

3. NARRATIVE OF THE ATTACK

a. Artillery and Air Support

The artillery preparation for the XIX Corps assault on the Siegfried Line began on 26 September, when the 258th FA Bn, firing M-12 155mm SP guns, was given the mission of destroying all pillboxes which could be located on the 30th Div front. From 26 September to 2 October the battalion fired on a total of 45 pillboxes (all that were within its field of fire and observable) with varying success (see 4 b (1)).

The second phase in the artillery preparation was the "blackout" of the enemy's AA batteries. Over a period of 15 minutes just prior to the air strike a total of 51 different AA installations were fired on by XIX Corps Artillery, while VII Corps Artillery concentrated on another 49. This program was highly successful, since there was hardly any ack-ack reported over the target area and no planes were lost in the operation. The 30th Division Artillery participated in this "Blackout" of the AA guns which had been located and plotted by the Photo Intelligence Team and the Air O.P.'s of the Division.

The air-strike at H-120 was intended (1) to effect a saturation bombing of the breakthrough area and (2) to knock out by dive-bombing the pillboxes immediately facing the two assault regiments as well as (3) to knock out all reserves which could be used for immediate counterattack. For the 1st mission, however, IX Tactical Air Command was able to supply only nine groups of medium bombers (324 planes) while only two groups (72 planes) of fighter bombers were assigned to the second mission. From H-120 to H-hour there was a scattered overcast sky at the target. The medium bombers approached the target from the West, whereas the 30th Division had been advised that the bomb run would be made from the southwest and not over friendly troops. This conflict caused confusion among the mediums as they approached the target. As a result, only 4 groups of mediums dropped any bombs on the target area. The other 5 groups made wrong approaches and could not be corrected by ground contact. Consequently the medium bombing was almost a total failure, as all ground observers agreed. The two groups of fighter-bombers dropped their gasoline "jelly" bombs in close proximity to the pillboxes that were their target, when the waiting infantry of the 30th Division noticed them circling uncertainly and aided their aiming with red smoke laid on the exact targets by their artillery.

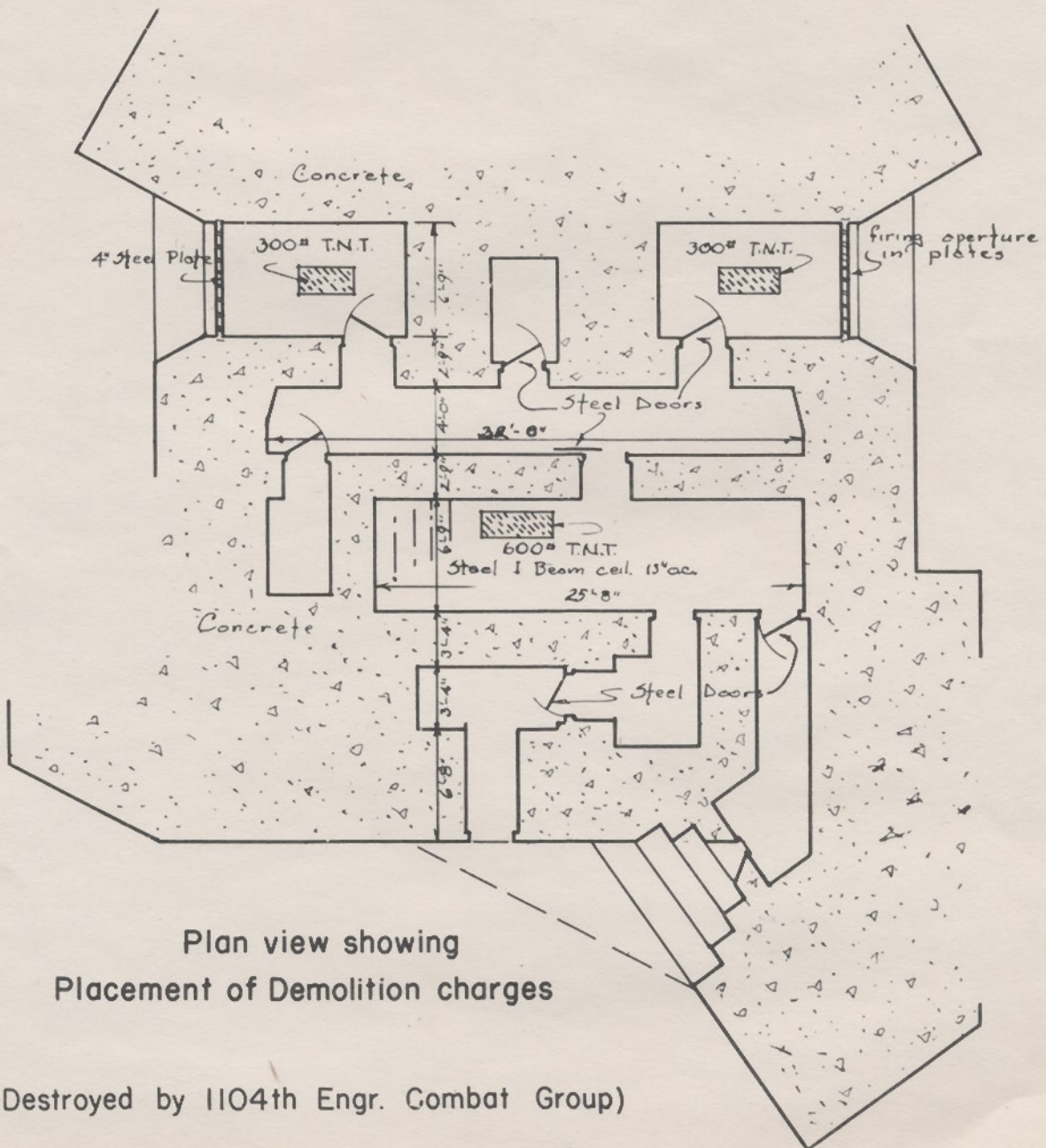
With the completion of the air strike at H-hour (1100), the two assault regiments, the 117th Infantry and the 119th Infantry attacked abreast. The 30th Division Artillery supported the attack with an elaborate program of prearranged fires. In this program the 4.2" mortars of the 92d Chemical Bn effectively cut wire and maintained a rolling barrage in front of the assaulting infantry. One of the main factors in the speed with which the 1st Battalion 117th Inf crossed the river and the railroad track, in addition to prior training, was the regimental plan for continuous use of all mortars until the last possible minute, and the shifting of mortar fire to the edges of the town when the battalions reduced the pillboxes. The 4.2" chemical mortars were assigned an area in front of both battalions with the mission of breaking all wire in the area, after which they took up a rolling barrage in front of the 1st Battalion. During this entire time the 81mm mortars of the entire regiment, employed in battalion batteries, fired on adjoining areas along the cliff on the north edge of PALENBURG. This continuous mortar fire, up to the time the boxes were reduced, absolutely prevented any outside assistance to the pillboxes. The regimental 81mm mortars of the 117th Infantry fired over 3000 rounds on the afternoon of the attack and a total of approximately 6000 rounds up to and including the capture of Alsdorf. The divisional artillery in the meantime neutralized likely assembly areas on the flanks and rear of the objective, being reinforced in this phase by battalions from both Corps and Army artillery. This program was greatly intensified over that originally planned, due to the fact that the air strike left most of the target area completely untouched.

