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MILITARY MONOGRAPH

TITLE: The Amphibian Tractor Battalion.

SCOPE: To outline the role played by the Amphibian Tractor Battalions during the war in the Pacific Ocean Areas. By sketching a historical background showing the need for Amphibian Tractors, how they were organized, trained, and employed, it is intended to show the vital contribution made by Amtracs in bringing the Pacific War to its successful termination.

41-73

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1. PURPOSE. It is the intent of this paper to outline, in general, the role of the United States Army Amphibian Tractor battalions in the War in the Pacific. Amtrac battalions, as they will be referred to hereafter, made a vital contribution in the successful conduct of the war, from the Gilbert and Marshall Islands in 1943, through the Marianas, Palaus, and Philippines to Okinawa. As the war ended in August 1945, the amtracs were preparing to land the assault waves on the beaches of the Japanese home islands of Kyushu and Honshu.

2. SCOPE. Four phases will be covered as follows:

a. Historical background - to point out how the geography of the Pacific demanded a vehicle of the Landing Vehicle, Tracked, (LVT) type.

b. Source and Organization - to show origin of the Amtrac battalions, and how they were organized.

c. Training - in the zone of the interior and overseas, prior to initial combat employment.

d. Employment in combat - selected combat examples designed to show normal and abnormal employment.

3. HISTORICAL BACKGROUND.

a. In 1943 the decision to open a new theater of operations in the Central Pacific area was made. Several new problems involved in this planning. Between the Gilbert Islands, stretching westward to the Philippines, were some 1400 coral atolls and volcanic islands. Most of these islands and atolls were surrounded by fringing coral reefs, making

it impossible for the smallest naval landing craft to go all the way to the beaches. Before large scale operations against a heavily defended beach could be expected to be successful, a vehicle capable of crossing the coral reef with assault troops and supporting equipment must be secured. The urgency for such a vehicle, with the trained personnel to operate it, became further apparent as a result of the Marines' costly experience at Tarawa in November 1943.

b. Tarawa, in the Gilbert Islands, was the opening battle in the Central Pacific area. It was the first landing by American troops over a coral reef; the first landing against a heavily defended beach; the largest amphibious operation in the Pacific up to that time. The main landing was made on Betio Island on 20 November, 1943. Betio, less than one square mile in area, contained some 500 pill boxes and was defended by an estimated 4,000 Japanese troops. Its most desirable feature, from our standpoint, was an airfield capable of holding the largest bombers we then had in the Pacific. This airfield, in our possession, would serve as a base for air operations against the Marshall Islands to the North, next on our list of stepping stones to the Japanese homeland. Betio was surrounded by a fringing reef which extended approximately 400 yards from the 4 foot seawall which ran along the beach. It was hoped, too, that the pre-landing Naval Gunfire and air bombardment, the heaviest yet concentrated for a single landing, would reduce most of the defensive installations and kill or stun a sufficient number of the defenders to make the landing relatively simple. Both of these proved

IT WAS HOPED THE TIDE WOULD BE HIGH ENOUGH WHEN THE ATTACK WAS LAUNCHED TO FLOAT LCVPs OVER THE REEF.

to be false hopes. The initial waves were carried by "Alligators", the prototype of the present LVT. Subsequent waves were boated in LCVP's. The first waves crossed the reef and rumbled towards the beach in the face of heavy artillery, mortar, machine gun, and small arms fire. Casualties were severe. Those who reached the seawall, were pinned down there by the heavy enemy fire behind the beach. Troops in the second and succeeding waves, were forced to debark at the edge of the reef and wade in to the beach. In water which sometimes reached their shoulders, carrying their weapons and equipment over their heads, these troops were like sitting ducks to the Japanese defenders looking down their throats from prepared positions on the beach. Officers, key non-coms and precious equipment became casualties. The assault battalions were completely disorganized. At the end of the first day, the Marines were tenaciously hanging on to a beachhead which extended about thirty yards inland. Two reserve battalions began moving in over the reef at 0600 on the second day and found the going equally rough. Some 300-400 Marines were left in the 400 yard stretch between the edge of the reef and the seawall. After 72 hours of determined, agressive fighting, Betio was declared "secure". A sample of the ruggedness of the voyage from reef to seawall is this report from "B" Company, 1st Battalion, Eighth Marines. Five of its six officers were casualties before they reached the beach. Of 199 men who disembarked at the edge of the reef, only 90 reached the beach. The lessons learned were bitter, but valuable in the light of larger scale

