constructed emplacements, the infantry could only advance when supported by tanks. Mine removal teams, each consisting of four trained men, were organized and assigned to close support of the tanks. These men cleared lanes for the tanks, often ahead of the front lines, which permitted direct fire to be placed on caves and pillboxes. Additional mine teams were attached to the battalion and were assigned the task of clearing secondary roads and areas just in rear of the front lines. The records show that this battalion detected and removed 800 mines of all types.

Road construction and maintenance within the division zone of action was not difficult. The sector assigned was narrow and had an excellent highway (Route 1 and Route 3) down the center which served as the MSR. Existing secondary roads were improved for tactical use. Two pioneer roads, each about a mile in length, were constructed to allow supply while Route 1 was still under observed artillery fire. The period between 21 May and 5 June was marked by extremely heavy and continued rains. The MSR and side roads became absolutely impassable for days at a time. Fortunately for this battalion, Corps had relieved us of maintenance of most of the roads, so that keeping traffic moving was not our direct responsibility.

This phase of the operation is one Marine Corps campaign in which amphibious operations played no part with the exception of the brief shore-to-shore movement on ORUBU Peninsula. The division advanced in frontal assaults against a series of heavily fortified ridges. This portion of the operation more nearly resembled the fighting in the European theatre than any previous action in the Pacific. In spite of a shortage of equipment, worn out during the first two phases, the Engineer Battalion was able to promptly and properly support the attack and the training of the officers and men was flexible enough to enable them to readily adapt themselves to this new type of warfare.

SIXTH ENGINEER BATTALION SPECIAL ACTION REPORT

PHASE III, OKINAWAN OPERATION

CHAPTER II

TASK ORGANIZATION

The Engineer group of the SIXTH MARINE DIVISION for Phase III consisted almost entirely of the SIXTH ENGINEER BATTALION, Major Paul F. SACKETT, USMCR, commanding.

One officer and 26 men, trained in mine removal, were attached to this Battalion from the 1st Separate Engineer Battalion on 14 May. There were so many mines in the NAHA - OROBU area that the mine removal personnel in this battalion could not do more than clear the main routes and tactical side roads for the passage of tanks and trucks. The men from the 1st Separate Engineers were assigned the task of clearing secondary roads and areas in which bivouacs or supply dumps were to be established. These men reverted to parent organizational control by III Corps orders on 19 June, 1945.

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SIXTH ENGINEER BATTALION SPECIAL ACTION REPORT

PHASE III, OKINAWAN OPERATION

CHAPTER III

PROGRESS OF THE OPERATION

A. NARRATIVE ACCOUNT.

1. THE BATTLE FOR NAHA.

The end of Phase I and II found the Sixth Engineer Battalion bivouaced near GABUSUKU on the MOTOBU Peninsula. The northern end of OKINAWA had been declared secured on 21 April, but the infantry battalions were widely scattered in strategically located bivouacs to mop up enemy remnants. During this period this battalion maintained 75 miles of MSR to supply the widely separated elements. This was quite a task, not only was this a tremendous amount of road for one engineer battalion, but much of the heavy road equipment was deadlined for repair after the strenous action of the first two phases. During this period a Cub landing strip was built at NAGO; it was named "GREEN FIELD" in honor of a battalion commander killed on MOTOBU.

On 30 April this battalion was alerted to move south and this movement took place, one company at a time, between 2 and 6 May. The battalion was first bivouaced in the vicinity of NIPUNJA (east of KADENA) awaiting definite orders to go in the line. Thereafter the bivouacs were kept from 2 to 4 miles behind the front line.

The SIXTH DIVISION was ordered to take over the right (west) flank of the line next to the EAST CHINA SEA on the afternoon of 8 May. An engineer company, was placed in direct support of the regiments going into the assault. Each supporting engineer company kept a Liaison Officer at the Regimental C.P. Under him was an Engineer Reconnaissance Officer who kept both the regiment and the engineer battalion advised on operations and obstacles to be encountered and supervised the work of engineer equipment supporting the regiments. This proved to be a satisfactory system and allowed the engineers to anticipate the next move and to have the material assembled and the men prepared before hand.

When the division took over, the front line was on the high ground at the south end of MACHINATO Airfield, overlooking the ASA-KAWA estuary. On the opposite bank was a heavily defended coral escarpment, honey-combed with natural and artificial caves, the west anchor of the NAHA-SHURI-YONABARU line, Route 1, the MSR for the division, was under observed artillery

fire and impassable because the enemy had demolished a Bailey bridge (erected by the 1st Engineer Battalion) about ½ mile north of the ASA-KAWA.

Reconnaissance was made for a footbridge across the estuary and a bypass in defilade around the destroyed bridge on Route 1. It was found that a satisfactory pioneer road could be constructed along the shore around the west side of MACHINATO Airfield, about a mile in length, which would allow vehicles to approach the ASA-KAWA in defilade. This work was immediately started. It was reported that a timber bridge could be constructed on the old approaches for the passage of foot troops. This was put in the night of 9 May and at dawn two companies of infantry crossed it and established a secure bridge head. Before more reinforcements could cross, two "human demolition charges" rushed out of hiding and threw themselves on the bridge, destroying it. However, engineers had already blasted gaps in the seawalls for the passage of Armored Amphtracks, so additional reinforcement and supplies were ferried across in LVTs. That night, a Bailey bridge, 100-feet long, was erected across the old causeway approach to permit the passage of troops and tanks. A floating foot-bridge, 275-feet long, was erected nearby as an emergency crossing: this bridge was improvised from empty oil drums and planks, tied together with wire. These bridges were shelled intermittently for the next two weeks, but were not damaged.

During Phase II, the mine removal teams had accompanied the leading infantry battalions, sweeping and removing AT-Mines. Because organized resistance was infrequent, the tanks followed the infantry and seldom had to precede them. In Phase III the enemy planted many mine fields and protected them with fire. Because the enemy was fighting from prepared positions and caves, it was always necessary for the tanks to advance with or ahead of the infantry to neutralize this fire. Nine mine teams, each of four men, and one officer, were assigned to work with the Tank Battalion, and bivouaced with them throughout all of Phase III. These men rode the decks of the tanks up to the front lines, and then cleared and marked lanes for their advance. These men always worked with the assault infantry and sometimes ahead of them. Since the infantry could only advance with tank support, and since the tank could not move without having the AT-Mines removed, the attack was dependent on these men. Although casualties were very heavy, these men performed their mission in true Marine Corps tradition and well deserved the praise they received from all observers. When the tanks were not in actual combat, these men cleared mines from roads and lanes for the passage of supply vehicles and ambulances. Other mine removal teams were organized to clear bivouac and dump areas.

After crossing the ASA-KAWA and securing the heights overlooking NAHA City, the advance of the division was halted

until the division to our left (east) had overcome the stubborn resistance in the salient of the SHURI hill mass. Meanwhile, the engineers improved Route 1 and placed a small bypass on it in place of a demolished bridge to allow it to become the MSR in place of the MACHINATO bypass. Other roads were improved and surfaced: notably Routes 34 and 38, and a long access road to the proposed division C.P. at the north end of MACHINATO Airfield.

A new road was constructed and surfaced from just above the ASA-KAWA to the left flank of the division on the ridge overlooking "Sugar Loaf Hill". This new road was under enemy observation from SHURI, a mile to the east, but in spite of artillery and mortar fire, this road was completed and for a while was a MSR. Meanwhile continued reconnaissance was made by foot and air of possible crossings of the ASATO River, the next barrier to the entering of NAHA.

When the division to our left had advanced far enough into the SHURI salient to insure its removal, our infantry moved to the banks of the ASATO preparatory to forcing a crossing. During the afternoon of the 23rd of May, an attempt was made to haul Bailey bridge parts to the ASATO to stock pile them for erection next morning. The enemy detected this convoy and forced it back by unusually accurate artillery fire, during which the Division Engineer and a bridging officer were severely wounded. Another attempt to bridge the stream was made that night: five amphtracks were to be run into the stream and scuttled. These were to act as piers and a deck of timber laid across them. This project was abandoned when two of the five LVT's were blown up by AT-mines. Two foot-bridges (Army Model 1938) each 50-feet long, were then thrown across the ASATO and the troops advanced into NAHA on the morning of the 24th. As soon as the south bank was secured, a Bailey bridge, 80-feet long, was erected to permit the passage of tanks.

Meanwhile, an attempt was made to cross a narrow part of the ASATO by building a bypass around a demolished bridge to the east of "Sugar Loaf". Three culverts, 30-feet long, were welded together from drums and reinforced. These were to be carried on the sides of tanks who, without exposing personnel, would drop them where they could be rolled into place by an armored bulldozer and covered over. This project also failed. The heavy rains had just started and the gound was so soft that a bypass adequate for tanks could not be constructed. The afternoon of the 24th a Temporary Pier, 45-feet long, was erected at the same site in spite of heavy machine gun fire to allow tanks to enter east NAHA.

There is a canal, about 40-feet wide, running north and south through NAHA, which separates NAHA city from east NAHA. Marines had occupied NAHA city, and the northern portion of

east NAHA, but resistance on the high ground just east of the canal stopped the advance from the north. The engineers were ordered to place three footbridges across the canal to permit troops in NAHA city to cross the canal and envelope these strong points on the morning of 29 May. In spite of the proximity of the enemy and torrential rain, three crossings were erected ahead of the lines and the foot troops successfully crossed.

East NAHA required another Bailey bridge on the road south from "Sugar Loaf". This was put in on the morning of 30 May and the tanks moved southward to eliminate the remaining resistance north of the KOKUBA-GAWA, a small river which forms NAHA harbor. During this period three truck bridges were erected across the NAHA Canal to facilitate supply and the streets of NAHA cleared of rubble. Roads east of NAHA were widened and improved and culverts placed.

There were several other bridges built across the ASATO which are not mentioned in chronological order. The torrential rains on 26 and 27 May caused the river to flood: this washed out the Temporary Pier on the "Sugar Load" road and the two foot bridges. Another floating footbridge, 240-feet long, was immediately launched at the mouth of the estuary (where the current was least) until a jeep bridge of local lumber could be erected across the abuttments of an old bridge. To replace the wash-out Temporary Pier a D.S. Bailey was erected at the same site while the stream was still in flood.

No mention has been made of mine teams in conjunction with bridging and road improvement. Yet every bridge approach had to be swept prior to the arrival of the material trucks, and every road and street cleared of mines before the bulldozers could start work.

2. THE BATTLE FOR OROKU PENINSULA.

All of NAHA was secured on 31 May. On 1 June reconnaissance was made of possible crossings to the OROKU Peninsula. NAHA Harbor is from 200 to 1000 yards wide and extends inland about two miles. At this point the KOKUBA-GAWA flows into it. The KOKUBA is a creek, or small river, which would have been feasable to bridge had the weather been drier and the banks firm enough to carry tanks. About ½-mile in from the mouth of the estuary is an island, ONO-YAMA, which divides the harbor into two channels, each about 100-yards wide. A portion of old bridge across the north channel was still standing, requiring only a 70-foot span to close the gap. But the bridge across the south channel was gone entirely; only the concrete pile bents remaining. Just south of the harbor is another coral escarpment, about 100-feet high, heavily defended, and with excellent observation of the entire NAHA area and the north slope of the ASATO.

The division ordered that the assault on the OROKU Peninsula should be from the seaward side on 4 June and two regiments were alerted for the movement. Included in the operation were many engineer personnel: mine removal men, demolitionists and operators for the Water Distillation Units which accompanied the expedition. The landing was made with LVTs at dawn and the infantry drove inland about one mile before encountering firm resistance.

In preparation for crossing NAHA Harbor, the engineers had loaded aboard trucks 70-feet of Bailey bridge for spanning the damaged portion of the bridge across the north channel, and 330-feet of Pneumatic Ponton Bridge (Army M3, 13 ton capacity) for crossing the south channel.

As soon as the infantry had secured the east portion of the OROKU Peninsula, erection of the Bailey bridge across the north channel began. The site was still under direct machine-gun cross-fire. It was necessary to run three Army Amphibian Tanks to the end of the causeway to shield the men unloading the trucks and to give covering fire for the erection crew. In spite of this fire and several casualties, the bridge was completed to ONO-YAMA by the afternoon of the 4th. For courageous leadership, this Company Commander was recommended for a SILVER STAR.

Meanwhile the floating bridge was being inflated and assembled into rafts in a slip near the estuary. On the morning of 5 May these rafts were towed to the south channel of NAHA Harbor and there assembled into a bridge, 300-feet long and with a 13-ton capacity. This allowed direct supply and support of the assault regiments still fighting on OROKU. A raft was constructed immediately adjacent to the ponton bridge to ferry across bulldozers weighing more than 13 tons.

Tanks, which weigh 35 tons, were ferried across in LCTs.

At the south end of the ponton bridge, Route 3 swings right and climbs the ridge to NAHA Airfield. Route 7 swings left and follows the KOKUBA for a short distance before it too turns southward. About 400-yards from the ponton bridge a short span was demolished on Route 7. An engineer platoon replaced this bridge on the night of 6 June. It was fortunate that this work was done at night, for as soon as the first tank crossed at dawn it was found that the site was under heavy machine-gun and AT-gun fire. Hard fighting took place at this point for several days and a number of tanks were knocked out before the area was secured. Another bridge had been blown on Route 3 opposite the southern end of the NAHA Airfield. This was not replaced until 10 June by a Bailey because of continued sniper fire. Meanwhile the tanks had bypassed this span via the airfield so that the attack was not held up.

The floating bridge across the south channel was inadequate to carry the heavy traffic supplying the 6th and 1st Marine Divisions, so it was decided to replace it with a Bailey bridge. The entire bridge, 350-feet long, was assembled on the south causeway and rolled into place by a tractor. It was launched on the site of the old bridge: the existing concrete piers of which were used for intermediate support. This was the longest Bailey bridge ever built by the Marine Corps. During the erection, the Japs scored several direct hits on the bridge with a 75mm. An officer and a NCO were wounded, but the bridge suffered only minor damage.

The landing on OROKU took place on 4 June and on 13 June the area was declared secure. During this period the enemy defending OROKU, estimated at 4000, were encircled and eliminated. One Marine regiment circled southward from East NAHA while the other two moved westward from the OROKU beach. Engineer companies were in close support of each regiment and improved the narrow back roads and replaced culverts to supply the widely scattered battalions taking part in the encirclement. The area around OROKU was the most heavily mined of any on OKINAWA, and probably in the whole Pacific theatre.

Before leaving this part of the operation, mention must be made of the torrential rains and terrific mud which slowed but did not stop the Battle for NAHA. The rain began 21 May and continued intermittantly until 5 June, with no sunshine to dry the roads. All roads, particularly Route 1, under the churning of heavy traffic turned into rivers of hub-deep mud. High water washed out a temporary pier across the ASATO and a number of culverts. The roads became so bad that traffic would be stopped for 24 hours at a time to give the engineer troops a chance to surface and drain the worst stretches. Fortunately for us, III Corps had taken over maintenance of all roads as far south as ASA-KAWA, so that keeping the roads open under these

adverse conditions was not our responsibility. During this time, the division supplied the front and evacuated wounded with LVTs or DUCKS. These left Route 1 at Port Loomis and returned to land at ASA or ASATO-KAWA. The engineers made use of the DUCKS for transporting the bridging required to cross NAHA Harbor, and LVTs or LCTs were employed to move high-priority gear ahead. These 16 days of rain and mud were difficult for all hands, but forward progress never stopped.

3. CAPTURE OF ARA-SAKI PENINSULA.

The OROBU Peninsula was declared secure on 13 June. The 14th and 15th were spent by the assault troops in mopping up and resting. The Engineer Battalion employed this time in moving from bivouacs along the north bank of the ASATO to an area in the vincinity of the NAHA Airport. At the same time it was discovered that an old bridge, a portion of which was used in conjunction with a 70-foot Bailey bridge to cross the north channel of NAHA Harbor, was failing under heavy loads. A 10-ton limit was immediately placed on the crossing and steps taken to replace the old wood stringers. All traffic (except ambulances) was stopped twice a day for a period of four hours while the old decking and stringers were removed and renewed, and bents were placed to strengthen weak piles.

The SIXTH DIVISION again took over the western sector of the line just south of ITOMAN on 16 June. The enemy was dug in along a series of transverse coral ridges and as usual fought stubbornly, but attrition, loss of ordnance and supplies and propaganda began to break their morale. On the 19th one regiment broke through to the sea at the southern tip, splitting the enemy into several pockets. Mass surrenders and suicides became common. On 21 June, at 1300, the island was declared secured and the OKINAWAN operation was over.

Route 3 south of NAHA Harbor was, in general of concrete, and in fair shape when this Engineer Battalion took it over on 16 June. The exception was a mile stretch of coral road through swamps and rice paddys just north of ITOMAN; this was fast going to pieces under the pounding of the tanks and supply trucks of two Marine divisions. On orders of the Division Engineer, the traffic on this section of road was made alternately one-way. This kept the traffic in the center of the road until the engineers, by working night and day, could widen both shoulders and the grade raised. This stopped further breaking up and two-way traffic was restored. There were no important bridges to be replaced on the ARA-SAKI Peninsula, but there were the usual number of drum culverts to be placed and bypasses constructed. Once the attack passed beyond ITOMAN, it was realized that the campaign would soon be over. Therefore, beyond this point, the secondary roads were only improved enough to pass tanks and the supply truck for the assault battalions. The weather was excellent during this part of the operation.

After the crossing of the ASATO-KAWA, the enemy began to regard the armored bulldozer as a combat vehicle and gave it the same treatment they gave our tank. Whenever a bulldozer ventured ahead of the lines, it drew artillery or mortar fire. On the last day of the campaign, an armored

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dozer went ahead of the tanks and began filling in a tank trap. A Japanese soldier, hidden in the weeds, rushed forward with a satchell charge which he threw into the open hatch, killing the operator and demolishing the tractor.

The last few days of the campaign were devoted to blasting in the entrances of tunnels and caves in which groups of enemy were hiding. The infantry blasted in the entrances of small caves themselves, but the larger ones and those with multi-entrances were closed by engineer demolition personnel from the companies in direct support of the regiments. At the time of writing this report, blasting of caves is still continuing.