The 30th Division Artillery plan virtually blanketed areas from which German fire could be brought to bear on the attacking infantry. 339 previously prepared concentrations were designated for use during the attack in addition to the 92d Chemical Bns 4.2" mortar barrages and other fires.

DEMOLITION OF PILLBOXES SIEGFRIED LINE



Sketch of Pillbox
Before Blowing



(Destroyed by 1104th Engr. Combat Group)

DESTRUCTION OF PILLBOXES SIEGFRIED LINE



This one by 400lbs.
of T.N.T.



This one by bulldozing
it underneath

Starting at H-hour, the XIX Corps artillery also fired approximately 50 counter-battery missions on enemy artillery locations which had been plotted and verified over the preceding five to six days. VII Corps artillery at the same time executed 31 counterbattery missions against batteries capable of firing into the 30th Div sector. In addition, several other counterbattery missions were fired on locations which were picked up subsequent to H-hour.

The AAA "blackout", the counterbattery program, and the neutralization of assembly areas were all greatly restricted due to ammunition shortage, as instead of firing five to six battalion volleys on each enemy battery location, it was only possible to put one or two volleys. The enemy's artillery fire was consequently not silenced, but was equally heavy in both the 117th and 119th sectors although the wooded terrain to the south made the enemy artillery in the 119th sector perhaps even more effective, due to tree bursts.

Summarized, the artillery with the XIX Corps fired 18,696 rounds of ammunition from 372 tubes between 0600 and 1800 on 2 October.

The total XIX Corps artillery that fired on the assault area was 24 battalions; these were divided as follows:

<u>Type</u>	<u>No of bns</u>
105mm Howitzer	11
155mm Howitzer	6
155mm Guns	3
8" Guns	1
240mm Howitzer	2
8" Howitzer	1
Total	<u>24</u>

b. The Infantry Assault

The assault of the 117th Inf was made at and just south of Marienberg. That of the 119th Inf was at and just south of Rimbürg. In the case of the 117th Infantry, the 1st Battalion spearheaded the attack and Company E was moved into position East of the Wurm River to protect the bridge site. Despite considerable small arms fire and heavy mortar and artillery fire, they pushed rapidly down the hill to the Wurm River. There footbridges, especially constructed by the 105th Engr C Bn, were thrown across in a matter of minutes, and the infantry streamed across. Then the first battalion went to work on the pillboxes. The second battalion moved out at 1430. Mortar and artillery fire was still heavy on the west side of the Wurm River, but the battalion maintained its momentum, quickly crossed the river, and began the assault of the pillboxes in its sector. By nightfall the first battalion had seized its objective, an area in and east of Palenberg. Together with the second battalion it had reduced 11 pillboxes, entirely without tank support. Co "I" was also pushed across the stream at the end of the afternoon. Casualties that day for the 117th Inf were 227, of which around 75% were caused by arty and mortars.

The 119th Infantry attacked at 1100 in a column of battalions, First Battalion leading followed by the 2d and 3d battalions. The 2d battalion was committed after the 1st battalion was held up. The thick woods on and in front of the steep slope that confronted the assault elements of the 119th Inf made impossible any observation of pillboxes or enemy movement within this area. The 155mm guns (self-propelled), used to demolish pillboxes in the sector of the 117th Inf and on the right flank of the 119th Inf sector, were unable to damage these in the woods. The effects of the jelly bombs were also negligible. No pillboxes were hit and the woods failed to burn because of the dampness and green nature of foliage and underbrush.