landings to come. Outstanding among the conclusions reached as a result of Tarawa, were these three:

(1) Japanese defenses and/or defenders would not be rendered ineffective despite the severity of our pre-landing bombardment fires.

(2) The Japanese soldier would burrow into the ground as far as possible, making the Americans dig him out, hoping we would grow sick of our losses before completing the job, and seek a negotiated peace.

(3) Amphibian vehicles capable of crossing coral reefs, and personnel to operate them, must be secured in quantities sufficient to assure the landing of complete assault teams, reserve troops and the equipment necessary to give them a fair shot at the hostile defender.

c. The magnificient courage and determination displayed by the men of the 2nd Marine Division at Tarawa, served notice on the Japanese that the American fighting man had the ability and will to finish his job. While these conclusions were being drawn, new and improved "amtracs" were rolling off the assembly lines of plants in the United States. The men to drive them were already training in California to give the doughboy a secure foothold ashore and a fair chance to come to grips with his Japanese opponent.

4. SOURCE AND ORGANIZATION.

a. Source - The vanguard of the Army Amphibian Tractor battalions arrived at Fort Ord, California in October 1943 for preliminary training and preparation for movement overseas. Their source was high priority

Separate Tank, Tank Destroyer, and Armored Infantry battalions drawn from Armored Divisions. These battalions had been together as units for periods of one to two years and their state of training was high.

b. Organization.

(1) Initially organized under Tentative T/O & E 17-125; 17-126; 17-127, the Amphibian Tractor battalion consisted of four companies; Hq., Hq & Service Co. and three Amphibian Tractor companies. The battalion had a total of one hundred LVT's with thirty in each line company and ten in Hq., Hq and Service company for command and administrative purposes. This organization was used by three battalions at Saipan and Tinian in the Marianas in June-July 1944. It was not satisfactory however, since it did not allow the retention of unit integrity in the boating of infantry battalion landing teams. In order to conform to loading plans of the Infantry, it was necessary to split up one of the line companies among the other two. This resulted in a loss of training efficiency and caused considerable command and administrative confusion.

(2) The present T/O & E provides a Hq., Hq. and Service Company and two line companies. There are three platoons in each of the line companies. The battalion has 119 LVT's with 51 in each line company and 17 in Hq., Hq. & Service Company for command and administrative purposes. Each platoon consists of 16 LVT's broken down into three sections of five vehicles and one in the platoon Hq. This breakdown is based on the tactical organization of the Infantry Division Regimental Combat and

and Battalion Landing teams and the capabilities of the Landing Ship, Tank (LST), the natural mothership of the LVT.

(3) As presently constituted, two Amphibian Tractor battalions are required to land the assault elements of an Infantry Division, Reinforced. Tactical components are boated as follows:

1-Infantry Division	*	2-Amph Trac Bns
1-Infantry RCT (2 in assault)	*	1-Amph Trac Bn
1-Infantry BLT (2 in assault)	*	1-Amph Trac Co (2 in Bn)
1-Infantry Co (3 in BLT)	*	1-Amph Trac Platoon (3 in Co)

(4) The LST transports seventeen LVT's, which is one platoon (16 vehicles) plus one extra vehicle. Thus we have one reinforced assault company carried on one ship with the personnel and vehicles which will land them on their assigned beach. This is ideal for command, liaison, briefing, dissemination of last minute intelligence and orders, and discussion of common problems between infantry and amtrac personnel. Dovetailing of basic units in this manner is also admirably suited for combined training.

