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THE OPERATIONS OF A GUN SECTION, BATTERY D, 746 AAA GUN
BATTALION, 251 AAA GROUP, (XIV CORPS) IN THE SECOND BATTLE
FOR BOUGAINVILLE, 13-25 MARCH 1944.

(NORTHERN SOLOMONS CAMPAIGN)

(Personal Experience of a Gunnery Officer)

Type of operation described: 90mm ANTIAIRCRAFT GUN IN
DIRECT FIRE MISSIONS FROM A JUNGLE PERIMETER

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OPERATIONS OF A GUN SECTION, BATTERY D, 746 AAA GUN BATTALION,
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INTRODUCTION

This monograph covers the operations of a single gun section from Battery D, 746 AAA Gun Battalion, 251 AAA Group in the Second Battle for Bougainville.

It will be necessary to briefly relate the events which preceded this action in order to establish the situation clearly in the readers mind.

With the invasion and subsequent capture of New Georgia Island, the way was open for further advances in the Solomons. The Fall of 1943 saw large scale preparations for the blows to come. The occupation of Vella Lavella and Kolombangara made clear the Allies intentions to push their holdings to the northwest. (1) (See Map A)

In order to hammer the big Japanese base at Rabaul it was necessary to secure airfields closer to New Britain. Two possibilities presented themselves, Bougainville or Choiseul. Bougainville was the most likely, as it offered the shortest air routes and a suitable area had been discovered for the erection of the base. Accordingly, plans were made for the largest amphibious operations yet attempted. (2)

In an effort to divert what mobile seaborne forces the Japs might be holding in northern Bougainville it was decided to make a preliminary feint at Choiseul. A Marine Paratroop Battalion, minus ^{? Gunners?} parachutes, landed in the remote section of Vozga, Choiseul on 27 October 1943. This Battalion made raids on Jap garrisons and in general tried to give the impression

(1) A-12, p. 152 ; (2) A-1, p.5.

that they were the advance party of a large force. Admiral William F. Halsey's Headquarters aided in the deception by announcing that Choiseul had been invaded by a "large force" and operations were proceeding satisfactorily. (3)

Three days later, 1 November 1943, Lt. General Alexander A. Vandergift's 1st Marine Amphibious Corps made assault landings on Bougainville at Cape Torokina in the Empress Augusta Bay area. Initial opposition was light, estimated at only two companies, which were quickly over-run by the Marines. Troops of the 1st Marine Amphibious Corps consisted of the 3rd Marine Division, with attachments. One week later, 8 November 1943, the Army's 37th Infantry Division, commanded by Major General Robert S. Beightler, landed to support the Marines. The 251 CA (AA) regiment landed on 3 December 1943. ^{on} 15 December 1943 Major General O. W. Griswold's XIV Corps assumed ^{CONTROL} of the beachhead, and it was an Army show from there on in. The Americal Infantry Division landed late in December and completed relieving the Marines. This division was commanded by Major General John R. Hodges. (4)

The next few months saw rapid changes in the matted jungle of Bougainville. (See Map B) Soon there were three air strips in operation, and a sizable road net under construction. The two veteran divisions were not chasing the Japs back into the jungle, but had formed a perimeter defense and were busy making it impregnable. The Japanese were being taught some new departures in island warfare. With the all important airfields safely constructed inside the perimeter it would be unnecessary to conduct a bloody tree by tree conquest. The Torokina area was being made into a first class advance base. With tight air and naval patrols about the island to prevent reinforcements, the remainder of the land mass was left to the Niponese. This was a radical departure from our previous

(3) A-8, p. 44; A-12, p. 152 (4) A-9, p. 20-23; A-13 p. 88-91.

tactics, and it required some time for the Japs to realize what was going on. Too much time, as it later turned out. (5)

GENERAL SITUATION

The two divisions comprising the XIV Corps represented some of the finest troops in the Pacific Theatre. Both were veteran divisions that had proven themselves in previous exploits. The Americal had its baptism of fire on Guadalcanal, and the 37th on New Georgia. ^{How about 144th Inf in the background?} Together they were covering a perimeter approximately $5\frac{1}{2}$ by 7 miles. The 37th was on the left and the Americal on the right. (6)

