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Wesel

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RIVER

CANAL

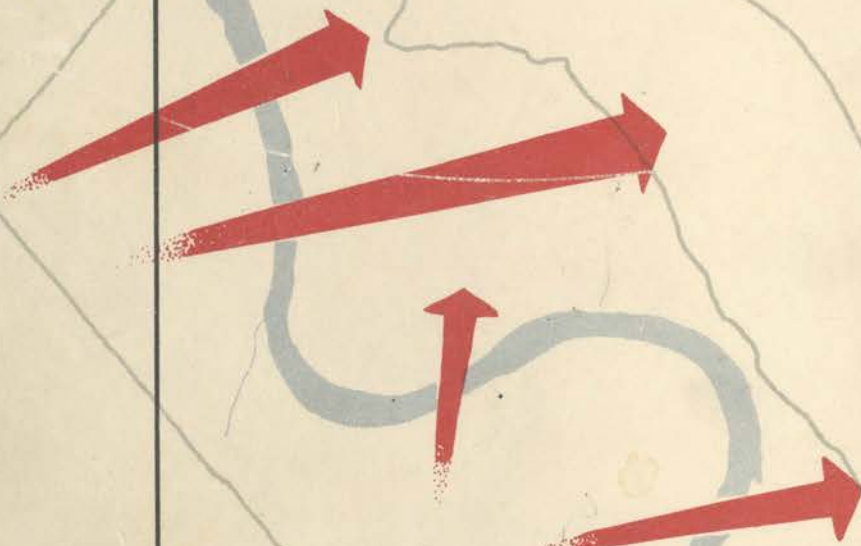
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ACCESSION NO  
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LIPPE



Dinslaken

Rheinberg

RHINE

Hamborn

Lintfort

RIVER

Mors

Homburg

Duisburg RIVER  
RUHR



UNCLASSIFIED

CROSSING THE RHINE  
WITH THE XVI CORP ENGINEERS  
24 MARCH 45

THE ENGINEER ACCOUNT  
OF  
THE CROSSING OF THE RHINE RIVER BY XVI CORPS

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Introduction

At 0200 on the 24th of March, the Ninth U. S. Army made the assault crossing of the Rhine River as part of Field Marshal Montgomery's 21st Army Group's attack to defeat the German armies. At the time of the attack the three Corps of the Ninth Army were abreast on the Rhine River; the XVI Corps was on the north, the XIII Corps in the middle, and the XIX Corps on the south. The XVI Corps attacked across the Rhine River between Orsoy and Wesel and secured a firm bridgehead. The XIX Corps and the XIII Corps passed through the XVI Corps' bridgehead south of Wesel and attacked in a northeasterly direction through Munster and Hannover and toward Berlin. This is the Engineer account of the crossing of the Rhine River by the XVI Corps.

Early in November of 1944, when it became evident that the major Engineer operation of making an assault crossing of the Rhine River must be planned and executed, higher Engineer headquarters began to accumulate the necessary hydrological and terrain data and issued instructions to lower units to begin making plans for an assault crossing of the Rhine River. As the military situation developed, it became evident that a major effort would be made in the American Ninth and British Second Army sectors. Early in February, 1945, the XVI Corps was instructed to prepare plans for crossing the Rhine River between Orsoy and Wesel.

In this area the Rhine River was between 1200 and 1400 feet wide and was bordered on each side by a low river flood plain. This plain, from 1000 to 2500 yards wide, was covered with wet meadows and crossed by numerous ditches. As the river is subject to floods, a system of dikes and jetties confine its flow during flood periods. The dikes which contain the floods in the Rhine Valley are known as the summer dikes and the winter dikes. The alignment of these dikes is irregular, resulting in floods in the area during high water. Where the natural banks are not high enough to contain the usual summer floods, summer dikes are constructed along the banks to give such protection. The higher floods which overflow the summer dikes are held by the winter dikes. The winter dikes are from twelve to fifteen feet above the surrounding terrain, although some are as high as forty-five feet and vary in width to fifteen feet. The sides slope from one to two to one to five. Many are used as roads with approach ramps built alongside. Between Orsoy and Wesel there is a fall in water level of the Rhine River of 2.55 meters in 20.56 kilometers.

The flood plain is of sand and gravel covered by alluvial clay and fine sand for a depth of approximately three feet. The ground water level is high; and, during periods of extended rain or high waters, traffic would be generally road-bound, although, as at the time of the crossing, this type of soil will carry all types of traffic when dry. West of the Rhine River plain from six to fourteen kilometers, there is a series of broken ridges twenty to seventy meters high which run parallel to the Rhine River. The area west of the Rhine River has sparse vegetation, especially on the high ground, although there are a few trees and shrubbery at some points near the river. The flood plain east of the Rhine is much narrower but has much of the same characteristics as that west of the river. The ridges run generally east and west perpendicular to the Rhine and rise approximately to 100 meters. There is a great deal of vegetation east of the Rhine.

East of the Rhine the enemy has several excellent observation posts afforded by the terrain as it rises towards the east. In addi-

tion, the high, built-up areas in the vicinity of Dinslaken and Hamborn also offer excellent observation posts. Fields of fire are very good and are, in general, limited only by the dikes and the built-up areas. Excellent cover is afforded by the dikes bordering the river and in the built-up industrial areas. There is no extensive concealment on the Rhine plain on either side of the River; although moderate concealment exists in the wooded area just east of the relatively narrow east plain.

Despite continuing heavy Allied pressure during the attack to the Rhine, the enemy forces west of the Rhine were able to salvage most of their artillery and armor and also much of their depleted infantry and move it across the river into initial assembly areas close to the river, where at least a semblance of order was brought out of the confusion and full advantage taken of the situation to readjust and redistribute his forces for the continuation of the defense of the Ruhr and the interior of Germany. The enemy strength, composition and disposition, were rather obscure. It was estimated that the equivalent of two infantry divisions, for a total approximate strength of 9,000 men, were holding the river line between Orsoy and Wesel; the 180th Volksgrenadier Division on the north and elements of the 2d Para Division with miscellaneous units on the south. These divisions were expected to be supported by approximately 27 light batteries, 12 medium batteries, and 5 to 6 heavy batteries of artillery, plus 50 to 60 active batteries of heavy AA spread throughout the sector. It was estimated that the enemy had a total of approximately 1200 AA gun positions in the entire area in our sector. It was also estimated that the enemy would have available for counter-attack on the first day of our attack a counter-attacking force of combat strength of 25 tanks and 8,000 men (116th Panzer Division). The speed of the actual assault forced the enemy to commit his reserves piecemeal in company strength. While earlier fortifications and constructions were located to defend against an attack from the Ruhr from the north, last minute construction and fortifications were designed to oppose an attack against the Rhine. The enemy attempted to take full advantage of the limited time available to him to improve his defenses. In order to directly oppose the crossing, the enemy dug in on the dikes, digging in around and in AA positions. There were weapons pits and individual foxholes approximately every fifteen yards on the dikes of which some were not occupied.

## II

### Preparation

#### a. Prior Planning

On November 24, 1944, the Corps Engineers of Ninth Army were assembled and instructed to prepare plans for the crossing of the Rhine in their sector. Flashpoint was the code name assigned to the crossing of the Rhine River by Ninth Army. From this period until the actual crossing of the Rhine many plans and studies were made.

On February 9, XVI Corps received instructions to prepare detailed plans for the crossing of the Rhine between Wesel and Orsoy. The engineer study began immediately. On 12 February, the commanding officer and some

members of the staff of the 1153d Engineer Combat Group were called in to assist the Corps Engineer with this study. The mission of the Corps was to cross the Rhine River in the vicinity of Rheinberg and provide right flank protection for the Second British Army which was to attack at Wesel and the area to the north. Target date of the operation was set at March 15.

On the 20th of February, the commanding officer and members of the staff of the 1148th Engineer Combat Group, which was closing in the area, was called to Corps Headquarters to help prepare the detailed engineer plans for this crossing as the 1153d Engineer Combat Group was preparing to support the assault across the Roer River. They worked on this project until the 28th of February, when the plans were presented and approved.

Preparation of the engineer plan was based necessarily upon the crossing equipment which Ninth Army stated would be available for Flash-point operation and on the number of troops which would make the assault crossing. The principal items of engineer equipment which would be available were:

Heavy Ponton Bridge	enough for 1 bridge
Treadway Bridge	enough for 3 bridges
Stomboats, 55 HP Motor	150
Assault Boats	500
22-HP Motors	250
LVT (Amphibious Tractor)	100
LCVP (Navy Amphibious Landing Boat)	24 (6 held in Army reserve)
LCM (Navy Amphibious Landing Boat)	24 (6 held in Army reserve)
Sea Mules (33-ton Tug Boats)	12
Power Utility Boats	20
M-29 (Weasel)	300
Class 40 Bailey Rafts	15
British Admiralty Netting	1200 linear yards

The crossing was to be made on a two division front, with one to three infantry and/or armored divisions passing through the initial bridgehead to push forward.

A very thorough and detailed study was made utilizing relief models, maps, aerial photos, and intelligence data accumulated, prepared, and furnished by higher headquarters. Possible bridge sites, ferry sites, and assault sites were located, studied, and evaluated. From this study a detailed engineer troop and engineer material requirements list was prepared and submitted. The engineer troop requirements were:

- 3 Engineer Combat Groups
- 9 Engineer Combat Battalions
- 3 Engineer Treadway Bridge Companies
- 3 Engineer Light Ponton Companies
- 3 Engineer Light Equipment Companies
- 2 Engineer Dump Truck Companies
- 1 Engineer Camouflage Company
- 1 Engineer Maintenance Company
- 1 Engineer Topographic Company

Certain basic decisions were arrived at and steps were initiated to complete the training and preparation of these units for the assault crossing. The crossing was to be made on a two division front, with the north division making the main effort in the vicinity of Wallach. The 30th Division, supported by the 1153d Engineer Combat Group, with five Engineer Combat Battalions, would make the north crossing with four assaulting infantry battalions and would have two tactical bridges in its area (one Heavy Ponton and one M-2 Treadway). The 79th Division, supported by the 1148th Engineer Combat Group, with two Engineer Combat Battalions, would make the southern crossing with two assaulting infantry battalions. They would be supported with two tactical bridges in their area (two M-2 Treadways), one of which actually would be in the 30th Division sector but would be used by the 79th Division. The Division Engineer Battalions would not be used in the assault operation but would cross the river as passengers in order to be fresh for work on the far side.

