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NOTES ON OPERATIONS AGAINST THE SIEGFRIED LINE

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1. Background.

a. Shortly after the VII Corps had breached the Siegfried Line on its front south of Aachen, a small group of officers of the Training Branch, G-3, Twelfth Army Group, visited the zone of action of that corps for the purpose of studying the details of construction and tactical dispositions of the obstacles and fortifications as well as the tactics and techniques involved. Thereafter these officers visited the zone of action of the V Corps who had penetrated into the Siegfried Line but not through it. Some of the following information was obtained by personal observation and other from commanders and staff members of corps, divisions and regiments.

b. A week prior to the present offensive of the XIX Corps, a representative of this Headquarters visited Headquarters, XIX Corps and the divisions of that corps and disseminated information that had been previously gained on the fronts of the VII and V Corps. Also some of the operations of the XIX Corps were observed during their offensive and additional information was obtained from commanders and staff members of the corps, divisions and regiments. It is believed that the information imparted to the XIX Corps was of benefit and with that in view, all ^{U.S.} armies, corps and divisions who have not contacted the Siegfried Line are being visited for the purpose of dissemination of information pertaining to operations against that line.

2. Description.

a. A typical section of the Siegfried Line consists of one or more bands of dragons teeth spaced from six to twelve miles apart with mutually supporting reinforced concrete emplacements dispersed throughout its depth. A band of dragons teeth consists of from six to eight rows of dragons teeth. The depth of each band is from 30 to 40 feet, the dragons teeth being approximately five feet apart in both depth and width. The dragons teeth are on a continuous base of concrete, consisting of reinforced concrete strips. The reinforcement of each dragons teeth consists of five 1½ inch steel ropes shaped to follow the contour of the tooth.

b. An antitank ditch is often found in front of a band of dragons teeth. This ditch is not of concrete but is only an excavation. Neither the antitank ditch nor the dragons teeth was an obstacle to foot troops, but only to track or wheeled vehicles. At the intersection of the bands of dragons teeth with roads, the dragons teeth effect is continued across the road by heavy steel "I" beams fitted in concrete recesses in the road bed. The density of these "I" beams was the same as the density of the reinforced concrete dragons teeth. In some instances, at the intersection of the bands of dragons teeth with improved roads, the "I" beams were fitted with a release mechanism that operates similarly to the trunk door of an automobile, i.e. when you raise the door once it will stay up and when you raise it again the release mechanism operates and the door

can be lowered. In other cases the "I" beams were either wedged in with wooden pegs or secured in the recesses with concrete. Usually, both in front of and in the rear of the "I" beams, a heavy hinged steel gate was found. These gates were sometimes locked and sometimes belted closed. Also, huge graters were often found in front of the "I" beams. In some instances road blocks were located on the road several hundred yards in front of the intersections of the bands of dragons teeth with roads.

e. The mutually supporting concrete emplacements that were dispersed throughout the depth of the position were from one to five rooms in size, usually consisting of three rooms. These emplacements were of reinforced concrete and were from six to seven feet thick on top, front, sides and rear. One or two embrasures were so placed as to provide supporting fire to adjacent pill boxes. These embrasures were "stepped in" to a $1\frac{1}{2}$ inch steel plate backed up by $2\frac{1}{2}$ feet of concrete. A port was in the center of each embrasure through which a weapon could be fired. These ports were usually about fourteen inches wide and ten to twelve inches high. Ports could be closed by doors or plugs of $1\frac{1}{2}$ inch steel backed by $2\frac{1}{2}$ feet of concrete. The rooms of the emplacements were used as living quarters for the garrison as well as storage space for ammunition and rations. Underground telephone cables furnished communication between emplacements and between command posts and emplacements. The emplacements were usually equipped for gas decontamination and had a ventilating system. The emplacements were constructed prior to 1940 and were to receive the 37 mm antitank gun which was the approved antitank gun of the German Army at that time. The present German antitank guns can not be fired from the emplacements. No antitank guns were found at any of the emplacements in the zones of action of the V, VII or XIX Corps. The only weapons found in any of the emplacements were small arms and heavy machine guns. Antitank guns were dispersed throughout the depth of the position and were often in the immediate vicinity of emplacements, connected with them by communicating trenches. The ports in the embrasures were so small and the field of fire was so limited that a machine gun final protective line was maintained. Little wire was found at any place throughout the depth of the position. Some mines were found on the approaches to the intersections of the bands of dragons teeth with the roads, and in some instances on likely approaches to the pill boxes.