Japanese troops in defensive positions around the island were under control of the 17th Field Army. The 6th and 17th Divisions were present with three regiments of artillery. The 6th Imperial Division, backbone of the force, consisted of the 13th, 23rd, and 45th Infantry regiments. This unit was infamous for its action in the "rape of Nanking," China. They boasted of never having been defeated in combat. Total infantry troops in the 6th Division amounted to approximately 7,800. The 17th Division was not nearly so well organized. It was composed of the 53rd and ~~85th~~ Infantry regiments only, with the 53rd having an effective strength of 400. Total infantry troops in this division amounted to some 1,400. The artillery regiments were the 6th, 4th and 10th. The 6th regiment was composed of 6 batteries of 75mm howitzers. The 4th Medium Artillery regiment had only six guns, 2 10cm howitzers and four 15cm howitzers. The 10th Independent Mountain Artillery regiment had five batteries of 75mm howitzers. This brought the total effective combat troop strength available for an assault against the American positions to some 15,400. The Japanese considered this adequate, only because they seriously underestimated Allied strength. Their intelligence was of the opinion that the American forces numbered some 30,000 of which 10,000 were Air Corps ground personnel, the effective infantry strength being that of a single division.

(5) A-12, p. 153; (6) A-7, p. 8.

This was a disastrous estimate, as all the plans for the attack were based on this presumption. (7)

XIV Corps intelligence estimated that it would take the Japs from $2\frac{1}{2}$ to 3 months to move the necessary troops and equipment to the Torokina area for an assault. Actually it took four months. (8)

The American beachhead was slightly deeper than it was wide ($5\frac{1}{2}$ by 7 miles). Flanks were anchored on the Laruma and Torokina rivers and extended inland for a maximum of seven miles. The terrain was generally low flat jungle with immense trees of all varieties. Ebony and mahogany were in abundance. Only two key terrain features were close to the perimeter, hills 260 and 700. As these looked down on the bomber strips, it was a logical conclusion that they would be the focal points of any attacking force. Hill 700 was included in the 37th Division sector, and strongly defended by elements of the 129th Infantry. Hill 260 posed a slightly different problem, as it was outside the normal perimeter. It was therefore set up as a separate strong point by one company from the Americal Division. Still farther inland were hills 600, 1000, 1111, and a range known as the Blue Ridge. While these would prove advantageous to an enemy it was impossible to defend them with the forces available. (9) (See Map C)

BATTALION SITUATION

After landing on the island the 251st CA (AA) regiment was redesignated as a group and three separate battalions. The former first battalion became the 746 AAA Gun Battalion, 90mm Towed. The four firing batteries of the ¹⁵battalion were in antiaircraft defensive positions around the Piva bomber strips. The officers and men were in good physical condition, tanned and healthy. The units had been together for over three years, resulting in an excellent state of training and discipline. The slim 90mm guns had cracked an ominous warning to the harassing Jap planes that came around

(7) A-2, p. 3 & 15; (8) A-1, p. 6; (9) A-7, p. 8-12.

nightly during the first few months of the beachhead. Morale was high, as usually is the case in an artillery unit that is doing considerable firing. In anticipation of the Japanese counterattack Lt. Col. John V. Long, the battalion commander, had directed that all positions be completely wired in with double apron fence. This had been done, and all possible approaches were covered with .50 caliber machine gun fire. Some additional clearing was accomplished to provide minimum elevations for terrestrial firing. (10)

COUNTERATTACK

Intensive ground patrolling by the Infantry Divisions as well as a battalion of Fijian scouts made it apparent that the Jap attack would be launched on or about 7 March 1944. (11)

At dawn 8 March 1944 Japanese 75mm mountain guns started coughing from the heights overlooking the perimeter, and the Second Battle for Bougainville was on. During the first few days of the battle all of the ^{the 1st Battalion} 746 batteries were busy supporting the perimeter, interdicting vital stream junctions, or harassing the Jap supply lines. (12)