5. TRAINING. Since the battalions that were to become Amtrac units had already completed basic and unit training in their basic arm, the training problem involved was mainly one of transition to new equipment, tactics, and techniques peculiar to the new arm. The procedures involved

will be discussed in two phases: First, training received prior to shipment overseas; secondly, that accomplished prior to combat at the advanced overseas base.

a. Pre-embarkation phase. Training during this period was concentrated mainly on orientation, familiarization with equipment, driver training and maintenance. The time available was short, aggregating two to six months from time of arrival at Fort Ord until movement overseas. The bulk of the time was spent on driver training and a study of maintenance requirements.

(1) Orientation. The new battalions had been ordered to Fort Ord with all their organic equipment, less tracked vehicles. None knew exactly what was in store for them. Shortly after arrival at Ord, the units were redesignated Amphibian Tractor battalions. Redesignation was followed by information outlining in general, what an Amtrac battalion was expected to do. Missions, as conceived at that time were as follows:

(a) Land assault troops over coral reefs on hostile shores.

(b) Land reserve troops and high priority combat supplies.

(c) Evacuate casualties from beach to hospital ships.

(2) Familiarization. A short period was devoted to acquainting all personnel with their new vehicle, the LVT(2), which also arrived at Fort Ord close on the heels of the redesignation orders. Manufacturer's representatives were present to assist, as were two Marine officers who were

familiar with the vehicle and its characteristics. Accustomed to nursing and grooming thick-skinned tanks, the ex-tankers were somewhat awe-stricken by the relative fragility of their new "baby". This feeling soon disappeared, however, in the excitement of riding the surf and preparing to go overseas. After a short period devoted to a study of nomenclature, characteristics, location and operation of controls, and stowage, the new "Armored Amphibs" were ready to test their fins at sea.

(3) Driver Training. The transition from tanks to amtracs was relatively simple for the ex-tankers inasmuch as the LVT engine, power train and controls were the same as those in the old light tank. Land driving was conducted first for the purpose of giving the drivers the feel of the vehicle. Following that, the training progressed to water driving. The first water driving sessions were held in the calmest part of Monterey Bay to enable the drivers to observe the water handling characteristics of the LVT. Last, came the most critical phase; land-to-water, water-to-land driving through the surf. Initially, there was a feeling of skepticism on the part of most crew members as to the capabilities of the LVT in the California surf. After a few days, however, this feeling was replaced by the realization that the LVT was a sturdy, capable, seaworthy, seagoing craft. Confidence and enthusiasm were on the upswing as the battalion concluded its driver training with a series of night beach driving exercises.

(4) Maintenance. The basic maintenance of the LVT was much the same as the tank. There were, however, two additional factors that

combined to make maintenance the largest single factor in the successful operation of the LVT. It was later estimated that the ratio of maintenance time to operating time was in the neighborhood of 4:1. That is, each hour of operation required four hours of maintenance. A look at two critical factors will serve to shed light on those figures:

(a) The LVT was operated on land and in the water. Daily exposure to salt water and salt air made rust and corosion Public Enemy No. 1. Daily fresh water washdowns were SOP when fresh water was available. Final drives had to be checked, and usually drained after each day's water operation. Grease seals had to be checked daily for evidence of salt water.

(b) Track maintenance occupied something like 50% of all maintenance time. The Hydraulic grouser, attached to the track to provide traction on land and propulsion in the water, suffered frequent failures. This was particularly true when operating over rough coral reefs under heavy loads. Cap screws and guide pins frequently sheared off under the heavy loads and long operating periods, both of which were common during combat. The one welder in the battalion maintenance section proved so conclusively insufficient to handle the welding load, that, following the Leyte campaign, welding equipment was authorized for each line company, in addition to that in the battalion maintenance section.

(c) Preventive maintenance (1st echelon) was preached day and night. Drivers were cautioned against making sharp turns while on rough, hard surfaces as a means of preventing bent or broken grousers.