3. Operations.

a. The breaching of a band of dragons teeth was similar to a stream crossing. A bridgehead was established, by taking out all weapons whose fire could be brought to bear on the point selected for breaching. In order to do this, reconnaissance was necessary to determine the location of the emplacements in the proposed bridgehead. The emplacements were especially well camouflaged. Having been built prior to 1940 and having been well covered over with earth, except for embrasures and entrances, vegetation has grown up over them and the emplacements have blended in with the background. At a very short range it was extremely difficult to recognize them, however, suspected localities could be picked up due to unnatural looking mounds. French maps showing the location of emplacements were not entirely accurate and were not complete. Emplacements could not be readily located on air photographs, however dragons teeth could be detected. In one instance a captured German map was found to be very complete and accurate. By visual reconnaissance, likely locations of emplacements could

be determined, and a patrol often confirmed that emplacements were located at suspected spots. An effective means of locating pill boxes was to fire tracer ammunition at suspected locations and if ricochets were observed, artillery was used to uncover the pill box.

b. Direct fire by tank guns and from TDs was used to support the advance of infantry in Infantry Divisions. Time fire was most effective in neutralizing the fire of antitank guns on the outside of the pill boxes. The crews of the antitank guns often sought shelter in the nearby emplacements and time fire on the outside of these emplacements would often keep the antitank crews from manning the antitank guns. Small arms fire and the fire of automatic weapons was most effective in supporting the advance of infantry. The fire of small arms and automatic weapons against the ports did not usually lift until sometime after the supporting direct fire of artillery, tanks, and TDs had lifted. It was found desirable that this small arms and automatic weapons fire be delivered against the ports until the last possible moment. This small arms fire was directed against the ports of the embrasures and was very successful in neutralizing the fire of the automatic weapons in the emplacements.

c. A short concentration of artillery fire usually preceded the attack by the infantry. In the attack against any pill box it was necessary to neutralize the fire of all of those which gave mutual support. After a bridgehead had been established to protect the point selected for breaching a band of dragons teeth, mechanical means had to be used to make a path through it. If the point of breaching was through reinforced concrete dragons teeth it was found that a 25 lb charge of TNT would destroy a small dragons tooth and 50 lbs of TNT was used to destroy the larger ones. These charges were tamped on one side and near the base. It was found desirable to take out two rows, in depth, of concrete dragons teeth in order to furnish an ample breach. Another means of establishing a crossing over the concrete dragons teeth was to use a tank dozer and establish a dirt ramp over the band. This method was not too satisfactory because tanks or vehicles would soon pack the earth leaving the tops of the dragons teeth protruding and the tank dozer had to be continually used, thus interfering with the passage of the vehicles.

d. At the intersections of the bands of dragons teeth with roads, several methods were used for removing the "I" beams from the road bed. If the "I" beam were equipped with a release mechanism as previously described, five or six men could lift the beam about one foot and when the release mechanism would operate, the beam could be dropped so that it was flush with the pavement and a steel door closed over the recess. If the "I" beam could not be removed in this manner a necklace of $\frac{1}{2}$ lb blocks of TNT was used to cut it off. In one instance a tank wrecker was used to lift the "I" beams from the recesses in the road bed. The steel gates in front and in rear of the "I" beams were removed by blowing the lock or bolts that secured the gate and then by swinging the gate open. In some instances both the lock or bolts, and the hinges were blown and the gate removed to one side. If the approaches to the intersections were mined, either with antipersonnel or antitank mines, these had to be removed. Any road blocks had to be removed. Concrete emplacements and antitank guns were found throughout the depth of the position.

e. After emplacements were captured it was found necessary to seal them so that German patrols could not infiltrate and re-occupy them at night.

The doors were in some instances spot-welded. In others, an explosive charge was used to blow the handle from the door after the door had been closed. The most popular method used was to cover all the openings to the embrasures with earth by use of tank dozers. If this last method were used it was found necessary to protect the tank dozers and the usual protection consisted of two tanks and approximately a platoon of infantry. When the tank dozer was not protected, German patrols often infiltrated and destroyed both the crew and the tank dozer. It was found inadvisable for our troops to occupy captured pill boxes as patrols would infiltrate at night and with grenades or otherwise cause casualties by raiding these occupied pill boxes.

4. Operations Peculiar to an Armored Division.

a. Due to the difference in proportion of infantry to tanks in an armored division, the methods used by an armored division were different than those used by an infantry division. Supporting fires are generally the same, however armored divisions advanced their tanks ahead of the infantry using a great deal of time fire, as compared to infantry divisions who use the attached tanks as supporting guns from hull-down positions. The infantry advanced behind the tanks and operated against the embrasures as described in the operations of an infantry division. After passing by emplacements, tanks operated against the rear of the pill boxes by firing against the rear door. Tank weapons do not penetrate these doors but the concussion of this close range fire is terrific and in many instances the tank fire alone caused the surrender of the garrison of the emplacement.

5. General Remarks.

a. The SP 155 mm gun, M-12 with the concrete bursting shell was the most successful gun in penetrating the embrasures of emplacements. One direct hit would, in every instance, penetrate an embrasure.

b. Nine groups of medium bombers and two groups of dive bombers supported the attack of the 30th Division on the front of the XIX Corps. Only a few of the bombs dropped by the medium bombers hit within the saturation area. The bombing by the dive bombers was accurate in that the bombs were placed in the saturation area, however it is doubtful if any direct hits were obtained on emplacements. German prisoners stated that the bombing was ineffective. It is not implied that future bombing, in support of troops operating against the Siegfried Line, will not be effective. It is only pointed out that in this instance the bombing was not accurate.