The Japanese artillery was the most extensive yet encountered in the Pacific war. It was not being used, however, in a supporting role for the infantry. From their advantageous positions in the hills about the perimeter the 75's popped away at the American airfields. Numerous hits were reported on the fields, and some planes were damaged. There were surprisingly few duds. After a day or two these shellings took a definite pattern. At dawn and dusk the Jap guns would open up in their attempt to neutralize the airfields. There was no massing of fires, rather it seemed to be individual gun action. A single gun would open fire, send several projectiles on their way, and then cease firing. Their accuracy was excellent as it should have been considering the fact that they could boresight their guns if necessary. (13)

(10) Personal Knowledge; (11) A-1, p. 5; A-9, p. 20; (12) A-4, p. 40

(13) A-3, p. 8 & 9; A-7, p. 8.

This type of firing was proving to be difficult to combat by our own artillery. The Jap guns would not go into extensive action so that they could be definitely located, and the jungle made matters even worse. Photo interpretation proved most unsuccessful in locating gun positions. The time it took a forward observer to place fire on the area in which a gun was located was generally too long. The Jap gun would have completed its mission before the first retaliatory round landed. Obviously some new method would have to be employed. (14)

Corps Artillery decided to move several 90mm antiaircraft guns to the low hills on the perimeter and use their high muzzle velocity with relative flat trajectory in direct fire counterbattery missions. (15)

Battery D, 746 AAA Gun Battalion was to locate one gun on hill 608 in the area of Co. K, 164 Infantry. Reconnaissance determined that the most favorable position would be on the ridge just below the crest. (See Map C) A composite gun crew was selected from each section of the battery. This crew moved to hill 608 and began work on a bunker. Sand filled gasoline drums were placed in a double row forming a half circle. Ammunition ready boxes were built in each end of this wall with a covering of palm logs and sand bags. The position was complete and ready to occupy by the night of 13 March 1944. A bulldozer was used to emplace the gun. Shortly before dark it was in position, minus one outrigger which had to be removed. A settling round was fired, marking the final before operation check. (16)

INITIAL MISSIONS

The newly emplaced 90mm was designated as Gun No. 3, located on hill 608. Its mission was to silence the Japanese artillery on the opposite hills. Clearance to fire was not necessary as the artillery had priority to fire in this sector. (17)

On the morning of 14 March 1944 at 0710 a Jap 75mm opened up from the

(14) A-10, p. 22; (15) A-11, p. 143; (16) A-5, p. 22; A-6, p. 333; A-10, p. 25
(17) A-11, P. 143.

Slopes of hill 1111. The 90mm was quickly brought to bear on this position and fire commenced. Fortunately only a slight adjustment was necessary to go into fire for effect. This resulted in the silencing of the Nip cannon, but also brought something forcefully home to the gun officer. Up to this time no serious consideration had been given to fire control, as the guns were equipped with two elbow antimechanized sights mounted on either side of the tube. After three rounds had been fired it was impossible for the azimuth and elevation trackers to even see the opposite hills, much less the targets. Muzzle blast, together with dust and smoke made visibility through the scopes extremely difficult. The only immediate solution was to place an observer on the flank to sense deviations. These could be called to the gun and placed on the indicator in mil corrections. A pair of field glasses were procured and observation set up on the right flank. An opportunity to test this system was not long in coming. At 0720 and 0730 two more Jap guns opened up and were in turn silenced by the 90mm. (See Sketch D, Nos 2 & 3) Fire control was satisfactory with this method, however it was difficult to initially designate the target. At 0915 a camouflaged Jap position was spotted by the observer. Fourteen rounds of fire for effect turned this target into a mass of splinters, smoke, and smashed Jap equipment. (See Sketch D, No. 4) It was impossible to determine what manner of position this had been. (18)

At 1030 Marine fighter planes were putting on a show for the front line troops by strafing and bombing Jap positions in the immediate rear of hill 1000. S/Sgt. Jack R. Lewis, the gun sergeant, noticed an unfamiliar sound above the roar of the Marine planes and carefully scanned the opposite hill. After several minutes he discovered a well camouflaged Jap pillbox. From the roof of this pillbox a Jap heavy machine gun was taking the Marine planes under fire as they came in. The gun was leveled on this target and adjustment started. Initial increase in elevation was necessary due to the