The OKINAWAN Operation was unusual in several respects. Phase I was a normal Amphibious landing, but Phases II and III were two different types of operations, both new to the Marine Corps in this war. Phase II was a war of movement, wherein the division advanced daily for considerable distances. Here the Engineer Battalion found itself handicapped by inadequate transportation to fulfill its engineer missions and displace forward almost every day. Phase III involved frontal assaults on prepared positions protected by water barriers and well placed mine fields. This was very similiar to the warfare of Europe and involved an entirely different type of engineering. In all phases, this battalion met and solved all problems as they arose and demonstrated that the training of engineer personnel of this battalion is flexible enough to meet any type of warfare.

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B. DISCUSSION.

1. Bridging.

The campaign south of MACHINATO Airfield was a "War of Bridges". In a distance of three miles there were four water barriers across which not a single bridge remained: the ASA-KAWA, the ASATO-KAWA, the NAHA Canal and NAHA Harbor. These were tidal streams with soft muddy bottoms. These streams had to be forced in the face of determined first-line Japanese troops fighting from long prepared positions. In this distance of slightly more than three miles, the Sixth Engineer Battalion erected 25 bridges of all types, not including 27 culverts and bypasses. Of these 25 bridges, 7 were floating footbridges with a combined length of 860-feet, 6 were timber trestles totaling 136 feet, there was one Temporary Pier of 45-feet, one Ponton Bridge of 300-feet, three Jeep bridges totaling 125-feet and 7 Baileys with a total length of 800-feet.

As will be seen from the attached list, the battalion erected a number of bridges which are not standard in the Marine Corps and on which the men had had little or no drill. The footbridge, Model 1938, was obtained from the Army only a few days before making the crossing of the ASATO. Each company had one day's drill on its use. It is recommended that this footbridge be included in the T/A of an engineer battalion engaged in warfare on larger islands. It is light to handle, quick to erect and stows very compactly.

Just before leaving Guadalcanal, each company had one day's drill on the erection of the BAILEY bridge. This bridge had recently been added to the equipment of the engineer battalion, but had not yet been received. During Phase II, on the MOTOBU Peninsula, a D.D. Bailey bridge was erected to replace a concrete arch across a deep gorge where the collapse of a concrete arch had cut off supply and evacuation of advance troops. This is the only type of bridge which could have been erected here, and so on its first use proved its military value to the Marine Corps.

During Phase III this battalion erected seven Baileys with a combined length of 800-feet. These bridge had been procured by III Amphibious Corps from the Army. The sites on which these bridges were erected all had fair approaches for assembly and launching and in most cases the high banks and soft bottom precluded the use of Temporary Pier. Many of these bridge sites were under fire. The Bailey can be speedily erected under these conditions with a minimum exposure of personnel and when completed will carry the heaviest load in the division without the damage of settlement that is always present in the Temporary Pier. The Bailey as also almost invunerable to shell fire: the bridge at ASA-KAWA was

shelled without direct hits daily for two weeks. The Bailey across the north channel of NAHA Harbor received machine-gun and automatic cannon fire, while the Bailey bridge across the south channel, NAHA Harbor received a direct hit by a 75mm shell. Damage was almost nil.

It is recommended that the Bailey bridge be made readily available to the engineer battalion in operations of this magnitude. The present allowance of trucks and trailers makes it difficult for the battalion to transport this heavy bridge, so unless the transportation allowance of the battalion is materially increased, this bridge should be carried in depot stock available by "D-plus-7". It is recommended that the bridge and facilities for transporting it are included in the T/A so as to assure its early use if required.

The only Floating Bridge which the battalion brought with them on this operation had been turned over to the Army immediately upon landing. This was the new Marine Corps Floating Bridge, 20-35-ton capacity, with steel balk. For crossing the southern channel of NAHA Harbor, 300-feet wide, a Pneumatic Floating Bridge, M3, was obtained from the Army. Few of the men and officers had had any experience with this type of bridge, but it was successfully assembled and was used as the MSR until a 350-foot Bailey could be launched across the old Japanese bridge utilizing the undamaged piers for bearing. A clear span of 110-feet D.D. was used over the destroyed section.

The Floating Bridge-M3 has a capacity of only 13-tons, so it was necessary to send the 35-ton tanks to the OROKU Peninsula via LCT. To cross our own bulldozers and gasoline shovels, a ferry of 25-tons capacity was constructed from extra parts of the floating bridge. This proved adequate for the small amount of traffic weighing between 13 and 25 tons. In operation in terrain such as this, a floating bridge of 18-ton capacity, capable of being reinforced to 35-ton, should be included in the T/A of the battalion. Trailers should be provided so that at least 50% of the bridge can be kept loaded, ready for instant use.

The Temporary Pier, 35-ton capacity, was only used once, as compared to four such bridges erected during Phase II. The reason the Pier was not used more often was that in most places high abutments and soft bottom made its employment inadvisable. The one Temporary Pier, 45-feet in length, erected across the ASATO was washed out by high water and replaced by a Bailey. Chess and balk from the Temporary Pier were frequently used for short span timber bridges: on two occasions the trestle bent from this type of bridge was set up under the center of wood girder bridges to reinforce them to carry 35 tons.

Bridging timbers (8"X8" for posts, 4"X12" for stringers and 3" decking) were always difficult to procure. Some Japanese timber was found in NAHA and employed on smaller bridges, but timbers of large dimension had to be procured from III Amphibious Corps. Had more timber been available and more readily accessible, there would have been much less balk and chess from the Temporary Piers cut up and used on small spans.

A study of the attached list of bridges constructed during Phase III, together with those built in Phases I and II, show how inadequate the quantity of bridging was with which we left GUADALCANAL for an operation of this nature. Fortunately the Army had a large stock on the island which was made available to us, although there was often some delay in procuring and transporting the required quantities.

It is recommended that in future operations of the magnitude of OKINAWA, that the Marine Corps establish Engineer Depots by "D-plus-7", in which large amounts of the following bridges be stocked to replenish or supplement those brought in by the Combat Engineer Battalion:

Foot Bridges,
Ponton Bridge- 20-35 ton capacity.
Temporary Pier, 20-35 ton capacity
Bailey Bridge,
Bridging timbers: 3X12, 8"8, 4X12 or 6X12, cut to stock length.
Corrugated Iron Culverts of small diameters.

Establishment of such an Engineer Depot would materially ease the replacement problem for engineer equipment and expendable supplies.

It is further recommended that a bridge of each type be available in training areas for the instruction of engineer officers and men.

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BRIDGES BUILT DURING PHASE III OF THE OKINAWAN CAMPAIGN

BRIDGE	NO. BUILT	LENGTH	TARGET AREA	DATE
Foot Bridges Model 1938	1	60'	7572-Y1	23 May 45
	1	50'	7572-S2	23 May 45
	1	240'	7573-U	25 May 45
	1	80'	7572-R	27 May 45
	1	75'	7471-G	29 May 45
	1	80'	7471-K	29 May 45
		585'		
Foot bridge, improvised drum type	1	275'	7574-D	10 May 45
Wooden Bent Bridge	1	30'	7472-O	29 May 45
	1	15'	7471-D	29 May 45
	1	45'	7471-P	2 June 45
	1	21'	7370-Y	7 June 45
	1	18'	7269-E	8 June 45
	1	7'	7365-L	11 June 45
		136'		
35-Ton Pier	1	45'	7572-Y	25 May 45
Pneumatic Ponton Bridge, M-3	1	300'	7370-D	4 June 45
Bailey Bridge	1	100'	7575-X	11 May 45
	1	50'	7572-M4	24 May 45
	1	80'	7572-Y	27 May 45
	1	50'	7571-C	30 May 45
	1	70'	7371-Y	4 June 45
	1	350'	7370-I	9 June 45
	1	50'	7268-C	10 June 45
		800'		
Jeep Bridges	1	30'	7472-O	27 May 45
	1	30'	7572-P	27 May 45
	1	65'	7573-U	31 May 45
		125'		
Bypasses	1		7676-Y	13 May 45
	1		7675-Q	12 May 45
	1		7675-M	10 May 45
	1		7572-P	29 May 45
	1		7269-L	8 June 45
	1		7269-H3	8 June 45

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[redacted]

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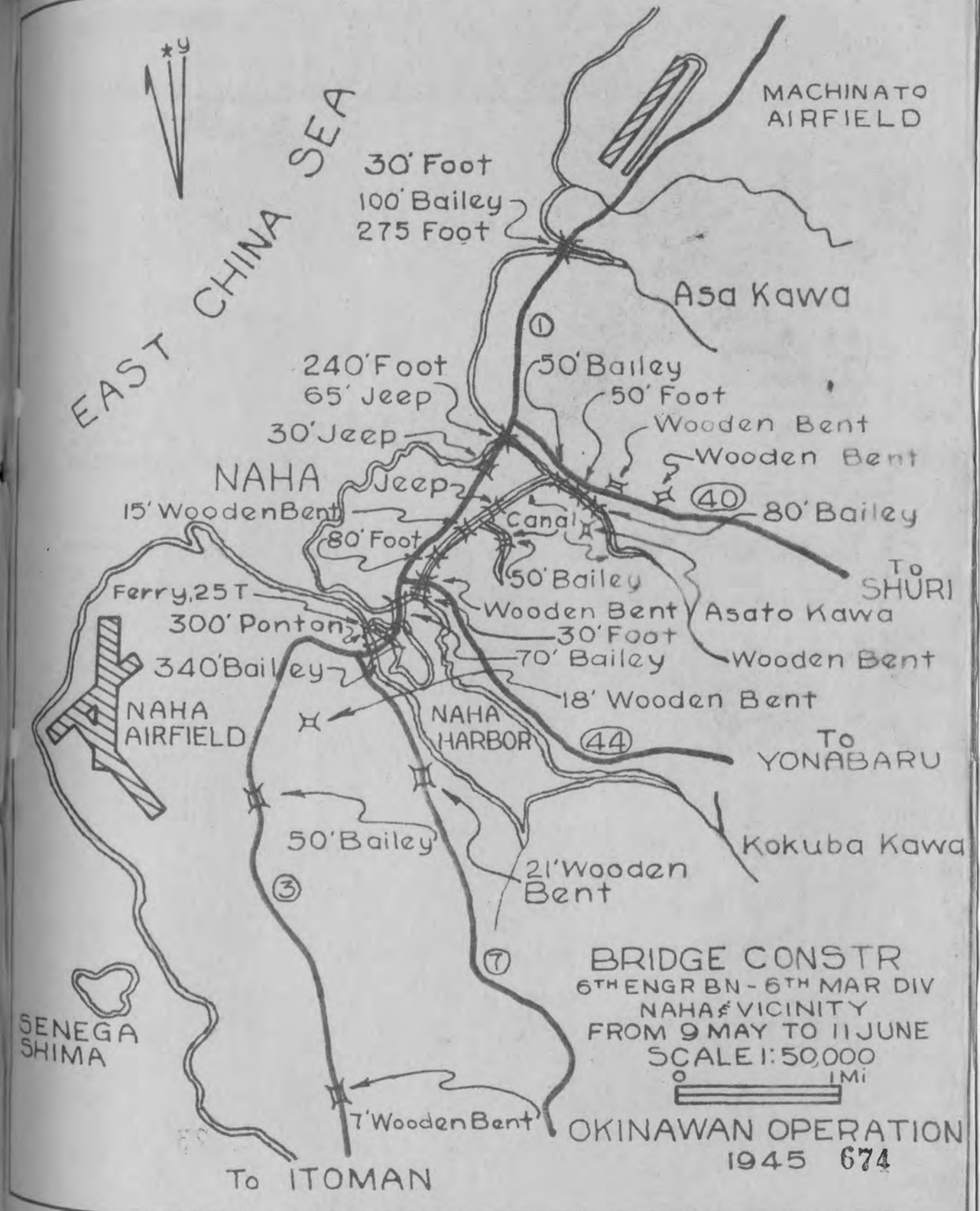
DOCUMENT(S) TO THIS

MARKED LOCATION


EAST CHINA SEA
MACHINATO AIRFIELD
30' Foot
100' Bailey
275 Foot
Asa Kawa
240' Foot
65' Jeep
30' Jeep
NAHA
Jeep
15' Wooden Bent
80' Foot
50' Bailey
50' Foot
Wooden Bent
Wooden Bent
80' Bailey
Canal
To SHURI
Ferry, 25 T
300' Ponton
340' Bailey
Wooden Bent
Asato Kawa
30' Foot
70' Bailey
Wooden Bent
18' Wooden Bent
NAHA AIRFIELD
NAHA HARBOR
To YONABARU
50' Bailey
21' Wooden Bent
Kokuba Kawa
BRIDGE CONSTR
6TH ENGR BN - 6TH MAR DIV
NAHA & VICINITY
FROM 9 MAY TO 11 JUNE
SCALE 1:50,000
0
1 Mi
SENEGA SHIMA
7' Wooden Bent
OKINAWAN OPERATION
1945 674
To ITOMAN

BRIDGES	NO. BUILT	LENGTH	TARGET AREA	DATE
Culverts, Drum	1		7675-L	11 May 45
	1		7575-D	11 May 45
	1		7674-S	13 May 45
	1		7673-I	16 May 45
	1		7674-W	14 May 45
	1		7271-R	7 June 45
	1		7568-Q	12 June 45
	1		7567-H	13 June 45
	2		7567-P	13 June 45
	2		7361-R	17 June 45
	1		7365-H	18 June 45
	1		7365-J	18 June 45
	1		7365-I	19 June 45
	1		7365-J-1	19 June 45
Culverts, Wooden Box	1		7167-J	9 June 45
	1		7267-O	18 June 45
	1		7267-R	18 June 45
Ferry, Pneumatic Float	1	(25-ton cap)	7570-D	6 June 45

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2. Roads.

Road construction and maintenance during Phase III was overshadowed by the more spectacular engineering missions of bridging and mine removal, but it is still important. Between 22 April and 6 May, the battalion was bivouaced on the MOTOBU Peninsula of northern OKINAWA. The infantry battalions were widely scattered over this end of the island engaged in mopping up, so that the battalion was responsible for about 75 miles of MSR.

On 10 May the Sixth Engineer Battalion took over maintenance of Route 1 south of Junction 34 in the Division Zone of Action. Route 1 was at that time under artillery fire from the heights south of the ASA-KAWA and was impassable at a point one-half mile north of the ASA where the enemy had destroyed a Bailey built by the division from whom we took over. A mile long pioneer road was built around the west side of the MACHINATO Airfield in defilade which allowed the bridging material for the ASA-KAWA crossing to be delivered at the site. With the capture of ASA-KAWA heights, Route 1 was improved and a culvert bypass constructed at the demolished bridge to allow traffic to flow straight through. The weather was dry at this time and very little work was required to improve this and other roads to carry the traffic of one division. At UCHITOMARI Estuary there was a long causeway with two narrow bridges which required long stretches of one-way traffic. The battalion started a bypass to allow two way traffic: this bypass was 500 yards long and required three culverts. Another bypass was built around the town of YAFUSU to avoid a poorly drained section of Route 1.

The most amphibious pioneer road was built from a point on Route 1, around the east end of the ASA Estuary and up almost to "Sugar Loaf Hill" where so much heavy fighting took place during the attack on NAHA. This was a fine wide road, in excellent defilade, and was used as a MSR until NAHA was captured and the main effort centered again on Route 1. This road was one and one-half miles long and was partially surfaced when taken over by III Corps.

On 16 May the III Corps took over maintenance of roads north of the ASA-KAWA. This left this battalion only the maintenance of Route 1 south of ASA, which was of concrete and in fair condition, and the pioneer road which swung around the east end of ASA Estuary to supply the left flank. Heavy rains began 21 May and lasted for sixteen days. Route 1 became impassable for days at a time. Supply and evacuation by road became impossible. The Division used water transport, LVT, DUCKS and LSM, to supply the forward troops. A temporary beach head was established at ASA and later at ASATO-KAWA. Our pioneer road to the left flank became impassable, but by that time Route 40 along the ASATO

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was open and the left flank could be supplied over it.

The roads in NAHA City were all of concrete and were in good condition. Once the mines were cleared and the rubble dozed to the sides, no further work was required. Roads in East NAHA were, except for Route 44, narrow and in poor condition. But as only one regiment was in that area, these served the purpose. Once the enemy was driven out of East NAHA, the effort swung westward again.

The attack on OROBU Peninsula was from the sea. Once bridges were thrown across NAHA Harbor, Route 3 became the divisions MSR. This was of concrete most of the way to ITOMAN and required little work to make it suitable as an avenue of supply for two divisions. The only bad point on Route 3 was a section through a rice paddy just north of ITOMAN: here it was necessary to limit traffic to one way until the road could be widened.

The enemy made a last stand on the inboard end of OROKU Peninsula. They were here surrounded by a regiment which worked its way southward from EAST NAHA. The roads were very poor in this area and many under heavy fire by the trapped enemy, but side roads were improved or detours constructed to allow supply and evacuation of the one regiment to the left flank during the seven days of encirclement. The weather was excellent at this time.

The enemy made his final stand south of ITOMAN. Here the roads were of narrow coral surface but were without difficulty improved to permit the passage of tanks and supplies to the troops engaged in the final attack and mop-up.

Prior to moving south to engage in the NAHA campaign, all heavy equipment of the letter companies had been grouped in Headquarters and Service Company under control of one officer for allocation and maintenance. This officer had charge of all improvement and maintenance of roads except those for forward tactical supply which were put in by the engineer company in direct support of the regiment. Road machinery was allocated to the letter companies for such work as required. This method of operation proved very satisfactory when the division was advancing slowly on a narrow front. But once the ASATO was reached, the regiment began fanning out in various directions and required numerous temporary supply roads. This type of road improvement could not be efficiently handled by one machinery pool, so equipment reverted to company control.

During Phase III the Sixth Engineer Battalion accomplished the following road work.

26 miles MAIN SUPPLY ROUTE, improved and maintained.
2½ miles PIONEER ROAD, built and maintained.
3 miles CAMP ACCESS ROAD, built and maintained.
15 miles TACTICAL SIDE ROADS, widened and improved.

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3. Water Supply.

Water supply on this operation was not nearly as difficult a problem during the campaign around NAHA as it was at the northern end of the island. This was because the southern zone of action was narrow with a good MSR along the center, and with plenty of streams crossing it where suitable Water Points could be established. Another factor which simplified water supply was that the advance was slower; water points did not have to be moved as frequently as during Phases I and II.

