

First in a series of articles recalling the vehicles that were and are uniquely Marine.

Battle Honors of the Marine Amphibian

I. The Beginning

by Col Victor J. Croizat, USMC(Ret)



The first amphibian tractor procured by the Marines undergoing tests at Culebra Island in 1941 during Fleet Exercise Seven (FLEX-7).

Operation Plan 712H, Advanced Base Operations in Micronesia, approved by John A. Lejeune, Major General Commandant, on 23 July 1921 is an exceptional document. Prepared by Maj Earl "Pete" Ellis, it contains the strategic blueprint for the Central Pacific campaign of World War II. Beyond identifying objectives such as the Marshalls and Marianas, now part of Marine Corps legend, the plan envisages many of the innovations needed to make the amphibious assault operation possible. This, at a time when there were only 20,000 Marines and landings were made



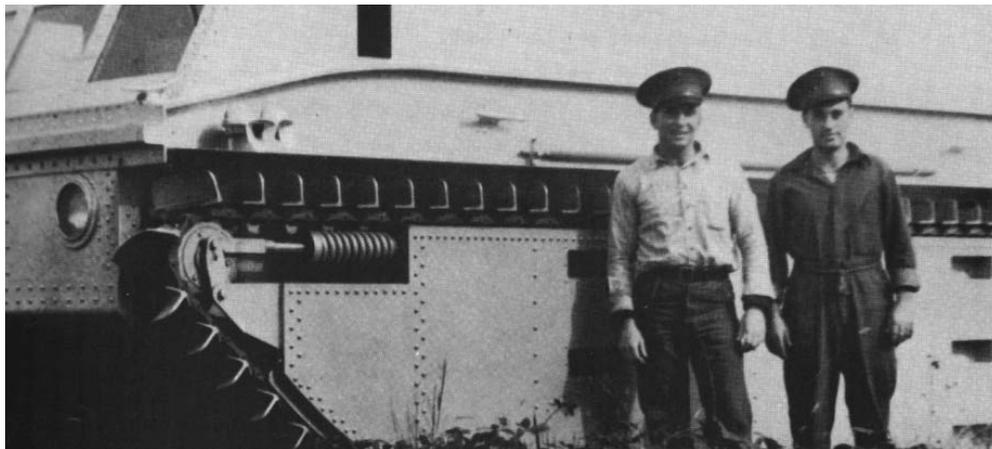
The LVT(1), first production amphibian tractor, was a modified Roebling design powered by a 150 hp Hercules engine and capable of carrying up to 18 men or 4,500 pounds of cargo. It began its combat service in a logistic role at Guadalcanal on 7 August 1942 and saw extensive use in the Southwest Pacific, ending its service as an assault vehicle at Tarawa on 20 November 1943. 1,225 LVT(1)s were built during WWII.

with ships' boats and tows. The establishment of offensive Expeditionary Forces that year was another event pointing the Marine Corps toward the amphibious mission. Notable too was the creation of the Marine Corps Schools where the visions of Ellis and other like-minded Marines would find expression in the 1934 *Tentative Manual for Landing Operations*, destined to guide the conduct of amphibious operations in World War II.

Efforts to parallel these developments with the acquisition of proper landing craft were limited by inadequate funds. Despite the establishment of the Marine Corps Equipment Board in 1933, little could be done with the scant \$40,000 in the R&D budget. Yet, when World War II ignited Europe in September 1939, the Navy had 35 of the 30-foot personnel landing boats and 11 lighters for tanks and artillery. Two years later the expanding conflict had helped the inventory grow to 1,285 boats, 303 lighters, and "300 amphibian tractors under construction." These unique vehicles, born of civilian rather than military needs, would come to play such a vital role in the Pacific War that Gen H. M. Smith would declare ". . . without (them) our amphibious offensive . . . would have been impossible."

In 1933, when rescue efforts following a devastating hurricane in Florida were hampered by the lack of capable transport, Donald Roebling, a wealthy engineer living in Clearwater, undertook to build an amphibious vehicle. The result, an aluminum box-like craft fitted with cleated tracks for propulsion, was featured in the 4 October 1937 issue of LIFE magazine. This came to the attention of the Com-

See Amphibians On Parade, p. 92.



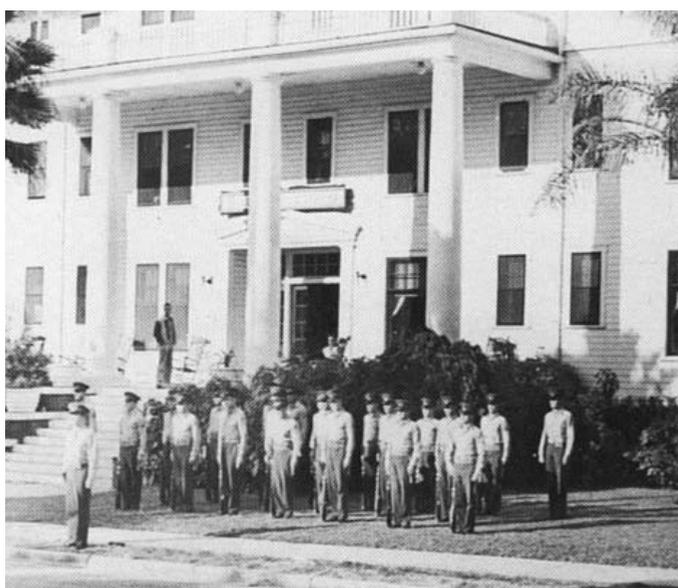
Sergeants Clarence H. Raper (right) and Walter L. Gibson pictured with the original amphibian tractor procured from Donald Roebling in 1940; the vehicle was aluminum and was powered by a Lincoln-Zephyr engine.



Donald Roebling pictured after receiving the Medal for Merit in Washington on 18 December 1946.



An LVT(1) emerges from a bay near Dunedin during a driver training session. 2dLt Harry Taylor wears the "tank" driver's helmet.



A Marine Amtrac Detachment poses in front of the Dunedin Hotel, Florida in June 1941. The Hotel served as headquarters, mess, and barracks for the initial 37-strong group of Marines to serve in the Detachment.

mandant, MGen Thomas Holcomb, who directed the Equipment Board to investigate.

Maj John Kaluf, Secretary of the Board, went to Clearwater in September 1938 to find Roebling uninterested in involvement with the military. Kaluf returned in January and convinced the reluctant Roebling to demonstrate his "alligator." Impressed, Kaluf recommended procurement of a test vehicle, but no funds could be found. Unwilling to drop the matter, Board President BGen E. P. Moses, visited Roebling in September and gained his agreement to build a test model with military specifications for \$20,000. Moses then talked the Navy out of the money. Roebling had the tractor finished by October 1940, \$4,000 below estimate. Refunding the money reportedly took longer than building the machine!

A week after arriving in Quantico, the amphibian tractor was demonstrated successfully to the Commandant and other dignitaries. A letter of intent for 100 tractors promptly followed. The vehicle was then sent to the 1st Marine Brigade in the Caribbean for field testing. This went well until the day Capt Victor H. Krulak took crusty Adm Ernest J. King, Atlantic Fleet commander, for a ride. The vehicle threw a track, and the admiral, ever impatient, waded ashore in starched whites, a stream of profanity in his wake. In Quantico, meanwhile, Maj W. W. Davies was preparing to move his detachment of 3 officers and 37 men to Dunedin, FL, where, in July, they would receive the first production LVT(1), a 21-foot sheet steel vehicle, near 10-feet wide and 8-feet high with 4,500 pound cargo capacity, quite different from its smaller and less powerful aluminum prototype.

The Marines, knowing virtually nothing of its performance, promptly went into the field to acquire operational and maintenance data. The process trained the officers and men who formed the first amtrac units and contributed to improving the LVT(1) and designing the LVT(2). An initial group of 45 Marines received orders to depart on 8 December for North Carolina to join the 1st Marine Division; another 69 Marines were to leave a week later for the West Coast and the 2nd Marine Division. Thus it was that the morning after the attack on Pearl Harbor, the people of Dunedin, still shocked by the event, gathered at the railroad station to bid goodbye to the first to go, the amtrac Marines . . .

USMC

Second in a series of articles recalling the vehicles that were and are uniquely Marine.

Battle Honors of the Marine Amphibian II. Offensive Defense

by Col Victor J. Croizat, USMC (Ret)



LVT(1)s of the 1st Amphibian Tractor Battalion bringing supplies ashore during the landing on Guadalcanal, 7 August 1942. Note World War I model water-cooled .30 caliber machinegun. Note also canvas cover used to cover cargo compartment in high surf. The LVT(1)s were completely unarmored and were armed with three .30 caliber and one .50 caliber machineguns.