(18) Personal Knowledge.

greater range, however the third round was on target. Several more rounds were necessary before the observer could clearly make out the target. Once exposed, the pillbox was hammered to pieces by 18 rounds fired at the maximum rate (only slightly more than a minute being required to get these off). This was the first example of reconnaissance by fire which was to be used quite extensively later in the mission. (19) (Sketch D No 5)

All was quiet for the rest of the day until the sun started settling in the west. As this had been a period in which shelling was accelerated, the gun crew stood by ready for action. Promptly at 1830 the now familiar "swoosh" announced that the Japs were still in business. This particular Nip cannon fired only one round, which brought such a hail of 90mm fire in his general area that he was willing to call it a day. Checking the data on the gun indicators made it apparent that this was the same gun that had been silenced at 0710 that morning. (Sketch D No 1) Apparently even the 90mm would have to be more accurately placed on these positions if they were to be destroyed. This was definitely proven when at 1845 the gun engaged at 0720 was again able to go into action. (Sketch D No 2) A total of 15 rounds were necessary to silence this crew a second time.

At 1858 a Jap howitzer went into action once too often. Five rounds of preliminary fire definitely disclosed a position, and 12 rounds of fire for effect positively destroyed this gun. (Sketch D No 1) It was the same piece that had fired at 0710 and again at 1830. The third time was fatal, as the previous neutralizations had cleared the area sufficiently for accurate point fire. Co. K's OP confirmed the destruction of this gun with warm words of praise. This ended the first day of action, which was a good preview of the days to come.

The crew was again standing by at dawn on the 15th. When no Jap
(19) A-5, p. 23; Personal Knowledge.

fire was immediately forthcoming eight more rounds were poured into the position that had been destroyed the night before. (Sketch D No 1) It seemed feasible that some evacuation of material might be underway at this time, and would justify additional firing. (20)

In the middle of the morning the Battery Commander's Scope arrived from the battery position and a new system of fire control was initiated. The BC scope made more accurate spotting possible, in addition to establishing a method of initial designation. Azimuth and elevation indicators on both the gun and scope were oriented in the center of the field of fire, and it was then possible to swing the scope to a target, read the data and give it to the gun. This would be sufficiently accurate to obtain a burst in the spotting scope, which could then be finally adjusted by use of the mil scale in the reticules (crosshairs). The mid range being fired was slightly less than 2000 yards, which made fire control even more simple. The projectile initially jumps to the left and then proceeds to drift to the right. At 2000 yards it is almost crossing the line of sight. Azimuth and elevation probable errors at this range are one mil each, certainly negligible. The only remaining problem was that of superelevation. (*) This was taken from the firing tables at from 10 to 15 mils and added to the angular height of the BC scope dependent upon the range. Communications were simple and foolproof. The gun was only some 15 yards from the scope hence fire orders could be given verbally to the crew. A sequence was devised to fit the situation which worked quite well. With the more powerful lens of the BC scope and the new system of control it was believed that destruction missions could now be accomplished. (21)

At 1015 Sgt. Lewis discovered what appeared to be a series of small bunkers not far from a suspected position. The new fire control system was

(*) Superelevation- the difference, in mils, between the angular height and the quadrant elevation necessary to pass a projectile through the target.

(20) Personal Knowledge; (21) A-5, P.23; A-6, p.333; A-10, p.26; Personal Knowledge.

employed with the second round being on target. (Sketch D No 6) Subsequent rounds resulted in small explosions and dense smoke arising from the target area. This was an ammunition dump, and a high priority target. A total of 32 rounds were expended to completely neutralize the area. The Japanese equivalent of an S-4 must have been pulling his hair during this episode, as all of the enemy ammunition had been carried by hand to the forward areas. The dump continued to smoulder for four hours. (22)

W. H. A. 2.
That afternoon (15 March 1944) communications from AAA Group came in, and with it control. Field wire had been run forward from an AA Battle-field Illumination searchlight position. This wire connected in with the searchlight battalion alert net to AAA Group. While not a direct line, this was quite satisfactory. (23)