During the heavy rains of 25-27 May water supply suddenly became critical. A number of waterpoints were washed out and their pumps drowned; at other, the water was so muddy that an adequate quantity could not be produced. At all of these points the roads were so muddy that haulage of water by the consumer was difficult or impossible. To meet this emergency portable Water Purification Units and Water Distillation Units were sent forward by LVT and LCM where they could be set up to supply the forward elements. This took care of the situation until the streams subsided and the Water Points were reestablished.

South of NAHA Airfield the water sources were limited in number and quantity. By intense reconnaissance and developement, sufficient water was produced to supply the assault troops without too long a haul. The Japanese had apparently neglected their water supply, for many of the POWs and civilians captured at the southern end were suffering from thirst.

In NAHA City water was supplied from springs and wells in sufficient quantity for the SIXTH DIVISION; but as quartermaster personnel and construction troops from the Army moved in to develope the port, it was necessary to establish priorities so that our division could be supplied without too long a wait in line.

Both Water Distillation and Purification Units accompanied the expedition which made the amphibious assault on OROKU Peninsula. A small stream was discovered on the landing beach, so that it was not necessary to set up the distillation units.

All water was pre-treated in accordance with Corps order. The quality of the water was excellent throughout the operation and, with a few exceptions, adequate in quantity.

Towards the end of the operation there developed a shortage of 3000-gallon canvas tanks. This shortage became so critical that it was impossible to use all the purification units.

units. It is recommended that the allowance of Tanks, Canvas, 3000-gallons, be increased to take care of the rapid deterioration, or that a glass-fibre tank of similiar capacity be adopted in lieu of canvas.

The present Mobile and Portable Water Purification Units performed in a satisfactory manner, and no recommendations are made for changes in this equipment. The following figures for Phase III are self-explanatory:

Number of Water Points Established - - - -	27
Average Number of Water Points in Service at one time - - - - - - - - - - - - - - - - - -	6
Daily Average Production - - - - - - - -	80,000 gpd.

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4. Mine Removal.

During Phases I & II, the removal of mines were not a serious problem because the number of mines the enemy had planted in his hasty retreat were few and poorly camouflaged. The mine lifting teams accompanied the advance infantry units. The tanks followed the infantry except on the few occasions when determined opposition stopped the foot troops.

Upon being alerted for movement to the NAHA area conferences were held between officers of the Tank Battalion and the Engineers. It was realized that the attack on well prepared emplacements with numerous minefield would require a different technique in the use of tanks and mine removal personnel. Plans were drawn for a "Tank-Engineer Team" but before any training could be done, the division moved into the line.

This battalion organized a mine lifting detail consisting of 1 officer and 39 men, divided into nine teams of four men each. Three of these teams, or 12 men were assigned to each tank company. These men bivouaced with the tank battalion and were always available. At first, the infantry regiments demanded that mine removal personnel accompany them when attacking. It was soon found that the danger to infantry from the few crude AP-mines encountered was so small that thereafter the mine removal men stayed with the tanks except when specific request were received from the regiments.

The mine lifting teams accompanied the tanks into combat, riding on the deck. When firing began, these men alighted and waited for signals from the tank commander. When he requested mine removal these men moved forward and cleared and marked lanes for the passage of the armor. On many occasions it was necessary for these men to work ahead of the infantry and under enemy fire. The men would then sweep for mines from a prone position while the tanks protected them by fire and smoke. Casualties were heavy among the men assigned to mine removal, but on few occasions were the tanks long delayed by mines.

Mines were detected by the metallic Mine Detector, SCR-625. This proved excellent in all cases except when the ground was to thickly covered with fragments. It was found that this device would detect the fuse of the non-metallic terracotta mine when buried 4-inches. Since most of the mines were of the Single-Horn Type or improvised from shells or Aerial Bombs, the detector had no difficulty in finding them. Mines improvised from satchell charges generally had a metallic hand grenade as a detonator. The horned mines were difficult to camouflage, therefore a road

or area was first visually swept before beginning a closer search with a detector.

Each four-man team was equipped with one detector and the necessary tool for probing and disarming mines. While one man searched for and marked suspicious spots, the remainder of the party followed investigating and removing mines. Probing was frequently resorted to when the ground was covered with shell fragments. Most of the clearance done by the men was along the shoulders of roads and lanes; signs were posted and the tanks and regiments informed of the extent cleared. When lanes were cleared across open fields, they were outlined with improvised markers.

The mine removal personnel supporting the tanks spent more time in other work than they did with the tanks. This was because the tanks had many days when they were not committed, and which were spent in refitting and repairing. On these days these mine lifters went out to clear secondary roads, areas to be used for bivouacs, and future avenues of attack.

The minefields encountered were so numerous and scattered, and the available mine removal personnel so limited within the battalion, that the III Corps was called upon for assistance. One officer and 26 men, trained in mine removal, were attached to us for a period of slightly more than one month to aid in mine clearance. These men were held together as a unit and principally used to clear large area to the rear for bivouacs and dumps.

One interesting inovation in mine removal was tried during the last days of the operation. A long stretch of Route 3 was through rice paddys and exposed to enemy fire throughout. This road was heavily mined but it was necessary to get tanks through in order to flank the prepared defence of ITOMAN and KUNISHI ridges. A tank-dozer was fitted up for mine removal. The blade was reinforced with heavier armor and shields welded on each side of the blade. Two experienced mine removal men were placed on seats between the blade and the front of the tank in a position where they could reach the ground ahead of the tracks. These men were protected from small arms fire and mortar fragments by the armored blade and the side shield. The tank crept along while the two mine removers probed the ground (the mine detector would not work so close to the blade) and on signal would stop while the men disarmed and removed mines. This proved a successful means of clearing this road.

The enemy's mine laying technique was much improved in Phase III. These were "deliberate mine fields" in every sense of the word except one; there was no pattern nor uniform

spacing. Road junctions were mined and the fields adjacent to them. All main roads, their shoulders, likely turnouts to bivouac areas, lanes and courtyards had to be searched for scattered mines. Mines were particularly thick in the OROKU area: the beaches on the seaward approaches, SENAGA-SHIMA, and the south shore of NAHA Harbor, and the valleys which had to be used by the tanks to approach their final center of resistance.

These mines had been laid by men who had had plenty of experience and training; in very few of the mines had the layers forgotten to take out the safety pins and camouflage was markedly better. Yet in spite of this, it was felt that the enemy failed to use the proper intelligence in locating his fields; certain points which were critical in the defense had only a few mines, later large minefields were discovered in places where it would have been impossible to take a tank or amphtrack.

The following types of mines were encountered in Phase III. Mines Removed and Neutralized by Mine Removal Teams of the SIXTH ENGINEER BATTALION:

472 - - - - - Single-Horned Mines
33 - - - - - "Tape Measure" Mines, Model 93
70 - - - - - Terra cotta Mines
72 - - - - - Improvised Box Mines
6 - - - - - New AP-Fragmentation Mines
12 - - - - - Improvised Charges
4 - - - - - Conical Shaped Charges
4 - - - - - Depth Charges
25 - - - - - Improvised Can Mines
10 - - - - - Yard Stick Mines
17 - - - - - Charges, 1000-lbs, electrically detonated
25 - - - - - Bombs, 63-kg.
3 - - - - - Bombs, 50-kg
3 - - - - - Bombs, 500-lb
2 - - - - - Knee Mortar Shells
7 - - - - - Stick Grenade Booby Traps
8 - - - - - Torpedo War Head
25 - - - - - Shells, 5"
2 - - - - - Shells, 6"
800 Mines Removed and Destroyed.

363 Mines found stored in caves and destroyed: these were Tape Measure, Yard Sticks and Box Charges.

1163 Mines neutralized by this battalion by actual count.

Not included in this total is the many mines discovered and removed by infantrymen, and those sealed in caves along with Japanese soldiers.

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It is recommended that a mine removal platoon, consisting of one officer and about 40 men, be set up in the engineer battalion. These men are to be intensively trained in the detection and removal of all types of enemy mines. They are also to be trained to work in a "Tank-Engineer" team.

Considerable trouble was experienced in maintaining and repairing the mine detectors. It is further recommended that one NCO be included in the platoon who has had training and experience in maintaining and repairing the Mine Detector SCR-625.

All men in the battalion should have some mine removal training. At least one platoon of each company should have intensive training so that their members could be used to replace casualties in the "Tank-Engineer" team, or be used for clearing in rear area.

5. TANKS

The engineers worked very closely with the tanks throughout this phase of the operation. Mine removal was the most important part of the "Tank-Engineer Team" and is fully discussed in the section on Mine Removal.

An attempt was made to lay a culvert bypass across the ASATO under fire. Four culverts, each 30-feet long, were welded together and reinforced with longitudinal ribs of steel. These were carried to the site on two tanks: one culvert lashed to each side of the tank with a prima-cord connection that could be electrically severed from within the tank. The tanks were to turn parallel to the stream and drop the culverts where an armored bulldozer could move them into place and doze the fill over them. This was tried but was only partially successful: the ground was so soft from continued rain that both the dozers and the tanks became bogged down and the plan had to be temporarily abandoned. Nevertheless, there is considerable merit in this scheme and under better conditions it would have been successful.

Below ITOMAN the enemy had blown craters in the road where it passed through rice paddys. These craters were under fire and there was no fill nearby which could be shoved into place by an armored tank-dozer. Bundles of poles and logs, or fascines, were lashed to the blade of a tank-dozer using a prima-cord connection which could be severed from whithin the tank. The tank-dozers would then advance and drop its fascine into the crater over which tanks could cross to continue the assault.

6. AMPHIBIAN TRACTORS

Amphibian tractors were employed on three occasions during Phase III in conjunction with engineering projects. The first occasion was an attempt to bridge the ASATO River on the road just east of "Sugar Loaf". Five Amphtracks, loaded with chess and balk were to run into the stream bed at this point and be scuttled. A deck of the balk and chess was then to be laid from gunwale to gunwale of the scuttled LVTs. This project was abandoned when two of the five tractors hit AT-mines while approaching the site and were blown up. It is doubtful if this bridge, when built under combat condition, could have been made to carry a 35-ton tank. The gunwales of the LVTs would have to be reinforced to carry this much load, and when the amphtracks were scuttled, they would not have settled on an even keel. This would have required many shims and wedges to secure even bearing under the balk. Cutting and fitting these shims at night would have been difficult when within earshot of the enemy.

Armored Amphtracks were used while building a Bailey across the north channel of NAHA Harbor. The approach to the bridge was over a causeway, 200 yards long, without protection of any kind. The bridge was under observation from OROKU Heights, a thousand yards distant, and two machine guns and an automatic cannon were laid to effect cross-fires. Three Army Amphibian Tanks were sent out to give fire support and were so arranged to give Flank Protection where the bridging trucks could be unloaded. In spite of continued fire, the bridge was successfully assembled and launched in daytime with a minimum of casualities.

The following day two LVTs were employed to place a Pneumatic Ponton Bridge, 300-feet long, across the south channel of NAHA Harbor. The pontons had been inflated and sections of the bridge were assembled into rafts in a slip nearby where they were protected from enemy fire. The LVTs were used to tow the rafts from the slip to the bridge site where they were assembled into a bridge. The LVT is not a good craft for handling pneumatic floats , for while maneuvering the floats into place the tracks of the LVT cut the fabric of the pontons beyond repair. This was primarily due to strong tidal currents and difficulty in controlled maneuver of the bulky LVT.

7. Communications.

Communications was in general very satisfactory during thisphase of the OKINAWAN operation. Telephone communication was much more reliable; this was because this part of the operation was "semi-stabilized" and there was not the necessity of running telephone lines to the division and company C.P.s because of frequent displacement that occured during Phase II.

Just before entering Phase III, the battalion secured on loan four TCS radios, three of which were mounted on reconnaissance trucks and one on a jeep. These had a 20-mile range as compared to the ten mile range of the TBX which is standard equipment for an engineer battalion. A net was set up which included the Battalion C.P. and the individual companies of this battalion. Many times, when the telephone lines were out of service or jammed with other traffic, the TCS radio proved itself invaluable as engineer equipment. It is strongly recommended that the TCS radio, jeep or truck mounted, be included in the T/A of the engineer battalion in lieu of the present inadequate TBX.

The jeep-mounted TCS was frequently employed by the Division Engineer or the Battalion Commander while making reconnaissance. This only required changing the assigned frequencies and tying in on the battalion net. Information and orders could be radioed back to the C.P. without having to depend on the telephone, which were sometimes inadequate for the traffic they had to carry.

On all major bridging jobs, of which there were many, direct communications were immediately set up between the bridge site and the battalion C.P. This certainly proved its worth: it was possible to keep in close touch with the progress of the work. If enemy fire was delaying erection, artillery fire or smoke could be called for immediately. If more equipment or material was needed, it could be started from the rear within a few minutes. At first, the TCS radio was used for this purpose. It was soon found that the Japanese radio direction finders and they soon brought fire to bear on the site. When the convoys arrived at the site, or erection began, the enemy commenced shelling. Thereafter telephone communication was employed, tying into the wires of advanced infantry units or forward observers.

Even after the bridge was completed, these telephones were often left in place with an operator on duty during daylight hours. Messages could be phoned to this man who would then be on the lookout for the officer desired and whenhe passed the bridge would phone back for additional instructions.

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8. MEDICAL

In the period from 22 April, 1945 to 21 June, 1945, inclusive the Battalion suffered 121 casualties, of which 26 were non-battle casualties. Fifty-four of these have returned to duty. In the same period of time 55 men were admitted to the hospital for medical conditions. Of these, 21 have returned to duty.

Wound, Fragment, Shell	47
Wound, Gunshot	19
Killed in Action	11
Died of wounds	
Wound, Fragment, mine	10
Burn	8
Wound, Lacerated	5
Fracture	4
Contusion	4
D.U. (Fracture)	4
Blast, Concussion	3
Wound, Fragment, grenade	1
Wound, Fragment, bomb	1
Deafness due to firing	1
Exhaustion from over-exertion	1
Strain, muscular	1
D.U. (Dislocation)	1
TOTAL:	121 (Includes 26 non-battle casualties)

H&S Co. 31
A Co. 32
B Co. 27
C Co. 31
TOTAL 121

Returned to duty...54.

Fatigue, Operational	12
Patigue, Combat	1
D.U. (Dementia Praecox)	2
D.U. (Fatigue Combat)	1
Manic Depressive Disorder	1
Alcoholism	1
Schizophrenia	1
Paralysis, facial nerve	1
Psychoneurosis	1
D.U. (Dengue)	3
D.U. (Malaria)	5
D.U. (Amebic Dysentery)	5
D.U. (Cat Fever)	2
FILIARIASIS	2
Pneumonia	1
D.U. (Lymphoma)	1
D.U. (Appendicitis)	1
Appendicitis	1
Hernia	1
Hemorrhoids	1
Abscess	2
Calculus Kidney	1
D.U. (Hematuria)	1
D.U. (Duodenal Ulcer)	1

H&S Co. 25
A Co. 10
B Co. 15
C Co. 5 TOTAL: 55

Returned to duty..21

8. MEDICAL

D.U. (Enteritis)	1	
Cellulitis	3	
Arthritis	1	TOTAL 55

SANITATION

The fly and mosquito problem was met by intensive and frequent spraying with DDT insecticide and the use of general sanitary measures such as, screened galleys and heads, fly traps, proper burning of garbage and refuse.

Malaria control was well maintained. There were no new cases of malaria in the Battalion nor any proven recurrences. Sporadic outbreak of diarrhea and gastro-enteritis were quickly brought under control. The health of the Battalion as a whole was excellent.

9. Supply and Logistics.

Supply was simpler during Phase III than during Phases I and II. By this time the beach heads were well established and Field Depots had been set up. There was an excellent supply route for the division which was operating in a narrow zone. Furthermore, the advance was slower than during the earlier phases.

The most difficult part of the supply problem was to secure the large amount of bridging required by the battalion. The bridging and timers originally landed by us had already been expended at the north end of the island. Fortunately, the Army had large stock of bridges of all types available and this was obtained as required through requisitions by III Corps. Delivery of this material to the site was always a problem, this battalion had too few trucks for its normal work, so it was necessary to stop other less essential work unless trucks could be obtained from Corps or Motor Transport Battalion.

Just at the time the division was crossing the ASATO into NAHA and the bridging requirements were the greatest, the haulage problem was farther complicated by rains and mud. Delivery by truck became impossible but arrangements were made for delivery of bridging material by DUCKS and LCT. This involved several rehandlings but at least the material was delivered on the site when needed.

Much of the battalion's equipment and transportation was already in poor shape due to the hard use required in the northern campaign. Hard work, mud and enemy action during the third phase farther destroyed or deadlined equipment and trucks, so that at the conclusion of this operation the battalion was in dire straights.

Parts supply for equipment and trucks improved during this phase, but much equipment was always deadlined awaiting replacement parts. Expendable supplies were adequate in quantity with the exception of Tanks, Canvas, 3000-gallons.

SIXTH ENGINEER BATTALION SPECIAL ACTION REPORT

PHASE III, OKINAWAN OPERATION

CHAPTER IV

ENEMY TACTICS

The enemy defended his lines in souther OKINAWA with the usual tenacity of his first line troops. The defense was conducted from a series of coral ridges which were honey combed with carefully concealed and mutually supporting emplacements. The engineers took no part in the assault of these emplacements, so no mention will be made in this report of the enemy tactics in defense.

To stop the Marines' advance, every bridge had been completely destroyed with a few minor exceptions. The enemy had had plenty of time, and unlike the norther end of the island, the demolition had been done by experts. However, in few cases were the abutments destroyed so that erection of replacement bridges was simplified. Anti-tank mines were planted on the approaches, which meant that erection could not be started until the road had been cleared and the abutments searched for hidden charges.

Almost every culvert had been destroyed. While the replacement of a culvert is not ordinarily much of a job, it still held up the advance of tanks. If the culvert was in a defile or a rice paddy the tanks could not detour, or if a detour was possible, it must be searched for mines. So it was necessary to eliminate enemy resistance before the engineers could replace the culvert and fill it in.

Mine fields were around all road junctions, in road shoulders, and sometimes in holes broken in the pavement. Mines were also scattered in the fields in spots where the tanks might turn off the highway to attack some fortification or to avoid a crater. Here again the tanks were delayed until enemy fire had slacked enough for the engineer mine removal men to go ahead of the tanks and clear lanes for for their advance.