Individual crews came to know that this vehicle must be treated with the same loving care they would lavish on their own new, shiny automobile at home, if it was to complete its assigned mission. The high quality of their Armored Force trained maintenance sections were a boon to the battalions. Frequently in emergencies, they did third and fourth echelon maintenance with improvised equipment and it was generally conceded that the maintenance sections were the work horses and backbone of the battalions.

b. Overseas training was conducted at a base camp on Oahu in the Hawaiian Islands. For simplification it can be broken down into four separate phases each of which was carried on concurrently.

(1) Driver training. In the Hawaiian Islands the battalions saw their first coral reefs. The driving problem took on a new aspect in this respect because new factors had to be considered. Surf, tide, and wind had to be judged by the driver in order to put his tractor up on the reef without broaching or capsizing. He had to learn to be on the lookout for jagged coral heads which might "hang up" his vehicle and rip a hole in the hull. During the process of learning, all of these things happened. The ex-tankers learned rapidly, however, and were soon adept at crossing the reef under all conditions and ready to move on to the next phase of their training.

(2) Unit training. The purpose of this phase was to develop proficiency in formation driving. Initial exercises were conducted at the section (5 LVT's) level, later progressing to include the platoon and

company. Control by radio communication and visual signals were stressed along with adherence to close time schedules.

(3) Combined training. After the amtrackers had been welded into an efficient team in the handling of their own equipment, they had to get some practical work with the people they were to support and be supported by. This involved both the Army and the Navy. It was accomplished by having alternating platoons from the line companies, with infantry troops at the Waianae Amphibious Training Center on the west shore of Oahu, and with the Navy off-shore from the amtrac camp at Koko Head. Each phase will be discussed briefly:

(a) Navy. The Landing Ship, Tank (LST) was the mother ship for LVT's. It would carry them from their advanced base to the target area, disembark them, and then wait for them to come back at night. There was a definite technique to loading and unloading LVT's at sea. Again, wind, swells, and tide became factors affecting the efficiency and speed of loading. The LST had deck space for 17 LVT's, which made the amtrac platoon the basic unit for training. Procedures had been set up in "Transport Doctrine, Amphibious Forces, Pacific Fleet." The Navy dispatched an LST for training three days a week for about three weeks, and by rotation, each platoon in the battalion was able to get enough practice to attain a good standard of proficiency. Cooperation between the Navy and LVT crews was the criteria for rapid loading. Under ideal sea conditions with well trained crews, some platoons could load and get their LVT's dogged down in 40-45 minutes. Adverse conditions ran this time

up as high as 2½ hours. Exercises in night loading were also held during this phase.

(b) Army. The training at the Waianae camp had amtrac platoons working with infantry. It was designed to familiarize the infantryman with the LVT, and give the amtrac people practice coming across the reef with full loads of men and equipment. The troops were loaded on the beach, after which the LVT's drove out to sea, then were led in formation to a simulated line of departure and from there made their run to the beach. The LVT was new to the Army infantryman and these exercises proved invaluable as a means of building up his confidence in them. Subsequent exercises involving infantry battalion landing teams and amtrac companies were held at the Kahuku Training Center on the north side of Oahu.

(c) Finally, an exercise with an infantry regimental combat team and the amtrac battalion was held off the coast of Maui, about 250 miles south of Oahu. The troops were loaded on LST's and APA's at Oahu, carried to Maui where they simulated a landing on a hostile shore. All elements of the Army and Navy necessary for such an assault participated. This was the final polishing process for the amtracs. Now they were ready for a "wet run."

(4) Miscellaneous. The subjects mentioned here were going on all through the training period. Although listed as miscellaneous, they were considered to be no less important than the basic techniques stressed above. The amtrac battalions were to spend long periods at sea

with the Navy. They came to call themselves "seagoing soldiers" because of this, and it followed; naturally, that they should have some knowledge of the Navy in order to better get along with Navy people. Some of the representative subjects covered in the extensive miscellaneous group were:

(a) Organization of a Joint Landing Force.