Artillery fire on the 1st Bn, 119th Inf, which attacked on the right, was relatively light initially, becoming heavier as attempts to assault the woods frontally were made. Artillery reaction on the 2d Bn in the vicinity of RIMBURG CASTLE and during the fight to the top of the ridge east of the castle was heavy and concentrated. Here, for a period of forty minutes, the enemy put over a battery concentration every five seconds. The enemy had direct observation of this area until several days later when the attack forced their OP's off the high ground to the



MAP SHOWING PROGRESS BY DAYS
OF THE
30TH INFANTRY DIVISION'S PENETRATION
OF THE SIEGFRIED LINE
DURING PERIOD 2 OCT TO 18 OCT. 1944

north and south of the breakthrough. Attempts to install a treadway bridge over the Wurm River near the castle during daylight were rendered impossible by enemy artillery. The bridge was finally installed at night but was subsequently knocked out twice and damaged several times.

The mission of the 119th Inf in breaching the Siegfried Line soon boiled down to the job of effecting a penetration of the woods, and then cleaning out the enemy that remained in them. Two enemy machine gun companies initially manned the defenses in the greater part of the woods and throughout put up a determined stand. (These were reinforced later by another company when approximately half of the woods had been cleared.) Observed artillery fire and mortar fire could rarely be used against this defense because of the closeness of the opposing lines. After the castle at RIMBURG had been reduced by the 2d Bn, the 1st Bn effected a penetration to the northeastern edge of the woods. It then swung its attack to the southwest to mop up the defenders in the woods and destroy the pillboxes. The steep slope around each pillbox was honey-combed with communication trenches and machine gun emplacements. When any break in the underbrush permitted artillery or mortar fire and friendly troops were drawn back to permit this fire, the defenders would go into the pillboxes for protection and man their outside positions when the shelling lifted. Tanks and TD's could be used on only a few of these pillboxes because of the steep slope and thick woods. Flanking these positions by moving around on the open ridge above the woods was prevented by direct fire weapons firing from vicinity of MERKSTEIN HOFSTADT (K845570). Clearing of the woods was accomplished after severe close-in fighting with opposing lines rarely getting further apart than twenty-five to fifty yards.

The Wurm River proved a serious obstacle to the attached tanks of the 743 Tank Bn and the attached TD's of the 803 TD Bn. In an effort to expedite the crossing of the vehicles, both the 117th Infantry and the 119th Infantry had made arrangements to put in so-called "expedient bridges" which were to be rolled into place by a tank dozer. These bridges had been successfully employed in practice stream crossings. They were composed of several culverts reinforced and protected by a bundle of logs. The whole was mounted on a sled. The plan was to have a tank dozer push the sled into the water, doze the bank over the culvert, and repeat the performance on the far side. (See photo) However in both regimental sectors on the day of the attack either the tank dozer got stuck or the "expedient bridge" itself got stuck in the rain-soaked banks of the stream. In the 119th Infantry sector the 105 Engr C Bn got a treadway in about 1515 but on reaching the far side all but one platoon of tanks became mired in the boggy meadow. The 117th Infantry's treadway was completed by 1830 but its tanks and TD's crossed too late to take any part in the first days fighting. Both bridges were constructed under artillery and sniper fire. By the next morning, however, the 247th Engr C Bn and the 1104th Engr C Gp had installed a treadway at RIMBURG and a Bailey at MARIENBERG.

On 3 October the 117th Inf, aided by tanks of the 743d Tank Bn and Combat Command "B" (CCB) 2d Armored Div, widened its bridgehead and cleaned out the town of Ubach. The second battalion 119th Inf, cleaned out the enemy strong point at the castle and advanced to the eastern edge of the woods in the rear of the castle. The first battalion got across the railroad tracks in the wooded area of the castle and attacked south against the flanks of the pillboxes that were interdicting a direct advance east. Three of these pillboxes were captured without any tank support. Marshy terrain canalized tank movement and prevented their use in this maneuver.

In the early morning of 4 October the enemy launched his first serious counterattacks, two against the 117th Inf and another against the 119th Inf. The first attack against 117th Infantry identified 1st Battalion, 352 Regiment, 246th German Infantry Division and 219th Engr Bn, 183d Division. The attack against 119th Infantry identified 2d Battalion, 149th Regiment, 49th Division. Not more than two companies were employed in these counterattacks, and they were repelled after a stiff fight. Our supporting artillery played a dominant role in breaking up these counterattacks. The 119th Inf was heavily engaged the rest of the day, however, and the 117th Inf had to beat off two more smaller counterattacks in the latter part of the afternoon. Ubach was the focal point of the operations this day.

CCB, 2d Armored Div, was passing through the town on its way east and northeast, while the second battalion, 119th Inf, and the 117th Inf were trying to organize attacks out of Ubach to the south. The enemy took advantage of this concentration to place the heaviest artillery fire on Ubach which our troops had ever received.

The following day, despite 99 counterbattery missions by the artillery, the hostile shelling was even more intense. The third battalion, 117th Inf, and the second battalion, 119th Inf, launched a coordinated tank-infantry attack south from Ubach. The former got held up by fire from a German cantonment on its left flank, but the latter reduced 11 pillboxes and reached the high ground east of Herbach. The other two battalions of the 119th Inf, still without tank support, made slow progress in cleaning out the woods facing the railroad tracks south of the castle.