Mines were scateered without pattern in fields and valleys adjoining the highwars which made it hazardous for artillery or convoys to pull off the roads. Thus large areas had to be cleared before the artillery could set-up or dumps be established. All secondary roads and lanes were mined: this meant that it was dangerous for trucks to haul supplies to the front line foot troops or evacuate wounded until the hard worked mine removal personnel had had a chance to sweep the road. Tank barriers, made from coral blocks, were set up in narrow village streets or defiles: these were frequently mined and could not safely

be dozed out of the way.

Anti-tank ditches had been dug across many of the valleys. These ditches were about 16 feet wide and 10 feet deep, with the spoil piled on the enemy's side. These ditches were protected by mines and AT-guns on the flanks: these had first to be removed before tank or armored dozers could begin filling the obstacle. In several cases, Japanese demolitionists were hidden in "spider traps" and attacked the equipment or tanks. On the last day of the campaign such a demolitionist completely destroyed an armored bulldozer and killed the operator.

The enemy made ever attempt to destroy the bridges built by this battalion. He succeeded in destroying the first bridge built in this phase: thereafter engineer security were kept on all of the more important bridges at night, with infantry reinforcements. Security details were also kept on all water points.

SIXTH ENGINEER BATTALION SPECIAL ACTION REPORT

PHASE III, OKINAWAN OPERATION

CHAPTER V

ESTIMATED RESULTS OF OPERATIONS

In the period of 42 days, beginning on 9 May, the Sixth Marine Division was called upon to perform the most severe fighting against a series of strongly fortified positions. To support this attack, this battalion performed numerous difficult combat missions. This Phase of the campaign was truly an "Engineers' War". There were four (4) water barriers, across which all bridges were destroyed, which had to be crossed. In every case, the far bank was in enemy hands and the foot bridges for the assault infantry had to be constructed at night. The following day heavier bridges had to be constructed to carry tanks and these were constructed under machine-gun and artillery fire in many cases. In the lowlands on which NAHA is located, were many small streams not shown on the map. The bridges or culverts across them had been destroyed and in every case had to be replaced by the engineers before the tanks could advance. In most cases the enemy protected these obstacles with machine-gun fire which further hampered the work of the engineers.

The mine teams were formed in a most efficient manner and in spite of this being probably the most heavily mined area in the Pacific, our losses of vehicles and equipment to land mines were remarkably small.

The Engineer Battalion did not engage the enemy physically but attacks on Engineer bivouacs and water points were not infrequent. It is estimated that members of this battalion killed a total of 150 Japanese soldiers and Naval troops and took about 45 prisoners of war. This does not include the many Nipponese sealed in caves by engineer demolition teams.

This battalion rapidly and efficiently overcame all obstacles, naturally and artificial which impeded the advance of the Division. Craters and blown culverts were by-passed, bridges were repaired or replaced, tank traps were filled in, mine fields were removed, and pioneer roads constructed to supply our troops who are always manuevering to turn the flanks of the enemy.

In Phase III this battalion suffered 95 battle casualties and 26 non-battle casualties, a total of 121. Of these casualties 11 were KIA and 54 returned to duty. Considering the hazardous nature of the work this battalion was doing, and the many times when the men worked under enemy fire while bridging, mine lifting or bulldozing by-passes, is considered that the number of casualties was quite moderate.

SIXTH ENGINEER BATTALION SPECIAL ACTION REPORT

PHASE III, OKINAWAN OPERATION

CHAPTER VI

COMMENTS AND RECOMMENDATIONS OF THE

COMMANDING OFFICER.

1. S-1.

(a) COMMENT.

Same as for Phases I and II, except that due to much heavier action in Phase III, casualty reports and personnel records required much more work.

RECOMMENDATION

None.

2. S-2.

(a) COMMENT.

Due to the nature of enemy opposition during Phase III, the advance was much slower which permitted more careful API and oblique photographic studies to be made by S-2. These interpretations were valuable in the advance knowledge gained of destroyed bridges, road craters, heights of river banks and sea walls and other pertinent engineer data for planning. Close estimates of bridge spans and stream depths could be made, thus generally determining prior to actual ground reconnaissance, the best location for a crossing and the type of bridge, fill or culvert to be used.

RECOMMENDATION

That due to the value of the above information to the engineer battalion, complete photographic coverage, both vertical and oblique, should be obtained. Also, that the S-2 section be well trained in Aerial Photographic Interpretation.

(b) COMMENT.

One aerial flight was made which provided good information, This method of getting engineer intelligence is not stable because of so many controlling factors, and the normal difficulties involved in making these flights.

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RECOMMENDATION

That aerial observation flights for obtaining engineer intelligence information be made when other means do not provide adequate coverage.

(c) COMMENT.

Other intelligence information was gathered by engineer reconnaissance officers in direct support of regiments, many times involving front line ground reconnaissance. It was these reconnaissance missions that determined the final decisions on the task at hand and all of the detailed requirements involved.

RECOMMENDATION

All engineer platoon leaders should be thoroughly trained in engineer reconnaissance in conjunction with scouting and patrolling. Such reconnaissance work often requires the officer to check front line areas or even forward of the front lines.

3. S-3.

(a) COMMENT.

The duties of S-3 in Phase III were much more important and involved a great deal of field operational control and coordination. The reports required covering so much more activity took more time to prepare and included many diagrams, overlays and detailed drawings. The majority of the time S-3 acted in his capacity as Operations Officer. Coordination, close liaison, personal reconnaissance and supervision of all major installations kept this section in the field most of the daylight hours and often at night. The work done by S-3 in Phase III was invaluable and contributed materially to the successful completion of our many and sometimes complex missions.

RECOMMENDATION

The results of the above were invaluable, therefore it is recommended that all officers of the S-3 section be thoroughly trained and have a good background for overall supervision and coordination of work in the field. This will enable the OinC of the section to spend some time in the office so as to check all outgoing reports for detail, correctness of information and value to higher authority.

(b) COMMENT

In order to prevent any overlapping of work by the various companies as well as to thoroughly cover all daily assignments a daily Battalion operations order was put out after receipt of the Division order which generally included assigned missions for the engineer battalion. This provided all companies with a complete knowledge of their assignments as well as those of the remainder of the battalion.

RECOMMENDATION

A daily battalion operation order, no matter how simple should be put out to all companies with copies to appropriate staff members.

4.-S-4.

(a) COMMENT

Same as Phase I and II except that the forward movement was appreciably slower thus allowing S-4 to plan ahead and normally have time to get materials to the site on time. Transportation remains a major problem in handling bridging materials and will have to be included in future T/A allowances to adequately provide for Division needs.

RECOMMENDATION

That every effort be made by the Marine Corps to procure required additional transportation for bridging hauls. An alternate would be for Corps to provide all bridging materials at or near the site when required.

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ANNEX G

TO

SIXTH MARINE DIVISION

SPECIAL ACTION REPORT

PHASE III OKINAWA OPERATION

DIVISION SHORE PARTY

[redacted]

SPECIAL ACTION REPORT

PHASE III

OKINAWA JIMA OPERATION

Sixth Pioneer Battalion
Sixth Marine Division

ANNEX GEORGE TO THE DIVISION
SPECIAL ACTION REPORT, PHASE III

S. R. SHAW
LtCol., USMC,
Commanding.

[redacted]

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CHAPTER I

GENERAL

The purpose of this report is to outline and present in an integrated form the activities of the 6th Pioneer Battalion during Phase III, May 1 to June 30, of the OKINAWA JIMA campaign.

The Pioneer Battalion during this period had two prime missions, the nature of which was determined by the controlling agency.

During the period 1 May to 14 June the Battalion was under the operational control of the III Phib Corps and while under this control was assigned the prime mission of unloading resupply and maintenance shipping. Another mission assigned while under this control was to furnish logistic support to the III Phib Corps.

During the period 15 June to 30 June the Battalion was under the operational control of the 6th Marine Division and was assigned missions of an engineering nature. This consisted of various ordinary engineering tasks, road construction, mine lifting, beach development, etc.

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CHAPTER II

TASK ORGANIZATION

During the period covered by the report the task organization generally consisted of:

6th Pioneer Battalion
6th JASCO SP Communication Teams
26th Replacement Draft
33rd Replacement Draft

Various units were detached at odd times. An outline of the attachments and detachments by date is given below:

17 May, 1945 - 26th and 33rd Replacement Drafts detached from the 6th Pioneer Battalion and disbanded.

1 June, 1945 - "A" Company (Reinforced by SP Communication Unit) detached to 6th Marine Division control.

15 June, 1945 - 6th Pioneer Battalion less detachments reverts to 6th Marine Division control.
"A" Company reverted to Battalion control.
"B" Company detached to III Phib Corps.
"C" Company reverted to Battalion control.

16 June, 1945 - Detachments 6th JASCO reverted to parent control.

21 June, 1945 - "B" Company released by III Phib Corps to Battalion control.

As can be readily imagined the constant changes in task organization led to some administrative and operational confusion, in general however, workable organizations were arranged.

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CHAPTER III

PROGRESS OF THE OPERATION

The Division directive directed that this chapter follow a prescribed form. As the tactical situation did not affect the Pioneer Battalion this chapter will deviate from the prescribed form.

The form used in this report follows:

(1) Chronologically the activities of the 6th Pioneer Battalion by weekly periods.

(2) Narrative sections covering activities of special units or attached units.

BATTALION OPERATIONS

30 April to 6 May

During this period the pontoon causeway previously installed on Red Beach One was moved to Green Beach One. Cargo unloading activities on Beaches Green Two, Red One and Red Three were discontinued and all activities were consolidated on or adjacent to Beach Green One.

Construction was commenced on an earth fill, coral rock with a clay binder, causeway on Beach Green One. This causeway proved to be of value in unloading but it is felt that a small amount of additional construction work would have proven invaluable in keeping maintenance work at a minimum. No provision was made to protect the fill from tide and wave action. If in the future such a causeway is to be built it is felt that rip-rap should be provided in order to prevent the scouring action of the tide and waves from disintegrating the structure.

"C" Comapny, 6th Pioneer Battalion (Reinforced) was ordered to ATSUDA on NAKAGUSUKU WAN on 5 May to unload supplies under the direction of 10th Army. A detailed report of their activities from period 1 May to 19 June (during which time they operated under 10th Army and III Phib Corps) will be found on page 7 of this report.

7 May to 13 May

Unloading of resupply and maintenance shipping continued normally during the period. Transfer of service personnel, replacement troops, affected operations in a

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beneficial manner. At this time all beach activities were confined to a limited frontage and only certain types of lighterage, LST's, LCT's, LSM's and Barges, were being handled and these directly on the causeways. It is felt that on the limited beach frontage, under these operating conditions, too many personnel present decreased the operating efficiency and as these people were removed efficiency increased.

At the close of the assault phase, see previous report, logistical control channels were removed. On 8 May radio communications between ship and shore were set up by the 6th JASCO Shore Party communications section and a workable logistical control system resulted. Incidentally, accurate unloading data was thus always available.

14 May to 20 May

Unloading activities continued and problems met were typical and handled as they became apparent.

Some cargo lifts exceeded the capabilities of the Pioneer equipment and resort had to be made to field expedients. However, too much emphasis cannot be made regarding the previous recommendation of furnishing the Pioneer Battalion with a limited number of heavy-boom cranes, it is reiterated here.

During the period the 26th and 33rd Replacement Drafts were detached from the battalion and disbanded.

21 May to 27 May

Preparations were made during this period to turn over all beach operation activities to the Port Director's Office. Beach cleanup and police constituted the major proportion of the work although a small amount of cargo was landed.

28 May to 3 June

The unloading of cargo over the beach was discontinued during the period and preparations were made for the return of the battalion to 6th Marine Division control.

A summary of tonnage landed over the active beach during the month of May is given below:

Period	*DW Tons	Pers	Veh
30 April - 6 May	11,416	1,103	418
7 May - 13 May	15;298	869	630
14 May - 20 May	13,847	1,293	217
21 May - 27 May	1,656	0	51
28 May - 3 June	0	0	0
	42,217	3,265	1,316

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[redacted]

*Does not include DW Tons of vehicles landed.

4 June to 10 June

During this period the Pioneer Battalion prepared to move camp and CP when directed by the 6th Marine Division. On the 6th of June "A" Company, reinforced with elements of 6th JASCO, was ordered to NAHA in support of the division. They established camp south of NAHA Estuary and under the direction of the Division Engineer performed engineer duties in support of the division. This work consisted of mine lifting, road development and minor engineer tasks.

11 June to 17 June

On 11 June orders were received reassigning "C" Company to the battalion and then assigning the 6th Pioneer Battalion less "B" Company to the 6th Marine Division.

The battalion acquired control of "A" Company on 15 June and a battalion camp was established on OROKU PENINSULA and preparations were made to provide engineer support to the division.

A summary of the activities of "C" Company during the period of detachment is given at this time. In order to complete the records this summary includes the month of April.

Elements of this Company landed on L-Day on Beaches Green One and Two which were already occupied and in operation by "B" Company, 6th Pioneer Battalion. Arrangements were made for allocation of the troops and the responsibilities of work. The remainder of the Company landed on L plus one. Battalion Landing Team Shore Party two was assigned to Green Beach One and Battalion Landing Team Shore Parties one and three were assigned to Green Beach Two. All were charged with the organization and operation of the beach dumps.

On L plus four elements of Headquarters Command Section, including JASCO, plus Battalion Landing Team Shore Party one, comprising some 300 officers and men, were detached from Green Two to KURAWA (TS-8698-T2) to lend logistical support to the rapidly advancing troops toward the MOTOBU PENINSULA. At this location, dump areas were prepared and a finger pier repaired and made ready for the landing of supplies. However, the assault troops moved so rapidly to the North and the need for forward dumps was so pressing that the installations at KURAWA became obsolete in short order. This set-up was abandoned on L plus six

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and the troops and the equipment were moved to CHUDA (TS-0511-T2). Here, the remaining cargo aboard two AKA's CASWELL and AQUARIUS amounting to approximately 650 tons was unloaded in a period of 36 hours, all hands working without rest. In addition to the unloading, the beach area was cleared for dumps, and roads of egress were constructed. The principal types of cargo handled here were rations, fuel and miscellaneous gear.

Battalion Landing Team Shore Party two plus the remainder of Headquarters Section and members of the Ship Platoon from the AKA's CASWELL and AQUARIUS, amounting to 250 officers and men joined us at this location L plus eight, less heavy equipment.

The Service Battalion, 6th Marine Division took over the dumps established at this point on L plus eight and this unit moved to NAGO (TS-0716-C3) to develop a port of entry at NAGO WAN. A beach party detachment was established for ship to shore control from the Garrison Beach Forces, Island Command, and SOPA Headquarters was established afloat aboard the LSD EPPING FOREST. Beach approaches were improved and a transient dump area was established with an attendant road network. A detachment of the 7th Field Depot extablished in the Northern end of NAGO to provide dump areas and issuing agencies for supplies.

At this location Battalion Landing Team Shore Party three, comprising 250 officers and men, plus heavy equipment, joined the Company from HAGUSHI Beaches. This Company operated at this location until L plus 36. During this time it was under III Phib Corps Service Group Command and worked in close cooperation with the 6th Marine Division, 7th Field Depot, 11th Special Naval Construction Battalion, 128th Naval Construction Battalion, 4th Amphibious Tractor Battalion, 6th Amphibian Truck Company, and Naval Forces operating under the Command of Admiral Reifsnieder. In addition to the unloading of cargo and supplies, this unit established beach defenses, and security patrols, aided in the construction of roads and installations for the Division Command Post, aided in the construction of the Cub Strip, located at the Northern end of NAGO, aided in the construction of a pontoon causeway, evacuated casualties, leveled off large sections of the rubble-strewn town, aided in drainage projects for malaria control, and materially reduced the fire hazard by the controlled burning of wrecked thatched buildings.

[redacted]

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It was here that most of the replacement troops, temporarily assigned to this unit, reverted back to Division to replace battle casualties.

The following table shows the amount of cargo unloaded from the various ships and landing craft at this Port between 9 April and 7 May:

SHIPS NAME	DW TONNAGE	TYPE OF CARGO
GREEN BAY VICTORY	3986	General cargo & vehicles.
MORNING LIGHT	2050	General cargo.
CZECHOSLAVOKIA VICTORY	2974	General cargo & vehicles.
STAR LIGHT	60	Signal equipment.
PICKNEY, APH	163	Medical supplies.
DASHING WAVE	1008	Engineer equipment.
LENOIR	1800	General cargo & organ gear.
JEROLD	450	General cargo & organ gear.
CAPE ISABELL	2337	General cargo & vehciles.
	14,828	
LST's		
651	75	Vehicles.
220	15	Fresh stores.
916	100	Bridging.
651	70	General cargo.
772	250	General cargo & vehicles.
651	700	Ammunition.
799	440	General cargo & vehicles.
	1,650	
LCT's		
792	75	Bailey bridge.
750	125	Rations.
	200	
LSM's		
173	118	Ammunition.
270	250	Ammunition.
175	300	Ammunition.
144	150	Ammunition.
175	300	Ammunition.
271	118	Ammunition.
173	200	General cargo & lumber.
	1,436	

TOTAL TONNAGE - 18,114

In addition to the above tonnage unloaded at NAGO this unit loaded supplies aboard LSM's and LCT's at various times for further shipment to more Northerly points. It also provided a Ship Platoon to the Victory Ship USS HALL YOUNG, carrying vital equipment for the

IE SHIMA operation, which had been hit by a suicide plane off NAGO WAN.

The unit was relieved by III Phib Corps on 7 May, and was assigned to work at ATSUTA (TS-8881-U), under the direction of Island Command. The Company comprising about 250 officers and men at this time.

Transportation was via LST. The unit arrived at ATSUTA on 9 May. This Company was assigned to the task of unloading supplies and equipment from lighterage serving the NICARAGUA VICTORY ship. A total of 4771 tons were unloaded, and in addition to this, drivers were supplied for tracked and wheeled vehicles that came ashore.

The remainder of the replacement troops assigned to this unit were detached on 14 May, 1945.

The 12th Naval Construction Battalion took over operations on 22 May, and this unit was relieved by Island Command of further work excepting to furnish drivers and DUKW riders.

This unit was ordered by III Phib Corps to move to MACHINATO (TS-7978-R), on 31 May, to replace "C" Company, 1st Pioneer Battalion, 1st Marine Division, in the unloading of supplies at that point. Approximately 2500 tons of fuel and rations were unloaded from LCT's here.