The supporting Engineer Combat Group (the 1103d Group with two battalions) would be responsible for the construction and maintenance of all the roads west of the Rhine. Inasmuch as there was an adequate network of good roads west of the Orsoy-Rheinberg-Alpen road, it was decided that this group would concentrate in building up the poorer roads leading to the actual bridge and ferry sites east of this road. It was necessary that all roads and bridges in this area be Class 70, have unlimited overhead clearance, and be able to sustain a maximum amount of traffic.

(On March 8 the final plan was prepared and approved, in which the only major changes were that each assaulting Engineer Combat Group would have four battalions and the supporting Engineer Combat Group would have two battalions; and the assaulting amphibious equipment would be divided up roughly on the basis of two to one, with the main effort (30th Division) receiving the larger amount.)

#### b. Training

In preparation for the assault crossing of the Rhine River, it was evident that every effort should be made to adequately and thoroughly train the assault troops which would participate in order to insure the success of this Corps. It must be remembered that during this period up to the 15th of March the Corps was actively engaged in the crossing of the Roer River and the pursuit of the enemy to the banks of the Rhine.

Early in February small detachments of the Engineer Combat Battalions were sent to Storm Boat Operators School to learn how to operate and maintain storm boats. The Corps plan called for the withdrawal of the divisions charged with the river crossing along with the necessary Engineer troops to the Maas River in the vicinity of Maeseyck, Holland, where the bank and current conditions resembled those to be encountered at the Rhine River, for the purpose of experimenting and training in river crossing. Early in March, the special amphibious equipment and their operating personnel were assembled at this site. On the 10th of March, the two assault divisions (the 30th and 79th Infantry Divisions) were closing in their training areas. The two

Engineer Groups which were to support the assault closed in the training area on approximately the 10th of March. The general plan of the Corps training program was that each division, together with its supporting Engineer Group, would train in all phases of the assault crossing with each unit practising its task until perfection was attained and all personnel were thoroughly acquainted with their duties.

Emphasis was placed upon the training of teams which would operate together. Operators were assigned to their boats, equipment and motors, and trained with the equipment they later used in the crossing. Infantry boat teams trained together and gained confidence in the assault and storm boats.

Methods of launching amphibious equipment were tried out. Experiments were conducted with improvised roads made of Sommerfeld Track with 2-inch planking fastened to it. Improvised bows were constructed and tried out on both the storm boat and the assault boat. Log booms were designed and constructed. The best fuel mixture for the outboard motors was determined. All the intricate details which accompany a river crossing operation were worked out.

The assault elements of the Divisional Engineers trained with their respective infantry units in all phases of the crossing of the river by use of the storm and assault boats. Each individual Engineer boat load received training so that it could operate as a separate independent unit capable of performing all Engineer tasks in case of casualties to the other boat loads. This training consisted of the destruction and removal of mines, the marking of cleared roads, hasty construction of bridges and roads, and practice in cutting passages through dikes by use of explosives and hand tools. The equipment and supplies to be carried by each boat load was determined. The remainder of the Divisional Engineer Battalions received training with the infantry in the crossing of the river in assault boats. Emphasis was placed on training in both mine removal and mine laying, hasty road construction, and gapping of dikes.

The Corps Engineer units, depending on their mission, trained in the operation of assault and storm boats, construction and operation of ferries, construction of hasty roads, the unloading and launching of amphibious equipment from transporters, construction of Treadway and Heavy Ponton bridges, construction of log booms, and the actual operation of the beaches on the near and far shore.

The Corps Engineer combat groups had the mission of training the divisions and supporting troops in river crossing procedure, in addition to training themselves. The assault elements first received familiarization training with the equipment and then day and night training in moving from the assembly areas to the river, loading on to the boats, ferries, LVTs, LCVPs, LCMs, and rafts, unloading and moving off the beach. This training was very detailed and thorough, and culminated in a dress rehearsal.

The other supporting troops which would take part in the crossing of the Rhine also received training. The 8th Armored Division practised day and night driving over Treadway bridges. Signal Corps teams practised laying telephone cable across the river. A DUKW company practised moving in and out of the water. The 747th Tank

Battalion, which was equipped with light tanks, was equipped with 100 LVTs and trained in their operation.

Throughout this period maintenance of all equipment was stressed and carried on. The 1468th Engineer Maintenance Company assigned a crew of outboard motor mechanics to each Group who lived and trained with the outboard motor operators. All the LVTs were overhauled by Ordnance. Navy personnel made last-minute checks on the LCMs and LCVPs.

It is felt that although the time available for this training was inadequate, that the movement to the final assembly areas was rushed, that some equipment was damaged, and that the familiarization of the individuals with the actual ground over which they were to operate may have been less than that desired, there is no question that the training received by the assaulting infantry elements and the confidence they had gained in their equipment and supporting Engineers was a major contribution to the successful crossing of the Rhine, as evidenced by the smooth operation of the assault phase. In the early morning hours of March 24, there were only three mechanical failures in all the motor boats and very few casualties to the assault troops while in the boats.

When the training ended on March 18, the immense task of moving all these men and equipment to the Rhine River began.

#### c. Reconnaissance

Reconnaissance of the area west of the Rhine was initiated as soon as the ground was cleared of the enemy. The Essential Elements of Information as far as the Engineer work was concerned were:

1. The trafficability of the ground - could wheel and track vehicles negotiate the flood plain?
2. Conditions of roads and their ability to withstand disintegration under heavy traffic;
3. Condition and profile of the river and its banks at each bridge and ferry site;
4. Areas affording cover and defilade on the west bank;
5. The extent of enemy organization of the ground on the far shores with especial emphasis on the location of mines and obstacles.

All possible means were utilized to gather the necessary information - Infantry-Engineer patrols, liaison planes, Artillery observers, and Engineer reconnaissance teams all contributed valuable bits of information. All critical information was checked by at least two independent sources.

The most valuable source of information was the Corps Engineer S-2 Group, consisting of elements of the S-2 sections of each of the



assaulting Engineer Groups and elements of the Battalion S-2 sections. This group reconnoitered the entire area, determined that portion of the flood plain which could be negotiated by vehicles and tanks, located and reconnoitered the ferry and bridge sites and their approach roads, and located all defiladed and covered areas. The results of their work is shown on the attached map. The S-2 sections of the 1103d Engineer Combat Group and of the 275th Engineer Combat Battalion (75th Division) completed independent reconnaissance missions which were intended to check the Corps Engineer S-2 Group's data. This group operated under the control of the Corps Engineer from 10 March to 21 March. From 16 March until 21 March each Engineer Group section concentrated on its own areas.

During this period the actual sites to be used were selected. The general area was first selected by map and aerial photo studies made during the planning stage. The Corps Engineer S-2 Group then made the actual ground reconnaissance for the location of the specific areas. The actual pinpoint location of each site was made by the Engineer troops, and in the case of the assault beaches, together with the infantry, which were to work at the sites. All engineer commanders and noncommissioned officers were able to make a personal reconnaissance over the ground which they would use.

In the 30th Division area, three beaches were selected over which each infantry regiment would assault in column of battalions. On both the near and far shore the beaches were flat or gently sloping to the water's edge, with from one to four feet drop from the bank to the water. The distance from the nearest dike to the water was, in the case of the northern beach (Red) 150 yards, the middle beach (White) 800 yards, and the southernmost beach (Blue) 500 yards.

The beach sites will be discussed in order from north to south. The M-2 Treadway Bridge site at Wallach would require 800 yards of road construction on the near shore and 200 yards on the far shore before tying to a good road net. Only minor work would be necessary to prepare the abutments. ✓

The Heavy Ponton Bridge site had similar characteristics as the M-2 bridge site at Wallach except that 500 yards of road had to be constructed on the far shore in order to tie in to the same road net.

The M-1 Treadway Bridge site at Mehrum would require about 500 yards of road construction on either side.

The ferry sites for both the rafts and the naval craft would require very little work to prepare them for operation, and they utilized the same road net as the two bridges at Wallach.

All of the LCMs, Sea Mules, and LCVPs, except three (which were unloaded at Red bridge), were unloaded about 300 yards north of the mouth of the Alter Rhine Canal. It had been planned to unload these boats in the Alter Rhine, where some cover was available, and moved from there into the Rhine; however, this plan could not be used as the water level dropped three feet and several obstructions were found in the mouth of the canal. The actual site selected was a twenty-five foot earth bank between two concrete docks. (The docks were not suitable because of their construction which would not necessitate the use of more powerful

cranes than were available.) Considerable work was done by tank dozers and angle dozers at this site to remove wreckage and to prepare standings for the heavy cranes and equipment.

No difficulty was experienced in finding sites on each beach for the LVTs. The site requirements were a gently sloping bank into the water with a fairly firm bottom.

In the 79th Division area more difficulties were experienced in locating good sites. Two assault beaches were selected over which two regiments would assault in column of battalions. In the 315th Infantry Regiment sector (northern sector) the primary consideration was the length of hand carrying for the boats. A northern limit was fixed at grid coordinates 267288, as the dike curved away from the river north of this point and there was a ten foot vertical drop here which meant greater exposure to enemy fire as well as haul. On the far shore the ground was inundated north of grid coordinates 274291. The area just south of these limiting points was selected as the assault beach. In the southern sector, the sector of the 313th Infantry Regiment, length of hand carrying was not a factor as the distance between the dike and the river was fairly consistent. Inasmuch as the infantry desired to cross as far away from the exposed right flank as possible, a 800 yard stretch of beach north of 266266 was chosen.

It was very difficult to find a good launching site for the heavy naval amphibious craft and Sea Mules. While there were two German ferry sites available, these sites were not considered as they were on the exposed right flank. The actual site chosen at 267288 was approved by the Naval Commander. The chief factor here was the existing road net.

The selection of ferry sites for both the rafts and the naval craft did not offer any difficulty at all and were based on the best available road net.

There were two excellent bridge sites for the M-2 Treadway Bridge at existing German landing stages on the southern flank but they were too exposed. A site was chosen which was on the division's left flank, and there was a minimum amount of road construction necessary.