Ten weeks after Pearl Harbor, the Japanese had reached the “The Southern Resources Area” and were establishing strongpoints to safeguard their prize. At home, the 1st and 2d Marine Divisions, though below authorized strength, each had to detach an infantry regiment to garrison Samoa. While this hampered their buildup, they could rely on established practices to overcome difficulties. The

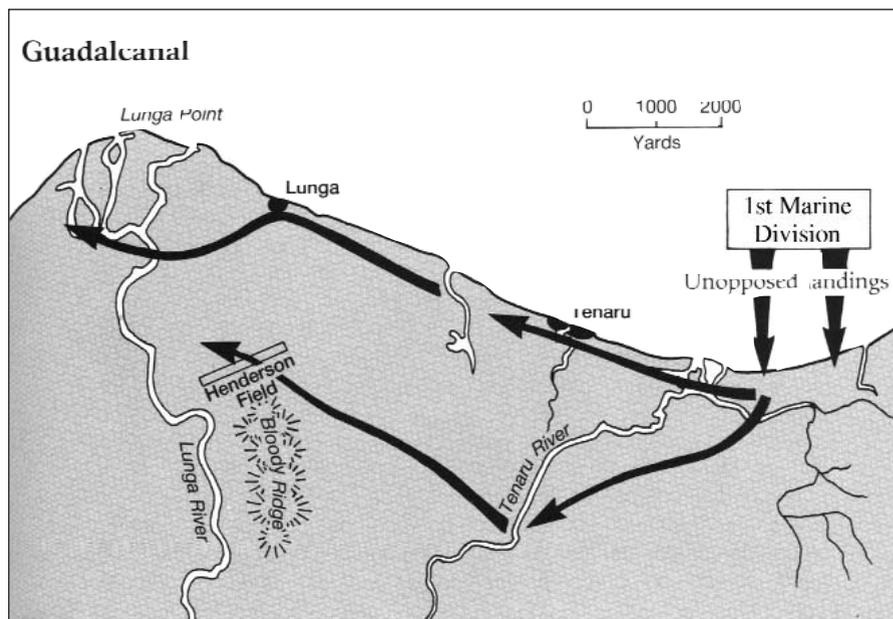
amphibian tractor (amtrac) units had no comparable guidance; only the decision to organize them as division motor transport battalions with 10 LVT(1)s in the headquarters and 30 in each of 3 lettered companies, these last to be attached for operations one per infantry regiment. The 1st Amphibian Tractor Battalion was activated accordingly on 16 February; the 2d followed on 18 March.



Amtracs used as pontoons over which wooden bridges have been built. Speed is of the essence during the initial landing hence the use of field expedients to span waterways.

In May 1942, Japanese naval forces from Rabaul entered the Coral Sea. One group seized Tulagi and started building an airfield on nearby Guadalcanal. The Port Moresby invasion group, however, turned back when it lost the carrier *Shoho*. The latter was a strategic victory for America, but the Guadalcanal airfield threatened the communications with Australia, whose security was one of the Commander in Chief Pacific’s two principal missions. The other, “holding the Hawaii-Midway line and maintaining its communications with the west coast,” was decided off Midway on 4 June when Japan lost four carriers and 250 aircraft. This cleared the

See Amphibians On Parade, p. 101.



way for U.S. forces to regain the lower Solomons and mount an offensive against Rabaul where Japan had five airfields, an excellent fleet anchorage and, reportedly, the best brothel east of the Dutch Indies.

On 14 June 1942, the lead echelon of the 1st Marine Division arrived in Wellington, New Zealand anticipating a lengthy training period. Twelve days later MajGen Alexander A. Vandergrift learned his division was to undertake the first Allied offensive of the war. Controlled chaos followed, during which arriving ships, administratively loaded, were emptied and combat loaded, often under bone-chilling rains. Despite all adversities, the force sortied as scheduled on 22 July. It met up with the 1st Raiders, the 2d Marines with Company A, 2d Amtrac Battalion and other reinforcements in the Fijis, where all joined in a rehearsal of little value. That ended, 19,000 Marines crowded in 23 transports set course for Tulagi and Guadalcanal.



Another view of the LVT(1) clearly showing two of the machineguns. The vehicle was capable of land and water speeds of 12 and 6 miles per hour, respectively, and ranges of 120 miles on land and 50 miles in the water.

The 1st Division's LVT(1)s, tasked to provide transportation services, had been embarked early. Thus, all preparations for combat, to include painting over their factory-bright silver, were accomplished in the ships' holds. There, too, four amtracs were fitted with wooden ramps to serve as bridges on Guadalcanal. Strange to add that, although a reef fronted the landing beach at Tulagi, boats were used and the Marines had to wade ashore. Fortunately, all landings on 7 August were unopposed. The next day, however, Rube Dailey and brothers Olin and Glen Darnel, manning an amtrac of the 2d Battalion, stormed ashore on Gavutu with guns blazing to cover the evacuation of several wounded Marines.

Units of the 2d Amtrac Battalion left with the transports on 9 August; the 1st Amtrac Battalion remained until the end of the year. Initially committed to help the Shore Party disperse the supplies and equipment dumped ashore by the departing Navy, amtracs were also used to position artillery and support advancing infantry. Thus engaged, Sgt Cantrell's amtrac reached the airfield and nearby encampment on 8 August, where Cantrell found a stock of Asahi beer. After careful testing to ensure the wily Japanese had not poisoned the brew, he generously shared what remained. Soon after, the 1st Amtrac Battalion was integrated into the defense perimeter established around the airfield, from where it engaged in endless hauling tasks that diminished only as its vehicles broke down. These were not a total loss. With three machineguns per amtrac, they were a welcome source of parts and replacement weapons for infantry units.

The Japanese repeatedly sought to destroy the Marine beachhead. Antipersonnel bombs and naval shells ranging to 14-inch size entertained at night, bomber formations routinely arrived as the Marines were eating one of the two meals per day their meager supplies allowed, and the perimeter defenses were periodically attacked by ground forces. Yet, the Marines held. In December, the 1st Division, decimated by combat casualties and tropical diseases, was relieved and resettled in Australia. The 2d Division, incrementally deployed to Guadalcanal, remained until the island was secured in February and then sailed for New Zealand. The lower Solomons were back in Allied hands, and two amtrac battalions had started a "can do" tradition.



Third in a series of articles recalling the vehicles that were and are uniquely Marine.

Battle Honors of the Marine Amphibian III. Neutralizing Rabaul

by Col Victor J. Croizat, USMC(Ret)



Marines on Bougainville in November 1943.

The basic Marine weapon on Guadalcanal was the 1903 rifle. A few Riesing submachineguns had also been issued. But, as one lieutenant demonstrated in an encounter with a Japanese soldier, the Riesing was a better club than firearm. The LVT(1) was also new and unreliable. Rushed into production in 1941 as a hasty redesign of the vehicle tested in the Caribbean, the model had been frozen when the war began



A standard LVT(2), the successor to Roebing's LVT(1). It was the basic design for all amtrac models during WWII except for LVT(3). The LVT(A)2 was an LVT(2) built of armor; the LVT(A)1 was an LVT(A)2 with a 37mm gun turret.

and America's industry shifted into high gear. Meanwhile, Food Machinery Corporation engineer James Hait, working with inventor Donald Roebing and military technicians, designed the improved LVT(2), a duplicate LVT(A)2 built of light armor, and an LVT(A)1 fitted with a 37mm gun in a tank turret. All three went into production early in 1943.

The Navy, which began the war without specialized lift beyond six destroyers converted to troop transports, quickly began building amphibious ships. The first LSTs and LCTs appeared in the South Pacific in March 1943; LCIs followed a month later. The Army, increasingly preoccupied with amphibious operations, formed amtrac battalions like those of the Marines and created engineer amphibious

brigades, each with 7,000 men and 550 landing craft for short-range landings. The first reached New Guinea in June 1943; two more followed in 1944.

The Marine Corps, with two divisions already deployed, activated the 3d Marine Division in September 1942, at the same time as its 3d Amphibian Tractor (Amtrac) Battalion. The division moved to Guadalcanal in June 1943 after a sojourn in New Zealand. The previous February, 2 weeks after Guadalcanal had been secured, the nearby Russell Islands had been occupied in preparation for the drive toward Japan's major base at Rabaul. Now in June, the Army's XIV Corps with several Marine raider and defense battalions was poised to invade the Central Solomons. After bitter fighting, mastery over the area was attained in October. In that world dominated by mud, the 12 LVT(1)s of the 3d Amtrac Battalion supporting the 9th Defense Battalion had proved invaluable.

The next task, that of establishing airfields on Bougainville to seal off the eastern approaches to the Japanese bastion, was assigned to the 3d Marine Division. It landed near Cape Torokina on 1 November 1943. A month later, after organizing a perimeter accommodating two airfields, the Marines were relieved by Army units and returned to

See Amphibians On Parade, p. 94.



An LVT(1) from the 3d Amtrac Battalion moves supplies through the mud on Bougainville.