On 15 June, this unit reverted to 6th Marine Division control and it was ordered to move to NAHA (TS-7270-CD). The move was accomplished by truck and was completed by 17 June. The work at this station was primarily engineering; constructing camp sites, building roads, mine disposal and the like.

18 June to 24 June

Work was continued on the Battalion bivouac area. Some engineer work, mainly equipment operation and mine removal, was undertaken under the direction of the Division Engineer. Some equipment was detached to the 71st NCB's for the construction of LST ramps and loading out points.

On 23 June, "B" Company rejoined the battalion after completing the task assigned by III Phib Corps.

During the period of detachment this company operated a beach on the Northern side of the ASATO GAWA and in addition operated a small out loading beach on Beach Orange One. A small amount of baily bridging

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[redacted]

(approximately 200 tons) was outloaded by the 2nd platoon of this company over the Orange Beach. The balance of the company unloaded approximately 2500 tons of mixed ammunition on the beach at ASATO GAWA.

25 June to 30 June

During this period the battalion, complete for the first time since 7 April, performed engineer tasks under the direction of the Division Engineer. Bivouac areas for divisional units were worked on and plans and developments for outloading the division were made.

COMMUNICATIONS

As communications are more or less a separate and special part of any activity, and further that during the reportable period reinforcing communications teams were attached to the Pioneer Battalion, it is apropos at this time to briefly summarize the communications activities.

During the period 1 May to 30 June, the Shore Party Communication Section improved their already established installations. Pole lines were erected, switchboard and radios dug in and sandbagged and in most instances all wires running in the same direction were cabled.

When each of the Pioneer companies moved to a new location a Communication team went with them. Most of the work accomplished by Shore Party Communication teams was routine.

At one time, on Green Beach One, a radio net was established between shore ("B" Company, Pioneers) and five ships. Blinker stations were often established to contact ships. These were Beach Master tasks and should have been handled by a Beach Master section.

All in all, communications in the Shore Party were satisfactory.

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CHAPTER IV

ENEMY TACTICS

As this battalion had no contact with the enemy, outside of minor contacts with isolated and bypassed enemy individuals, no useful or intelligent comments on enemy tactics can be made.

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[redacted]

CHAPTER V

ESTIMATED RESULTS OF OPERATIONS

As no contact with the enemy was had by this battalion this chapter of the report is devoted entirely to an S-1 summary of personnel changes.

BATTLE CASUALTIES:

KIA - 0
WIA - 4
MIA - 0
TOTAL 4

NON-BATTLE CASUALTIES:

Died of Accidental Wound - 1
Injured - 4
TOTAL 5

In addition to the above personnel changes 8 officers, 1 Warrant Officer and 150 enlisted men were transferred to divisional units as battle replacements.

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[redacted]

CHAPTER VI

COMMENTS AND RECOMMENDATIONS

As the operations of the battalion followed the same general pattern of operations previously reported on, no comments or recommendations regarding S-1, S-2, S-3, or S-4 are made in this report.

It is felt that some further recommendations as to communications procedure and equipment should be made at this time.

These recommendations are offered to facilitate the rapid installation and effective operation of Shore Party Communication Teams:

1. The switchboard BD-71 with six drops was inadequate for even the smallest set-up. The switchboard BD-72 with twelve drops was also inadequate in all but very few cases. The BD-96 switchboard with forty drops proved adequate for all set-ups, therefore it is recommended that each Regimental Shore Party Communication team be issued a BD-96 switchboard.

2. Many times the laying of long lines and trouble shooting of long lines took hours, due to the fact that no vehicles were available for these purposes. Experience proved that each Regimental and the Division Shore Party Communication teams needed a wire Jeep or similar vehicle.

3. No further recommendations are offered at this time.

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ANNEX H

TO SIXTH MARINE DIVISION

SPECIAL ACTION REPORT

PHASE III OKINAWA OPERATION

1ST ARMORED AMPHIBIAN BATTALION

[redacted]

SERIAL: 520-45

1st Armd Amph Bn.
FMF, Pacific
In The Field.
27 June, 1945.

ANNEX HOW, OKINAWA OPERATION, PHASE III

CHAPTER I: GENERAL

1. Annex HOW will conclude the report of this Battalion's activities during the Okinawa Operation, covering the period from 22 April through 22 June, 1945. Between the dates of 27 May and 5 June, this unit was detached from the Sixth Marine Division and loaded aboard LSTs in accordance with Movement Order No. 2, Headquarters 10th Army, dated 24 May, 1945. Upon the rescinding of this order, the Battalion was reattached to the Sixth Marine Division.

2. Four missions were assigned this unit during this phase of the OKINAWA Operation: Support of Landings on Islands in the Division Zone of Action, Night Beach Defense, Direct Support of the Infantry, and Firing as Artillery. Chapter II gives the Task Organization of the Armored Amphibian Group attached to the Sixth Marine Division. Chapter III is a narrative account of operations for the period. Chapter IV discusses enemy tactics. Chapter V deals with estimated results of operations. Chapter VI contains the recommendations of the Commanding Officer.

CHAPTER II: TASK ORGANIZATION

1. The 3d Armored Amphibian Battalion (Provisional) (less four (4) Platoons) was attached to the 1st Armored Amphibian Battalion at the following times: 9 May to 23 May.
8 June to 12 June.

The 708th Amphibian Tank Battalion (USA) was attached from 9 June to 23 June.

The attachment of these elements to the 1st Armored Amphibian Battalion was primarily to defend the beaches in the Division Zone of Action.

CHAPTER III: NARRATIVE ACCOUNT OF OPERATIONS

1. The Battle for NAHA: (4 May - 27 May).

(a) Movement to Southern Okinawa:

From 22 April to 2 May, repair and maintenance was performed on all LVTs. On 3 May, the Battalion embarked upon five (5) LSTs for the movement from MOTOBU PENINSULA to a bivouac area south of the Brown Beaches (TA 8480-H). All companies were in position on 4 May, 1945.

(b) Night Beach Defense:

(1) Deployment and Tactics:

From 9 May to 22 May, 1945 a beach line measuring from 11,000 to 13,500 yards was covered by 93 to 105 LVT(A)s. Areas most susceptible to counter landings (proximity to artillery positions, supply dumps, front lines) were defended by spacing LVT(A)s at regular intervals; whereas less vulnerable areas were organized by placing platoons or sections of LVT(A)s in commanding positions covering a larger sector of the beach. In all cases, a hull defilade position was considered most desirable although it was necessary in two locations to place the LVT(A)s outside the seawall.

With platoons and companies sited in this manner, orders were given to fire only on positively identified enemy movements near the reef's edge or upon the reef itself. Because of the presence of numerous patrol craft lying off the beaches, orders were further given to fire only upon command of the Division Naval Gunfire Officer, except in emergencies. From 22 May to 27 May, the sector of this Group was reduced, extending from POINT KAZU-SAKI to the ASATO River, a distance of 6,930 yards. 55 LVT(A)s were deployed in this area for beach defense.

(2) Effect:

Survivors from enemy barges sunk at 152150I by patrol craft attempted to land at TA 7473-D-I South of ASAGAWA during the night. The platoon defending that area killed an estimated fifty (50) enemy, counting twelve (12) bodies at dawn. The action of the tide is believed to have washed out to sea the remainder of the bodies during darkness. All firing was done by this platoon's automatic weapons. An enemy suicide boat was destroyed by the automatic weapons of a platoon occupying the same position at 260050I.

On 310300I after this battalion was detached from the Sixth Marine Division but was still on beach defense four (4) enemy were killed and one (1) captured as they attempted to land after leaving the dugout that carried them. The prisoner was turned over to the 4th Marines.

(c) Direct Support of the Infantry:

From 10 May to 27 May, two (2) companies of LVT(A)s were placed in support of the 4th and 22d Marines respectively. On 10 and 11 May, one (1) company of LVT(A)s supported the advance of the 22d Marines across the ASA-GAWA to the ASATO-GAWA. LVT(A)s remained waterborne or on the reef's edge delivering enfilade fire into enemy held positions. 869 rounds of 75mm high explosive ammunition were expended in this mission with excellent results, neutralizing or destroying enemy small arms fire, mortars and automatic weapons.

From 14 through 20 May, direct fire support into the town of NAHA was delivered by one (1) platoon of LVT(A)s in hull defilade positions at the request of the 22d Marines. Targets of opportunity and known enemy emplacements were well covered by this fire up to ranges of 2,800 yards, expending 2,331 rounds of 75mm high explosive ammunition.

(d) Artillery Missions.

On 21 May, the Sixth Marine Division requested that harassing fires be placed upon assigned targets by one (1) company of LVT(A)s. Targets were received daily from the Division Target Information Center. All missions were directed and observed by this organization.

On 24 May, two (2) companies were prepared to fire smoke missions in support of the 22d and 4th Marines respectively; only one (1) smoke mission was actually fired. Liaison was maintained with these units through 26 May.

From 25 through 27 May, additional missions were fired on request of the 15th Marines. These included Time on Target, Preparation Fires, and Adjusted fires on known targets. These fires were assigned and observed by the 15th Marines.

2. The Battle for OROKU PENINSULA (8-16 June).

(a) Landings in Support of Infantry:

(1) This battalion was detached from the Sixth Marine Division at the time of the landing on OROKU PENINSULA. Elements of the 3d Armored Amphibian Battalion (Provisional) supported Division Troops in this mission.

(2) Landings on SENAGA-SHIMA:

a. Preparation:

Two (2) Platoons of LVT(A)s were assigned the mission of supporting the Sixth Marine Division Reconnaissance Company, reinforced by elements of the 29th Marines, on 15 June. While the landing was small and unopposed, new tactics were developed for the mission which are worthy of comment.

During a period of two (2) days prior to the landing, 2,500 rounds 75mm high explosive ammunition were expended on the island at targets assigned by the Division Target Information Center. Direct fire was employed, LVT(A)s neutralizing targets from ranges of 300 to 600 yards. Platoons of the 1st Armored Amphibian Battalion and the 708th Amphibian Tank Battalion (USA) participated in these fires.

b. The Landing:

The island of SENAGA is small (700 by 500 yards) and is a short distance from the beaches of OKINAWA (500 yards). At low tide, the reef affords good passage to the island. The movement from OKINAWA to the island was made at Ø445 in darkness under an artillery smoke barrage. Infantry preceded two (2) platoons of LVT(A)s of the 1st Armored Amphibian Battalion due to lack of visibility. Upon landing of the troops, LVT(A)s supported their movement around the entire island. Liaison between LVT(A)s and infantry through SCR 300 radios was eminently satisfactory. The employment of LVT(A)s in this manner is considered sound proceedure. Neutralization fires on beaches just prior to the landing were prohibited due to the hour at which the landing was made; but the firepower of the Armored Amphibians was available to the infantry after reaching the beach had the occasion demanded.

(b) Night Beach Defense:

(1) General:

Night beach defense was extremely effective during the Battle of OROKU PENINSULA and the capture of ARASAKI PENINSULA. While no large counter landings by the enemy were experienced by the Armored Amphibian Group, there was active infiltration along the beaches by small groups of the enemy during these periods.

(2) Deployment:

The Division Beach Line varied from 10,500 to 20,550 yards extending from the ASA RIVER to the Division Boundary (2,000 yards north of ITOMAN) and including NAHA ESTUARY. 104 LVT(A)s were employed on the beaches to defend this area; in addition, 24 LVT(A)s were sited on the NAHA AIRFIELD as a counter measure to anticipated airborne attacks by the enemy.

Because of the large area defended, it was necessary to deploy platoons and sections of LVT(A)s as strongpoints along the beaches, with considerable interval between LVT(A)s in some instances. This method would have been effective in repelling an organized counter landing, it is believed, but did not prevent some infiltration by the enemy. See Chapter IV for results of Night Beach Defense Operations.

(c) The infantry was not supported either by direct or indirect methods during the Battle of OROKU PENINSULA.

3. The Capture of ARA-SAKI PENINSULA (17-21 June):

(a) Night Beach Defense:

All elements of the Armored Amphibian Group were withdrawn from the City of NAHA and the NAHA ESTUARY on 17 June. The beaches were defended initially from SAKIBARU-SAKI through ITOMAN and ultimately as far south as KIYAMU, a total distance of 19,000 yards. The NAHA Airfield was defended at all times with at least two (2) companies of LVT(A)s. 118 LVT(A)s were deployed in the same manner as described in the preceding paragraph.

(b) Direct Support Missions:

Armored Amphibians were employed in two locales as direct support weapons, firing at enemy positions from the reef. One company of LVT(A)s of the 1st Armored Amphibian Battalion supported the advance of the 22d Marines along the high ground west of MEZADO to NAGASUKI, delivering enfilade fire on enemy positions. Some mortar and small arms fire was received by the LVT(A)s but no casualties resulted to either personnel or equipment. Direct hits were scored on numerous caves in this vicinity. Liaison was established between infantry and LVT(A)s by the company commander remaining at the Regimental Command Post with an SCR 610 Radio, relaying missions to his company.

One company of LVT(A)s supported mopping up operations of the 29th Marines from KIYAMU-SAKI to ARA-SAKI. Civilians and military personnel had taken refuge in the large caves in this area. LVT(A)s assisted in cleaning up this area by direct fire and were used as well in guiding the large numbers of military and civilian personnel who surrendered along the reef to rear areas. An infantry officer with SCR 300 Radio embarked on an LVT(A) for liaison with troops supported. This was the most satisfactory arrangement made for missions of this type and resulted in close coordination between LVT(A)s and infantry.

(c) No artillery missions were fired during this period; nor were any landings made.

CHAPTER IV: ENEMY TACTICS

1. The enemy made several attempts to destroy LVT(A)s on beach defense with satchel charges. Working in groups of three to four, they would attempt infiltration. In no case were they successful in damaging LVTs.

2. Enemy artillery was active while this unit was on beach defense in the vicinity of the MACHINATO Airfield and between the ASA and ASATO Rivers. Fire was received from positions at SHURI and the ridgeline south of NAHA. It is believed that no more than two (2) guns delivered these fires which in most cases was inaccurate. No massing of enemy artillery fire was experienced.

3. Numerous opportunities were given the enemy to place artillery fire on LVT(A)s while delivering supporting fires on the reef. It is noteworthy that very little fire was received while these missions were being performed. However, positions that LVT(A)s occupied on the reef during the daytime were taken under fire by enemy artillery at night after LVT(A)s had returned to beach defense positions.

CHAPTER V: ESTIMATED RESULTS OF OPERATIONS

1. A report of the results obtained from operations by type of mission follows:

(a) Night Beach Defense:

	KIA	POW	EQUIPMENT
1st Armd Amph Bn.	168(counted) 75(estimated, washed out by tide).	68	1 Suicide Boat
3d Armd Amph Bn.(Prov)	5(counted)		
708th Amph Tk Bn.(USA)	48(counted)	28	
Total	296	96	

(b) Direct Support Missions:

	KIA	POW	EQUIPMENT
1st Armd Amph Bn.	66(counted) 90(estimated, in caves).	15	3 HMGs 1 Mortar

(c) Total, Armored Amphibian Group:

KIA	POW	EQUIPMENT
287 (counted) 165 (estimated)	111	1 Suicide Boat 3 HMGs 1 Mortar

(d) Landings: No opposition was encountered on the landing on SENAGA-SHIMA.

(e) Artillery Missions:

The only missions fired in Phase III were during the battle for NAHA. The extreme range of observation on targets fired and type of positions placed under fire make results impossible to evaluate. However, it is felt that the harassing effect was good in view of the number of enemy and emplacements in the areas fired upon.

2. Losses sustained by Armored Amphibian Group:

(a) Personnel:

	KIA	DOW	WIA	IIA
1st Armd Amph Bn.	2	1	13	2
3d Armd Amph Bn.(Prov)			2	
708th Amph Tk Bn. (USA)	1		1	
	3	1	16	2

3. Loss or Damage of LVTs, 1st Armored Amphibian Battalion:

1 LVT(A)(4) destroyed by single horn conical mine (1 KIA, 1 DOW, 4 WIA; Cab blown thirty (30) feet from LVT(A)(4), track, transmission, hull destroyed).
1 LVT(4) swamped and sank coming through heavy surf.
1 LVT(4) sank on debarking from LST due to failure of ramp.
1 LVT(A)(4) had track blown off by enemy shelling.
2 LVT(A)(4)s had large holes caused by shrapnel, both repaired.
9 LVT(A)(4)s had failures of internal final drive.
2 LVT(A)(4)s had failures of external final drive.

1 LVT(A)(4) had large hole in hull caused by niggerhead, repaired.
3 LVT(A)(4)s required new transmissions.
1 LVT(A)(4) had failure of internal final drive.
1 LVT(A)(4) required new engine
1 LVT(4) required new engine.

The rough surface of the reefs surrounding OKINAWA were the worst ever experienced by this battalion. As a result 3,500 grousers were repaired and replaced, 450 outside track links and 56 bogies were replaced. The majority of maintenance failures were in the suspension system of the LVTs due to the conditions under which they were operating.

LVTs operable at end of period: LVT(A)(4)s 71 LVT(4)s 11

4. Ammunition expenditure, 1st Armored Amphibian Battalion:

Type	Night Beach Defense	Direct Support Missions	Artillery Missions	Total
75mm, HE,M48		6,300	2,500	8,800
75mm, HE,M54		1,879	900	2,779
75mm, HEAT		191		191
75mm, Cann.		29		29
75mm, Smoke		178	98	276
.50 Cal,API	2,500	3,000		5,500
.30 Cal,belted	20,000	17,000		37,000
.30 Cal.M1,clips	6,300			6,300
.30 Cal.Carbine	2,800			2,800
.45 Cal,Ball	9,200			9,200

5. Comments on 3d Armored Amphibian Battalion and 708th Amphibian Tank Battalion (USA):

Missions assigned the 3d Armored Amphibian Battalion (Provisional) and the 708th Amphibian Tank Battalion (USA) were in all cases performed with dispatch and efficiency. Reports submitted by these battalions were complete and regular. Consequently this headquarters was well informed of their capabilities at all times.

CHAPTER VI: RECOMMENDATIONS

1. Night Beach Defense:

(a) Illumination:

It is recommended that each company in an Armored Amphibian Battalion be equipped with a 60mm Mortar for illumination purposes. There were numerous occasions where it was impossible to receive adequate illumination from either Naval Gunfire or infantry.