#### d. Final Plans

After most of the vital reconnaissance had been completed and the many details of coordination ironed out by conference, the final plans were decided upon and orders were issued on 18 March. D-day was set at 24 March and H-hour at 0200, 24 March. There was to be an artillery preparation starting at 0100 and continuing until 0200 in the 30th Division sector and from 0200 to 0300 in the 79th Division sector.

The 30th Infantry Division, supported by the 1153d Engineer Combat Group, was to jump off at 0200 with three assaulting battalions, one battalion from each regiment making the assault and the remaining battalions of the regiments crossing in column. The assaulting battalions were to be crossed in four waves with two minute intervals between waves. The two leading rifle companies would cross in storm boats in two waves with

two minute intervals. The remainder of the battalion will cross in cross in double M-2 assault boats in two waves. The second infantry battalion would cross in LVTs and returning storm boats and assault boats. The third battalion would cross with all available storm boats and assault boats, fifteen LVTs, and three LCVPs. Supporting weapons would be carried in LVTs, LCVPs, and ferries.

The 79th Infantry Division, supported by the 1148th Engineer Combat Group, would jump off at 0300 with two assaulting battalions. The assault battalions were to cross in three waves at fifteen minute intervals. The first wave consisting of twenty-eight double assault boats and two storm boats. The second wave of twenty-one storm boats and eleven double M-2 assault boats. The first wave was to land on the far shore and return with the second wave to form the third wave. Succeeding infantry were to be taken across on company fronts. A maximum use would be made of ferries (infantry support rafts, treadway rafts, and Bailey rafts). LCMs and LCVPs were to move equipment and supplies over to the shore until the bridges were completed. In both divisions, until the bridges were completed, light tanks and TDs would be crossed by LCMs, and the medium tanks were to be crossed by Treadway and Bailey Bridges.

The division engineer battalion was to be moved across with their division and were to be responsible only for the preparation of landing sites for the amphibious equipment, i.e., LVTs, LCVPs, LCMs, and DDs, until relieved by the Corps Engineers. They were to be responsible for the engineer work east of the first dike on the east bank.

The Engineer plans are given in more detail. The 1153d Engineer Combat Group consisting of the following units:

- 202 Engineer Combat Battalion
- 258 Engineer Combat Battalion
- 280 Engineer Combat Battalion
- 171 Engineer Combat Battalion
- 234 Engineer Combat Battalion
- 989 Engineer Treadway Bridge Company
- Co E 17th Armored Engineer Battalion
- 180 Engineer Heavy Ponton Battalion
- 554 Engineer Heavy Ponton Battalion
- 73 Engineer Light Ponton Company
- 1355 Engineer Dump Truck Company
- 747 Tank Battalion, less Co C (operated the LVTs)
  - 9 LCMs with crews
  - 9 LCVPs with crews
  - 6 Sea Mules with crews
- 125 attached outboard motorboat operators from Ninth Army

were to support the assault crossing of the 30th Division. They were to construct and maintain a Class 40, M-2 Treadway Bridge in the vicinity of Wallach, a Heavy Ponton Bridge (reinforced) in the vicinity of Wallach, and one M-1 Treadway Bridge (to be constructed by the 234th Engineer Combat Battalion) in the vicinity of Mehrum. (Inasmuch as this bridge was to be constructed in the 30th Division area for the 79th Division, it was felt that it would be better to have its construction under the control of the Commanding Officer, 1153d Engineer Combat Group. Upon completion, this bridge was to be turned over to the 79th Division). This group was also to construct and maintain the necessary roads in

its sector and to launch and operate its river crossing equipage. To provide downstream protection of the bridge they were to install one log debris boom and one stagger debris boom and to provide a downstream water patrol.

The 1148th Engineer Combat Group with the following units attached:

- 187 Engineer Combat Battalion
- 149 Engineer Combat Battalion
- 1276 Engineer Combat Battalion
- 999 Engineer Treadway Bridge Company
- 70 Engineer Light Ponton Company
- 587 Engineer Dump Truck Company
- 9 LCMs with crews
- 9 LCVPs with crews
- 6 Sea Mules with crews
- Co C 747 Tank Battalion
- 160 attached outboard motorboat operators from Ninth Army

was to support the assault crossing of the 79th Division. They were to construct and maintain one Class 40 M-2 Treadway Bridge in the vicinity of Milchplatz. They would construct and maintain the necessary roads in their sector. They were also to launch and operate attached river crossing equipage. For protection to the bridges against floating objects, they were to construct and maintain one British Admiralty Submarine net boom, one log debris boom, and one stagger debris boom upstream of their bridge site, and they were also to provide an upstream water patrol.

The 1103d Engineer Combat Group with the following units attached:

- 208 Engineer Combat Battalion
- 625 Engineer Light Equipment Company
- 633 Engineer Light Equipment Company
- 3 Platoons, Company C, 84 Camouflage Battalion
- Headquarters U.S. Navy Detachment 122.5.3
- less 18 LCM and 18 LCVP crews
- Detachment C, 329 Harbor Craft Company
- less 12 Sea Mule crews

was to construct and maintain all roads up to the dikes until D-day. At D-day they were to stand by in general support and be prepared to support either or both assaulting Engineer Combat Groups.

The general plan and organization of both groups are worthy of great interest. The 1153d Engineer Combat Group planned to execute its Engineer missions by the task force principle.

1. Task Force Assault -- the 258th Engineer Combat Battalion, reinforced by 200 outboard motorboat operators from other units in the group and from Ninth Army, was to furnish, operate, and maintain all storm and assault boats for the crossing. Inasmuch as the training time was so short, it was believed that this centralized method would be the simplest and most efficient.

2. Task Force Heavy Boats -- the 202d Engineer Combat Battalion, reinforced by the 122.5.3 Naval Detachment, was to transport, unload, and operate LCVPs, LCMs, and Sea Mules and to construct and operate all ferries.
3. Task Force Roads -- the 280th Engineer Combat Battalion was to continue its present road work on roads up to the Rhine River and was to build 2-way approaches to the bridges and landing sites. On D-day, starting at H-1, it was to build 2-way roads or the equivalent to each bridge site and ferry site except to the M-1 Treadway Bridge for which the 234th Engineer Combat Battalion was responsible for road construction and maintenance.
4. Task Force M-2 Treadway Bridge -- Company E, 17th Armored Engineer Battalion of the 2d Armored Division, with Company C, 202d Engineer Combat Battalion attached, was to construct the M-2 Treadway Bridge.
5. Task Force Heavy Ponton Bridge -- the 180th Engineer Heavy Ponton Battalion, with A and B Companies, 554th Engineer Heavy Ponton Battalion and two companies of the 171st Engineer Combat Battalion attached, was to construct the reinforced Heavy Ponton Bridge.
6. Task Force Booms -- the 554th Engineer Heavy Ponton Battalion Headquarters and Headquarters Company, with one company of the 171st Engineer Combat Battalion attached, was to construct the stagger and log debris booms.
7. Task Force M-1 Treadway Bridge -- the 234th Engineer Combat Battalion with the 989th Engineer Treadway Bridge Company attached, was to construct the M-1 Treadway Bridge and its roads and approaches.
8. Task Force LVTs -- the 747th Tank Battalion, less Company C, was to operate the LVTs.

The 1148th Engineer Combat Group was organized to execute its mission on a more conventional manner. The 149th Engineer Combat Battalion was to support the crossing of the 315th Infantry Regiment by operating storm boats and controlling the operation of all types of ferrying equipment supplied to it. They were also responsible for the approach roads in their area. The 187th Engineer Combat Battalion had a similar mission in support of the 313th Infantry Regiment. The 1276th Engineer Combat Battalion with the following units attached:

70 Engineer Light Ponton Company  
 999 Engineer Treadway Bridge Company  
 9 LCMs  
 9 LCVPs  
 6 Sea Mules with operators  
 556 AAA AW Battalion (less one battery)

was to launch 9 LCMs, 9 LCVPs, and 6 Sea Mules in the Rhine River, construct the M-2 Treadway Bridge at Milchplatz, construct twelve Class 40 Bailey rafts, construct three booms, including one British Admiralty Net

boom, one log debris, and one stagger boom, construct and maintain approach routes to the bridge, establish an upstream river patrol, and take over the maintenance of the M-1 Treadway Bridge when released by the 1153d Engineer Combat Group. The last mission was to utilize the 55th AAA AW Battalion to protect bridges and ferry equipment and dumps on the sites, and to be prepared to cross one to two platoons on the far shore.

The following critical material and equipment was available for the operations and was allocated as follows:

	<u>1148</u>	<u>Allocated</u>	<u>1153</u>
Storm boats	80		160
55 HP outboard motors	100		200
Assault boats M-2	214		260
22 HP outboard motors	100		140
LVTs	35		65
LCMs	9		9
LCVPs	9		9
Utility power boats	12		12
M-2 Treadway	2		2
M-1 Treadway			2 (Reinf)
Sea Mules	6		6
Class 40 Bailey rafts	12		12
Life belts	5,000		7,500
Heavy ponton sections			10

A thorough study was made and detailed plans prepared to protect the bridges across the Rhine from being destroyed by any type of enemy action -- floating barges, floating mines, swimmers, air bombing, and artillery fire.

The defense against objects floating down the river such as mines, floating barges, and explosive filled motorboats was based on the use of a river block system, which for comparative thought is like a road block across the river. Starting at the upstream side of the upper (Milchplatz) bridge proceeding upstream there would be:

1. A submarine boom across the river of the British Admiralty Netting type.
2. A log debris boom to catch surface objects.
3. A stagger debris boom across the river which was to be made up of short sections of cable - log - buoy booms in depth.

As an additional protective measure against any propelled craft or explosive filled motorboats coming upstream against the bridge, two booms were to be constructed north of the downstream bridge in the vicinity of Wallach. The one nearest the bridge was to be a log debris boom across the river, with hog fence fastened to it to give it anti-submarine features. The furthest downstream boom was to be a stagger type boom. In the vicinity of Lohmannsheide, the Germans had destroyed a railroad bridge, two spans of which were left standing. Inasmuch as the debris from the destroyed spans effectively blocked the river, it was planned that the 275th Engineer Combat Battalion of the 75th Division

would improve this river block by installing a cable boom in the vicinity of the undemolished spans utilizing the existing piers for an anchorage.