CCB, 2d Armored Div outflanked and captured the pillboxes north of Palenberg on 5 Oct up to and including Frelenberg. In the face of strong anti-tank and artillery fire, other elements of CCB advanced northeast 2-2½ kms. CCA, 2d Armored Division, started coming across the Marienberg bridge at 1330 and holed up at dark one km east of Ubach.

On 5 Oct 1944, the 3d Battalion, 120th Infantry was attached to the 119th Inf and at 1530, 5 Oct 1944, crossed the Wurm River in the vicinity of Rimburg with the mission of attacking south in the gap between the 1st and 2d Battalions, and seizing the high ground south of Herbach. When leading elements of this battalion advanced to the line held by the 2d Battalion 119th Infantry, the battalion was ordered to make contact with adjacent units and consolidate positions for the night. Main enemy opposition after the battalion attacked at 1530, 5 October 1944, consisted of heavy artillery concentrations, coming from the east and small arms and 75mm direct fire from the vicinity of Herbach.

On 6 Oct, the battalion continued the attack to its objective. Prior to "H" hour, an enemy column of 80-100 infantry was observed to the front of this battalion and was dispersed by artillery and MG fire. On 7 Oct, this battalion was ordered to seize an objective 500 yds east of Herzogenrath. The route of this attack was generally cross-country. Direct fire coming from the vicinity of Herbach was reduced when artillery fired upon and forced the crews of two German 75mm AT guns to surrender.

The enemy defending in the open ground around the perimeter of the pillboxes attempted to withdraw when our tanks appeared but were kept in their foxholes by artillery time fire. 386 PW's were taken, and many were found dead in their foxholes due to time fire. Enemy in pillboxes in the vicinity of K849583, which was used as an OP, evacuated the pillbox and surrendered when the tanks approached. Pillboxes in the vicinity of K8754 delivered heavy MG fire, but the occupants of this pillbox surrendered when tanks fired 75mm guns into embrasures and the infantry began to close in.

It was noted that OP's and foxholes in open country were camouflaged with straw to resemble small haystacks. One enemy company commander occupied a position similar to this. Pillboxes with steel cupolas were apparently used principally as CP's with the aid of a very good periscope. Ports in cupolas make 360° fire possible for weapons as big as Model MG 42. PW's taken in the vicinity of Wurselen stated that 50% of the personnel had AT bazookas of smaller type. No AP mines were encountered. AT mines were not used extensively, except in the vicinity of Herzogenrath where they had been sown in great profusion.

The 120th Infantry Regiment, less the 3d Battalion in division reserve, aided the penetration by making feint attacks, and by seizing the populated area of Kerkrade west of the Wurm River, immediately south of the point of actual penetration by the 117th and 119th Infantry Regiments.

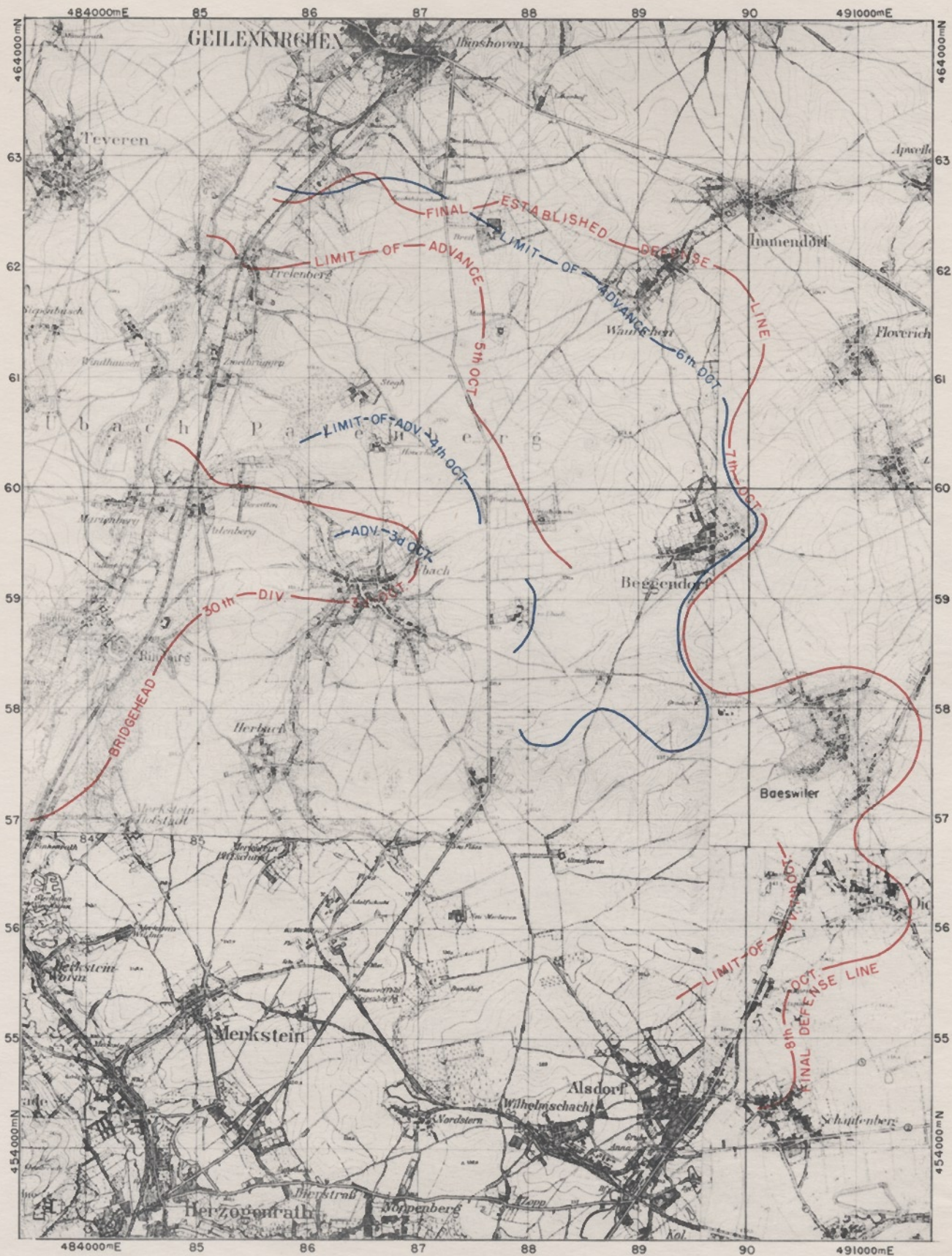
Operations on 6 October ended all German hopes of holding the Siegfried Line in the XIX Corps sector. At 0700 the enemy launched its strongest counter-attack against our forces, employing a maximum of two battalions, 4 assault guns, 2 tanks, and heavy artillery and mortar fire. The counterattack recaptured 4 pillboxes, forced the second battalion of the 119th Infantry to withdraw 800 yards, and caused considerable casualties before it was stopped. The lost ground, however,