(b) Coordination:

In two instances, beach defense units received small arms and automatic weapons fire of infantry in the vicinity. Targets taken under fire by the infantry were on the reef and in the sector of responsibility assigned the Armored Amphibians.

2. Direct Support Missions:

(a) It is believed that direct support given the infantry from positions taken on the reef was effective in neutralizing enemy positions by enfilade fire. LVT(A) - Infantry Liaison was best performed by an infantry officer riding with the vehicles using an SCR 300 Radio. It is recommended that this method be employed in the future.

3. Artillery Firing.

(a) From 21 through 25 May, the S-2, S-3 and Battalion Artillery Officer observed and adjusted the artillery fires of this unit. If Armored Amphibian Battalions are to fire as completely independent artillery units, it is recommended that a qualified Artillery Forward Observer be assigned them. It is felt that these Staff Officers, who are not particularly qualified as Forward Observers, cannot be spared from their primary duties.

LOUIS METZGER
Lieutenant Colonel,
U. S. Marine Corps.

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Part I & 12 pts

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RECORD SECTION, M.C.S.

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ANNEX I

TO

SIXTH MARINE DIVISION

SPECIAL ACTION REPORT

PHASE III OKINAWA OPERATION

4TH AMPHIBIAN TRACTOR BATTALION

[redacted]

HEADQUARTERS, FOURTH AMPHIBIAN TRACTOR BATTALION,
FORWARD ECHELON, FLEET MARINE FORCE, PACIFIC,
C/O FLEET POST OFFICE, SAN FRANCISCO, CALIFORNIA.

[redacted]

28 June, 1945.

ANNEX ITEM TO SIXTH MARINE DIVISION SPECIAL ACTION REPORT, OKINAWA OPERATION, PHASE III.

References: (a) Map RYUKYU-RETTO, 3d Revision, Contour Revised Map, 1:25,000.
(b) GO 36, Sixth Marine Division.
(c) Annex Jig to Special Action Report, Sixth Marine Division, Okinawa Operation, Phase I and II, (Fourth Amphibian Tractor Battalion).
(d) SO 154, Sixth Marine Division.

Enclosure: (A) Medical Report.

Chapter I: General.

This is a report of the operations of the Fourth Amphibian Tractor Battalion during Phase III of the Okinawa Campaign and covers the period from 7 May, 1945 through 20 June, 1945. Reference (c) covered previous operations during the Okinawa Campaign.

At various times during Phase III the following missions were assigned this battalion by the Commanding General, Sixth Marine Division:

1. Direct support of Assault Regiments for purposes of supply and evacuation of casualties of units at the front.

2. Supply and movement of various division units by beach and water routes when existing road nets were impassable or clogged.

3. To land and supply the 4th Marines and 29th Marines in the attack and landing on OROKU Peninsula.

4. To support the attack on SENAGA SHIMA by landing supplies and reinforcements

5. To supply by sea routes elements of the 22nd Marines which had broken through on OROKU Peninsula.

6. To evacuate Jap prisoners and civilians from the southern tip of the island by sea routes and to assist in psychological warfare by carrying interpreters along the shore.

7. To defend about fifteen hundred yards of shore-line extending from TA 8180-X to TA 8381-K on reference (a).

[redacted]

Subject: ANNEX ITEM TO SIXTH MARINE DIVISION SPECIAL ACTION REPORT, PHASE III, (CONT'D).

Chapter II: Task Organization.

The battalion remained under the Command of Lieutenant Colonel Clovis C. Coffman. Upon attachment of this battalion and the Ninth Amphibian Tractor Battalion to the Sixth Marine Division, both were placed in an Amphibian Tractor Group under Command of Lieutenant Colonel Coffman. As required by the various missions, groups of tractors were formed from those available in both battalions.

The Task Organization of the Amphibian Tractor Group which landed on OROKU Peninsula was as follows:

Group Commander - Lieutenant Colonel Clovis C. Coffman.

One Provisional Amphibian Tractor Company including thirty tractors from the Fourth and Ninth Amphibian Tractor Battalions - Captain R. F. Lago.

One Provisional Amphibian Tractor Company including twenty-nine tractors of the 788th Amphibian Tractor Battalion, United States Army - Lieutenant Colonel F.G. Hufford, AUS.

One Reserve Amphibian Tractor Platoon including fourteen tractors from the Fourth and Eighth Amphibian Tractor Battalions - First Lieutenant J. C. Morecraft Jr.

Chapter III: Progress of the Operation.

The operations of the battalion during Phase III divide into sub-periods:

1. The Battle for NAHA:

Upon reassignment to the Sixth Marine Division on 7 May, "B", "C", and H&S Companies moved to the vicinity of Machinato Airfield, (TA 7777-K on reference (a), for the purpose of supporting the assault regiments. From 9 May until 2 June, after the fall of NAHA, groups of tractors were continually in support of the 22nd Marines, 29th Marines, and 4th Marines in turn. Groups were formed including the number of tractors required by the regiment supported, together with a few Maintenance, Communications, and Medical Personnel and sent forward to parks usually located near Regimental Headquarters but always along the main route of supply and evacuation. An officer or Platoon Sergeant and radio equipment was always

available at the park for dispatch of the tractors, control of the tractors by radio, dispatch of Maintenance and Recovery Personnel and Equipment, liaison with the regiment, and communication with the Battalion Headquarters and Maintenance Section. In every case the officer in charge of the group worked in the closest cooperation with the Regimental S-4. It appears that several of the regiments have an assistant S-4 whose sole or primary duties are the procurement, use, and dispatch of motor transport and this officer also controled the use of tractors. The tractors and personnel assigned were rotated from the battalion area near Machinato Airfield to the lines at intervals of six days, partly to permit all personnel to see action but primarily to return the tractors for second and third echelon maintenance. It may be noted that the bivouac and maintenance area of the Sixth Tank Battalion was located near that of this battalion and the tank unit seemed to operate much the same way.

At first, while the terrain was dry, groups of six to ten tractors were sufficient to serve the needs of a full infantry regiment. With the onset of the rainy period these requirements increased to twenty to twenty-five tractors, partly because of the increased needs of the regiments for tractors to be used in lieu of bogged down motor transport and partly because the muddy terrain proved very wearing on tractors which had already seen their normal period of service before overhaul and breakdowns became very frequent. A less important factor was the increased time required for each trip due to the slowing up of the tractor and to the avoidance of short covered routes rendered impassable by the soggy ground.

On the night of 23 - 24 May the battalion received, directly from the Commanding General, Sixth Marine Division, an order to furnish three tractors to the Division Engineers to be used as supports for a bridge across the Asato Gawa, (at that time the front line), at TA 7572-S on reference (a). The order was received at about 1930 and tractors were ordered to rendevous with a convoy of the Sixth Engineer Battalion at the road junction at TA 7575-Y on reference (a), load bridge timber and plank, and proceed to the destination under the control of the Engineer Officers. Three tractors were hastily stripped of radios, guns, and salvagable gear, and together with two other tractors to be used for withdrawing personnel and covering the bridge party, moved out for the rendevous in charge of Major H.L. Opponheimer. The rendevous was made, bridging and Engineer Personnel taken aboard, and the tractors proceeded along the road on the north bank of the Asato Gawa. Near the destination the leading tractor ran over a small mine and broke a track. The second tractor, in towing it out of the road, also was immobilized by a mine and the mission was not accomplished. Later, after the seizure of NAHA, both

tractors were recovered, repaired, and placed in service.

On 24 May, by order of the Commanding General, Sixth Marine Division, the battalion was assigned the defense of about fifteen hundred yards of shore-line extending from TA 8180-X to TA 8381-K on reference (a). This assignment was in addition to the task of supporting the division and therefore no tractors were ever available. However, the shore at that point consisted of a sea-wall backed by rice paddies and was adequately covered by placing elements of "A" Company along the wall with large numbers of .50 and .30 caliber machine guns.

2. The Landing on OROKU Peninsula.

On 2 June the Amphibian Tractor Group of the Sixth Division was given the mission of landing the 4th Marines on the OROKU Peninsula. Plans were made for loading and landing of the assault echelons by conference with the Commanding Officer, 4th Marines. Additional tractors were procured from the 788th Amphibian Tractor Battalion, AUS, and the Task Organization set forth in Chapter II was created. The Marine Company carried the 2nd Battalion, 4th Marines and landed on the left, the Army Company carried the 1st Battalion, 4th Marines and landed on the right, the Reserve Platoon carried the Regimental Headquarters, 4th Marines. The assault battalions were loaded from beaches to the seaward of Machinato Airfield between 0400 and 0430 on 4 June and proceeded south in two columns each of one tractor company followed by a third column of the reserve, a column of Armored Amphibian Tractors furnished by the Third Armored Amphibian Tractor Battalion took position ahead of the tractors containing troops. The route of approach was in deep water about a thousand yards seaward of the reef edge. Direction was maintained by guiding on the land masses visible through the darkness. The outlying reef in TA 7375 and TA 7475 on reference (a) grounded the tractors but was easily negotiated. The line-of-departure was marked by a red light set up by a Sixth Division agency at TA 7472-F1 on reference (a), in NAHA. On coming abreast of the red light the two Amphibian Tractor Companies and the Armored Amphibian Tractors each executed column left and then each wave in turn executed a right flank movement placing tractors directly in line in front of the landing beaches. The waves then, without pause, proceeded to the landing beaches and debarked troops. Beaches Red one and two were located from TA 7171-I to TA 7271-S on reference (a). Opposition was light and no tractors were lost or damaged from enemy action, however, one man of the Ninth Amphibian Tractor Battalion was killed by sniper fire.

How-hour had been set for 0530 but was changed to 0545 upon order of the Commanding Officer, 4th Marines and the six waves used actually

landed from five to ten minutes late. Due to the presence of a sea-wall and difficult terrain it proved impossible for the tractors to carry troops inland and the assault waves were unloaded on the beach.

The Marine Tractor Company then returned by the sea route to the beach opposite the Machinato Airfield and loaded the 3rd Battalion, 4th Marines and carried them to OROKU Peninsula. The Army Tractor Company returned to a dump of the 4th Marines near Machinato Airfield, loaded supplies, and carried them down to OROKU, making several trips and using the remainder of 4 June. The Marine Tractor Company, after landing the reserve of the 4th Marines, returned to the bay at the mouth of the Asato Gawa, TA 7473-S on reference (a), and awaited further orders of the division. At about 1400 they began working as individual tractors carrying the 29th Marines to OROKU and landing them on the beachhead. The Reserve Platoon, after the original landing, furnished three tractors to the Sixth Marine Division, two to the Engineers to assist in erection of a pontoon bridge from NAHA to ONO YAMA Island in NAHA Harbor and the third to the Divisional Logistics Officer for supervision of movement of supplies to OROKU. The remainder of the platoon was absorbed in the Marine Tractor Company. The following two days both companies worked as individual tractors on runs from Asato Gawa to the beachhead on OROKU carrying the remainder of the 29th Marines and supplies to the beachhead and evacuating casualties on return trips.

Beginning 7 June, Amphibian tractors were relieved of the task of carrying supplies to the OROKU Peninsula as bridges had been constructed and roads cleared. A mixed group of tractors drawn from the Fourth, Ninth and the Army 788th Tractor Battalions remained on Red Beaches. In the succeeding days, tractors were furnished for regimental supply runs. The group made numerous runs south by water to supply the 22nd Marines. On 13 June, five tractors were furnished to support the Division Reconnaissance Company in the attack on SENAGA SHIMA. These tractors carried supplies behind the assaulting troops. On 15 June the Red Beach Group secured.

3. Capture of ARA SAKI Peninsula.

From 16 June to 22 June the battalion maintained nine tractors at ITOMAN and additional tractors of the Ninth Amphibian Tractor Battalion were stationed there. Very little use was made of these vehicles due to the excellence of the coastal road and the prevailing good weather. On 21 and 22 June, several tractors carried interpreters, and loud speakers along the reef at ARA SAKI Point, (TA 7454 on reference (a), in a mission intended to secure the surrender of Japs holed up in caves in the cliffs

overlooking the sea. Some prisoners were secured and the tractors engaged were also, several times, taken under fire by snipers using small arms. No damage to tractors or casualties to personnel resulted and about four or five loads of prisoners were carried out.

Chapter IV: Enemy Tactics.

It became increasingly evident, as tractors continued work with assault infantry units, that the enemy considered the tractors targets of prime importance.

During the period in which weather conditions made the roads impassable to wheeled vehicles and amphibian tractors became the major source of supply to front line units, numerous instances of attempts by the enemy to cripple this means of supply were noticed. All personnel operating tractors in forward areas reported intense enemy mortar and artillery fire whenever the enemy suspected amphibian tractors were operating in the area. Occasionally mortar and artillery fire was directed at a moving tractor. For example: tractor 4-A-1 operating in the vicinity of Sugar Loaf Hill, (TA 7672-G on reference (a), broke down with a final drive failure and was immediately brought under severe enemy mortar fire forcing the crew to abandon the tractor. Repeated attempts by Maintenance Personnel to reach the tractor and repair it were met with enemy fire. This tractor was later hit by a large enemy shell and completely destroyed.

Throughout this phase of the operation the existence of mines laid singly or in fields became increasingly apparent. It is interesting to note the varying effect of these mines on the tractors as in the following instances:

On the night of 23 - 24 May, five tractors were ordered to assist the division engineers in placing a bridge across the Asato Gawa. The tractors were to be used as floating supports for the bridge which was being built as a load tank crossing. Upon arrival at the area specified, one tractor ran over a mine, breaking one track and damaging bogies nearest to the explosion. Another tractor attempting to tow the injured tractor from the area was itself crippled by a mine which caused the same damage. No casualties resulted and it has not been possible to determine the size of the mine. Both tractors were easily repaired later.

On the other hand, tractor 4-C-20, which had been repaired

and was proceeding to a rear area, hit a mine which resulted in the destruction of the tractor. The track was completely broken, bogies blown off, and one engine completely torn from its mounts. The tractor hull was ruptured and the tractor became good only for spare parts. It was felt that an artillery shell was attached to the mine because the resultant explosion was greater than any other encountered heretofore.

The following incident occured after the period covered by this report but as it has a direct bearing on the material covered it is included. Tractor 4-A-18, while operating in the vicinity of SEMAGA SHIMA Island hit a mine killing four people and injuring two, the tractor was completely demolished.

Chapter V: Estimated results of operation.

The following casualties were suffered by this battalion during Phase III.

a. Killed in action: None.

b. Wounded in action: Seven (7).

c. Missing in action: None.

Chapter VI: Coments and Recommendations.

S-1: The battalion began the orperation almost ten percent under-strength. At the beginning of Phase III this deficiency was made up from replacements taken from the shore party pool. It is pointed out that the need of an Amphibian Tractor Battalion is invariably greatest on the day of the original landing. Thereafter it is possible to operate with smaller crews and the number of tractors in operation declines steadily. The replacements received in no way benefited the battalion, and only increased the work of the supply section. It is recommended that Amphibian Tractor Battalions be sent into combat full strength.

S-2: The S-2 functions are carried on by the S-3. As pointed out in Chapter IV, tractors draw fire. On front line supply missions this seemed to disconcert infantry units in the neighborhood. It is recommended that every effort be made to have the tractors stop only in defiladed positions. While in movement the tractors have a high degree of immunity to mortar and artillery fire but lack of good results does not seem to discourage the en-

emy and his expenditure of ammunition on them seemed out of line with his usual economy. It was also noted that even the relatively small enemy mines could immobilize a tractor though without damage to its occupants. Exceptionally large mines damaged the hull beyond possibility of repair, but even these have not caused serious casualties to personnel. One slightly wounded was the only casualty from mines. It is believed the immunity of crewmen to harm from large mines resulted from their positions high up on the gun platform and the drivers cab, and troops, as passengers, would not get off so easily.

S-3: Phase III was featured by use of tractors within the division combat teams. The extent and variety of this employment is believed to be unprecedented. Tractors in varied numbers were almost constantly in use in good weather because of their ability to negotiate mud and adverse terrain.

Continued operation during the rainy period, through almost impassable terrain, took a heavy toll but as the number of tractors decreased the care and intelligence in their use increased and at no time was the division without the minimum necessary.

Assignment of up to twenty tractors to an assault regiment, with the officer in charge of the tractors working directly for the Regimental S-4, made for rapid dispatch and economical use.

The landing on OROKU Peninsula proved that experienced Amphibian Tractor Units cooperating with experienced infantry units can plan assault landings on short notice, with very few orders and can execute and supply the landing without rehearsal or naval assistance. The beaches, despite an approach during darkness, were hit as accurately as on the original assault landings on Guam and Okinawa.

S-4: Difficulty was experienced in keeping the battalion supplied with grease. A tractor battalion probably requires more grease than an entire division and it is felt that the battalion should carry its own thirty day supply. The same comments apply to certain items of engineering expendibles, particularly oxygen, acetylene, welding electrodes, steel cable, shackles, and bar stock. Our requisitions for these items invariably were cut heavily by screening agencies with the result that we soon were forced to return with another requisition. On the other hand we have invariably been allowed or ordered to carry several units of fire and this

space could be more profitably employed to carry these engineering items.

The Motor Transport brought on this operation proved to be essential in Phase III, particularly the four 2½-ton trucks. Without these trucks it would have been impossible to carry on the supply, salvage, and movement of the battalion and it is recommended that the same number be brought on every operation where there is any possibility that the battalion will be called upon to support a division away from the original beaches. The rest of the vehicles, including four parts trailers, a machine shop truck, three ¾-ton trucks, three water trailers, one 1-ton truck, and four ¾-ton radio trucks were also essential but are so obviously necessary or require so little space that no trouble will ever be experienced in procuring a shipping allowance for them.

Apart from the engineering items mentioned, all classes of expendibles were procured without difficulty.

Maintenance Officer: During Phase I and Phase II and the maneuvers, tractors ran an average of one hundred and sixty-eight hours and some accumulated as much as three hundred and fifty hours. At the end of this time about ninety-five percent of the track should have been replaced and the stock of final drive parts was exhausted. Both items were on order but only about two percent of our needs on track were supplied. As a result, during Phase III with the onset of the rainy season, worn final drives became stripped and eventually about three quarters of the tractors were deadlined for lack of both final drives, the extra one in each case being used to keep another tractor in service. In each case the final drive stripped gave very little service on installation in another tractor. The tractors customarily operated with less than a third of the original grousers and broken tracks became very common. In a number of cases these failures immobilized the tractor under enemy fire. It is urgently recommended that a one hundred percent replenishment of final drives and track be carried wherever use of tractors beyond thirty days is contemplated. However, one hundred and thirty-six final drives were expended during the period covered by Phase III and this meant the deadlining of fifty-three tractors, nineteen of which have been turned in to the 7th Field Depot during the period, because adequate replacements were not available. This seriously effected the efficiency of this organization and not enough emphasis can be placed on having adequate final drives and track parts on hand for future operations.