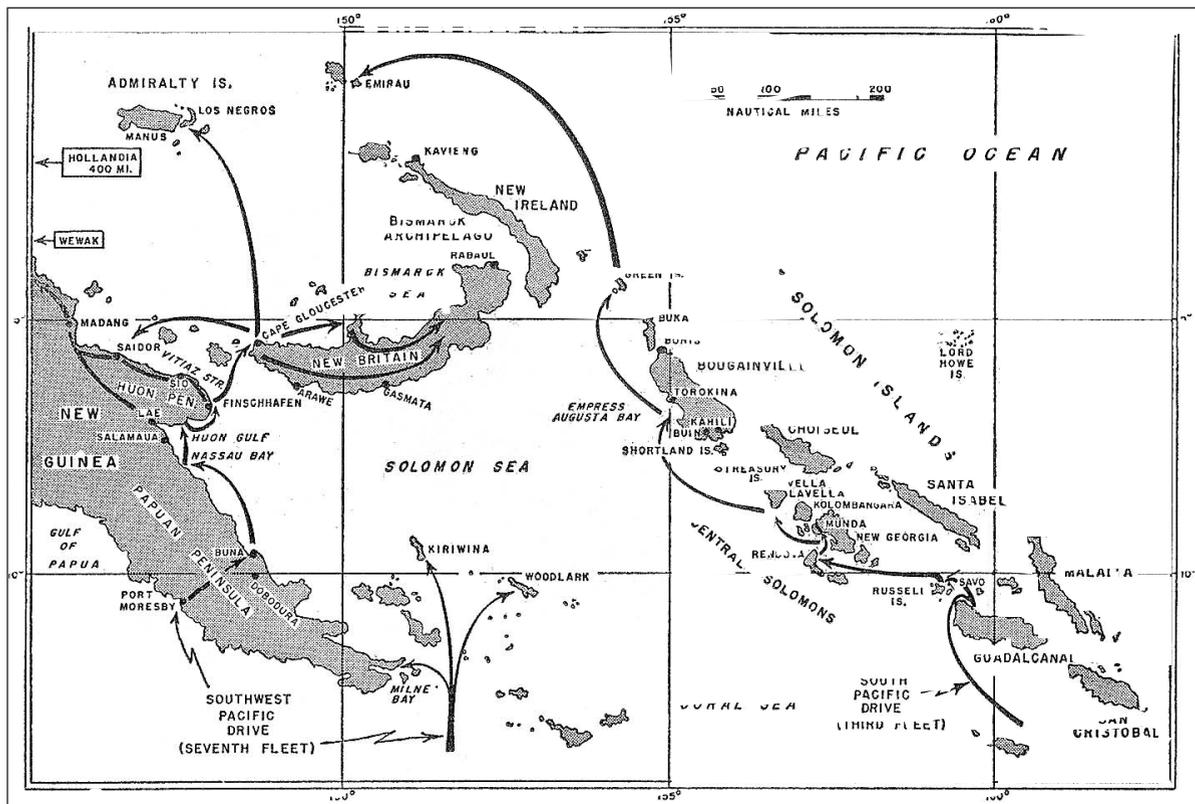
Guadalcanal. Marine casualties were relatively light. However, only 29 of the division's 124 LVT(1)s were operational 3 weeks after the landing. The division's after action report explains, "Due to the swampy terrain and complete absence of roads, the LVTs were the only vehicles that could be used." Particularly impressive was the transport of 23,000 tons of supplies, all of which had had to be manhandled over the side of 8-foot high amtracs.

Meanwhile, Allied forces advancing up New Guinea had reached the strait opposite the island of New Britain. The 1st Marine Division, having by then ended its Australian idyll

and moved into New Guinea staging bases, was ready to invade that "evil island." Operations began at Arawe on 15 December where an Army regiment landed over the reef in 29 LVT(1)s and 15 new LVT(A)2s of Company A, 1st Amtrac Battalion. This double first, a new amtrac in a new assault troop transport role, was followed 11 days later by the 1st Marine Division landing from boats on Cape Gloucester. The Japanese airfield there was presented "to the American people" by Gen MacArthur on 31 December. This was not a simple accomplishment, for the "damp flats" behind the beaches proved to be virtually impenetrable swamps and rain fell daily with unbelievable violence. Unprecedented among the casualties were 20 Marines killed by falling trees. In these conditions, the amtrac, as the only reliable transport, became indispensable. Unlike Bougainville, where the capabilities of the 3d Amtrac Battalion diminished as its LVT(1)s broke down, the effectiveness of the 1st Amtrac Battalion was maintained by 50 new LVT(2)s received as replacements.

The Marines remained on New Britain to help secure the facilities needed to isolate Rabaul at the other end of the island. They were relieved on 25 April and ordered to the Russells, which differed little from the wet misery of New Britain. The month before, the 4th Marines, reconstituted by fusing the four raider battalions, had landed on Emirau in 66 amtracs of the 3d Amtrac Battalion and closed the last access to Rabaul. Thus ended the campaign in which amtracs had thwarted an environment as hostile as the enemy.

US MC



Neutralizing Rabaul

Fourth in a series of articles recalling the vehicles that were and are uniquely Marine.

Battle Honors of the Marine Amphibian IV. Central Pacific Atolls

by Col Victor J. Croizat, USMC(Ret)

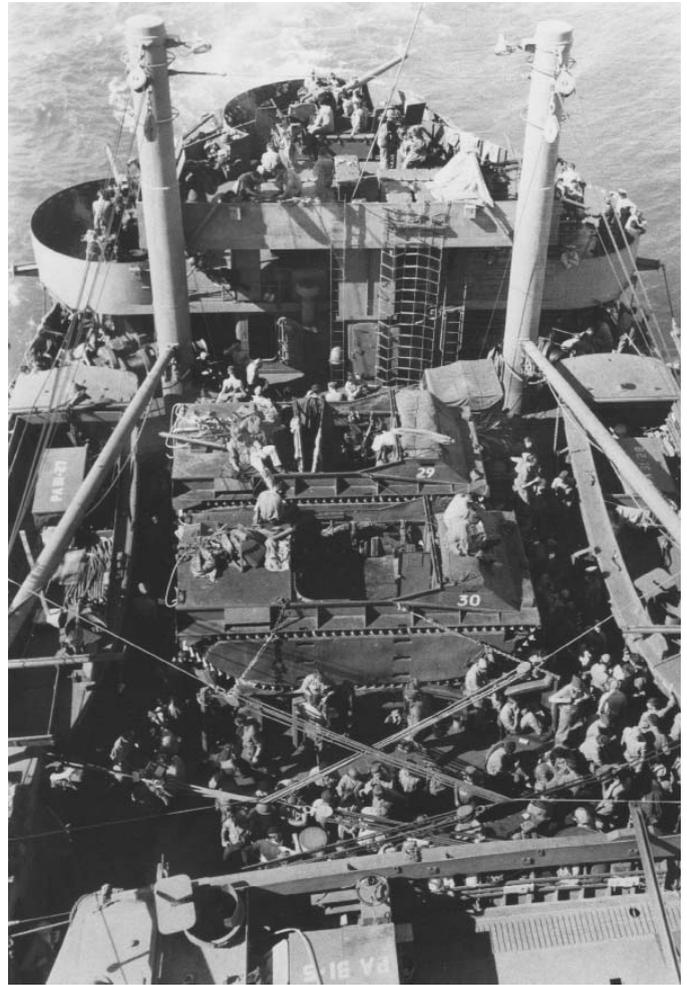
The second year of the Pacific War began with the Allies in control of Papua and the Japanese evacuating Guadalcanal. Parallel drives up New Guinea and the Solomons toward Rabaul would soon begin. (See map MCG, Jun99, p. 94.) Coincidentally, the Combined Chiefs of Staff had agreed to operations in the Central Pacific, and on 20 July 1943, the Joint Chiefs had directed seizure of the Gilberts to open the way to the Marshalls, stepping stones to the Marianas.

Commander, Central Pacific Force alerted the 2d Marine Division (2d MarDiv) in New Zealand that it was tasked with landing on Betio Island, Tarawa Atoll, while the Army's 27th Division cleared Makin. Marine planners soon realized their mission was unprecedented. An estimated 3,000 Japanese had organized formidable defenses on Betio, which was little more than a square mile of sand and coral surrounded by reefs. The landing would be the ultimate test of their amphibious doctrine; crossing the reef would be a measure of their ingenuity.

Trials confirmed amtracs could cross reefs. When the 75 operational LVT(1)s remaining in the 2d Amtrac Battalion proved insufficient, 50 LVT(2)s were shipped to Samoa. They were met by a provisional company and readied for combat before sailing aboard 3 LSTs directly to the objective. The LVT(1)s were loaded on transports with 2d MarDiv and sailed from New Zealand. All came together at 0330 on 20 November off Betio, where the troops safely transferred to amtracs. These then formed columns for the long journey to the line of departure 6,000 yards off the landing beaches. At 0824, the first of three waves began churning shoreward. Fifty-six minutes later 1,500 Marines were fighting ashore. The amtracs then repeatedly braved intense enemy fire to maintain the flow of men and supplies across the reef to fuel the Marines' advance. Three days later 4,690 Japanese were dead and the battle over. *Time* carried the story:

Last week some 2,000 or 3,000 United States Marines, most of them now dead or wounded, gave the nation a name to stand beside those of Concord Bridge, the *Bon Homme Richard*, the Alamo, Little Big Horn, and Belleau Wood. The name was Tarawa.

Of the 3,301 Marine casualties, 180 were from amtrac units. Ninety amtracs had also been lost, 82 to enemy action. Maj Henry G. Lawrence, succeeding to command of the amtracs at Tarawa, summarized the experience as, "We went from s--t troops to shock troops in a helluva hurry!"



USS Monrovia steams toward Tarawa with LVT(1)s of the 2d Amphibian Tractor Battalion loaded on deck in place of LCVPs. Note LCVP in foreground.