Above the upstream or stagger boom and below the downstream boom was to be an engineer river patrol consisting of two Sea Mules or other motor propelled craft. The mission of this river patrol was to intercept any and all derelict barges or large debris objects and either beach them or anchor them. They were also to be on the lookout for Gamma swimmers who might swim down to the bridge and destroy it. Each river patrol boat was equipped with two .50 caliber machineguns, bazookas, a radio for communication with the Artillery, spare anchors, and prefabricated five-pound demolition charges. It was intended to drop one five-pound demolition charge every five minutes from each boat during the hours of darkness in order to discourage any attack by the Gamma swimmers.

As in all road blocks, in order to be effective, they must be covered with fire. Anti-tank guns and Tank Destroyers were emplaced along the dike all along the Corps front and moved into position on D-1. As a secondary mission they were charged with neutralizing any enemy small arms fire which might come from the east bank of the river. In order to protect against air attack, three AAA Gun Battalions, two AAA AW Battalions (SP), and nine AAA AW Battalions (mobile) were disposed through the area. One Battalion (SP) was attached to each Engineer Combat Group to protect their bridge trains in the assembly area and on the move to the river. Provisions were made to ferry across the river, at the earliest possible time, platoons of these battalions in order to afford a better defense. These battalions were also emplaced with the view of taking targets of opportunity floating down the river under fire.

One AAA searchlight battery was also available and disposed so that it could provide night illumination for the crossing and the construction of the bridges and normal AA missions. Fifteen CDLs (searchlights mounted in tanks) were available to illuminate the area of the booms. Two Chemical Smoke Generating Companies were available to smoke the entire area on call. It was planned to cover the entire area by smoke. Attempts were made to secure barrage balloons for the protection of the bridges against low flying aircraft.

The deceptive measures which were planned to be used during this period, outside of the demonstration by the XIII Corps to the south, was a demonstration in the south of our area to be done by the 75th Division. This was later cancelled. The Corps to our south were requested to emplace their TDs in similar manner, and they also had a road construction program similar to ours. Intermittent smoke was released for short periods of time along the entire front.

In order to effect close control over the wide-spread operations and to have a responsible representative of the Corps Engineer available to give any Engineer decisions on the spot, the Corps Engineer assigned a Deputy Corps Engineer with the authority to act for the Corps Engineer to represent him in the areas of each assault division. Each Deputy Corps Engineer was assisted by three officers of the staff of the 171st Engineer Combat Battalion of which at least one was on duty at the crossing sites at all times. These officers reported all items of interest direct to the Corps Engineer and acted as a liaison officer. In this manner the Corps Engineer was kept constantly informed as to what was actually happening at each site.

#### e. Communications

Due to the distances involved and the need for close coordination, the communication problem was great. More than 200 miles of wire were necessary to service only the Engineer units. Engineers started to lay their wire net ten days before D-day. The Corps Signal Officer ran a direct line from Corps Headquarters to each Group CP, a line to each bridge train, and a direct line from each Group CP to the Engineer dump at Lintfort. (Due to a change in plans, the 1148th Engineer Combat Group changed its CP location but the wire had been laid to its forward OP.)

Each Group laid wire to its subordinate units and to each bridge site and critical final assembly area. The 1153d Engineer Combat Group buried all its wires and as a result was never out of communication with its forward elements.

The Corps Engineer established an Engineer command radio net, utilizing the radios of the Reconnaissance Platoon of a Reconnaissance Squadron, 8th Armored Division, which was attached for this purpose. One radio was located at each bridge site, at each Group CP, and at the Corps Engineer's headquarters. Each Group established its own radio net between its CP, dumps, and final assembly areas.

In addition to the Corps liaison officers operating under the Deputy Corps Engineers, each Group kept one liaison officer on duty at all times at the Corps Headquarters. Two messengers with transportation from the 171st Engineer Combat Battalion were also on duty at Corps Headquarters.

#### f. Assembly of Materials

The Engineer supply problem of this operation was tremendous. Hundreds of tons of bridge equipment, materials, and engineer supplies had to be collected, assembled, distributed, and subsequently stored in the final assembly dump. The source of much of this material was from captured enemy stocks. The neighboring Corps Engineers gave every possible assistance with men, supplies, and equipment. Over 100,000 feet of steel cable, 200 anchors, 500,000 linear feet of lumber, 1,000 logs, and tons of steel were located, "liberated", collected and used. Lintfort was chosen as the site for the Engineer dump where all materials were to be collected and stored. Smaller dumps and bridge trains were located in the vicinity. ✓

Not only did material and equipment have to be collected, but much of this had to be assembled in the dump before it could be used. 8,000 feet of prefabricated road material was made by fastening 2-inch lumber to Sommerfeld Track. 200 Bailey anchors were made from Bailey Bridge panels. Bows were manufactured for the double assault boats. One of the more difficult tasks was the assembling of the twelve Sea Mules. After many delays, and in order to meet the dead-line for operations, the Commanding Officer of the 171st Engineer Combat Battalion was given the mission of assembling the Sea Mules. By working on a 24-hour schedule, all Sea Mules were assembled, tested, and loaded on the tank transporters by 22 March. ✓

One of the major tasks was the moving of the amphibious equipment to its final assembly points which, due to security reasons, had to be done during the hours of darkness. The 1153d Engineer Combat Group was ✓



responsible for transporting the amphibious equipment used at the training areas on the Maas River to the final assembly points. The only equipment which could carry these amphibious vehicles were M-19 or M-25 Tank Transporters. All of the available Tank Transporters (approximately 40) in Ninth U. S. Army were utilized at one time or another in this movement. Over a period of eight days, 100 LVPs (amphibious tanks), 24 LCVPs, 24 LCMs, 12 Sea Mules, 20 DDs, and four large crawler cranes were moved a distance of 100 miles to their final assembly areas. The LCMs and Sea Mules presented a special problem as on transporters they represented an object  $16\frac{1}{2}$  feet high, 15 feet wide, and 95 feet long, and required a special route over which the closest traffic control would be necessary. One Engineer company worked for two days in improving this route by demolishing houses, cutting down trees, and strengthening bridges. In spite of the heavy traffic demands on all routes leading to the front, this movement was made in two convoys without incident even though the route crossed and passed over the Main Supply Routes of two Corps and five Divisions, all of which were engaged in rushing troops and materials to the front. A signal wire team followed each convoy and repaired all wires torn down by the vehicles. (All signal officers concerned had received prior notice of the route that these vehicles would take and had been requested to raise the wires to a minimum height of eighteen feet from the ground.)

The deliveries of bridging, training equipment, and supplies to the forward assembly points was simplified by two means. The main road from Lintfort to Rheinberg was designated the Engineer Road to be used only by Engineer vehicles. 1500 standard signs were prepared which read "Bridge Priority", on a distinctive background, and were placed on all Engineer vehicles engaged in liaison, command, or supply work. These vehicles were given the right of way on all roads.

The assembly of the troops in their final assembly areas was an equally great task as all movement had to close during the hours of darkness. Commencing from 19 March, the Engineer units that could disengage from the training started to move to the areas by infiltration. On the night of 22 March, all Engineer troops and materials closed in their areas and were ready to move to the final assembly areas on the river.

### III

#### Crossing the Rhine

The preparation for the Rhine River crossing by the XVI Corps actually started on 11 March when the 1103d Engineer Combat Group started to reinforce and improve the road network leading to the banks of the Rhine. From this day until the actual crossing of the Rhine on the 24th of March, the weather was all that could be asked for; it was clear and dry. During this period, the level of the Rhine River also dropped. As a result vehicles could travel almost anywhere and many of our difficulties which were foreseen in road maintenance due to bad weather did not materialize.

Crushed rock stock piles were located in the immediate area and the 234th, 208th, and the 280th Engineer Combat Battalions (under

operational control until 20 March only) were assigned to improve and build this road network so that the roads could bear the maximum amount of traffic. On March 19, as the heads of the roads approached the Rhine River, they came under enemy observation and drew artillery fire, and it was necessary to work at night. Artificial illumination was provided during the remaining period until the 24th of March. At 1800, 23 March, all work ceased on construction of the roads and the work parties were moved out of the way so as not to interfere with traffic. At this time there existed two-way roads, or the equivalent, capable of sustaining all traffic up to the dikes at each ferry and bridge site. A total of six shovels were located at three rock stock piles ready to load trucks. Two platoons from the 208th Engineer Combat Battalion stood ready to patrol the roads in this area and to make emergency repairs. Two other platoons were sent to the Mehrum bridge site to assist the 234th Engineer Combat Battalion in the construction of the approaches to its bridge.

The actual crossing of the Rhine River will be presented by phases. At 0001, 24 March, the engineers making the assault crossing together with the assaulting infantry battalions and their storm and assault boats were assembled behind the dikes on the west bank of the Rhine. At 0100 the artillery preparation in the 30th Division sector began, during which 54 artillery battalions and 6 tank destroyer battalions fired 36,000 shells in one hour. During this artillery preparation, the assaulting engineers and infantry in the 30th Division area moved up to the water's edge. At 0200, when the artillery fire lifted and shifted to the 79th Division sector, the assault battalions jumped off, each in four waves with two minute intervals between waves. The boundaries for the first wave were marked by machineguns firing tracer ammunition. After the first wave landed, aircraft control lights were placed to mark the boundaries. All assault boats had modified bows consisting of simple 6-inch splash boards. There were very few casualties in the assault crossing. The supporting battalions started to cross at 0330 and the bulk of the infantry had crossed by 0600.

In the 79th Division area the engineers, assaulting infantry, and the storm and assault boats were assembled behind the dikes at 0200. After the artillery fire lifted, the first wave hit the water at 0305 and crossed with only three boats failing to make a successful crossing. This wave remained on the far shore until the arrival of the second wave in order to prevent confusion. The second wave left at H + 15 minutes and all boats made a successful crossing. The first and second wave then returned together to the original site. The third wave departed at H + 30 minutes and the crossing was again successful. All boundaries were marked by colored lights. In the 315th Infantry Regiment sector, three double assault boats without the modified bows swamped but the personnel were able to swim ashore.

Succeeding infantry of the remaining battalions were sent across on company fronts. At 0600 all of the personnel of the 313th Infantry Regiment had crossed. At 0730 all of the personnel of the 315th Infantry Regiment were across. At 1000 the ferrying of the 314th Infantry Regiment across the river was started and by 1345 had been completed. One battalion crossed in the 149th Engineer Combat Battalion area, and the other two battalions crossed in the 187th Engineer Combat Battalion area.