Shortly after the field phone was installed a fire mission came through with an azimuth and range to an area to be neutralized. Sixteen rounds were fired into this area, with unobserved results. (Sketch D No 7) (24)

Co. K's OP excitedly reported at 1820 that they had spotted four enemy infantrymen in an open area to our right front. With some little searching they were located on the slopes of hill 600. (Sketch D No 8) Through the BC scope it looked as if they were taking a break before getting in their holes for the night. The 90mm was very carefully laid on this target as the first round would have to be within effective bursting radius. It was almost perfect, landing between two of the enemy soldiers, and leaving no trace of the four. An interesting phenomenon in this instance was the fact that the muzzle velocity of the 90mm is more than twice the speed of sound, consequently the Japs did not hear the sound of the gun firing before the shell had burst in their area. Truly they didn't know what hit them. (25)

The 16th of March was a quiet day in comparison. No Jap artillery was observed in action, and only three area missions were fired under the control of Fire Direction.

(22) A-5, p.23; personal knowledge; (23) Personal knowledge; (24) A-5, p.23, personal knowledge; (25) A-5, p.23; personal knowledge.

Work on the position had been going on steadily since occupation. As additional ammunition was being brought up daily from the battery position it was necessary to provide some storage place for rounds that could not be placed in the gun bunker itself. A heavily protected pit was dug on the reverse slope and palm logs used as racks for spaced storage. Additional layers of sand bags were placed on the ammunition ready boxes in the bunker. Each member of the crew dug a spider hole in the vicinity of the gun position. Although, it had not been openly mentioned, everyone realized that sooner or later the 90mm would draw some form of counterbattery fire.

The entire time on the hill the crew messed with Co. K . An improvised kitchen had been set up under the giant trees on the reverse slope where two hot meals a day were served. While not the best of food, it was adequate, and there were no complaints.

In the early morning hours of the 17th there was no response from the opposite hills. The crew was standing by and ready to answer any challenging Niponese guns. The enemy seemed reluctant to fire.

During all daylight hours one man was detailed to constantly scan the enemy terrain with the BC scope. This was a popular assignment usually manned by a volunteer. At 0935 the observer indicated that he had spotted something and a quick check was made. High to the right on hill 1111 there appeared to be a razorback ridge. (Sketch D No 9) Along this ridge a column of enemy troops were winding their way, oblivious of the fact that they were silhouetted against the sky. Azimuth and elevation were given to the gun to get off the first round. Both the first and second rounds were "overs" and lost in the valleys beyond. This was unfortunate for the Japanese, as they did not detect that the fire was aimed at them and continued to proceed on their march. The third round was a tree burst which caused at least two casualties among the column. This development caused an immediate and violent reaction among the enemy troops. Everyone was trying to get in a hole at once. The elevation was dropped three mils and fire for

effect began, with at least four more enemy being killed.

Shortly after the completion of this mission the first enemy attempt at retaliation occurred. From the reverse slopes of hill 1000 a Japanese howitzer fired three rounds at the 90mm. All rounds were over some 200 yards in rear of the position, again proving the point that the top of a hill is difficult to hit with artillery. This counterbattery was reported to Fire Direction Center so that our own howitzers could reply. (27)

The gun officer directed an experiment with some pre-cut fuzes to obtain air burst over suspicious areas as well as place fire on the reverse slopes of the opposite hills. This proved very successful with the standard 30 second mechanical time fuze being set at from three to four seconds. It was also found that an effective air burst could be obtained by this method on the area in which the march column had been sighted earlier. Another interesting experiment was that of firing the same 90mm round into the side of the hill with the fuze set to "safe". The projectile did explode causing mine action. This round would prove useful against bunkers, having the same effect as a PD round set to "delay". (28)

18 MARCH 1944

The 18th of March was probably the most eventful day of the entire operation. At 0700 the Japanese artillery again came to life and continued on their fruitless mission of interdicting the airfields. There was a gun firing from the extreme left of hill 1111 that could not be definitely located. (Sketch D No 10) Area fire was undertaken in an attempt to neutralize this piece. While this firing was going on a second gun began to fire at a much closer range, well down on the forward slope of 1111. As the flash of this second gun was clearly visible the gun officer decided to abandon the first mission and attempt to knock out the closer target. (Sketch D No 11) Again the 90mm proved its versatility. In less than two minutes it was traversed over 500 miles and dropped 40 miles in elevation, reloaded (27) A-5, p.22; personal knowledge; (28) A-10, p.26; personal knowledge.