(b) Naval customs and terminology.

(c) Navy numeral and letter flags.

(d) Navy abbreviations.

(e) Navy boat signals.

(f) Semaphore code.

(g) Blinker code.

(h) Knots and knot tying.

(i) Arm, hand and light signals.

(j) Hydrographic and beach markings.

(k) Island orientation.

(l) Shipboard training.

(m) Japanese tactics, materiel and obstacles.

(n) Identification of US and Jap aircraft.

(o) Identification of US and Jap naval craft.

6. EMPLOYMENT IN COMBAT. It is beyond the intended scope of this paper to cover in detail the employment of the Amphibian Tractor Battalions in combat. Several operations will be discussed to show employment on typical LVT missions. In addition, it is intended to show how the capabilities

of the LVT were exploited to their fullest extent, to meet unusual conditions.

a. Makin Island. Makin is mentioned because it was there that Army personnel were used for the first time to drive LVT's over a coral reef in a landing on a hostile shore. Fifty LVT's were commandeered from the Marines for this landing. Enlisted men were drawn from the Hq. Co. of a Tank Battalion on Oahu and given a short period of training in LVT operation. They landed the assault elements of the 165th Infantry Regiment on Makin. There were only a few hundred Japanese troops on the island and the landing was opposed by minor small arms fire. The provisional amtrac group carried out its mission without loss of personnel or vehicles. After landing their troops the LVT's unloaded LST's laying off the reef. Two recommendations were made in regard to LVT's after the Makin operation was completed:

(1) That LVT's be used in all future amphibious landings.

(2) That a ramp be installed at the stern of the LVT to facilitate unloading of troops and equipment. (This feature was later incorporated in the LVT (4).)

b. Saipan and Tinian (Marianas Islands).

(1) The first three organized Army Amphibian Tractor Battalions were employed in the assaults against Saipan and Tinian in June and July 1944. These battalions were attached to the Fifth Amphibious Corps (Marine) and further attached to the 2nd and 4th Marine Divisions. Liaison was established with the Marine Divisions, one of which was on Maui,

the other on Hawaii. The amtracs were on Oahu, so initial planning was effected by staff visits by amtrac personnel to the respective divisions to which they were attached. The amtracs, traveling by LST picked up their Marine troops early in May and the task force assembled off the coast of Maui for a full scale rehearsal of the Saipan landing. A short rehabilitation period followed the rehearsal, after which the Corps sailed for the target area. A stop was made at Eniwetok, for final briefing and transfer of personnel from APA's to LST's. It should be noted here that each LST carried a self-sustaining combat team; a reinforced infantry company plus the amtracs and amtrac personnel who were to carry the infantry ashore. These people lived together from the 13th of May until D Day, the 15th of June, except for short periods during the rehearsal when the troops were ashore over night and during the rehabilitation period which was only a matter of a few days. It is hard to estimate the value of this close daily association from the standpoint of orientation, briefing, discussion of common problems and morale. The latter, in the opinion of the writer, was all important. The Marines, many of them veterans of Tarawa, were confident of their ability to whip the Japanese soldier on land. But they still retained the memory of the long walk through the water at Tarawa, and wondered if this might be a repeat performance. The amtrac people, on the other hand, were confident of their ability to give the Marines a "dry landing." This confidence was transmitted to the troops during the long voyage, resulting in a higher state of morale as D Day approached.