SIEGFRIED LINE
AFTER OUR ATTACK



(US 33/721) 29 OCT 44 (F/24)//67T/RGP 1130

THIS WAS TAKEN 29 OCTOBER.
NOTE THE BATTLE SCARS WHEN
COMPARED WITH THE PHOTOS
TAKEN 28 SEPTEMBER.



was regained by nightfall, and the third battalion of the 117th Infantry on the 30th Division's left pushed down to zu Ubach. In the meantime, the first and third battalions of the 119th Infantry with tank support cleaned out the remaining pillboxes in the woods south of the Rimbürg castle. The enemy's efforts to check the penetration had definitely crumbled.

By 16 October the 30th Division had rolled up the Siegfried Line from north to south and it and the 2d Armored Division had completely destroyed the pillboxes along a 14 mile front, and penetrated 6 miles through the line.

c. The Armored Assault.

The shock action provided by the entry of the tanks into the battle played a dominant role in securing and holding the north half of the penetration and bridgehead in the Line. The German will to fight was appreciably affected by the penetration of tanks into the rear zones of the line.

The speed of the armored follow-up of the original infantry penetration and its immediate attack was unusual and extremely effective. The date lines of advance of the 2d Armored Division as shown on the sketch included herewith, indicate the extent of the original infantry penetration which the 2d Armored Division had available for deployment East of the Wurm River on 3 October. Due to factors other than enemy action, the advance N and E was halted on 7 October and attention was shifted S.

On 2 October CCB was alerted for movement on 30 minutes notice. At 1700A it was released from the 30 minute alert until 030500A as the bridging of the Wurm River did not then permit crossing. At 1300 on 3 October Task Force 2 (41st Armd Inf Regt - 3d Bn and one Co each 1st and 2d Bn; 2d Bn 67th Armd Regt with one Co. 1st Bn 41st AIR atchd; Co. C 17th Armd Engr Bn and one Platoon Co. B 702d TD Bn) started moving across the bridge on the Palenberg-Ubach road. In the late afternoon the 2d Bn 67th AR (-) (reinf) attacked through Ubach against strong German AT and artillery fire, secured the balance of the town, and occupied positions on the northern edge. Task Force One followed TF 2 the next day.

Tank losses by CCB from enemy action Oct 1-10 were 52 as shown below:

Type	Date - October							Total
	4	5	6	7	8	9		
Tanks light } total loss	1	6	5				3	
Tanks medium }							9	
Tanks light } Repairable	3	10	13	12	1	1	6	
Tanks medium }							34	
Tank destroyer, M-10	1	3					4	

Personnel losses October 1-10 were 29 officers and 309 enlisted men.

German prisoners October 1-10 taken by CCB were 984; an estimated 690 more were killed. 3 tanks, 7 towed AT guns, 14 SP AT guns, 3 ammunition carriers and 2 half tracks (Personnel carriers) were destroyed. 107 pillboxes were captured, of which 64 were destroyed -- the rest were used by CCB as CP's and personnel shelters.

The technique used most frequently to attack pillboxes was to concentrate heavy MG fire with an occasional round from the 75mm or 76mm tank gun at the pillbox firing port with a section of tanks. The remainder of the tanks fired on other pillboxes in the vicinity and various prominent features and entrenchments which threatened those working on the pillbox. Under cover of this fire the tank dozer moved in and sealed up the ports and doors of the pillbox. Another successful method was smoking the pillbox and moving in the tank dozer while other tanks covered boxes in the vicinity; the tank dozer, however, because of difficulty of observing his own work in the smoke, at times did not completely seal the ports.

An important lesson relearned was that artillery fire, as a rule, had little effect on tanks. A few tanks, however, were damaged slightly as a result of direct hits on critical points such as turretrace or gun mantle.

d. German Reaction to Breakthrough.

The attack started on 2 October. The 30th Infantry Division established contact with the 1st Infantry Division Northeast of Aachen on 16 October. In those two weeks the German reaction to our breakthrough and rolling up of the Siegfried Line was interesting, illuminating and ineffective.