Seizure of the Marshalls had been authorized in January, but implementing details awaited the end of the Gilberts campaign. Thus, the 4th MarDiv activated at Camp Pendleton in August with its 4th Amtrac Battalion, learned only in December it was to seize islands in the northern part of Kwajalein Atoll. Then, on 5 December, the division was authorized to activate the reinforced 10th Amtrac Battalion using a nucleus of personnel from the 4th Amtrac Battalion, to provide 140 additional LVT(2)s. This enabled the division to plan positioning artillery on off-lying islands on D-day to support the main landings on Roi and Namur Islands the next

See Amphibians On Parade, p. 88.



LVT(1) #49 and LVT(2) in foreground knocked out by gunfire on beach at Tarawa. Note penetration of boilerplate on cab of LVT(1) #49 by machine-gun fire.



Marines land from LVT(2). The high drop required of troops laden with individual weapons and equipment was always difficult, as was cargo-handling over the side.



LVT(1) towing 105mm howitzer offloaded from LCM on reef.

day. The resulting activity, and a 6 January sailing date, shattered the meaning of time for the amtrac community at Camp Del Mar where the 1st Armored Amphibian Tractor Battalion was also based. That unit, formed in July, had 75 LVT(A)1s armed with 37mm guns. Intended to cover the movement ashore of the troop carrying amtracs, the armored amphibians would henceforth constitute the first wave in all landings.

The weather on D-day, 31 January, was unfriendly to schedules for troop transfers and multiple trips to the beaches. Little went as planned. Yet, by nightfall, 10th Amtrac Battalion had landed infantry on five islands and brought three battalions of artillery ashore. However, the recovery of the amtracs that night was hampered by LST crews as inexperienced as the amtrac units embarked. Thus only half the amtracs needed for the landing on Namur Island on D+1 were available, and it was near noon when the infantry went ashore. The 4th Amtrac Battalion with 100 fresh LVT(2)s had little difficulty landing on Roi Island.

While the Army's 7th Infantry Division cleared southern Kwajalein, an Army battalion secured Majuro Atoll. This allowed release of the 22d Marines and the 106th Infantry, held as force reserve, to undertake seizure of Eniwetok Atoll, beginning 17 February. A week later American forces dominated the Marshalls. Of note, the 4th Marine and 7th Infantry Divisions both encountered enemy garrisons at Kwajalein equal to that at Tarawa but had less than one-third the casualties the 2d MarDiv had suffered there.

The campaign in the Marshalls validated the experience of Tarawa and confirmed the combat role of the amtrac. Yet it took more than 30 years for ALMAR 172/76 of 14 December 1976 to rename the amtrac an assault amphibian.

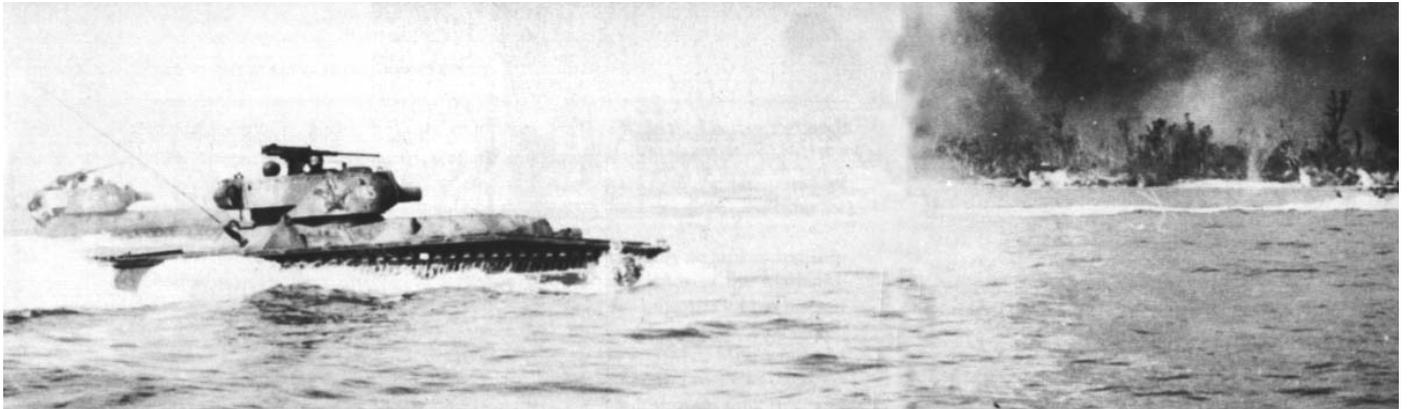
US MCMC

>Editor's Note: For an interesting account of subsequent air operations against another island in Kwajalein Atoll see article by Col Elie G. Tremblay, USMCR(Ret), on the Gazette Web Site: <www.mca-marines.org/gazette.html>.

Fifth in a series of articles recalling the vehicles that were and are uniquely Marine.

Battle Honors of the Marine Amphibian V. Marianas Campaign

by Col Victor J. Croizat, USMC(Ret)



LVT(A)4s form the first wave during the landing on Saipan, 15 Jun 44. This armored amphibian mounted a 75mm and a .50 caliber machinegun in an open turret. There were 1,890 LVT(A)4s built during World War II.

Near first light on a drab 6th of June in 1944, lead elements of two American and three British Divisions stormed ashore over five beaches fronting the Normandy coast. A few hours later and half a world away, word that the invasion of Europe had begun invited grunts of sympathy from the soldiers, sailors, and Marines crowded on ships rolling heavily over the long Pacific swells on course for the Mariana Islands.

The Normandy invasion force, embarked in 2,727 ships and craft for a sea passage measured in tens of miles, was backed by one million men in Britain who would be shuttled to the continent by 4 July. The Marianas invasion force comprising 4 divisions and 1 brigade was embarked in a self-contained 800-ship armada whose objectives were 4,000 miles from its mount-out bases and 1,200 miles from the nearest American-held area.

The outpouring of resources that made these operations possible included the LVT(4), essentially an LVT(2) with a stern ramp which multiplied its utility, and the LVT(A)4, whose 75mm howitzer made it an assault gun, in contrast to the

LVT(A)1 whose 37mm gun had encouraged its use as a tank, with disastrous consequences. That same year, the Marine Corps had doubled its amtrac units by forming five new cargo and two new armored amphibian battalions.

The Joint Chiefs of Staff directive of 12 March to seize the Marianas beginning 15 June countered Gen MacArthur's efforts to gain priority for operations in the Southwest Pacific in favor of acquiring secure bases for the forthcoming B-29 offensive against Japan. The plans that followed called for Marine landings on Saipan then,



Marine reserves transfer from LCVP to LVT(4) 1,500 yards offshore at Saipan on D-day. The LVT(4), a variant of the LVT(2), had its engine moved forward to permit installation of a stern ramp. It could carry up to 30 troops and as much as 9,000 pounds of cargo, including a jeep or 105mm howitzer. A total of 8,348 LVT(4)s were built during the war.

See Amphibians On Parade, p. 87.

days later, on Guam. Tinian would be taken once Saipan was secure. The Army would provide the reserves.

The pageantry of the amphibious assault began with a bright morning and bombardment ships resuming their thunder. Soon after, 46 LSTs carrying the assault units of the 2d and 4th Marine Divisions began disgorging 2 battalions of armored and 6 battalions of troop-laden amtracs, half of them Army units. Meanwhile, scores of small craft wearing bright colored flags took positions identifying the lanes to the beaches over which control teams would direct troops and supplies ashore. At 0827, 24 rocket gunboats crossed the line of departure, followed by 719 amtracs in a succession of orderly waves. The gunboats veered away at the reef, the amtracs continued shoreward, defying a deluge of fire. Twenty amtracs were lost, 12 to enemy fire and 8 to surf and mechanical failure. Still, within 30 minutes, 8,000 Marines were meeting the first of 30,000 Japanese defenders, most

of whom would die in the 25 days to follow.

The loss of Saipan caused the fall of the Tojo government and Emperor Hirohito to wish "for a diplomatic settlement of the war." But that was not to be, and the weary soldiers and Marines, diminished by 16,600 casualties, prepared for Tinian. On 24 July, the 453 serviceable amtracs remaining began landing the 4th Division over 2 northern beaches on Tinian that totaled just 600 yards in width. A demonstration by the 2d Division off Tinian Town distracted the enemy so that by nightfall virtually all the 4th Division was ashore ready to receive the expected counterattack. This attack, conducted by 1,500 of the island's 8,900 defenders, was unsuccessful and cost the Japanese 1,241 dead. A week later, 3,800 more were dead, and Tinian was American.

The invasion of Guam was delayed by the Battle of the Philippine Sea wherein Japan lost its carrier aviation, and by the American's need to reconstitute reserves when the 27th Infantry Division was committed to the battle on Saipan. Hence it was 21 July when 73 LVT(A)1s followed by 360 troop-laden amtracs began landing the 3d Marine Division and 1st Provisional Marine Brigade. The pageantry was like that at Saipan except that at Guam 55 amtracs were destroyed or damaged on the initial landing. Despite these and later losses, the amtracs continued to demonstrate their unique versatility in supporting the advance of the Marines and soldiers that had joined them.