Superior performance of the LVT-3 during this operation, except

for failures noted above, was always evident and in many cases performance over and above normal expectations was noted, for example; tractor 4-B-16 while operating in the forward area was hit by enemy shell fire causing the starboard gas tank to catch on fire and the starboard engine to burn up. When it was again possible to get near the tractor, after enemy fire had slackened, it was possible to hook one tractor to 4-B-16 and from the power remaining from the one engine that was still operating, to move this tractor to a rear area for repairs.

There were instances of LVT-3's operating on one engine over long distances on water during this operation and in some cases it was done near hostile shores. It is felt that had other types of LVT's been in the same position it would have been necessary to scuttle the tractor to prevent it from falling into enemy hands, yet with the LVT-3 it was possible to continue on one engine to an area where the tractor could be repaired.

There are other lesser matters not of general interest where a larger supply of parts is needed. The LVT-3 used for the first time in this operation proved to be a great success with far less maintenance required than is needed for the LVT-2 or LVT-4.

Communications Officer: In general, radio, telephone, and wire communication during this phase were good. Intra-battalion wire communications were excellent but the main obstacle in wire contact with other units was the lack of trained wire personnel in this battalion. The main difficulty was in overcoming distance. This is especially true when the Sixth Marine Division was moved to OROKU Peninsula and the III Phib Corps assumed responsibility for the Sixth Marine Division old line. To carry out this plan it was necessary for this battalion to lay a line that was overheaded on poles, a distance of three and one quarter miles. As there are no Wire Personnel authorized in an Amphibian Tractor Battalion it is almost impossible to lay and maintain a line of this kind. Finally it was decided to have III Phib Corps do this work and this battalion was held responsible for maintenance up to a distance of one mile. This plan has worked out extremely well and wire communications are now excellent

Very few difficulties were encountered in radio. Maintenance was not a problem as there was very little maintenance to do. Operation was excellent in the intra-battalion nets and on the Sixth Marine Division Command Net Able. Whenever the problem of distance was encountered this was quickly remedied by establishing a means of relaying. On the whole there was very little room for improvement in radio telephone communication.

[redacted]

Subject: ANNEX ITEM TO SIXTH MARINE DIVISION SPECIAL ACTION REPORT, PHASE III, (CONT'D).

Commanding Officer: It is recommended that a spur gear final drive be made available to replace existing final drives issued to this battalion or that necessary spare parts be shipped to this battalion in the rehabilitation area and such necessary changes will be made by the organization concerned. In the opinion of the undersigned, no Amphibian Tractor Battalion equipped with LVT-3 should be sent into combat with the handicap of continued failure of final drives and tracks as was experienced by this battalion in the Okinawa Campaign. While it is understood that production changes to remedy this situation are underway it is urgently recommended that no Amphibian Tractor Battalion be subjected to the almost impossible maintenance problem which this battalion had to face in this operation.

C. C. COFFMAN,
LtCol., USMC,
Commanding.

OFFICIAL:

THORNDELL R. MANGUM,
1stLt., USMC,
BnAdj.

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ENCLOSURE (A) TO SIXTH MARINE DIVISION SPECIAL ACTION REPORT, PHASE III.

Medical Officer: The Medical Department of this battalion, due to the peculiar manner in which the battalion personnel are dispersed according to the exigencies of the various operations, has found it necessary to adopt a style of operation, peculiar to this operational dispersal. Inasmuch as quite often, groups of Amphibian tractors, sometimes less than a platoon, operate at distances from the battalion, or even the Company Command Posts it was found most advisable to attach two corpsmen of different rates to each company for statistical purposes and general health and sanitation. This was done sufficiently prior to the operation, so that the corpsmen assigned to each company participated in that company's training program. Each corpsman was even instructed in the driving of a tractor.

Each tractor was equipped with a special first aid box, containing enough supplies to handle a number of casualties in that tractor, and all personnel were acquainted with the use of its contents. Each tractor was also fitted with a bracket adjustment and necessary two-by-four lumber so that they were able to carry as many as nine stretcher cases for evacuation from the beach. In addition to the Unit-3's, each group of two corpsmen assigned to the companies, carried a portable box equipped with all drugs necessary to set up a small independent sick bay. One corpsman remained in the Rear Echelon.

As each company was embarked upon two LST's there was one corpsman to each LST. Thus we were able to keep a complete check on statistics during the trip to the Target Area.

Material was loaded on motor transport aboard LST and consisted of Units 1 to 18 inclusive, plus number 35 complete, plus thirty day replenishment and necessary tentage.

In the assault phase, these corpsmen disembarked in the assault waves with their respective groups. The Chief Pharmacist Mate accompanied the Commanding Officer in the Command Tractor. The Medical and Dental Officers and two corpsmen remained aboard the transport and were incorporated in their Medical Organization. At about 1100 on L-plus one, they came ashore.

As soon as material came ashore on L-plus three, a Battalion Sick Bay was set up. In the meantime each group of two corpsmen already had their Company Sick Bays functioning. In all cases in the early phase, these sick bays were located either on, or very close to, the beach, and full advantage was taken of terrain.

Evacuation of original casualties was made by the individual corpsmen through beach evacuation station, and proved adequate.

Subject: ENCLOSURE (A) TO SIXTH MARINE DIVISION SPECIAL ACTION REPORT, PHASE III, (CONT'D).

As the division started north, they were accompanied by tractor companies and the attached corpsmen. In certain instances small groups of tractors were detached for supply of patrols. One corpsman would accompany each such patrol. The main camp of these companies was at NAGO, where these corpsmen had sick bays and supervised sanitation.

Each company had prefabricated, before leaving for the Target Area, screened heads and galleys, so that on L-plus five all had set up screened heads and galleys. Systems for washing of mess gear were also instituted, and water was drawn from water points. As each company moved they carried their galleys and heads along.

The Dental Officer was set up for emergency denistry on L-plus three, and by L-plus five had field office set up. Patients were referred from all outfits along the beaches, some as far as the Red Beaches. During the period from L-plus three to 1 June, at which time entire battalion moved south to vicinity of Machinato Airfield, Dental Department did one hundred and thirty treatments including extractions, fillings, abscesses, Pericoronal infections, and Vincent's infections. He also assisted in sick bay when necessary.

During the southern phase of the operation the tractors were attached to the infantry for supply and evacuation of wounded, and participated in the actions at Sugar Loaf Hill, Half Moon Hill, NAHA, OROKU Peninsula, SENAGA SHIMA, ITOMAN, and any others in which the Sixth Marine Division participated. Three of these corpsmen have been recommended for citations, for actions in these areas. While in these actions, it was necessary to attach a third corpsman to a company, as they operated mostly in platoons.

Casualties up to 21 June were twenty-eight, of which five were treated by battalion and retained, twenty-three were evacuated, one of whom died aboard LST-H.

It is felt that because of operational uncertainties, although medical organization is adequate, personnel should be increased during an operation so that there be one corpsman with each platoon, for as long as the battalion is operating in seperate units, and that these be temporarily attached and detached at the discretion of the Medical Officer and the Commanding Officer. Personnel in this battalion were all at a high state of training, so that all had thorough knowledge of first aid, and could operate a sick bay. In the case of two companies, two Pharmacist

Hatos Second Class did practically independent duty. During the Northern and Southern Phases they evacuated to nearest medical facility of Sixth Medical Battalion.

We suffered no pilferage of any material during shipment. Considerable gear carried forward was never used, but had to be carried for the possible emergency.

Although it has long been felt that a motor vehicle, either Jeep or Jeep Ambulance, is a necessary adjunct to the functioning of this department, we have never had one made available.

Each company carried with them a resupply of DDT, Cresole, Insect Repellent, and Aerosol Freon Bombs. Resupply here has been rather difficult in DDT, Aerosol Freon Bombs, and the DDT Body Powder.

Atabrine was brought in sufficient quantity to last in excess of thirty days.

We had no occasion to care for civilians or prisoners of war. We did have to bury a few enemy dead in area of present camp.

Hospitalization was to the III Phib Corps Medical Battalion, to III Phib Corps Evacuation Hospital No.3 and to Sixth Marine Division Field Hospital, depending upon the location of the evacuating sick bay.

Medical Supplies were obtained with a minimum of effort and were freely given, in all cases; from division, from Corps, and from 7th Field Depot, in the early stages.

Sanitation was most closely observed, and DDT was used, erring possibly on the side of excess, rather than not enough. Showers were set up as soon as excess water became available.

Food and water were adequate. Water was at first insufficient for showers and washing but soon became available, and was made use of therefore.

We have had no epidemics. Sickness has been only of the usual type encountered in units of like personnel, and like past invironmental experiences.

It is the opinion of this Medical Officer that there can be no formulation of a standard operations procedure for a unit of this type, for

Subject: ENCLOSURE (A) TO SIXTH MARINE DIVISION SPECIAL ACTION REPORT, PHASE III, (CONT'D).

each operation requires its own plan, depending entirely upon the type of landing and the employment of tractors thereafter, and therefore the Medical Officer in charge together with the Commanding Officer of the battalion, should have sufficient flexibility of medical plan to meet conditions. It is felt that the Medical Personnel be assigned as was done in this operation and not be kept as a unit, for if not done, in the event of an opposed landing it would surely result in a complete breakdown in medical statistical information, plus a lack of medical attention and sanitation for the individual groups.

M. CHAPMAN,
Lt., (MC),
Medical Officer.

ANNEX J

TO

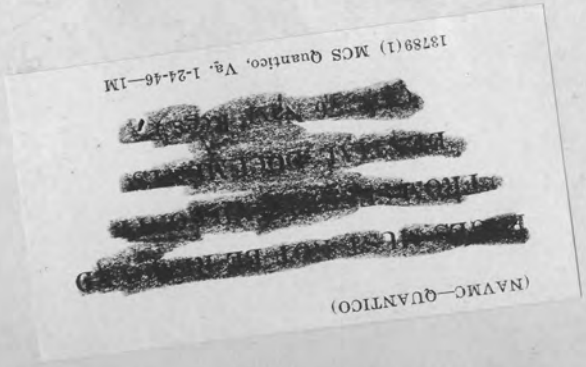
SIXTH MARINE DIVISION

SPECIAL ACTION REPORT

PHASE III OKINAWA OPERATION

9TH AMPHIBIAN TRACTOR BATTALION

[redacted]



HEADQUARTERS,
NINTH AMPHIBIAN TRACTOR BATTALION,
FLEET MARINE FORCE, PACIFIC.

SPECIAL ACTION REPORT
FOR OKINAWA SHIMA OPERATION, PHASE III.

ANNEX JIG

Theodore P. Watson

THEODORE P. WATSON,
Major, U. S. Marine Corps Reserve,
Commanding.

[redacted]

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NINTH AMPHIBIAN TRACTOR BATTALION,
FLEET MARINE FORCE, PACIFIC,
Annex JIG c/o FLEET POST OFFICE, SAN FRANCISCO, CALIFORNIA.

1 July, 1945.

NINTH AMPHIBIAN TRACTOR BATTALION SPECIAL ACTION REPORT
OKINAWA OPERATION, PHASE III.

CHAPTER I

This report will cover the activities of this battalion from the crossing of the Asa Kawa to the final securing of the island. The missions of this battalion were varied, but in the main consisted of the transporting of ammunition, water, rations and high priority cargo to front line troops, and the evacuation of casualties from the front. However, the heavy rains made roads impassible and immobilized motor transport to a considerable extent. Consequently this organization was assigned the additional mission of transporting men and supplies from the rear areas by water. As the rains continued in intensity, motor transport was almost completely stopped, and amphibian tractors became the only means of moving men and material overland.

The landing on Oroku Peninsula was the only time that LVT's were employed in the conventional manner. But by that time, this organization had only 16% of its LVT's operational because of their previous employment. Many factors contributed to this state of affairs of which the principal one was that LVT(4)s are not adapted for exclusive use in heavy mud. The situation was further aggravated by the total lack of spare parts which caused the dead lining of each LVT(4) when a mechanical failure ensued. Lastly, the retrieving of LVT(4)s could not be accomplished because of the lack of proper equipment and the condition of the terrain militated against any such action.

In spite of the aforementioned handicaps, this organization was able to carry out the varied missions assigned by higher echelon. However, it is hoped that in future operations, commanders of higher echelon are cognizant of the limitations of LVT(4)s and will bear in mind the primary mission for which the LVT(4) is designed.

CHAPTER II

The task organization for the battle of Naha was as follows:

(A) 9th AmphTracBn.	Major	T. P. WATSON.
1. Company "A".	Capt.	R. H. LAGE.
2. Company "B", minus 1st platoon on detached duty to Taka Banare Island.	Capt.	E. P. VARNER.
3. Company "C"	1stLt.	G. G. PALAIA.

The task organization for the battle of Oroku was as follows:

[illegible]. Amphibian Tractor Battalion.	LtCol.	C. C. COFFMAN.
(a) Amphibian Tractor Company.	Capt.	R. H. LAGE.
1. One platoon Company "C", 4th AmphTracBn.	1stLt.	W. J. POWERS.
2. One platoon Company "B", 9th AmphTracBn.	1stLt.	J. B. MURPHY.
3. One platoon Company "C", 9th AmphTracBn.	2dLt.	J. C. MC PHEE.
(b) 788th AmphTracBn (USA).	LtCol.	HUFFORD.

The task organization for the capture of Ara Saki Peninsula was as follows:

One platoon Company "B", 9th AmphTracBn.	1stLt.	W. R. IRWIN.

CHAPTER III

PART I

The Battle for Naha.

On 7 May, 1945, this organization was attached to the Sixth Marine Division.

On 9 May, 1945, Company "A" was dispatched from Bolo Point to the 22d Marines at Machinato Airfield. This company arrived at the 22d Marines area at 1745 with twenty-nine LVT(4)s. Upon arrival the 1st platoon was attached to 1/22; the 3rd platoon was attached to 3/22; and the 2d platoon and Company Headquarters set up a bivouac area at 7777K.

On 10 May, 1945, the 2d platoon's LVT's were dispatched as follows: Five to 2/22 and three to 1/22. Tractors were used to carry all types of supplies to front line troops and to evacuate casualties. During this period LVT's were subjected to heavy small arms fire and constant shelling and mortar fire. By 1800 only ten LVT's were operational. LVT's with mechanical failures were in most cases under fire, and could not be repaired. Four wounded in action were sustained during the period.

On 11 May, 1945, LVT's continued the hauling of supplies until 1300. At this time Company "A" was relieved by Company "C", Ninth Amphibian Tractor Battalion, and all LVT(4)s still able to operate returned to Company Headquarters at 7777K. Twelve LVT(4)s in need of major repairs were left in the vicinity of the front lines. One wounded in action was sustained during the period by Company "A".

Company "C" LVT's were divided into five groups to assist the 22d Marines. Two groups were of six LVT's each and the other three groups had three LVT's each. These groups were used to haul supplies and evacuate casualties.

On 12 and 13 May, 1945, Company "C" continued operations as on preceding day. Company Headquarters set up at 7777K adjacent to Company "A". From this area, LVT's were dispatched forward to replace those having mechanical failures.

On 14 May, 1945, at 0300, Company "C" Headquarters area was subjected to heavy artillery fire and four wounded in action were sustained. Operations forward continued, with LVT's hauling wounded directly from the front lines. While doing this, LVT's attracted heavy small arms and mortar fire.

One LVT was used to rescue a patrol that had been pinned down in the outskirts of Naha. Most of the members of this patrol had been wounded, and normal evacuation was impossible. Under the direction of the Lieutenant in

charge of the patrol, the LVT was guided into the Jap lines and fought its way up to position of the patrol. All members of the patrol were picked up or loaded on the LVT. Then the tractor managed to elude enemy fire and return to an aid station.

On 15 May, 1945, at 0700, three LVT's were on the front lines loading casualties. Crew members, working under the direction of a corpsman, loaded casualties into their LVT's. While doing this, a heavy mortar barrage wounded six LVT crewmen. Fortunately, there were enough LVT men left to drive the tractors loaded with wounded back to an aid station.

Company "A", Ninth Amphibian Tractor Battalion, relieved Company "C" at 0900. Company "C" returned to Headquarters at 7777K with twenty-one LVT(4)s. Six tractors had to be left behind with mechanical failures and could not be retrieved because of the small arms fire to which they were exposed.

Company "A" had fourteen LVT(4)s and divided them into three groups of four each. The remaining two LVT's were used as a maintenance and a command tractor. Hauling of supplies and evacuation of casualties continued. Company "A" Headquarters was subjected to artillery fire and two casualties resulted.

On 16 and 17 May, 1945, the need for tractors slackened and all but four were secured. These four were attached to 81 mm Mortar Sections as mobile dumps. One casualty was sustained during the period.

At 2100 tractors were dispatched to haul casualties of the 29th Marines in vicinity of "Sugar Loaf" hill. These LVT's worked the whole night hauling large loads of wounded.

On 19 May, 1945, Company "A" had eight tractors forward. These were relieved by a like number of Company "B" LVT's. All Company "A" tractors returned to the company area.

Four Company "B" tractors were dispatched by 22d Marines to 29th Marines. There, in the vicinity of "Sugar Loaf" hill, the LVT's were used to evacuate wounded.

On 20 May, 1945, Company "B" had seven LVT(4)s working for 22d Marines. These were used to haul supplies and evacuate casualties.

On 21 May, 1945, Company "B" had one LVT hauling the dead of 29th Marines from "Sugar Loaf" hill, five LVT's were with 3/4, and one LVT with the 22d Aid Station.

On 22 May, 1945, Company "B" had seven LVT's with 22d Marines on call. The need for LVT's was not great for this period.

On 23 May, 1945, Company "B" was relieved by Company "C". By that date, the heavy rains had caused the terrain to become exceedingly muddy. This

situation resulted in LVT's becoming the primary means of land transportation. Since the LVT(4) was not designed to act in that capacity, breakdowns became very frequent. Consequently reserve LVT's were committed as replacements and soon the battalion's total number of LVT's was depleted to almost zero. This situation was aggravated by the total lack of spare parts, which were not available from any source.