(2) Saipan, Japanese headquarters of the Caroline-Marianas Command, was defended by an estimated 20,000 troops. It was believed that they would do their best to deny the landing and would give up ground grudgingly if the American forces were not annihilated on the reefs. The landing was made with two divisions abreast on eight separate beaches. The reef, on the landing beaches, extended from 700 to 900 yards seaward. In spite of extremely severe artillery and mortar fire from high ground behind the beaches the landing was gratifyingly successful. It was later estimated that 98% of the troops embarked in LVT's reached the beach. After landing the assault battalions, the LVT's went back across the reef to a transfer area to pick up the reserve battalions which were brought from transports in LCVP's. There were losses all through the first day, but they didn't prevent the landing of troops in sufficient quantity to attain the first day's objectives by night. Certain vehicles had been previously earmarked as evacuation vehicles. After all the troops were landed the LVT's unloaded the LST's which had brought them to the target. These LST's were loaded with the immediate combat supplies necessary to sustain the assault troops for the first three days. Subsequently the LVT's were used by the Shore Party to haul supplies to inland dumps; they manned beach defense positions against expected Japanese attempts at counterlandings from the sea; as dismounted troops they guarded a section of the division perimeter; they were available for any mission within their capabilities.

(3) Operable vehicles and personnel of the Army and Marine Amtrac Battalions were pooled into a Provisional Tractor Group for the landing on Tinian in July. The opposition on the beaches was negligible and the landings were accomplished with few losses. Missions performed were normal and after two days the Army amtracs were released to return to their base camp on Saipan.

(4) The Army amtrackers were blooded on Saipan. They returned to their base on Oahu in August to resupply, rehabilitate and make ready for the next call. They were proud of their performance; they had a new confidence in their ability to hold their own with any unit. Further cause for pride in their accomplishments came a few months later, when as part of the 4th Marine Division, Reinforced, they were awarded the Presidential Unit Citation (Navy).

c. Leyte. Amtrac experiences on Leyte are mentioned primarily to show employment on independent and what might be called abnormal missions. Initially they performed their normal mission. They boated the assault waves despite the fact there was no reef to cross. They were not used to land the reserve troops since there was no problem on the beach for Naval landing craft. After the landings were accomplished, the LVT's were used by the Shore Party on supply missions; they ferried troops and supplies across rivers where the bridges had been blown; they were used as dismounted infantrymen in one case to protect a division MSR. The three independent missions that will be discussed briefly are felt to be noteworthy examples of exploitation of the capabilities of the LVT.

(1) In November of 1944, infantry units engaging Japanese forces on the west coast of Leyte were experiencing difficulty in maneuvering, due to rugged terrain and mired roads caused by heavy rains. In order to give them assistance and a means of outflanking enemy positions by water, a special amphibian battalion, composed of elements of an amphibian tractor and amphibian tank battalion, was organized and directed to move by water from the vicinity of Bincay on the east coast of Leyte to Baybay on the west coast. This task force with 24 LVT(4)'s and 18 LVT(A)(4)'s was carried from Bincay to the Panoan Straits by LSM's. The movement from the Panoan Straits to Baybay, a distance of 115 miles, was made under their own power. Carrying its supplies, responsible for its own protection against land, sea, and air attack, the amphibian task force completed the movement in three days and two nights. Night bivouacs were made for rest, refueling, and maintenance. The LVT was not designed for long water marches. Not only are they hard on the vehicles, but also extremely fatiguing to operating personnel. It is to thecredit of the people making this unusual water march, that they not only got all of the LVT's to Baybay, but after arriving, that the LVT's were ready to, and did immediately commence to support the infantry on land and water.

(2) After American troops had landed and secured the Ormoc area on the west coast of Leyte, the last Japanese port of entry on the west coast was the town of Palompon. Plans for an overland attack against Palompon via the Valencia-Palompon road were abondoned due to difficult

terrain and road conditions impassable to armored columns. Instead, it was decided to conduct an overwater envelopment against the port. A provisional company of amtracs was designated to transport a reinforced infantry battalion from Ormoc to Palompon, an overwater distance of forty miles. Naval support for the march consisted of several Engineer gunboats and PT boats. The amphibious force loaded and proceeded, at 2000 hours on Christmas Eve 1944, by way of Ormoc Bay-Camotes Sea. At 0700 Christmas morning the first wave of amtanks landed on the beach, followed by eight waves of troop and supply carrying amtracs. Following discharge of their infantrymen, the amtracs were moved forward to an important road junction, with the mission of supplementing the perimeter defense. They were also on call for troop carrying, supply, and evacuation missions as ordered. It should be recognized that long marches with troops, such as this, are neither normal nor desirable. The fatigue factor runs high on the infantryman confined in a small space with full combat gear and on the amtrac operating personnel. Sustained periods of LVT operation without proper maintenance periods also cuts heavily into the life expectancy of the vehicle. However, if other means of accomplishing a mission of this nature are impractical, the LVT is capable of doing it.