On 11 August after 11,000 Japanese had been killed and another 6,000 sealed in caves, Guam was secured, and the Marianas campaign ended. It marked the first massive use of amtracs in a meticulously organized landing, the introduction of the LVT(4) and LVT(A)4, and the first time a systematic effort had been made by amtracs to proceed inland before offloading troops.

Three months later, on 24 November 1944, the first flight of 100 B-29s left the Marianas for Japan.

US MC



Top and right: Marines landing on Guam, July 1944, from LVT(2)s. Pictures illustrate the difficulties of landing troops and cargo in this amphibian.

Battle Honors of the Marine Amphibian VI. Peleliu, Agony Island

by Col Victor J. Croizat, USMC(Ret)



Marine assault troops head toward the beach at Peleliu, 15 September 1944.

The 1st Marine Division spent 1941 and 1942 in the field, including 4 memorable months on Guadalcanal. It received compensation in the paradise of southern Australia during most of 1943, then returned to reality in the hell of Cape Gloucester as the year ended. Four unpleasant months later, the division was ordered to Pavuvu to refit. There, midst swamp and jungle, it had built a camp and was just settling in when, in June, it was alerted for the invasion of Peleliu.

Gen MacArthur had initially planned to reenter the Philippines by way of Mindanao, following seizure of the Palaus, 530 miles to the east, to eliminate their threat to his flank. However, when an extensive sweep by the Third Fleet revealed the enemy was unexpectedly weak, it was decided to strike directly at Leyte on 20 October, while executing the Palaus operation as planned. This entailed the landing of the 1st Marine Division on Peleliu on 15 September, followed 2 days later by the seizure of neighboring Angaur Island by the Army's 81st Infantry Division.

Intelligence on the 10,000-man Japanese garrison defending Peleliu was confirmed in documents captured on Saipan. However, little was known of the island oth-

er than it was 6 miles long, less than 2 miles wide, and surrounded by a reef. Not until landing did the Marines discover Peleliu's fragmented terrain, the product of a submerged reef thrust upward by volcanic action and now hidden under scrub jungle. The Japanese had ably exploited this tormented landscape, with its caves in the low-lying Umurbrogol Mountain, to create defenses of unsurpassed difficulty.

Prior to Peleliu the 1st Marine Division had used its 100 amtracs mainly as logistics vehicles. Now, it needed twice that number, plus some 70 armored amphibians, for its assault landing over Peleliu's reef. The 1st Amtrac Battalion had less than half its amtracs still serviceable. Only the 8th Amtrac Battalion at Camp Pendleton, reporting 10 percent readiness, was uncommitted. This compelled use of 1st Amtrac Battalion personnel as nuclei for the new 6th Amtrac and 3d Armored Amphibian Battalions. Working an impossible schedule, these units were organized, equipped, and "trained" in the time normally required to prepare arriving amtracs for combat. Most aggravating, the 3d Battalion found that its armored amphibians, all re-

See Amphibians On Parade, p. 108.



Marines on the Peleliu beach return Japanese fire from behind the shelter of an LVT(A) nicknamed "The Bloody Trail."

ceived in August, included the 37mm gun and 75mm howitzer models, both unfamiliar to their crews. Notwithstanding such problems, the armored amphibians sailed on 4 September accompanied by 221 cargo amtracs of the 1st and 6th Amtrac Battalions and a detachment of the 8th Amtrac Battalion. Among these, four were fitted with Navy flamethrowers; six others



Marines clear mines from path of a flame thrower LVT(4), one of three such vehicles in the platoon commanded by Ens Melvin B. Thayer.

were designated to guide tanks across the reef.

The deceptive tranquillity with which D-day began ended at 0530 when naval guns opened fire to herald the drama of the amphibious assault. The orchestrated scenario unfolded in familiar fashion until the lead wave crossed the line of departure. Thereafter, Japanese fire of increasing intensity fell on the boat lanes and reef, hitting 26 amtracs. Despite this deluge of fire, the first wave reached shore at 0832, and five battalions of infantry quickly followed. Progress thereafter was agonizingly slow and costly. Twenty-seven armored amphibians were hit while helping establish a shallow beachhead. Fortunately, their agony was relatively brief. Within the hour most of the division's 30 tanks had been guided over the reef and, though virtually all were hit during this transit, none was put out of action.

The division commander, who had announced the operation would take 4 days, was reluctant to accept the pace of events ashore or the eventual need for Army help. However, 6 days after landing the 1st Marines had suffered 56 percent casualties and was no longer a fighting force. It was relieved by a regiment of the 81st Division. The 5th and 7th Marines fought on, but by 15 October they too were exhausted and ready to have the Army finish the job. Finally, on 27 November, the "4-day operation" ended after 73 days of incessant combat and 10,000 casualties, 6,400 of them Marines. Included among them was Ensign Melvin B. "Flamethrower" Thayer, who had been adopted by the Marines and was killed on one of the support missions he unflinchingly accepted for his flamethrowing amtrac detachment. Vehicle losses in the amtrac units were also unusually heavy. The difficult terrain, prolonged operations, enemy action, and exceptional demands for transportation had left only a handful serviceable when the division was relieved. Return to Pavuvu was poor reward for the agony of Peleliu.

USMC

Battle Honors of the Marine Amphibian VII. Fight to the Finish

by Col Victor J. Croizat, USMC(Ret)

The Marines, having breached Japan's outpost line and penetrated its defenses, ended 1944 with six divisions plus nine amtrac and three armored amphibian battalions in base camps in Hawaii, the Marianas, and southern Solomons. The tranquility was momentary. Even as Army troops were preparing to storm onto Luzon, the 3d, 4th, and 5th Marine Divisions were readying to strike Iwo Jima. That 8 square miles of volcanic ash, dominated by 550-foot Mount Surabachi, stood halfway between the B-29 bases in the Marianas and the Japanese homeland. Its radar gave 2 hours warning of incoming B-29 flights, and its fighters challenged their passage. Seizure of Iwo would deny the Japanese these advantages and provide the Americans a base for escort aircraft and haven for emergency landings. The Japanese island commander, determined to thwart any such move, had cleverly inserted his 20,000 troops and their fearsome weapons, including launchers for 550-pound projectiles, into a violently broken terrain larded with caves to create a seemingly impenetrable defense system.

The Marines planned to land the 4th and 5th Divisions in 426 amtracs of the 5th, 10th, 3d, and 11th Amtrac Battalions behind 68 LVT(A)4s of the 2d Armored Amphibian Battalion. The absence of reefs and deep offshore waters promised an easy landing. It was anticipated that, once the assault units and 200 tons of priority supplies on each of 28 LSTs were ashore, the amtracs would withdraw. The landing on 19 February was uneventful; one LVT(A) lost and eight battalions of infantry ashore in 30 minutes. Then a tempest of shot and shell turned the landing area into a hell where deep ash made all movement unexpectedly difficult. Only amtracs with cleated tracks were unhampered. These were promptly engaged in endless transport tasks, among them positioning artillery, bringing water and ammunition to the infantry, and evacuating the many wounded. On 23 February, the American flag breaking out atop Surabachi eased the fatigue of 4 days of violence and renewed the Marines' determination to carry on. The next day the 3d Marine Division came ashore. By 16 March this epic battle that had cost 25,000 Marine and Navy casualties was over. In

the long month of demanding effort, the amtrac units had lost 191 men and 123 machines.

Fifteen days after the guns ceased fire on Iwo Jima, 1,300 ships lay off Okinawa ready to launch the last amphibious assault of the Pacific War. It began on 1 April, an Easter Sunday greeted by naval gunfire rather than church bells. It reached its climax at 0800, when assault infantry of the 1st and 6th Marine Divisions, in four battalions of amtracs screened by two battalions of armored amphibians, headed for the reef fronting the Hagushi beaches. The Army's 7th and 96th Infantry Divisions, similarly embarked, moved out at the same time. Resistance to the landing was negligible and by 1600 there were 50,000 soldiers and Marines ashore. The eventful day was marred only by the loss of 53 Marines and 12 amtracs when kamikazes hit 2d Marine Division units engaged in a demonstration off the Minatoga beaches across from the main landings.

The four divisions initially advanced towards the opposite coast. Thereafter the Marines swung north to clear that part of Okinawa while the Army turned south, toward the main Japanese defenses. A month later, the Marines took over the western sector of the Tenth Army front where, on 21 June, the struggle ended. The victory had cost 57,000 casualties, 142 from the amtrac units. Defeat left the Japan-



A dramatic aerial shot taken during the early hours of 19 February 1945, D-day at Iwo Jima.

See *Amphibians On Parade*, p. 95.



LVT(3)s in use at Quantico in 1950. LVT(3)s were first used at Okinawa. Cargo Capacity: 12,000 pounds, 25% more than LVT(4). Speed: 17mph on land, 6mph in the water. Range: 150 miles on land, 75 miles in water.

ese with twice that number in dead alone. Once again the Japanese had shown their determination did not lessen as the distance to their homeland shortened.



On Iwo Jima, Japanese laid "yardstick" mines on top of aerial bombs. If detonated, the explosions were powerful enough to lift 30 tons of LVT and cargo and blow a hole in the vehicle's bottom.