and adjusted on the new target. It required four rounds to get on the target and go into fire for effect. Clearly illustrating the strength of both the Japanese bunkers and artillerymen, while this fire was underway with their position completely obscured by the smoke and dirt from the bursting 90mm rounds, the enemy continued to fire their piece. A slight adjustment was made on the elevation indicator and fire again placed on the target. The 18th round scored a direct hit through the firing aperture. There was a violent explosion and the roof of the now visible bunker jumped into the air. To be doubly sure an additional 15 rounds were poured into the bunker, pounding it into a shapeless heap. This action was witnessed by a large number of infantrymen in the area. They cheered the destruction of the enemy cannon with the same zest they might have used at a home town football game. (29)

At 1100 a distinguished visitor stopped by the position during an inspection tour. It was none other than Lt. General Harmon. He had been informed of the success being enjoyed by the gun and was anxious to see it perform. A two round demonstration mission was fired showing the speed and accuracy with which a target could be engaged. The men of the section were greatly impressed by the presence in the front lines of such a high ranking officer. Shortly after this demonstration several Nips were observed on the ridge line again. (Sketch D No 9) The azimuth and elevation that had been determined from the trial fire were quickly set on the gun. Sustained fire was immediately undertaken with precut fuzes. Some of the rounds were off in range along the trajectory, however at least four rounds had good effect, killing two of the enemy. (30)

At 1200 the Japanese again attempted to neutralize the 90mm with a greater degree of accuracy. A total of seven rounds were fired -- three short, then two over, and finally two almost on target. One of these last rounds hit a stump some five feet from the position and the other hit in the dirt (29) A-5, p. 24; personal knowledge; (30) Personal knowledge.

directly in front of the bunker. This latter round ripped the gasoline drums with shrapnel, but did no material damage. One member of the crew was slightly wounded in the seat of his pants. He would have come through all right had he obeyed instructions and taken the proper cover. The spider holes proved to be excellent protection during this action. It is still a mystery why the enemy gun did not fire again at their last elevation as they most assuredly would have gotten a direct hit. One explanation might be that the last round would have looked like a hit to an observer from across the valley. It was difficult to determine just where the Jap gun was located, however it seemed to be in the vicinity of hill 500 at a considerable range. The Jap howitzer was a 15cm roughly equivalent to the American 155mm. (31)

At 1920 the gun that had initially started the Japanese firing that morning again went into action. A second time it was impossible to exactly locate his position, however area fire neutralized him. (Sketch D No 10)

FINAL MISSIONS

The 19th, 20th, and 21st were routine days. Several missions were fired each day with average results. The most satisfactory targets were enemy troops on the ridge line, which had now been named "Nip Haven." A total of 12 more enemy soldiers were killed in this same area during this four day period. Twice Jap guns were silenced, but not definitely destroyed. A highlight of this period was a visit on the 20th by Admiral William F. Halsey. A demonstration was fired for his benefit, and he remarked that it was almost as good as the Navy, which was a compliment indeed.

All was quiet on the 23rd as well as the 22nd. The gun was given a thorough cleaning at this time, which it well needed. During the more active periods only the bore and breech mechanism had been given much attention. The 90mm can stand excessive rough treatment and still give excellent performance.

Early on the morning of the 24th the last effort and firing of the Jap artillery began. With typical tenaciousness, their target was still the

airfields. At 0625 a position was definitely located with the now usual results ... complete destruction. (Sketch D No 12) It required 24 rounds to annihilate this bunker. Close examination with the BC scope showed that this same general area had been blasted several times before. It was suspected that there was another gun in the same vicinity. At 1845 these suspicions were confirmed when the final Jap howitzer began firing. The 90mm could not claim a complete victory in this instance, as an American 75mm TD gun and another 90mm joined in the shelling. This combined fire power was too much for the Japanese, resulting in the destruction of one more of their field pieces. (Sketch D No 13) (32)

Thus ended the first recorded account of the 90mm Gun being used for direct fire missions in the Southwest Pacific. The results were more than gratifying. During the eleven day period a total of 51 missions were fired, consuming 648 rounds. In addition to the area fires and neutralization missions the 90mm had definite credit for four Japanese howitzers, one pill-box with machine gun, one ammunition dump, one camouflaged position, and at least 24 enemy soldiers not counting the crews of the howitzers. United States losses amounted to only the slightly wounded cannoneer, who remained at his position after his "accident". There were no losses in material or equipment.