(3) In January 1945, 38 LVT's from two amtrac battalions were formed into a provisional unit for the purpose of transporting elements of an infantry battalion to the Camotes Islands to clear Japanese troops from Ponson and Poro Islands. The task force consisting

of 38 amtracs, 15 amtanks, and the infantry battalion accompanied by several LCM's, left Ipil at 150005 January. Its mission was to secure a beachhead on Ponson Island, clear it of enemy troops, then continue operations in the Camotes as necessary. The landing on Ponson Island was made at 0700 15 January. This task force operated in the Camotes from 15 January until 5 February. Lack of roads, coupled with impassable terrain, made it necessary to employ a series of water envelopments against Japanese strong points. Small task forces of LVT's and infantry were organized to carry out these reconnaissance and combat missions and the LVT's were used extensively for overwater resupply of infantry units operating out of inaccessible bases.

d. Okinawa. LVT employment at Okinawa was normal in most respects. However, one occurrence must be mentioned in which the amtrac again proved to be an "ace in the hole" when the ground commanders bumped into an unforeseen situation. In this instance, it was a combination of terrain and weather that precipitated the incident. It began to rain in May of 1945 and for a period of some twenty-one days the rain poured down incessantly. The roads on Okinawa became quagmires, particularly along the east coast in the zone of the 7th Division. The "Hourglass Division," on the left flank of the 24th Corps was making good progress on its drive south, and its ultimate mission of enveloping the Japanese right flank to ease the pressure against the 77th and 96th Army and 1st and 6th Marine Divisions which were pounding the famed Japanese Shuri line. The morasses, which had

been roads, completely cut the 7th's supply lines, denying it sorely needed ammunition and rations; threatening to bog down its attack at an extremely critical time. A company of amtracs was attached to the division. Loading rations, small arms and artillery ammunition at rear dumps, the LVT's swam along the coast then inland to deliver their cargoes to front line units. This method of supply was used to sustain the 7th Division until engineers had the supply routes in condition to handle wheeled vehicular traffic again.

7. CONCLUSIONS.

a. The amphibian tractor is a special purpose vehicle which was designed for a specific purpose. It was the means of overcoming a major advantage the Japanese held over us in our march through the Central Pacific area. It reduced the coral reef as a major obstacle to our gaining a secure foothold on the heavily defended island bastions stretching from the Marshall Islands to the Philippines. Its main missions may be summarized thusly:

(1) To land assault troops, equipment and supplies, particularly when reef conditions prevent naval landing craft from approaching the beach.

(2) To receive transferred personnel, equipment, and supplies from landing craft and carry them across coral reefs, barbed wire, or other obstacles.

(3) To evacuate casualties.

(4) To haul combat supplies directly to inland dumps or across terrain other vehicles cannot negotiate.

b. The amtracs not only accomplished their primary missions in excellent style: The capabilities of their equipment and personnel were exploited to the utmost to overcome galaxy of critical situations. They guarded airfields, protected beaches, hauled ammunition to front line troops, carried infantry assault troops in combat columns, made amphibious envelopments and performed as dismounted infantrymen. It is difficult to assess the true value of the amtracs' contribution to the Pacific campaigns. To the "doughfeet" who had to cross the reefs, they were the most important items in the war prior to an assault. To the commanders and planners who were responsible for overall operations, the amtracs were indispensable. Whatever the value, suffice it to say, the amtracs paid their way.

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