Sometime prior to the attack here, German first priority for mobile reserves was given to the Metz-Nancy area; when the Airborne landings and British 2d Army thrust northward across the Rhine River at Arnhem and Nijmegen took place, that area took over number one priority; when our breakthrough materialized, it caused highest priority to be transferred to us. (For details see Table of German Reaction to Our Breakthrough in Appendix a.)

Summarized, in two weeks the Germans were able to rally only approximately 20 equivalent battalions to try to throw us back or contain us. To do this they had to go 100 miles north (2 Pz Div from North Holland; 116 Pz Div, 506 GHQ Tk Bn, and 108 Pz Brig from Nijmegen-Arnhem) and 250 miles south (Mobile Regt von Fritschen from Luxembourg; CT "Rink" of the 1st SS and the "Trier" Volks Gren Regt from Trier; and the 3d Pz Gren Div from the Belfort Gap). Such extreme distances for so few mobile counterattacking reserves speak eloquently of the thin crust that now comprises the western defenders of Germany. It is likewise significant that even these exertions were wasted by their piecemeal commitment of units as they arrived. No greater thrust reached us than 2 Bns of Infantry.

A major reason for the failure of all German efforts was our superb artillery at all times, and, when light and the weather permitted, excellent fighter-bomber air support. On a number of occasions, counterattacks were broken up by both methods before they got under way.

Another reason probably stemmed from the German lack of staff cohesion in the units then opposite us. The Divisions were hardly more than groups of Bns coming under the control of a staff carrying a Div number. No staff coordination or cooperation even on a Regimental, much less Div or Corps, scale had ever been achieved. The more than 600,000 PW's already taken by the Allied Armies in the West since 6 June caused far reaching effects, and the shortage of trained combat leaders and of Divisional and higher staffs was evident.

4. PILLBOX REDUCTION

a. General

The pillboxes were admirably sited to take full advantage of the defensive potential of the terrain. Their reduction, however, and the surrender of their occupants was realized through a variety of very simple but militarily sound methods. The elaborate, concrete strongpoint reduction technique as used on the Atlantic Wall and as taught at the Engineer and Infantry schools in the United States was neither used nor applicable. In reducing the pillboxes small arms fire through the embrasures played an important part.

German instructions for using the pillbox called for most of the personnel remaining outside in firing positions around the pillboxes. Only 30 or 40 percent of the pillbox complement would be permitted to remain inside the box; the box normally fired in only one direction and was dependent upon protection by adjacent boxes; neutralizing these adjacent boxes with direct artillery, tank and small arms fire permitted assaulting infantry to work around to the rear, unprotected entrance to the pillbox. If the pillbox personnel did not surrender by this time a bazooka or tank shell through the rear door would normally clinch the argument.

Once the 30th Division was through the pillbox line at Palemburg - Ubach it turned south. This rolled the pillbox line up from its north flank and rear.

Virtually as many methods were used as units engaged. All were simple and involved the same basic principle of a straight infantry assault on any small defended knoll. The most effective was probably the infantry platoon supported by 3 or 4 tanks working closely together with no special equipment other than a bazooka.

"We trained according to the War Department principles, which call for placing small arms on the apertures, working men up close

to use bangalores to blow wire, cook 'em with flame throwers, and then place charges against the pillbox itself. We kept small arms on the apertures. We did not use the flame-throwers at all, but found that bazookas were highly effective at 100-yard range. It was the bazookas more than anything else that reduced the pillboxes."

-Captain Richard J. Wood, S-3, 2d Bn, 117th Inf Regt.

"The careful training had little relation to the actual way in which the pillboxes were reduced."

-Major Ben T. Ammons, CO, 2d Bn, 117th Inf Regt and
-Captain Richard J. Wood, S-3, 2d Bn, 117th Inf Regt.

"Some pillboxes of course were tougher than others. But generally they were not as hard to reduce as was foreseen. They were in clusters, all inter-supporting and sited to cover each other by fire. But due to the limited traverse of their fields of fire, there seemed to always be one at least in a group, which, if reduced, permitted our men to start a circuit of the remaining pillboxes, using approaches to each succeeding one that could not be covered by fire of the remaining ones. The problem of course, was to discover the key pillbox to each cluster."

-Report of G-2, 30th Division.

b. Methods and Effectiveness of:

(1) Artillery

The effect of direct artillery hits on the pillboxes, except the 155mm SP gun and possibly heavier calibers, was not sufficient to destroy the box or prevent its future use. The concussion by a direct hit certainly discouraged not too strong-hearted defenders. The 57mm anti-tank gun, 75mm and 105mm were, except for direct hits in the embrasures itself, ineffective. They could remove the camouflage but little else. The 155mm howitzer required an uneconomical number of rounds to secure direct hits. The 155mm SP guns at ranges between 2000 and 4000 yards with a concrete bursting fuze penetrated the 6 feet of reinforced concrete with 3 to 5 hits. The 8 inch howitzers at 8000 yards could average a direct hit per 5 rounds, and penetrate after 5 hits.

The major contribution of the artillery fire was to drive external defenders inside, and to force defenders inside to come out and surrender after direct hits were secured.