The Japanese units on hill 1111 were later identified as the 1st and 2nd Batteries of the 6th Field Artillery regiment. Neither of these units evacuated any equipment from the area.

Her mission accomplished in an exemplary manner, Gun No. 3 moved back to the battery position to join her less illustrious sisters. (33)

ANALYSIS AND CRITICISM

The most outstanding criticism of the entire campaign from the artillery (32) Personal Knowledge; (33) A-5, p.23; A-1, p.6; A-9, p.24; personal knowledge.

standpoint was the failure of the Japanese artillery to effectively mass their fires. Almost no massing was accomplished and the piecemeal employment resulted in only harassing effect. Secondly, it was apparent from the first few days that there was not ^{an} sufficient volume to neutralize the American airfields, yet to the last the mountain guns continued to hammer away at these targets. The Japanese infantry was left to advance through the hell of ^{American} Division Artillery concentrations with little ^{of our Artillery} or no support. This failure ^{to change} the mission of the artillery was inexcusable, and contributed materially to the Japanese defeat.

The exposed positions of the 90mm guns must be classified as more than a calculated risk. This did result in the loss of one gun and most of the crew. (34) Against an enemy of near equal strength this type of position would result in certain and speedy destruction. While good firing positions were limited, greater emphasis could have been placed on camouflage and concealment.

This ^{direct fire} mission, entirely successful, should not be taken as a criteria for ^{ethical} employment of high muzzle velocity weapons in direct support. The standard tactics of alternate and supplementary positions, with frequent displacement are still desirable. The success of this mission was due more to Japanese inflexibility than ^{to} sound tactics on our part.

A team of guns would have accomplished better results. Mutually supporting, with direct communication, they could converge their fires against point targets, or quickly engage widely separated ones. This type of team would greatly reduce the chances of a single gun being neutralized by enemy direct fire weapons.

A fire control plan should have been thought of before the gun was actually engaged. Training with the antimechanized sights prior to the mission would have brought out their disadvantages.

(34) A-11, p. 143.

The Japanese continued use of the trail known as "Nip Haven" was foolish. Any military leader should know that once artillery has fired on an area it can again be placed in that general vicinity with ease and facility. After being caught twice in this death trap some system should have been employed to detour subsequent parties. Failure to avoid this area resulted in the loss of an additional 18 men.

The 90mm gun M1, less the AA carriage, is an ideal assault weapon. It embraces high muzzle velocity with great accuracy, fixed ammunition, and a high rate of fire. Even in its present mount it presents a low silhouette. In a self-propelled carriage it should be the equal to any gun of its type in the armies of the world.

LESSONS

1. Reconnaissance by fire is an extremely effective method of locating targets in the jungle.
2. Spider holes are the best means of open-hole protection against artillery fire.
3. A tripod mounted observation instrument is superior to field glasses for fire control.
4. Visitors to front line positions, accompanied by large staffs usually draw some form of fire from the enemy. *Not to be forgotten*
5. Fortified positions, even of log and earth construction, may require intense concentrations in order to be destroyed.
6. Time fire is the most effective method against exposed enemy ground forces. *Not to be forgotten*
7. Gunners as well as fire control personnel should memorize the data to prominent target areas. *Not to be forgotten*
8. All of the members of a unit should be trained to fire all of the weapons organic to that unit in order to facilitate composite crews. *not brought out*
9. When firing a high muzzle velocity weapon repeatedly from the same

position the ground in front of the position should be watered down several times daily to reduce dust.

10. When an enemy weapon can not be accurately located fire should be placed in the general area.