The Marines had 434 cargo amtracs on Okinawa, 210 new LVT(3)s. These twin-engine machines had 25 percent more cargo capacity than LVT(4)s of equal size and proved able performers. Another novelty was the employment of LVT(A)4s as self-propelled artillery. Lt-Col Louis Metzger had trained his 1st Armored Amphibian Battalion to provide the firepower of 12 batteries of 75mm howitzers through five fire directions centers tied to the Division Artillery Fire Control Command net. This capability well supported the mobile operations of the 6th Marine Division in the north where cargo amtracs also found a role as personnel carriers. This demonstration of the amtrac's operational flexibility on Okinawa entailed insignificant losses and was a fitting manner for this unique and indispensable vehicle to end the war.

USMC

Battle Honors of the Marine Amphibian VIII. The Glory Road

by Col Victor J. Croizat, USMC(Ret)

In 1940 the Fleet Marine Force had two brigades and two air groups; 5 years later it had 303,500 Marines organized into 2 corps with 6 divisions and 4 air wings. Included were 13 amtrac battalions, the first appearing in 1942 as untried transport units. With the landing at Tarawa in November 1943 when 125 amtracs of the 2d Amtrac Battalion landed the 2d Marine Division over the reef off Betio Island, they became indispensable constituents of landing forces.

The 1st, 2d, and 3d Amtrac Battalions formed in 1942 with 100 LVT(1)s each were all deployed to the South Pacific with their parent divisions. The 1st and 2d on Guadalcanal in 1942-43 helped end Japanese expansion. Then, in the campaign to isolate the Japanese base at Rabaul, the 3d Marine Division landed on Bougainville in November 1943 to block one access, and the 1st Marine Division invaded western New Britain a month later to block another.

The last was shut in March 1944 by the 4th Marines' landing on Emirau Island with Marine amtracs from the 3d Battalion. Throughout these operations, LVT(1)s and improved LVT(2)s, available late in 1943, earned high praise for their unique ability to overcome impossible terrain. The Central Pacific campaign, opened at Tarawa, multiplied these accolades.

On 5 December 1943, the new 4th Marine Division was authorized to use 4th Amtrac Battalion personnel to form the 10th Battalion reinforced, needed for the landing at Kwajalein in the Marshalls. A month later, these units left San Diego; 25 days after that they were in action. Some amtracs mounted 4.5-inch rocket launchers, others had mine-detonating grapnels; both proved useless. The landings, successful despite delays, were attended by the 1st Armored Amphibian Battalion. Its 68 LVT(A)1s, essentially LVT(2)s mounting a 37mm gun, supported the advance of assault infantry during the landing. Their effectiveness, regrettably, was limited by their vulnerability and light armament.

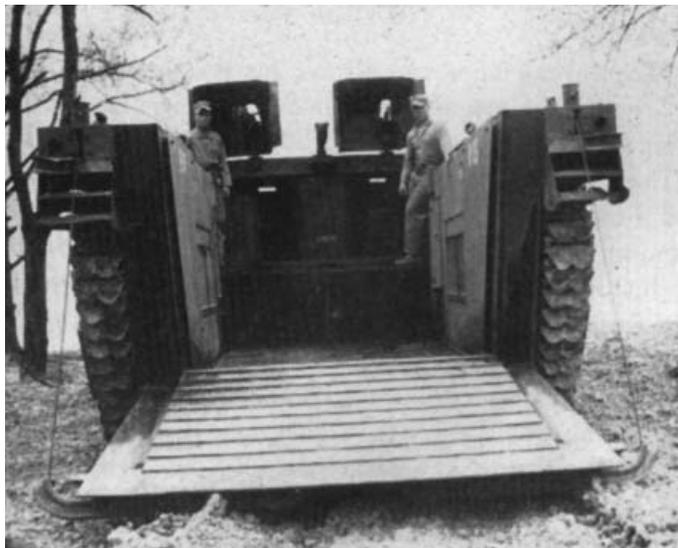
Amtrac battalions became Corps troops in 1944 and were assigned to divisions as needed. In the Mar-



Amphibian tractors played a significant role in bringing about this event on the deck of the USS Missouri.

ianas campaign beginning 15 June 1944 at Saipan, the 2d and 4th Marine Divisions landed in eight amtrac battalions, four Army and four Marine (2d, 5th, 10th, and 2d Armored). The return to Guam on 21 July was made by the 3d Division and 1st Marine Brigade in amtracs of the 3d and 4th Battalions behind 1st Armored. Finally, the 4th Division was put ashore on Tinian on 24 July by the remaining amtracs of the Saipan landing force. A refined ship-to-shore control organization with amtrac liaison officers at key points made for flawless landings. The designation of LSTs as aid stations or for amtrac maintenance was helpful, and the introduction of LVT(4)s with ramp and LVT(A)4s with 75mm howitzer was welcome. By then battalions had modified amtracs to provide recovery and field maintenance capabilities needed for salvage of disabled vehicles. On the negative side was the failure of amtracs at Saipan to advance directly to the first high ground before offloading assault troops, largely because the prelanding bombardment had destroyed beach exits.

See Amphibians On Parade, p. 107.



Two views of the LVT(3), which was the principal amtrac at Okinawa and into the postwar era.

The seizure of Peleliu, next on the Central Pacific agenda, required the 1st Marine Division to use 1st Amtrac Battalion personnel to organize the 6th Amtrac and 3d Armored Battalions. The landing on 15 September 1944 succeeded, as did the use of amtracs to guide tanks over the reef, but losses were high. The bloodbath intensified when the Marines encountered Japanese burrowed deep in the fragmented terrain. Four amtracs with flamethrowers helped rout them but were themselves too vulnerable. After a month of unremitting combat, the decimated 1st Division was relieved by Army units, who continued fighting until the end of November.

The 3d, 5th, 10th, and 11th Amtrac Battalions with the 2d Armored Battalion landed the 4th and 5th Marine Divisions on Iwo Jima on 19 February 1945. The amtrac battalions then expected to leave. However, because the amtracs' cleated tracks made them the only vehicles able to move freely over the volcanic ash, they

were sentenced to hard labor until the island was secured. A month later the 1st, 4th, 8th, and 9th Amtrac Battalions and the 1st and 3d Armored Battalions landed the 1st and 6th Marine Divisions on Okinawa. Two Army divisions in an equal number of amtrac battalions landed on the Marines' right. This began a 4-month struggle in which cargo amtracs served as armored personnel carriers, armored amphibians performed as self-propelled artillery, and new twin-engine LVT(3)s revealed superior capabilities.

Even as the amtracs continued searching for better ways to serve, two nuclear weapons forced Japan's surrender on 14 August 1945. This abrupt climax was followed by rapid demobilization. By spring 1946, the Fleet Marine Force numbered 35,000 men, and the amtrac battalions had passed into legend.



AMPHIBIAN TRACTOR PRODUCTION & USMC UTILIZATION IN WWII

MODEL	NUMBER BUILT	PRODUCTION YEAR	FIRST COMBAT
LVT(1)	1,225	1941	Guadalcanal
LVT(2)	2,963	1943	Tarawa
LVT(A)1	509	1943	Kwajalein
LVT(A)2	450	1943	New Britain
LVT(3)	2,962	1944	Okinawa
LVT(4)	8,348	1943	Saipan
LVT(A)4	1,890	1944	Saipan
LVT(A)5	269	1945	Korea

Notes

- 1) A prototype LVT(A)1 was built in June 1942.
- 2) The LVT(A)2 was a cargo vehicle built of light armor for the Army. Turreted vehicles used the hull.
- 3) The LVT(3) was built by Borg-Warner, all other amtracs were built by the Food Machinery Corp.
- 4) All amtracs, other than the LVT(1) and LVT(3) were variants of the basic LVT(2) design.
- 5) The LVT(2) was designed in 1941 but not put into production until 1943 because the LVT(1) model was frozen at the start of the war to endure maximum production.

Battle Honors of the Marine Amphibian IX. Inchon Masterstroke

by Col Victor J. Croizat, USMC(Ret)

Although Russia entered the Pacific War only 6 days before Japan capitulated, it amassed considerable booty. It also gained entry into Korea where it established a communist state after receiving the surrender of Japanese forces above the 38th parallel. While the communists were consolidating their power, American officials were voicing lessened interest in Korea. Thus reassured, eight North Korean divisions crossed the border on 25 June 1950, seized Seoul, and drove southward, confident of victory.

The reaction was surprisingly swift. On 26 June the United Nations demanded the aggressor withdraw, the following day U.S. Navy and Air Force intervention was authorized, and by 30 June an Army regiment in Japan was embarking for Korea. Nonetheless, the initiative remained with the North Koreans. By the end of July the newly created U.S. Eighth Army, with surviving South Korean units, was precari-



Assault elements of the 1st Marines in LVT(3)C (with cover open) head for Blue Beach at Inchon late afternoon 15 September 1950.



The 5th Marines landing from boats storm seawall fronting Inchon late afternoon 15 September 1950.

ously holding a 100-mile perimeter centered on Pusan.