"For nearly a week prior to our unit's crossing we manned static OP's and did considerable firing on pill boxes; the effect was almost negligible.....At one time a self-propelled 155mm gun was pulled up at the OP I was on and fired direct at a range of approximately 1500 yards. In 12 rounds fired he scored 7 hits. The only effect on the pillbox was about 4 feet of concrete removed and some dirt off the top. The enemy inside was probably shaken up by the impact but otherwise unhurt."

-2d Lt. E. Robinson, F.O. with B Co., 117th Infantry

"Our experience in the attack demonstrated that light artillery is almost worthless as far as destroying pillboxes even with concrete piercing fuzes; however in most cases it can be effectively used in cooperation with medium or heavy caliber artillery. We fired on suspected locations several times and knocked the camouflage material off exposing the pillbox for adjustment by heavy artillery. Another very effective system we used was to adjust on boxes and stay laid on them while the heavies or mediums fired on them. When the heavier artillery hit a box, the survivors (if any) often ran out of the box in an attempt to get away. We would then fire on them and the effect was usually very gratifying."

-Capt. Harley M. Force, Jr., 197th F.A. Battalion

"We have found that TD and 105mm projectiles bounce off of the pillboxes. They will rupture or penetrate when they hit in the embrasures. The 155 howitzer, using a CBF, will rupture and penetrate when an actual hit is made but on account of dispersion this requires about 25 to 30 rounds. Using the 155 SPGPF at ranges between 2000 and 4000 yards, a penetration is secured. Under 2000 yards the projectile disintegrates upon striking this concrete surface. Above 2000 yards using the CBF with 3 to 5 rounds we have penetrated six feet reinforced concrete. The M1-155 like the 155 howitzer has too much dispersion nor can it be brought sufficiently close up. The 8 inch howitzer is the best weapon we have to bust the pill boxes, when used at about 8000 yards. Below that range it has too much dispersion. A direct hit will disintegrate a pill box. It has taken an average of about 5 rounds to obtain a hit. In all cases the dirt has to be knocked off the pill box before it can be successfully engaged. We use 105 and 155 howitzers with HE delayed fuze for this purpose."

-Col. Otto Ellis, Executive Officer 30th Div. Arty.

"As an example of the ineffectiveness of artillery fire on the pillboxes, an M7 was brought up within 1000 yards of a pillbox and 24 hits were scored, none of which penetrated. Some smoke was seen emanating from the rear of the pillbox after one shot. The M7 then pulled out and an M12 (155mm SP) was brought up and seven hits were scored. One of these seven resulted in smoke coming out of the rear of the pillbox. One and a half hours later, the 197th Field Artillery Battalion was called upon to fire on the same pillbox because ten Germans had come out and were standing in the open."

-Lt. Col. D.V. Bennett, Bn Comdr, 62d Armd F.A. Bn.

"Shooting at a 700-yard range on 2 October, hits from an M12 knocked concrete off the pillbox, but did no other visible damage."

-Lt. Arthur G. Keller, platoon leader of 2d platoon, B Battery, 258th F.A. Bn, (155mm SP, M12)

"43 (pillboxes) were attacked by short range M12 fire, 1 by direct fire. M12 adjusted using fuze delay, switching to T105 fuze on obtaining the first target shot. Evidence of penetration was obtained on all targets."

-Lt. Col. Bradford Butler, Jr., 258th F.A. Bn.
(155mm, SP, M12)

"Artillery fire succeeded in the first step of the reduction of the pillbox, namely, to force the personnel from the supporting gun positions into the pillbox. This fire kept the personnel there while the tanks moved up to deliver close range fire, 30 to 50 yards in some cases. This blinded the pillbox so infantry could close in on the blind side."

-2d Armored Division

"Due to heavy artillery fire, the infantry was unable to move with the tanks. Consequently we had to have a thorough

artillery concentration (preparation) both before and during the time that the tanks moved in on the pillboxes. The preparation was on the dug-in positions so as to pin the enemy down, enabling the tanks to move without danger of "bazooka" fire. We found that time fire was most effective.

-Hq. 2d Bn, 67th Armd Regt.

(2) Air

Very little of the saturation bombing landed in the target area. Thus, no pillbox is known to have been affected by the air strike. PW's taken later stated that some of them had been asleep in pillboxes during the air strike and did not know the air strike had taken place. However, fire bombs dropped on pillboxes on the north flank were very effective on personnel dug in supporting the concrete installations. In the weeds to the south the fire bombs' effect was negligible due to the dampness of the ground and the fact that the foliage and underbrush was still green. From October 2 to October 25, 41 missions of close support were flown in the Division zone. Five enemy counterattacks were hit by air support, some of which were within 200 yards of front line troops. On 11 October, 14 squadrons were used to help break up a reported 50 tanks and considerable infantry in the Wurselen area.

"The saturation bombing on 2 October prior to the attack did no good. However two groups of medium bombers who came in late, seeing the red smoke marking in Palenberg for the dive bombers, came in and bombed, this with the operations of the dive bombers produced good results in Palenberg. According to PW's statements the personnel under cover were unhurt."

-Lt. Col. W.M. Johnson, Commanding 117th Inf., 30th Div.

"Having contacted many of our own personnel as to their findings and from information obtained from PW's it is the consensus that the air strike, preceding our attack on the morning of 2 October, was absolutely ineffective. PW's state that some who were asleep in pillboxes did not know the air had bombed."

-Lt. Col. H. E. Hassenfelt, G-3, 30th Division

"The air strike did not hit any of the pillboxes in the 117th sector. Palenberg was bombed quite effectively, but the net advantage of the strike was very little."