For the next few days, operations were carried on under great handicaps. The number of tractors operational was always in doubt. When a tractor was dispatched, there was no assurance that it would reach its destination. Soon there were sixty LVT's inoperational in the forward areas. Retrieving was next to impossible because of the inability of the TD-18 retriever to get around in the mud.

On 27 May, 1945, all Ninth Amphibian Tractor Battalion tractors were organized into a task organization of one LVT company. This was necessary to center control of remaining LVT's. However, LVT breakdown continued and by 2 June, 1945, there were only three LVT's operating in the battalion.

PART II

Battle of Oroku.

Introduction

On 2 June, 1945, a warning order was received from 6th Marine Division stating that the Amphibian Tractor Group be prepared to furnish one company of LVT's for the landing on Oroku.

On 3 June, 1945, by concerted effort this organization was allowed to draw thirteen new LVT(4)s from Seventh Field Depot. These LVT's, coupled with those that could be repaired brought the battalion total to nineteen operational LVT(4)s on the evening of June 3.

SECTION I - Status of readiness of organization.

(a) Personnel. Sufficient personnel were available to accomplish assigned mission.

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(b) Training. A thorough breakdown of training was given in the report for phases I and II, and training was enhanced by the combat experience personnel received during the earlier phases.

(c) Supply. All items of supply were at a favorable level except for LVT's and parts. There were only nineteen LVT(4)s in running condition for the operation. The rest of the organizations tractors were dead lined for lack of critical parts, namely internal final drives and first and reverse gears. These critical items had previously been salvaged from vehicles, until even this source gave out. For example, an LVT with first and reverse gear out had the good final drives removed and placed in a vehicle that needed only final drives to make it operational. However, final drives were expended more easily, and to keep one vehicle supplied with final drives, it was often necessary to use the drives from several vehicles. Eventually, most dead lined LVT's were for first and reverse gear, and in addition had been stripped of final drives. This pyramided until even this source was exhausted.

It was under the above conditions that this organization participated in the landing on Oroku Peninsula.

(d) Miscellaneous.

1. Communication. See Special Action Report, Phase I, Chapter 2 (d).

2. Armament carried by LVT(4)s. See Special Action Report, Phase I, Chapter 2 (g).

3. Ammunition carried by LVT(4)s. See Special Action Report, Phase I, Chapter 2 (h).

4. Loads carried by LVT(4)s. See Special Action Report, Phase I, Chapter 2 (i), (1) through (12)

SECTION II - Assault Phase.

1. Personnel. In the assault waves, four officers and eighty-three enlisted landed by HOW plus thirty minutes.

2. Intelligence. Available maps and photographs did not provide sufficient information as to depth of water, location of reefs, niggerheads, approaches through reef, landmarks, heighth of seawall, and topography of beach terrain. This situation can be attributed to the haste with which the operation was planned and executed.

3. Operations.

(a) Control of LVT(4)s.

(1) There were no Navy control boats.

(2) LVT's left shore in column by waves, each wave had the left flank tractors in lead followed by right flank tractors.

(3) Line of departure was a 90° bearing on a red light on the lighthouse North West of Naha.

(4) Upon signal from leading LVT, a column left was executed simultaneously by each wave. Then when the LVT's were in position behind the LD, a right flank movement by all waves was executed and the LVT's went into the beach.

(5) There were six waves of assault vehicles on Red Beach One, composed as follows:

WAVE	RED ONE
1	Armored Amphibian Tractor.
2	4 LVT(4)s.
3	4 LVT(4)s.
4	3 LVT(4)s.
5	4 LVT(4)s.
6	3 LVT(4)s.
Free	1 LVT(4).

(6) Control was on the SCR 528 radio. The company had one frequency, and group control was on another.

(b) For task organization see chapter 2.

(c) Short account of landing.

(1) Mission was to land 2/4 on Red One, return to Machinato dump, pick up 3/4 and land them on Red beaches. Thereafter land 1/4 on order. In the afternoon the 29th Marines were to be picked up and landed on Red beaches. This was accomplished. After all troops were landed, supplies were to be picked up and landed on order. By afternoon of King Day, LVT's had commenced to haul supplies inland and evacuate wounded.

(2) The surf was negligible, but the reef was quite abrupt and necessitated the breaking up of waves and getting onto the reef by the entrance available. At the edge of the beach, a seawall prevented tractors from proceeding inland.

(3) Weapons were fired at probable targets as LVT's came into beach.

(4) One killed in action was sustained while unloading cargo on the beach.

(d) LVT's were used to haul water, ammunition, rations and to evacuate wounded.

(e) Recapitulation of LVT losses.

(1) One LVT broke down prior to leaving the 4th Marines area. Cargo was placed in an LVT that was previously intended to carry a cargo jeep.

(2) None were lost in assault phase.

(3) Four were lost due to mechanical failure by How plus six hours.

(f) Maintenance of LVT's.

(1) A company maintenance section and tractor stood offshore ready to assist any disabled LVT. When beach became secure, maintenance set up ashore, but was badly in need of parts to effect repairs.

(g) Refueling of LVT's was done exclusively from regimental and division dumps.

Summary

This unit was normally engaged in hauling troops and supplies inland during this period.

On 8 June, 1945, a platoon of LVT's was loaded with ammunition, water, and rations, and dispatched via water to the beaches near the island of Senega Shima. Here these LVT's met the 22d Marines who had just driven and sealed off the peninsula. The supplies brought by this platoon materially aided the rapid advance of the 22d Marines.

Thereafter, all LVT's worked on various details as directed by higher echelon. There were twelve LVT's from this unit available at all times.

Annex JIG

PART III

Battle for Ara Saki.

This unit had seven LVT's available for use by division. There, tractors performed many miscellaneous duties and at all times there were more LVT's available than needed.

CHAPTER IV

Enemy Tactics

This organization was not directly committed to action against the enemy, consequently there were no enemy tactics encountered.

CHAPTER V

Estimated Results of Operations

(1) No area was secured by this organization.

(2) Enemy casualties.

(a) An estimated forty (40) enemy were killed by this unit.

(b) Thirteen (13) Okinawa Boetai were captured by this unit while on beach defense.

(3) Operational material damage to the enemy was contributed indirectly by this unit in conjunction with the operations of higher echelon to which the organization was attached.

(4) Casualties.

	During Period	Total to Date
(a) Killed in action -	3	3
(b) Died of wounds -	1	1
(c) Wounded in action -	21	33
(d) Missing in action -		
(e) Injured in action -	1	3
(f) Non battle casualties -	10	14
TOTAL CASUALTIES:	36	54

CHAPTER VI

Comments and Recommendations

(1) S-1 - None.

(2) S-2 - See Chapter 3, Section II (2).

(3) S-3 - The following recommendations are evolved from the experience of this battalion. These are in addition to those already given in the report for Phase I and II.

1. Attention is called to the fact that LVT's are designed primarily to haul troops and supplies ashore.

2. Maintenance man hours on LVT's is many times that on motor vehicles and it is therefore deemed uneconomical to use LVT's in the capacity of motor transport.

3. Troop commanders should be taught that because an LVT operates on land as well as in water, that it does not necessarily follow that they will function well in a muddy combination of both. There are two reasons why this is so. Firstly, an LVT will belly down in mud and become stuck. Secondly, prolonged running in mud imposes an added strain on the track sus-

pension system, which when clogged passes the strain along to the final drives. These final drives have an inherent construction weakness that cannot stand the added strain, and therefore break down.

4. It is highly recommended that regimental commanders be informed in future operations that tractors should not be used as a means for personal transportation.

5. The need for an M4 tank retriever was accentuated by the inability of the trac-tractors, TD-9 and TD-18 to retrieve vehicles. It is strongly recommended that the table of allowance be immediately increased to include an M4 tank retriever.

(4) S-4 - See Chapter 3, Part II, Section I (c).

Theodore P. Watson

THEODORE P. WATSON,
Major, U. S. Marine Corps Reserve,
Commanding.

ANNEX K

TO

SIXTH MARINE DIVISION

SPECIAL ACTION REPORT

PHASE III OKINAWA OPERATION

6TH MEDICAL BATTALION

HEADQUARTERS
SIXTH MEDICAL BATTALION
SIXTH MARINE DIVISION
IN THE FIELD

30 June, 1945.

ANNEX "K" TO

SPECIAL ACTION REPORT OF SIXTH MARINE DIVISION
COVERING THIRD PHASE OF THE OKINAWA OPERATION.

HEADQUARTERS
SIXTH MEDICAL BATTALION
SIXTH MARINE DIVISION
IN THE FIELD

30 June, 1945.

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Chapter VI:	Comments and Recommendations	10

HEADQUARTERS
SIXTH MEDICAL BATTALION
SIXTH MARINE DIVISION
IN THE FIELD

SPECIAL ACTION REPORT OF PHASE
THREE, OKINAWA OPERATION

A. Chapter I: General

This Special Action Report covers the activities of the Sixth Medical Battalion, Sixth Marine Division, from 20 April, 1945, to the conclusion of the assault phase of the southern Okinawa operation on 21 June, 1945. The mission assigned to this Battalion was the treatment and evacuation of casualties occuring in the Sixth Marine Division.

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B. Chapter II: The Task Organization

The Sixth Medical Battalion is composed of the following elements. The Battalion operates under the supervision of the Division Surgeon, Sixth Marine Division.

1. Headquarters and Service Company - Lieut. Comdr. J. S. Cowan, (MC), USN, Commanding Officer, Sixth Medical Battalion.
   Lieut. J. M. Shelton, (MC), USNR, Battalion Executive Officer.

   (a) Malaria and Epidemic Control Unit - Lieut. Comdr. H. B. Orenstein, (MC), USNR.

   (b) Battalion Quartermaster - 1st. Lt. L. G. Walters, (QM), USMCR.

   (c) Medical Supply Section - Ens. C. D. Worthen, (HC), USN.

2. "A" Medical Company - Lt. Comdr. O.W.E. Nowlin, (MC), USNR.

3. "B" Medical Company - Lt. B.V.D. Scheib, (MC), USNR.

4. "C" Medical Company - Lt. Comdr. R. J. Crawley, (MC), USNR.

5. "D" Medical Company - Lt. M. T. Michael, (MC), USNR.

6. "E" Medical Company - Lt. C. W. Ihle, (MC), USNR.

C. Chapter III: Progress of the Operation

1. From 20 April, 1945, at the conclusion of the Central and Northern Okinawa assault phase until 4 May, 1945, all companies remained at their last sites caring for the Division's sick, repairing equipment and re-equipping. On 3 May, 1945, "C" Medical Company and on 4 May, 1945, the H & S Company and "A", "D", and "E" Medical Companies moved to the new division bivouac in the area of Chibana, Nupunja and Deragawga. "B" Medical Company followed on 5 May, 1945. Movements were made in assigned truck convoys. Companies "A", "B", "C", and "E" established themselves in the bivouac area of the 4th, 22nd, 29th, and 15th Regiments respectively. All companies continued to care for the Division's sick, repair company equipment and re-equip themselves until this division was re-committed on 8 May, 1945.

2. Medical installations were moved closely behind the assault troops and established at their new sites. All moves with dates and distances are shown on the accompanying chart. It should be added that on 4 June, 1945, "D" Medical Company accompanied the 4th Marines in an amphibious assault landing on the tip of the Oroku Peninsula.

3. Methods of Evacuation

(a) Initially in this phase, all companies were located on traversible roads. With continued heavy rains, it appeared likely that the main routes of evacuation by road might become impassable. With this in mind on 25 May, 1945, an evacuation point was established on the coast at 7574 H and LVT's were procured and utilized as ambulances, transporting casualties from this forward point to "D" Medical Company at Machinato, from where redistribution of casualties was made as expedient. This proved to be a fortunate move as for the next ten days, all transportation over the main roads to the rear was intermittently prohibited or limited a few hours daily. The amphibious service was continued until 4 June, 1945, when the Division Field Hospital was established in Naha. At this time, casualties were evacuated in DUKW's directly to an LST (H) from Naha. From the LST (H), all 'white' casualties were unloaded daily at "B" Medical Company, which was being used as an anchor company at Machinato.

Upon the commitment of the Division south of Itoman, an air-strip located at 7364 G was utilized for evacuation of selected casualties by air to Corps installations in the rear areas. "B" Medical Company was established adjoining the air-strip. After 8 June, 1945, all main evacuation roads became and continued passable, but air evacuation was continued until the island was secured.

(b) Forward Medical Companies were located along natural lines of drift. However, such casualties were invariably evacuated to the hospitals by normal routes.

(c) The same protective measures were taken in Medical Battalion Units as indicated in Special Action Report on Phases I and II.

4. Hospitalization was as follows:

(a) Functioning

Medical care and evacuation of wounded proceeded smoothly and without interruption.

(b) Adequacy

Adequate in all respects during this operation.

(c) Equipment, supplies, and personnel

Adequate for the providing of medical care.

(d) Number of patients - 20 April, 1945 to 21 June, 1945

"A" Medical Company - 2324

"B" Medical Company - 3241

"C" Medical Company - 1986

"D" Medical Company - 1574

"E" Medical Company - 2833

11958

(e) Operations (major) performed:

391

(f) Casualties were disposed as follows:

Retained -	1837
Evacuated-	10027
Died -	94
Total	11958

(g) Types of Casualties were as follows:

Walking wounded - 61%
Stretcher cases - 39%

5. Sanitation included the following:

Covering of native heads and refuse.
DDT spraying by plane and working parties of bivouac areas and native villages.
An extensive sanitation and insect control program was carried out in the vicinity of all areas occupied by troops.

The Battalion's Malaria and Epidemic Control Unit was confronted with a major problem in Naha, a completely devasted city. In a ten day period, this unit had completed its work in Naha. Otherwise, all standard camp sanitary proceedures were routinely carried out.

6. Rations employed in this assault phase were:

C and 10-in-1 rations were employed throughout the southern phase, except for an occasional issue of limited B rations. All rations were prepared in screened galleys.

7. Water supply during assault phase:

All water obtained from established water points and transported in 300 gallon trailers or 55 gallon drums.

945

8. Disposal of dead was by the same means as in Phase I and II.

9. No epidemic or unusual diseases occurred in the troops.

10. Dental service was adequate and was furnished by Regimental and Medical Company Dental Officers with field units. One dental officer was carried in excess by each Medical Company. (Total per company - 2).

Number of cases treated - 409

Dental Officers were assigned the following additional duties:

Security Officer.
Censor.
Sanitary Inspector.
Motor Vehicle Supervisor.
Anesthetist.
Plasma Teams.

11. Civilian casualties, except for emergency first aid, were not treated at the Battalion's medical establishments. The Civil Affairs Medical Section cared for civilian patients. It was necessary for the Medical Battalion to supplement the medical supplies of this section, as was true in Phase I and II. It was obvious that the Civil Affairs Medical Section was inadequately supplied with both medical supplies and equipment.

Filariasis is apparently wide-spread among the native population as is scabies. We had no opportunity to study a significant number of civilian patients during this phase.

12. Prisoners of War were given emergency medical treatment by various aid stations and transferred to POW Stockades. There were no predominant diseases among these prisoners.

13. Medical Organization was suitable in it's present type and no changes are suggested.

14. Medical personnel were adequate initially, but as this phase progressed it became necessary to cannibalize the Medical Battalion to replace casualties in hospital corpsmen in the infantry battalions, reducing the medical companies to two-thirds of allotted strength.

15. Field medical equipment was found to be suitable and adequate for the operation. Re-supply was adequate.

16. Medical supplies were adequate due to satisfactory re-supply in block shipments. Pilferage and losses were minimal.

17. Motor Vehicles and Rolling Stock:

(a) Number and type carried

¼ ton Jeep Ambulances	- 27
½ ton Field Ambulances	- 6
4x4 Recon Trucks	- 8
6x6 Trucks	- 7
1 ton 2 wheel, trailer, cargo	- 8
1 ton 2 wheel, trailer, water	- 5
Trailer, Generator	- 5
Trailer, Sterilizer and Shower	- 4
Operating Room Trailer	- 1
¼ ton Jeeps	- 3

(b) Losses

¼ ton Jeep Ambulance - Hit by artillery shell fire. Surveyed and replaced.
¼ ton 4x4 truck - Stolen, not replaced.
Generator, 9.4 KVA, trailer, mounted - Surveyed and replaced.

(c) How utilized and maintained

Utilized in: Patient evacuation, hauling of company gear and supplies, routine hauling of materials, rations, and water. Ambulances used only for patient transportation.

18. Quartermaster Equipment and Supplies

(a) Re-supply

Adequate. Additional clothing issue received during assault phase.

(b) Re-clothing for patients

Adequate.

19. Malaria and Epidemic Control Equipment and Supplies

Resupply of Freon bombs was inadequate, being minimal. Other supplies and equipment were re-supplied satisfactorily.

Use of the basic supplies was by the unit sanitation officers under the supervision and advice of the Malaria and Epidemic Control Unit of the Sixth Medical Battalion.

D. Chapter IV: Enemy Tactics, Organization, and Equipment

Moderate quantities of medical equipment and supplies were found to be of good quality. Equipment and supplies of all unusual medications were turned over to the Medical Intelligence Section of the III Amphibious Corps. Of particular interest was the finding of quantities of Filarysin, a Japanese medication used in the treatment of Filariasis. Japanese Anti-venoms captured were out of date, but were also turned in for study. All other captured supplies and equipment not needed for intelligence purposes were released to the Civil Affairs Group for the care of wounded civilians.

E. Chapter V: Estimated Results of Operation

Personnel losses of the Sixth Medical Battalion:

(a) Wounded in action - - - - - - - - - - 12
(b) Non-battle casualties - - - - - - - - 88
(c) Died of wounds (Non-battle) - - - - - 1
(d) Missing - - - - - - - - - - - - - - - 0

F. Chapter VI: Comments and Recommendations

1. Recommendations as brought forth in the Special Action Report of Phases I and II.

2. It is recommended that a pool of available corpsmen be embarked with the Division for initially making these replacements and further that a proportionate number of hospital corpsmen accompany each subsequent draft of infantry troop replacements to avoid any excess cannibalization and resultant possible decrease in efficiency of the Medical Battalion.

3. It is recommended that all jeep ambulances in the Medical Battalion be replaced by larger field type ambulances, inasmuch as the former have been too light for long hauls and poor roads as experienced in an operation on a large land mass.