At home, Marine Corps fortunes were at low ebb. Airpower and nuclear weapons were preeminent, the Fleet Marine Force mustered just 27,000 men, and the Chairman of the Joint Chiefs of Staff held that "large-scale amphibious operations will never occur again." Yet on 7 August, 30 days after GEN MacArthur requested assistance, the 1st Provisional Brigade, commanded by BGen Edward A. Craig, had been activated, sailed 6,000 miles to Pusan, and been committed to battle.

By then, GEN MacArthur was pursuing his earlier proposal to land at Inchon, retake Seoul, and cut enemy communications to enable the Eighth Army to drive north. A major difficulty was that the approaches to Inchon are subject to 32-foot tides and 8-knot currents. Opposition to his proposal, heightened by prospects of a vigorous defense, was universal. But, MacArthur prevailed and asked for the 1st Marine Division to spearhead the landing.

Transfers and the mobilization of Reserves enabled the skeletonized division, then consisting of only 3,386 men, to reconstitute its units. Among these were the 1st Amtrac Battalion with newly covered LVT(3)Cs and the 1st Armored Amphibian Battalion, whose LVT(A)5s now had stabilized 75mm

See Amphibians On Parade, p. 75.



Low tide at Inchon. Tidal range exceeding 30 feet required scheduling main landings at Inchon in early morning and late afternoon.

howitzers. The task of organization, already daunting, approached the impossible as the 10 August embarkation date neared. That this compressed schedule was met was the first miracle; the second would be overcoming the extreme conditions at Inchon.

The 3d Battalion, 5th Marines began the action early 15 September by seizing Wolmi-do Island, which controls access to the port. The tide interrupted further landings until late afternoon, when the remainder of the 5th Marines stormed the seawall fronting the city, overwhelmed the defenders, and secured its initial objectives before midnight. Meanwhile, 3 miles to the south, 164 1st Battalion amtracs preceded by 18 Army LVT(A)5s landed the 1st Marines. There was some mixing of units and vicious firefights, but progress went as planned. By morn-

ing, there were 13,000 Marines ashore and the second miracle had been accomplished. MacArthur's masterstroke had succeeded.

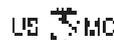
The Marines took Kimpo airfield on the 19th, but the nine LVT(3)Cs that later tried to cross the Han River were thrown back. The next morning, the amtracs successfully blasted a passage for an infantry battalion. Meanwhile, the 7th Marines arrived and joined the division, which entered Seoul on the 27th just 3 months after it had been lost. That same day, the Eighth Army linked up with the 7th Infantry Division, recently landed at Inchon.

The Allied advance continued above the 38th parallel and by mid-November the 1st Marine Division was at the Chosin Reservoir. There, it was overwhelmed by Chinese forces but broke through to fight its legendary 78-mile "advance to the rear." Because of the massive Chinese intervention, 1950 ended with the belligerents back on the 38th parallel and the Marines fighting guerrillas in the south. In February 1951, the Marines were shifted to the central front, where the intensity of fighting lessened once negotiations began in June. Finally, the Division took over the western 35 miles of the demarcation line in March 1952 and was there when hostilities ended on 27 July 1953.

Throughout the Korean War the amphibians continued their "can-do" tradition of World War II. Once the assault at Inchon ended, the armored amphibians were primarily used for artillery support and patrol of waterways and harbors. The cargo amphibians, which served as armored personnel carriers and supply vehicles, were notably effective for assault river crossings and ferry services. They also performed well manning fixed defenses. This diversity of tasks reflects the prolonged engagement of the Marines in land warfare. The Korean experience confirmed the utility of amphibians and provided a useful prelude to Vietnam.



It is December 1950 and Marine units leave the Chosin Reservoir area and advance toward Hungnam for reembarkation and redeployment southward. The operation, carried out in bitterly cold weather, was contested by seven Chinese divisions.



Battle Honors of the Marine Amphibian X. The French Indochina War (1946–1954)

by Col Victor J. Croizat, USMC(Ret)

France had ended World War II a devastated country, its infrastructure shattered and its economy drained by years of occupation and war. It was able, however, to reestablish control over southern Vietnam. Although the Expeditionary Corps that arrived in Saigon in September 1945 was austere, its personnel were imbued with an innovative, can-do/make-do attitude. This was particularly apparent in the Naval Brigade, which modified veteran landing craft to create naval assault divisions, the famed *dinassauts*, that were effectively used on the waterways of the Tonkin and Mekong deltas where most of the people live. To complement the *dinassauts'* capabilities, the Foreign Legion formed amphibious combat commands to operate on the wetlands of the deltas.

Late in 1947, the Foreign Legion's 1st Cavalry Regiment was given the mission of denying the enemy the use of the Plain of Reeds, a vast transit zone between Cambodia and South Vietnam. Anticipating its wheeled vehicles would be useless in swampy terrain, the Legion obtained several American M29C "weasels" for testing. When these light

tracked vehicles were seen to travel the Plain easily, 30 "crabs," as the French called them, were procured for each of the regiment's two squadrons. Soon after, crabs were roaming the Plain pursuing insurgents. That game was



Iwo Jima 23 Feb 1945.
First Combat appearance of the M29C "weasel" light amphibious vehicle—used for frontline resupply of high priority items.
USMC Photo



LVT(4) with rifleman from "shock element" of the 1st Amphibious Group approach village in the Plain of Reeds.
French Archives Photo

short-lived, however, for the Viet Minh quickly noted the vulnerability of single crabs with two-man crews operating beyond infantry support range, and began destroying them in increasing numbers. The French responded by restricting operations to two or more crabs with mounted infantry escort. But the crabs were incapable of carrying enough infantry to discourage enemy attack and the problem remained unsolved until the amtrac appeared.

The first LVT(4)s arrived in Indochina in October 1950 and were assigned to the

See Amphibians On Parade, p. 80.



LVT 4 with rifleman from "shock element" of the 1st Amphibious Group in Plain of Reeds. French Archives Photo

**Indochina 1949
M29C (crabs) of 1st Cavalry Regiment of the French Foreign Legion deployed to operational area aboard French Navy Landing Craft. French Archives Photo**

1st Cavalry Regiment for operational testing. This resulted in several organizational changes, culminating with the 1st Amphibious Group formed in April 1953. This unit included a "reconnaissance and rapid maneuver element" of 2 squadrons, each with 3 platoons of 10 crabs, and a "shock element" of 3 squadrons, each with 8 LVT(4)s embarking a light rifle company, and 3 LVT(A)4s for direct support. A separate platoon of six LVT(A)4s under group headquarters was provided for general support. A second amphibious group was formed shortly after for service in the north.

These groups had substantial firepower: fifteen 75mm howitzers in the LVT(A)4s, two machineguns in each crab and amtrac, and six 57mm recoilless guns and three 60mm mortars per squadron. The group also had the personnel and communications to operate as two subgroups. This flexibility, and the practice of carrying 3 days of supplies, provided the autonomy and endurance needed for long range operations. Although the group was remarkably versatile, it had limitations. Both amtracs and crabs often had to be moved by tank transporters to assembly points near opera-

tional areas. Further, the crab's tracks were easily damaged and the amtracs bogged down in thick, heavy mud. But, when operations were planned with due regard for these factors, the Legion's amphibious groups yielded spectacular results. They remain among the more innovative amtrac organizations ever conceived.



**Indochina, Plain of Reeds 1949
Platoon of M29C (crabs) on sweep of enemy transit zone, Plain of Reeds. French Archives Photo**

Battle Honors of the Marine Amphibian XI. The American War in Vietnam (1965–1973)

by Col Victor J. Croizat, USMC(Ret)

The Geneva Agreements of July 1954, which recognized two Vietnams, directed the regroupment of French forces in the south and Viet Minh forces in the north. The French withdrawal, accompanied by three-quarter million refugees, left a dedicated communist government in Hanoi supported by 230,000 battle-seasoned regulars and 100,000 militia. In the south, communist cadres remained to control numerous rural areas, and two enclaves were held by private armies of the Cao Dai and Hoa Hao sects. In addition, the South Vietnamese army of 150,000 regulars and 35,000 auxiliaries was disintegrating and the role of the French became ever less clear. Presiding over this maze was Premier Ngo Dinh Diem, a high-born Catholic in a country of Buddhist peasants, with little experience, few followers, and uncertain promise.

With their war ended, the French invited the Americans to help organize and train the South Vietnamese Armed Forces. The military in Washington opposed doing so without a stable South Vietnamese Government; Secretary of State Dulles believed a strong military was a necessary prerequisite to creating such a government. His view prevailing, a Franco-American training mission was created early in 1955. The year proved difficult. The French commanded many Vietnamese units, and their training methods differed. Moreover, when Diem directed his military to restore control over areas held by sect forces and other dissidents, few uncommitted units remained to organize and train. With the departure of the French in 1956, the American advisory effort gathered momentum, but so did communist subversion. Diem's government, unable to cope, was overthrown in November 1963.