The fact that only three outboard motors failed to start properly in the entire assault operation can be attributed to the fact that each operator had operated and maintained his motor throughout the training period, knew the proper setting of his motor for cold starting, and, lastly, medical heating pads had been placed on the motors and covered with protective gas covers, thus actually warming up the motors. The success of this assault phase was due to the detailed planning and training which had taken place on the Maas River, where the details of coordination had been worked out to the finest degree.

The construction of the roads from the dikes to the bridge and ferry sites began at 0100 in the 30th Division sector. All available trucks were loaded with the prefabricated roadway and were standing by. In the 79th Division sector, cuts had been prepared in the dike of the 187th Engineer Combat Battalion area by placing cratering charges which were fired after the crossing of the infantry assault battalion. Bulldozers were available to smooth out this cut and traffic could pass at  $H + 1\frac{1}{2}$ . While an entrance existed through the dike in the area of the 149th Engineer Combat Battalion, some dozer work was required so that wheeled vehicles could use it. The tank dozer engaged in this task was driven off by an 88 mm gun and the job was completed by an engineer bulldozer. A total of 7,000 feet of road east of the dikes was built and constantly improved until the area west of the Rhine was turned over to the Ninth Army engineers. The road construction on the far shore presented a greater problem and required continuous work during the entire use of these bridges.

The use of amphibious landing craft, LCMs, LCVPs and Sea Mules, presented many problems. In the 30th Division area, the convoy of heavy boats became entangled in a traffic snarl in the narrow approach road and this was not straightened out until 0300. At 0250 LVTs were operating on all beaches and the preparation of the launching sites for the heavy boats had begun. At 0400 three LCVPs were launched at Red Beach and were being used. At 0500 landing sites had been prepared for the LCMs on the far shore but difficulty was being encountered at the LCM launching site because of enemy fire. By 0640 five LCVPs had been launched from the heavy boat launching site just north of the mouth of the Alter Rhine, which raised the total to eight LCVPs operating, two at Red Beach, and three each at White and Blue. The first LCM was launched at 0900. By noon, three LCMs were in operation at Blue Beach and six were operating at White Beach. None could be used at Red Beach due to the poor road net on the far side, but the heavy equipment of the left regiment crossed at White Beach. By 1200 most of the LVTs were idle and they were ordered to assemble at the rear of the winter dike at 1817. The only Sea Mule used by the 1153d Engineer Combat Group was launched at 1740 and was used as a river patrol.

In the 79th Division area similar difficulties were experienced in launching and operating the amphibious equipment. Nine LVTs were in operation by 0400 and all were used extensively throughout the day, making 107 round trips in the first 24 hours. They could not make direct crossings as they drifted 300 to 500 yards downstream; however, this did not present any difficulties as they did not require any special entrance or exits. Difficulties were experienced in moving the LCMs up to the river as they could not get past the 1276th Engineer Combat Battalion CP which was on fire after having been hit by enemy mortar fire. Upon reaching the site at 0500, it was found that they

could not cross the beach because of lack of roads and D-7 tractors were utilized to pull the trailers to the launching sites. The first LCM was launched at about 0600 but was promptly knocked out by artillery fire at 0800. The remaining LCMs were launched by 1900. The launching of the LCVPs began at 0700 and was completed by 1200. The most successful procedure utilized was to back the transporter into the water so that a combination of sliding and lifting by a 20-ton crawler crane could launch the boat.

The Sea Mules presented the greatest launching problem in the operation. In the 30th Division sector they were to be launched off a dock and the first Sea Mule was in the water at 1740. In the 79th Division sector, the Sea Mules and their transporters were bogged down on the beaches as no roads had been built to their launching sites. After a road had been built to the launching site by D + 1, the first Sea Mule was launched at 1200 on D + 1. Two more were launched by 1800 and the remaining three on D + 2. On the whole the use of the Sea Mules proved very unsatisfactory. They are not intended to operate in rivers and require very well trained crews to operate at all.

The LCVPs were by far the most useful of all amphibious craft. They ferried personnel and light equipment, and were used as power boats for propelling rafts and constructing the bridges. The use of the LCMs was not as successful as was expected. While they were used to transport TDs and other equipment, their very bulk defeated them for they were very difficult to control in case of motor failure. The LVTs rendered yeoman service in the 79th Division area. Ducks were also utilized with excellent success as both cargo carriers and general engineer utility boats around the bridges.

The use of standard ferries as differentiated from the units of LVTs, LCVPs, LCMs, DUKWs, and Weasels was much less than had been anticipated due to the light enemy fire and resistance.

In the area of the 1153d Engineer Combat Group, the only rafts used were two Bailey rafts and several Treadway rafts which were in operation at noon of D-day and were utilized to move tanks across the river during daylight only until noon of D + 1. There is no doubt that the rafting operations would have been much greater in this area if the enemy fire had been heavier and if the construction of the first bridge had not been completed so early. Five storm boats were successfully used to propel the Bailey rafts.

In the 1148th Engineer Combat Group area the picture was slightly different. Due to moderate enemy and artillery fire and the slow construction of the bridge, it was necessary to place greater emphasis on ferrying operations. The first Infantry Support Raft constructed was knocked out at 0430 but the remaining eight rafts were constructed and in operation by noon of D-day. These rafts were powered by three 22-horsepower outboard motors and, although the speed of crossing was quite slow, no other difficulty was encountered. A total of five Bailey rafts were constructed and operated during the first three days of the assault crossing, the first having been completed at H + 8 $\frac{1}{2}$ . The different methods of propelling the rafts used are of interest. The Sea Mules were powerful enough but were too clumsy and drew too much water to operate at all sites. Two power utility boats were found to be insufficient for proper operation. A combination of one LCVP and two power utility boats was found to be more satisfactory. Attempts were made to use 55-horsepower outboard motors attached to the pontons, but this proved unsatisfactory because of an error

in design of the bracket used to attach the motors to the pontons. It is believed that this method is worthy of further development. Five storm boats were used to propell a Bailey raft with fair success. The most satisfactory method of propulsion was the use of two LCVPs.

It must be emphasized that at no time during the operation was there any delay in moving equipment across the river due to lack of ferries.

It was not intended to start construction of the floating bridges until bridgeheads were secured which would prevent enemy fire on the bridges, as there was only a 40% reserve of bridge materials available out of which the three Treadway Bridge Companies would have to be re-equipped for operations on the east bank of the Rhine.

At 0600 smoke had been placed on the entire area. However, intermittent fish-tailed winds made it exceedingly difficult to cover the entire area and prevent observation by the enemy. During periods he did have observation on certain of the bridges and/or the assembly sites.

One of the outstanding feats of this river crossing was the construction of the M-2 Treadway Bridge at Wallach by E Company of the 17th Armored Engineer Battalion, with Company C of the 202d Engineer Combat Battalion attached. ✓

1 1/2 hrs ✓  
At 0430 the improvised approach road consisting of Sommerfeld Track and planking had been laid and gravel and crushed rock was being placed upon it. Construction of the bridge proper started at 0630. From 0647 to 0815 the Treadway rafts constructed were used as rafts and were later incorporated into the bridge. At 0830 it was necessary to change the alignment of the bridge 100 yards in order to take advantage of the existing road net on the far shore. At 1045 Engineers were at work building the approach road on the far shore. At 1530 this 1150-foot bridge was completed and at 1600 it was opened to traffic. Unfortunately, a Bailey raft carrying an M-4 tank floated into the middle of this bridge at 1840. The raft sank with portions of it still attached to the bridge. The damaged portion of the bridge had to be cut away with explosives and 7 1/2 hours later, at 0200 D + 1, the bridge was reopened to traffic.

The method of construction of this bridge is worthy of special mention. For two days both companies were engaged in inflating all floats and assembling the saddles and distributing beams in the vicinity of the woods near Alpon. All assembled floats were checked for leaks, serviced, and painted with luminous paint at the places where the Treadway sections would be placed in order that there would be a minimum of difficulty. The assembled floats were placed in rows of three high on both sides of the road and camouflaged so as to resemble hedges. Two columns of trucks could load simultaneously between these hedges. At the same time that the floats were being assembled, twenty dump trucks were fitted with racks for carrying the assembled floats to their sites and a special route was picked out to the construction sites. On the afternoon of the 23d of March, the dump trucks were loaded and preparations were completed. The plan of construction was to have three section assembling sites in addition to the actual bridge construction site, one of which would be downstream and two which would be upstream of the bridge construction site. It was intended that the float trucks and the Brockways loaded with Treadways and anchors would arrive at the site first. At intervals in column, fully loaded Brockway trucks would be spotted

for use in case extra bridge materials were needed. Stacks of spare parts, anchor cable, anchors, rope, and other equipment were to be placed at each site and extra spare parts were to be available to move up and down the shore on call.

After the assembly sites had been smoothed by a little bulldozer work, the first trucks arrived and the construction of the bridge started at 0630. Intermittent artillery fire slowed construction several times during the period, especially when the smoke screen over the bridge site lifted and permitted enemy observation. One of the assembly sites had to be moved a few hundred yards after artillery fire had registered on it. Another site had to be moved when the bridge was almost three-quarters completed because of the guy lines interfering with the movement of the assembled floats.

It was found that rafts of two bays were the most practical to be used in the assembly of the bridge because of the small power utility boats available. One 200-lb anchor was used upstream with a 100-lb anchor on every other float downstream. A total of 216 anchors were used. At 1530 this 1150-foot bridge was completed and waiting gravel trucks crossed to complete the far shore approach. At 1600 traffic began passing over the bridge while construction parties continued to improve the anchor system. The construction of this 1150-foot bridge in 9½ hours total elapsed time and while under enemy fire was a remarkable feat.

Construction of the Heavy Ponton Bridge (reinforced) was started at 0600, at which time the hasty approach road had been completed and was being covered with crushed rock and gravel. This bridge was completed at 0100 D + 1; but, due to necessary work on the far approach and on placing treads on the bridge, it was not opened to traffic until 0630. The bridge was approximately 1150 feet long. All the anchors used in this bridge were salvaged from barges along the Maas River and weighed from 200 to 500 lbs. This anchor system was later reinforced by Bailey crib anchors.