-Lt. Col. Robert E. Frankland, CO, 1st Bn, 117th Inf. Regt.

(3) Demolition charges

In general these were not used as the pillbox personnel surrendered before demolition was necessary. However, 26 three-and-four man demolition teams were attached to the infantry assault troops. These men carried bangalore torpedoes and satchel charges and aided the infantry by demolition work and checking for mines.

"Pole charges which can be carried by assault platoons cannot destroy a pillbox but may blow in the rear door or the armored shield of the gun embrasure."

- Report of the 30th Infantry Division

"In the assault of pillboxes the engineers were employed with bangalore torpedoes and pole charges with the assault platoon. The use of such charges was not found necessary if the tanks could fire into the rear door."

-Report of the 30th Infantry Division

(4) Bazookas

These were found highly effective in direct fire at the pillbox embrasures and for penetrating rear doors.

"We found that bazookas were highly effective at 100-yard range. When we fired bazookas on one pillbox, the occupants ran out from the gun section to the living quarters and then were apparently too scared to return. It was the bazookas more than anything else that reduced the pillboxes."

-Capt. Richard J. Wood, 2d Battalion, 117th Infantry

(5) Direct Small Arms Fire

This was used considerably and proved extremely effective. Many PW's stated that opening the firing embrasure immediately resulted in the man attempting to fire through it being killed by accurate small arms fire.

"By aiming for the embrasures heavy machine guns were able to keep the enemy down and also hit some between the eyes, as did the riflemen."

-Lt. Col. Robert E. Frankland, 1st Bn., 117th Inf. Regt.

"An officer PW stated that every time an embrasure was opened to fire MG's, the gunner got shot so they had to keep ports closed; that our use of pole charges and tactics of sneaking in behind pillboxes to attack and our method of reducing pillboxes and delivery of small arms fire is excellent."

-Lt. Col W.M. Johnson, Commanding 117th Inf., 30th Div.

"Officer PW's expressed amazement at the accuracy of our riflemen in the manner in which enemy soldiers and weapons were picked off thru the pillbox apertures by our riflemen."

-Lt. Kline, IPW Team, 30th Inf. Div.

(6) Bull and Tank Dozers

In some instances, particularly when the pillboxes were on flat or gently sloping ground, the rear door of the pillbox was sealed by a jeep-towed arc-welder; then both the rear entrance and firing aperture were completely covered with earth by either a bull or tank dozer. German PW's taken have expressed their fear of being buried alive after seeing and hearing of this technique. Pillboxes were also destroyed by demolitions after capture to deny their use to the enemy in the event of a successful counterattack.

"Tank dozers covered embrasures and entrances in the instances where these were low enough to the ground."

-Lt. Col. Charles G. Rau, 7th Armd Gp, reporting on statements of 743d Tank Battalion Commander.

"We seal the pillboxes with the tank dozer only as a temporary measure. Our engineers follow us up and weld the doors

shut. We found that dozing alone is ineffective, as is the method of blowing the handles off the doors. The tank dozer always drew unusually heavy enemy fire and was put out of action three times during the operation."

-Lt. Col. J. E. Wynne, 67th Armored Regiment

(7) Flame-thrower

In general flame-throwers were not used. Testing the flame-thrower however, within view of some pillboxes made the subsequent encirclement by the infantry immediately followed by the capitulation of the box.

"We have had no occasion to use (flame throwers) against pillboxes as the Germans defend mostly from the trenches on the outside. Yesterday we had captured a pillbox (and) by operating the flame throwers through the embrasure and around the corners we cleared out the fire trenches."

-Capt. Wayne, Exec. Officer, 1st Bn, 119th Inf.

"In the case of one pillbox in each of the two assault company sectors, flame-throwers proved the most persuasive tool in forcing the crew to capitulate."

-Lt. Col. Robert E. Frankland, CO, 1st Bn, 117th Inf Regt.

(8) Satchel Charges

As obvious from the above discussion, these were unnecessary.

"Satchel charges did not prove of value; in one instance we placed a 25-pound charge against the rear door of a pillbox and it hardly blew the door out of line."

-Maj. B. Emmons, 2d Bn, 117th Inf Regt.

(9) Tanks

Tank fire to reduce a pillbox was wasted ammunition except for using it as cover fire for attacking infantry and engineers. The tanks were of a great value in neutralizing adjacent pillboxes and closing with the pillboxes was a great inducement to surrender. As stated in the narrative of the attack above (par 3c), the first day's operations were entirely infantry and engineer assault; thereafter tanks assisted materially in the reduction of most of the pillboxes.

"In areas where there is not a concentration of pillboxes we found that you can with reasonable safety, outflank the pillbox. This is the fastest method and we used the following system. One assault platoon concentrates its fire on the pillbox and the other platoon covers them. In the assaulting platoon, one section concentrates heavy fire on the ports and the other section moves around to the rear flanks of the pillbox and lays heavy fire in the back of the pillbox. Generally, this forces a quick surrender."

-Hq., 2d Bn., 67th Armored Regiment

"The tanks, firing 76mm ammunition, would engage the pillboxes from the embrasures and blind sides. The 76mm gun blasted holes through the steel doors, causing casualties to any enemy inside the boxes."

-2d Lt. Jack Bennett, F Co., 41st Armored Inf. Regt.

"An artillery concentration on and around pillbox drove enemy bazooka teams into pillbox. The tanks deployed