The U.S. Marine Corps advisory effort had begun in 1954 with one officer who assembled a scattering of commando and river force units into a regiment of Vietnamese Marines. Paralleling the

advisory effort, U.S. Marine helicopter units were brought in to support Vietnamese operations in 1962. But the governments that followed Diem's were no more effective, and communist activity intensified. On 8 March 1965, the 9th Marine Expeditionary Brigade landed at Da Nang tasked with airbase defense. Five months later the III Marine Amphibious Force with its 3d Marine Division and 1st Wing was in Vietnam engaged in activities from pacification to battalion-level offensive operations. Early in 1966, the 1st Marine Division was adding its weight to the large-scale operations directed by higher headquarters.

The 1st Amphibian Tractor Battalion accompanied the 3d Division to Vietnam in 1965, and by early 1966 the 3d Amphibian Tractor Battalion was in country with the 1st Division. Also present was the 1st Armored Amphibian Tractor Company whose three platoons were assigned one each to the amtrac battalions and the other to the Special Landing Force. In 1967, Company A of the 5th Amphibian Tractor Battalion was deployed to Okinawa with the 26th Marines to restore the intratheater rotation program needed to maintain the Special Landing Force as the Pacific command's strategic reserve.

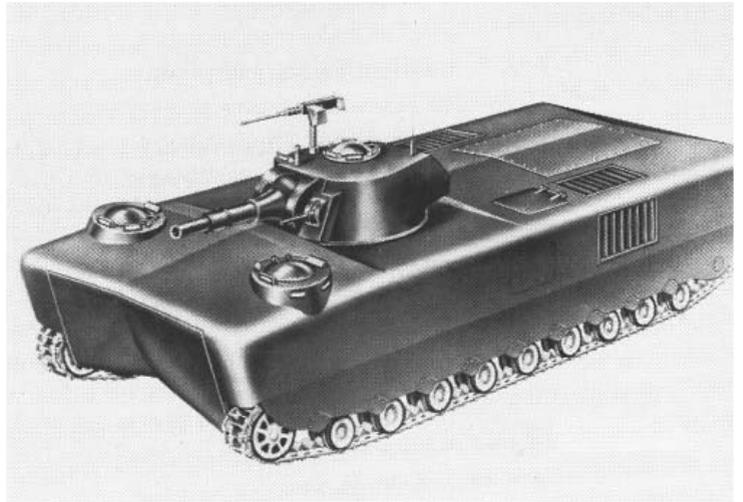


An LVT(P)5 carries its patrol atop the overhead cover in order to minimize any loss should a mine ignite the fuel cells in the bottom of the amtrac. (USMC)

See Amphibians On Parade, p. 87.

Amphibians On Parade continued from p. 96.

Each division thus had available 100 LVT(P)5s, 6 LVT(H)6s with 105mm howitzers, and several command, recovery, and mine-clearance amtracs. The LVT(H)6s served primarily as self-propelled artillery. The LVT5 models, first appearing in 1953, were longer and over twice as heavy as LVT3s but, with an improved track and greater land speed, were well suited to Vietnam and the tasks required. They were employed in conventional ship-to-shore operations and as armored personnel carriers to maneuver ground units in blocking and envelopment actions, often with helicopterborne forces. Amtracs were also adept at patrolling waterways, controlling waterborne traffic, and providing logistics support in riverine or coastal environments. Additionally, there is reference to an LVT(P)5 using machinegun fire to extricate an isolated fire team. Mine-clearing LVT(E)5s were particularly prized. In February 1966, the 9th Marines, which had suffered 70 percent of its casualties that month to mines and boobytraps, had to occupy a mined hilltop.



The LVT(H)6 was the last amphibian tractor model to mount a major gun. The vehicle, with its 105mm weapon in an enclosed turret, was last used in Vietnam. (USMC)



Another view of LVT(H)6.

A single LVT(E)5 cleared the way in spectacular fashion by firing 31 line charges causing 99 secondary explosions.

The versatility of the LVT5s was widely recognized. By July 1969, when the 1st Amphibian Tractor Battalion was redeployed to Okinawa, it had received the Meritorious Unit Commendation for "fulfilling the mission of an infantry battalion . . .," a second such award for clearing a 32-square-mile tactical area of responsibility, and the Vietnam Cross of Gallantry. The 3d Amphibian Tractor Battalion, which left for Camp



LVT(P)5 offloading supplies on beach in South Vietnam, Oct 1967, incident to 1 of the 62 landings made by Marines during Vietnam War. (USMC)

Pendleton in January 1970, received the same award and also earned the Vietnam Meritorious Unit Citation for Civil Action for its role in the pacification campaign. It is appropriate that the final appearance of track-propelled amphibian tractors after 28 years of combat service should end with such accolades.



Battle Honors of the Marine Amphibian XII. The Persian Gulf War, 1990–1991

by Col Victor J. Croizat, USMC(Ret)

The transformation of the Middle East began in 1908 with the discovery of oil in Iran. The region, then largely unknown beyond a few cities, comprised a scattering of remote settlements and nomadic tribes pursuing lives little touched by time or even four centuries of Turkish dominion. The flow of oil wrought profound changes, among them a modern infrastructure, an awareness of national boundaries, and enlarged governments to manage riches beyond comprehension. The example of Kuwait whose 1939 revenues of \$290,000 became oil royalties of \$720 million in 1969 indicates the scale of change.

The strife that accompanied this metamorphosis was confined to the region largely because of treaties,



Assault amphibian vehicles showing system of unit markings for 3d Platoon, Company A, 1st Battalion, 7th Marines, Task Force Ripper.



A Marine assault amphibious vehicle is unloaded from maritime prepositioning ship *Baldomero Lopez* (T-AK 3009) in a Saudi Arabian port.

the first signed in 1853, making Britain responsible for the foreign affairs and security of Persian Gulf states. The British terminated these obligations in 1971. Two years later, Egyptian and Syrian forces attacked Israel, and Arab oil shipments to the United States were suspended. Iran was by then pursuing programs too ambitious for its people and threatening to the power of the mullahs. Revolution followed and, in 1979, Iran became a hostile Islamic theocracy. This unhappy decade ended with the Soviets invading Afghanistan.

President Carter began 1980 by declaring the United States would defend its vital interests in the Persian Gulf. In September, Saddam Hussein engaged Iran in a war that would last 8 years and cause Iran to threaten tanker traffic. In response, the United States strengthened its forces in the area, authorized Kuwaiti tankers to sail under American colors, and battled Iranian forays. Finally, the United Nations brokered a cease-fire that ended the bloodletting in July 1988. Seven months later, Soviet troops left Afghanistan, and by the end of 1989 the Cold War was over but not

See Amphibians On Parade, p.96.



In an early rehearsal for the assault on Iraqi forces in Kuwait, Marines of "Task Force Breach Alpha" fire mine-clearing line charges from special trailers towed by AAV7A1 vehicles. The explosions clear vehicle-wide lanes by detonating, disabling, or moving the mines.

the reign of tyrants. Saddam Hussein, having shattered the economy of Iraq, concluded the riches of Kuwait would resolve his difficulties. On 2 August 1990, he overwhelmed the tiny emirate; the next day his armor was on the border of Saudi Arabia. Four days later, American forces were setting forth to thwart his design.

DESERT SHIELD, the deployment of U.S. forces to defend Saudi Arabia began on 7 August. Eight days later, the 7th Marine Expeditionary Brigade (7th MEB), equipped and supplied from ships arriving at Al Jubayl, was moving into defensive positions. The 1st MEB followed, repeated the procedure, and on 6 September the 1st Marine Expeditionary Force (I MEF) with the 1st Marine Division, 3d Marine Aircraft Wing, and 1st Force Service Support Group was in place. When DESERT STORM opened its air offensive on 16 January, the 2d Marine Division had joined the I MEF, and the 4th and 5th MEBs and 13th Marine Expeditionary Unit were afloat in

local waters. All told, almost 93,000 Marines deployed to the Persian Gulf to counter Saddam Hussein's aggression.

The 3d Assault Amphibian (AA) Battalion deployed with the 1st Division, the 2d AA Battalion with the 2d Division, and Company B, 4th AA Battalion with the 5th MEB. Eventually 530 AAV7A1s would be in country. Twenty years earlier, the Marine Corps had replaced its aged LVT5s with LVT7s, which were propelled by water jets and were both lighter and faster but limited to 5 tons of cargo or 26 seated troops. Redesignated the AAV7 on 1 January 1977, when amtracs became assault amphibians, the inventory was modernized in 1983 to become AAV7A1s.

The added value of amtracs as armored personnel carriers and mine clearance vehicles, demonstrated in Vietnam, was reaffirmed during the DESERT STORM ground offensive. This required the Marines to breach belts of mines and obstacles fronting Iraqi defenses. The 2d Division used an engineer task force with 40 AAVs, 22 tanks, and 15 earth-movers to blast a passage for the 6th Marines. The 1st Division formed two similar detachments to clear the way for two mechanized infantry task forces. Breaching operations launched on 24 February went as planned and both divisions were soon driving toward Kuwait City, where Iraqi resistance ceased early on the 27th. By 0800 on 28 February the 100-hour Persian Gulf War was ended by Presidential order. Saddam Hussein had suffered a crushing defeat, our losses had been unbelievably light, and the tradition of the amtrac/AAV in the forefront of the action had continued.



An AAV7A1 of the 4th Marine Expeditionary Brigade coming ashore during SEA SOLDIER rehearsal for amphibious assault, January 1991.

USMC