Construction of the M-1 Treadway Bridge at Mehrum started at 0630 but was forced to stop at 0700 due to observed artillery fire. Work started again at 0800. During the afternoon artillery fire knocked out 144 feet of this bridge but the bridge was completed at 0615, D + 1. Inasmuch as the bridge had been constructed by the use of guy cables, it was not opened for traffic until 0830 when additional anchors had been placed and a timber tread had been installed in order to pass ½-ton trucks. At 1000, a Sea Mule drifted against the bridge and damaged it but not sufficiently to close it to all traffic. By 1135 another Sea Mule had succeeded; by use of a tow line and anchor, in relieving the pressure against the bridge of the first Sea Mule, and restricted traffic could now pass over this bridge even though it had a pronounced S-curve in it. By 1700 the Sea Mule was pulled away from the bridge and the bridge was open to full traffic.

As foreseen, the southernmost bridge, the M-2 Treadway at Milchplatz, received a great deal of enemy attention in the way of artillery fire. At noon of D-day, two enemy radio operators were discovered in a slit trench close to the bridge site. Bridge construction started at 0800 and work progressed at a satisfactory rate in spite of light artillery fire. Progress would have been more rapid had more power utility boats or their equivalent been available. At 2330 approximately 720 feet

of this bridge had been completed when the bridge was knocked out when three LCMs struck it. One LCM had motor trouble and was drifting down on the bridge. Two other LCMs came up to aid the derelict LCM. All three boats struck the bridge and broke it about 240 feet from the shore. The break in the bridge necessitated the removal of all floats of the damaged section and the straightening of the alignment of the bridge behind the break. This was completed by 1200 D + 1. All during the day of D + 1 moderate artillery fire was directed at the bridge area although it is not believed that the enemy had any observation on the bridge. The Corps Artillery made every attempt to locate and neutralize the guns firing on this bridge. Artillery liaison planes were utilized but were not successful in locating the guns but did prevent shelling while they were in the vicinity of the bridge. During the morning artillery fire had knocked out seven pontoons. Construction was resumed at 1200 on D + 1 but proceeded at a very slow rate. At 1910, D + 1, prior to the completion of the bridge, the Corps Engineer issued orders that the 1148th Engineer Combat Group and the 1276th Engineer Combat Battalion would be relieved of the mission to construct the bridge and booms and nets of the area, and would be replaced with the 208th Engineer Combat Battalion and the 1103d Engineer Combat Group. Work was to continue on both booms and bridges until physical relief was made by the 208th. Actual time of relief was to be fixed by the Commanding Officer, 1103d Engineer Combat Group. Work continued on this bridge until it was completed at 1645 on D + 2 although light artillery fire still fell in the area and several floats had been punctured. Shortly after completion, artillery fire punctured several additional floats but these were replaced and the bridge was open to traffic at 1800, 26 March. The bridge was 1260 feet long. This bridge was strafed by an enemy plane at 2240 but no damage was done and the plane was shot down. This bridge was constructed using guy lines and great difficulty was experienced in attempting to place an anchor cable.

An item of interest is that when the enemy battery which had fired on this bridge was finally located on D + 2, sixteen battalions fired sixteen battalion volleys (TOT) and repeated this fire twenty minutes later. The battery was silenced.

Great difficulty was experienced in the construction of the booms for the protection of the bridges. In fact no boom was completely installed by any unit of the Corps. Starting with the upstream boom which was to be constructed to cover the undemolished spans of the railroad bridge at Lohmannsheide by the 275th Engineer Combat Battalion of the 75th Infantry Division. This unit designed and constructed an excellent boom to be placed in the vicinity of the undemolished spans of this bridge. The boom was first constructed and placed under moderate enemy artillery, small arms, and machine gun fire on the night of D-day. An unlucky artillery hit severed the main cable and the boom broke loose. A second boom was constructed, partly from the salvaged portions of the first boom, and was put in position on the night of D-day. On the morning of D + 1, a 20 mm projectile from strafing aircraft hit the main anchor cable and again broke the boom. On the third attempt to place the boom during D + 2, the boat pulling it into position had motor trouble and was forced downstream by the current, fouling the boom along the shore.

The 1276th Engineer Combat Battalion, believing the log debris boom the quickest and easiest to construct, attempted to install this boom first. After assembling the boom on shore, they found it impossible

to tow the boom across to the far shore. When relieved by the 208th Engineer Combat Battalion, this battalion had the Admiralty Net spread out on the ground in the vicinity of the site but did not have the net assembled.

The 208th Engineer Combat Battalion, which relieved the 1276th Engineer Combat Battalion on D + 1, succeeded in putting in some elements of the stagger boom but did not complete this boom prior to the XVI Corps turning over the bridges and everything on the river to Ninth Army on D + 3.

The 1153d Engineer Combat Group did not attempt to place its booms until D + 1 due to the unavailability of any power boats to tow it. The log debris boom was constructed on shore and towed across the river but broke loose before it was completely installed. Some sections of the stagger boom were in place when the project was turned over to the Ninth Army.

It must be emphasized that the placing of a boom across a 1200-foot stream with a four to five mile-per-hour current is not a simple matter but is a major task. It is believed that the best solution in bridge protection during the assault phase in a stream of this width is a stagger boom made up of hundred foot sections of an ordinary log boom.

Barrage balloons were flying around the bridge sites by 1805 of D-day. Although some officers believed that they drew enemy fire and accurately located the bridge sites for the enemy, this can hardly be true as they were dispersed over such a wide area at each bridge site. No attempt was made by the enemy to destroy the bridge by floating objects, explosive filled motorboats, or Gamma swimmers even though there were several false alerts.

At 2330, 26 March, the Corps Engineer prepared to turn over all Engineer work and installations on and west of the river to Ninth Army, and orders were issued reorganizing the Corps Engineer units so that the present assaulting Groups (the 1103d and 1153d Engineer Combat Groups) could move forward to support the attack on the other side of the Rhine. The 1118th Engineer Combat Group consisting of those units which were to be released from the control of XVI Corps was to remain in the area of the Rhine River and to maintain all roads west of the Rhine River, maintain the bridges, conduct salvage operations, and complete the construction of the booms.

At 1200, 27 March, the 1118th Engineer Combat Group with attached units reverted to the control of Ninth Army, and Ninth Army took over the control of the Rhine River and all roads leading to it. At 1200, 28 March 1945, the Headquarters XVI Corps moved across the Rhine River in preparation for its final attack on the Ruhr Valley.

#### IV

#### General Remarks and Conclusions

The planning for a river crossing operation of this scale should be as thorough and as detailed as possible. However, it is believed



that the plans should be general in nature until the final plans have been decided upon by the troops which are to execute the crossing. At that time detailed plans must be worked out.

In this crossing the organization of the 1153d Engineer Combat Group, which had been formed into task forces charged with the execution of definite missions, was superior to and much more economical in manpower than the conventional method used by the 1148th Engineer Combat Group. It is believed that Combat Engineer troops should not be attached to ponton or bridge companies or battalions for the construction of a job. The reason for this is that in many instances the bridge construction party may have to fight to secure its bridgehead and also the fact that the bridge companies sometimes lack that feeling of urgency in the construction of a bridge which demands the utmost in effort (it must be noted that E Company of the 17th Armored Engineer Battalion was a superbly trained organization which had a maximum of actual combat experience and actually was a unit of the 17th Armored Engineer Battalion of the Second Armored Division).

Due to the short time available for training on the Maas River, it is believed that better results would have been obtained if the assault battalions only of the infantry had received extensive training in assault tactics (this was done), the Engineers had concentrated in the remaining time on specialized training in order to be completely trained in their individual tasks, and the rest of the division had received only slight training in loading special items of equipment onto the rafts, LCMs and LVTs.

The thorough training and detailed planning which went into the preparation of the assault crossing resulted in a superb execution of this task. Some of the details which contributed the most to the successful execution were:

1. The wedding of the Engineer crews, their boats and the motors they were to use during the crossing early in the training period, as this assured proper maintenance and gave the crew members complete faith in their equipment. This confidence was passed on to the assaulting infantry in their training period.
2. The use of Medical Corps chemical heating pads to warm up the engines of the outboard motors.
3. The modification of the double assault boats by adding a 6-inch splash board.
4. The intricate system of marking the boundaries of the assault waves by the use of overhead tracer machine gun fire, inter-aircraft control lamps placed on the far shore by the first wave, and colored lights placed on the near shore facing the east bank and also facing the approaching troops on the west bank, and the use of luminous buttons and tracing tape to accurately mark the approach routes to each boat landing site.
5. The marking of the helmets of all Engineers engaged in the river crossing (1153d Engineer Combat Group area) with white

paint in various simple, distinctive designs for each different assignment.

An item of interest was that the entire Ninth Army was screened for trained motorboat operators and all available were placed on temporary duty with the assaulting Engineer Combat Groups for the crossing.

It is believed that the use of amphibious naval craft in an assault crossing of this type should be carefully considered. The use of the LCVPs was very successful; however, a better means must be found for launching them into the water. It is believed that the LCMs should not be used because they are too heavy and too difficult to launch and too ungainly in river, with swift currents. It is believed that better results can be obtained by the use of more power utility boats. There is a need for a more powerful power utility boat than what is now available. The performance of the Sea Mules was very unsatisfactory. Their bulk and 6-foot draft made them exceedingly difficult to control. It is not believed that they should be used on any river under any circumstances.

During the construction, three of the four bridges constructed were damaged by derelict boats or rafts. Whenever possible all rafting and boat operations should be done downstream of the bridges. No raft or boat should be permitted to operate closer than 100 feet upstream of a floating bridge. All rafts and boats should have substantial anchors and those responsible for the operation of the boats must be made to understand that these anchors are to be used immediately upon loss of control of the craft.


The DUKWs and LVTs did excellent work and were very successful.

The outstanding success in the construction of the M-2 Treadway Bridge at Wallach was due to careful and detailed planning, thorough training, and the prefabrication of float saddle assemblies back in the rear area. This prefabrication permitted a minimum of congestion at the assembly sites, and substantially reduced the time of erection. The superiority of this method was convincingly proven in a comparison on the job of the construction of this bridge and the M-1 Treadway Bridge at Mehrum of which only 75% of the floats were prefabricated and the M-2 Treadway Bridge at Milchplatz where no prefabrication was done.

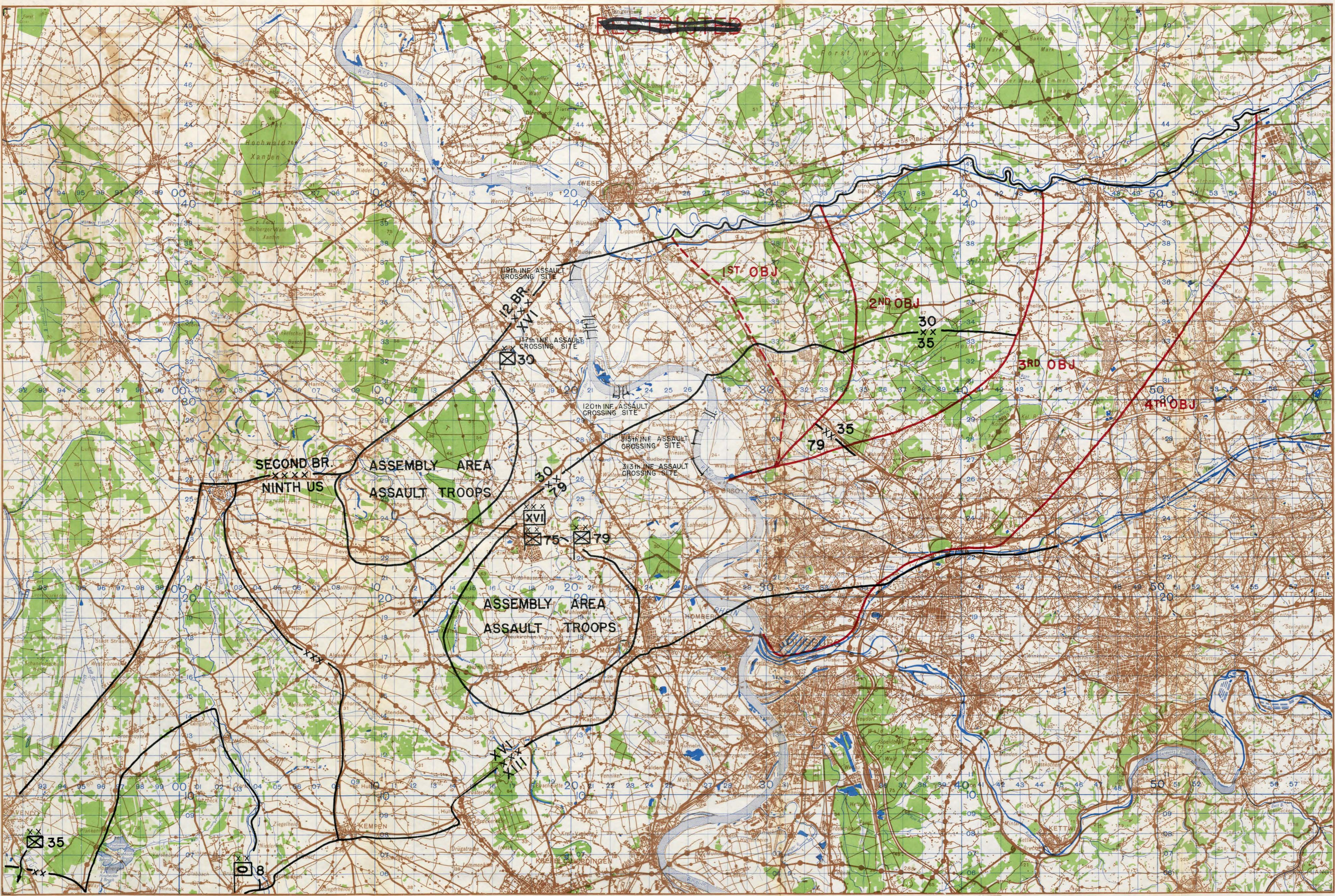
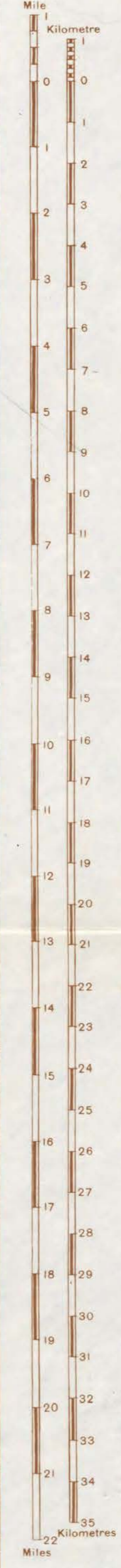
In the construction of booms over wide rivers, serious consideration must be given to the problem of towing the boom across the river. It is believed that the most effective defense against floating mines is the stagger boom made up of sections of an ordinary log boom 100 feet long and anchored at each end and placed in an irregular pattern of overlapping sections so as to cover the entire river. The use of prefabricated Sommerfeld Mat with planking attached to it (which was intended to operate satisfactorily under the worst possible conditions of soggy ground) was highly satisfactory. Due to the excellent weather, both prior to and during the actual crossing, road maintenance was not as great a problem as had been foreseen.

It is believed that smoke should be used on any and all bridge crossings in sufficient time so that the enemy are denied observation and can not accurately locate the site and assembly sites of a bridge.

Artillery liaison planes demonstrated that by simply being in the air they can keep artillery fire off the bridges.

  
JOHN W. WHEELER  
Colonel, CE  
Engineer

Scale  
1:100,000  
or  
1 Inch to  
1.58 Miles



Based on sheet Q-I, G.S.G.S. 4416.

1/ Mar. 45 / 667 Engrs. / 370

2/ June 45 / 667 Engrs. / 472

# OPERATIONAL PLAN FOR THE CROSSING OF THE RHINE RIVER



XII BR  
XVI US



VII  
TACTICAL  
OVERPRINT

ROADS CONSTRUCTED IMPROVED AND MAINTAINED  
BY 1103 ENGR C. GP. ARE SHOWN IN GREEN

ENGINEER DUMP  
AT LINTPORT

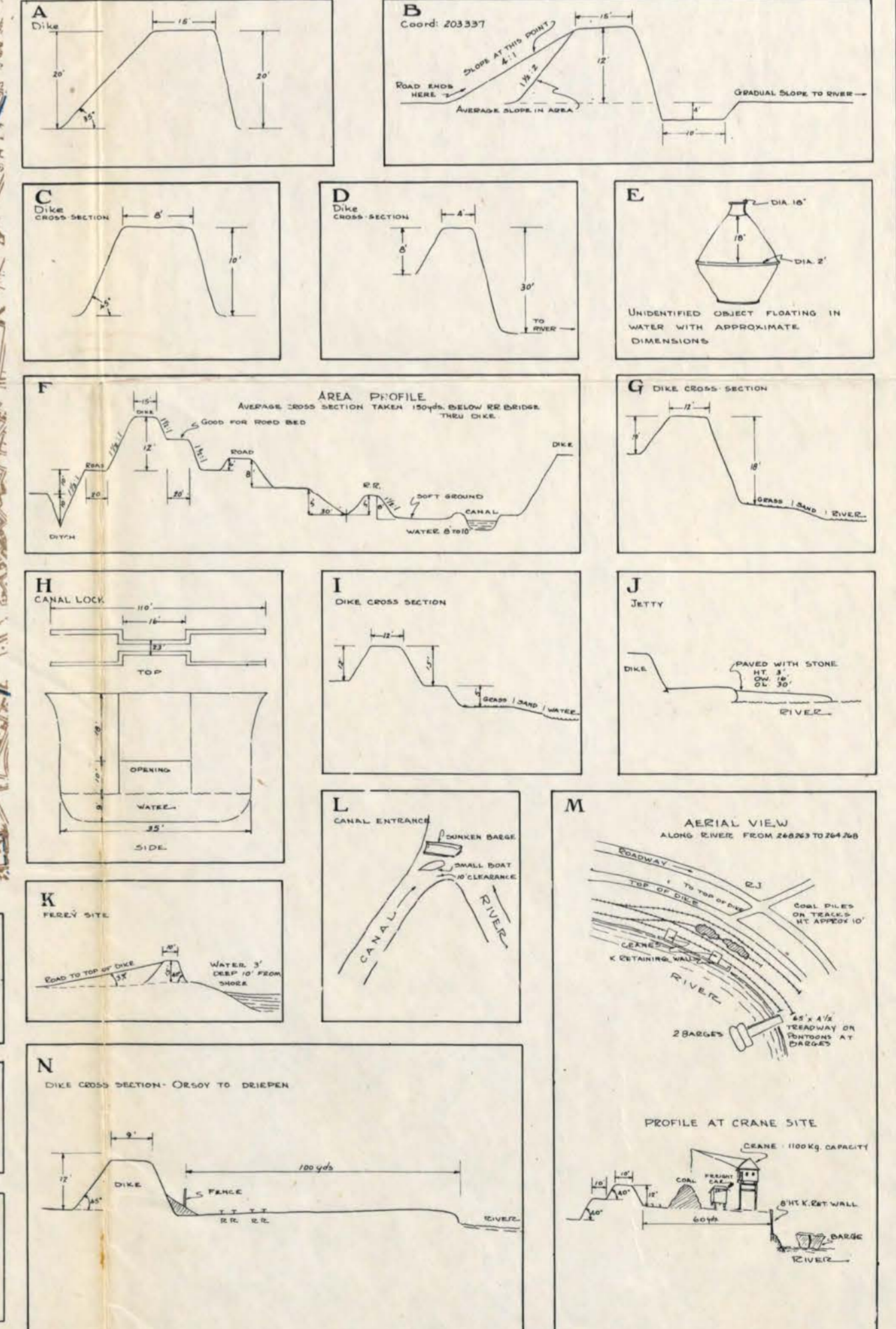
ENGR DUMP  
1355 DP TK CO  
180 HV PON BN (A)

RESTRICTED



- LEGEND**
- Class 70 roads and/or enemy installations.
  - - - Class 10 roads.
  - Marshy land.
  - ① 6' to 10' banks with sand beach. 1:1 slope.
  - ② TDBB - L 150+ - Class 10.
  - ③ No banks in jetties.
  - ④ Wooden stakes in ground - AP minefield suspected.
  - ⑤ 6" banks.
  - ⑥ Good defilade for troops.
  - ⑦ Trees & shrubs growing thickly atop dikes - ht 10'.
  - ⑧ Good defilade for vehicles.
  - ⑨ Minefield suspected.
  - ⑩ Good defilade for troops.
  - ⑪ 15' gap in bridge. Cl 10 to Cl 70 Div.
  - ⑫ Good defilade for troops.
  - ⑬ Cross country - not a road.
  - ⑭ Power cable down - poor by-pass.
  - ⑮ Road blocked - wrecked vehicles.
  - ⑯ Filled crater - poor.
  - ⑰ Sunken barge.
  - ⑱ Opening in dike for RR - 15' clearance.
  - ⑲ Road over dike blocked - wrecked convey.
  - ⑳ Rowboat with MG mounted inside.
  - ㉑ Opening in dike - 18' clearance. Permits enemy observation into town.
  - ㉒ Under enemy observation post barrier at this point.
  - ㉓ B.A. 2x10 1x12 h - 13 Cl. Cl 10.
  - ㉔ Widening west side of road.
  - ㉕ 6' - 8' path from road to 125 yds. of river, possible to convert to class 70 road. Has good firm base, but rubble should be added for Cl 70. From path to river summer fall mat should be used. Sufficient space for turning semi-trailers. This is a possible crossing site. 8' into river. 5:1 slope.
  - ㉖ Another possible crossing site. Approach excellent as far as farm house. Class 70 road 20' wide. From here to river same as ㉕. River has same slope also. Bottom is gravel at this point.
  - ㉗ Dike crossing too steep for semi-trailers, should be cut with dozers.
  - ㉘ River end of road is plank and leads to sunken barge. Sodded soil with mats would carry 30-40 T. Estimated slope of bank 50%.
  - ㉙ Soft ground, would need mats.
  - ㉚ Bank has 30% slope for 15'. Large rocks near water line, then sand.
  - ㉛ Jetties 20' long 8' wide and are crowned masonry sloping toward water.
  - ㉜ Fences.
  - ㉝ Evidence of tank vehicle. Gravel shore, then heavily grassed area. Be O.K. using mats. Path but no road evident.
  - ㉞ No Cl 70 1-way Cl 10 2-way.
  - ㉟ Water and mud pockets. Would not hinder traffic. Can go around.
  - ㊱ 1 w 12 Steep approach. Water appears deep here. Bank has 6' drop in 10 yds. between arrows.
  - ㊲ 1 w 12 Path leads from road to within 125 yds. of river, next 50 yds. are firm soil, remaining 75 yds. sand and gravel with firm base.
  - ㊳ Bank has 1:1 slope between arrows.
  - ㊴ Possible new construction.
  - \* Under construction March 19.

**SITE SKETCHES NOT TO SCALE**



(3' Drop almost vertical) between arrows

— DIKES

Note: Characteristics of the river are favorable for hostile attempts at destruction of our bridges by means of floating mines, charges placed by swimmers, and release of barges or debris from upstream (Topo Terrain Study - 75th Inf. Div.).  
Roads in Wallach are being made class 70.

VI

RESTRICTED

RECONNAISSANCE  
OVERPRINT

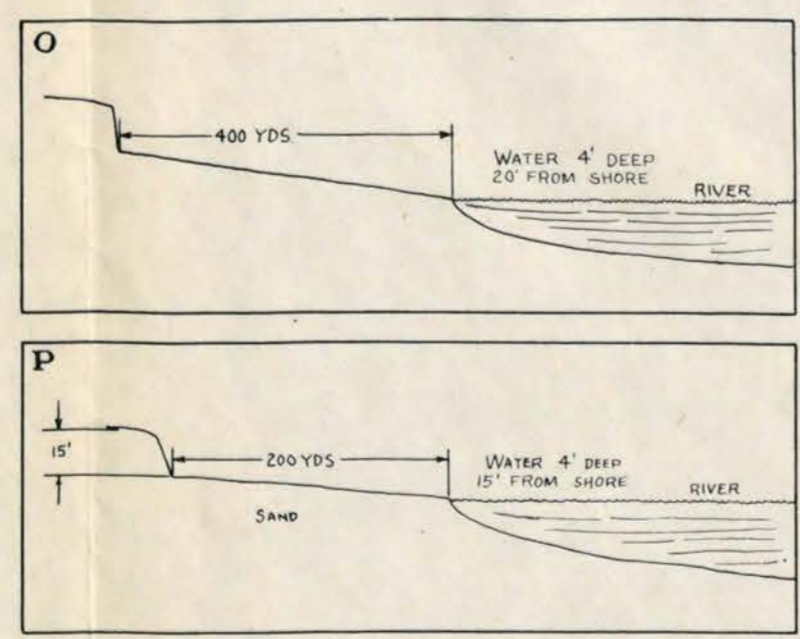




Figure 1

Bailey Bridge floats  
in Engineer Dump at  
Lintfort, Germany.



Figure 2

Heavy Ponton floats  
in Engineer Dump at  
Lintfort.



Figure 3

Prefabricated road  
materials stored at  
Lintfort.



Figure 4

Camouflaged double assault and storm boats in final assembly area behind winter dike on white beach (D-1).

Figure 5

Same as figure 4



Figure 6

Same as figures 4 & 5





Figure 7

LVT's dispersed near  
Wallach, Germany in  
preparation for assault  
(D-1).

Figure 8

Same as figure 7



Figure 9

Close up of LVT



Figure 10

Same as figure 9

Figure 11

Infantry outposts on banks of Rhine near mouth of Alter Rhine. (RR cars in background are on the water edge)



Figure 12

LCM loaded on trailer



Figure 13

LCVP's loaded on trailers ready for movement to launching site. Note low bed trailer and cradle for ease in launching.

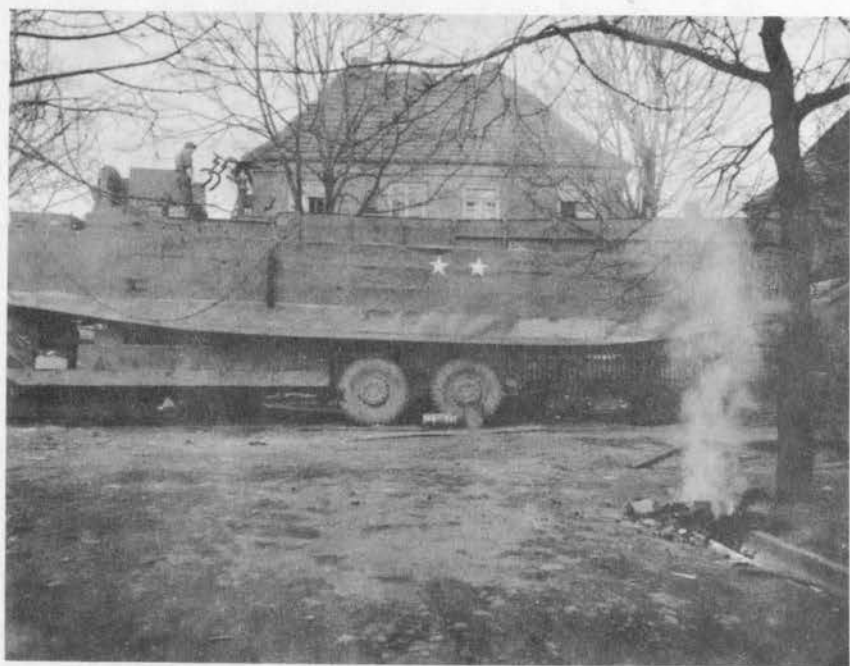


Figure 14

LCM loaded on trailer



Figure 15

Assembling Sea Mules in Lintfort

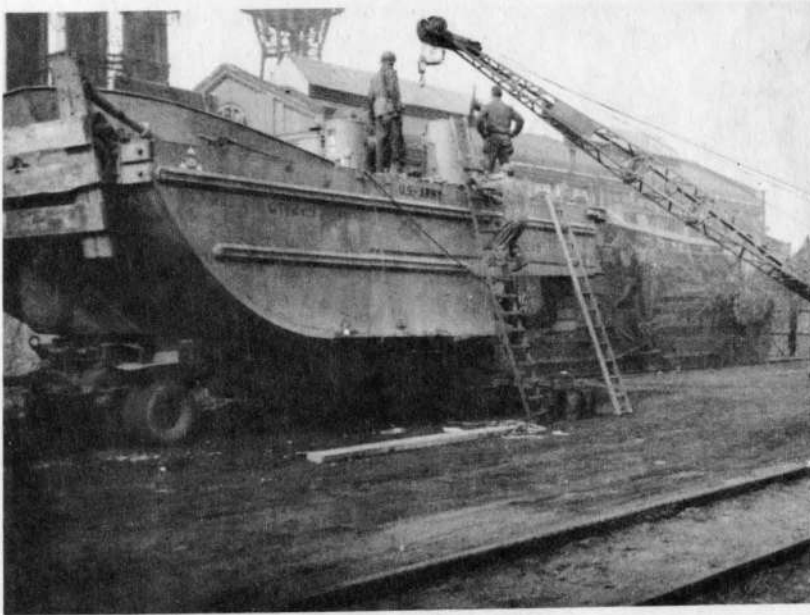


Figure 16

Assembling Sea Mules  
in Lintfort

Figure 17

Sea Mule propelling  
Bailey Raft

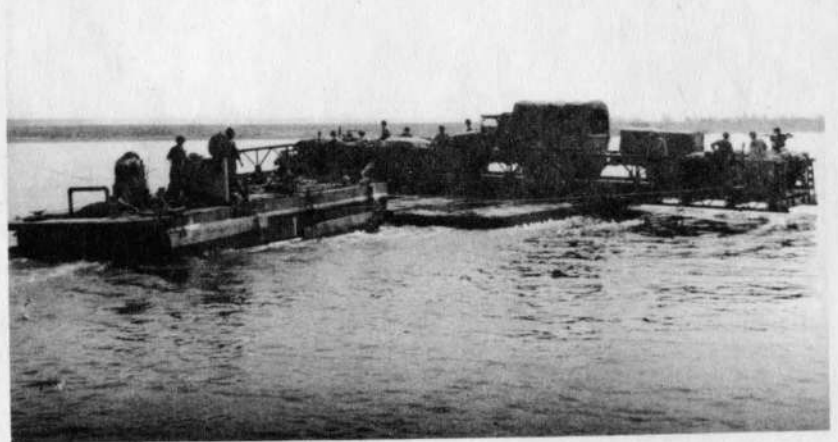


Figure 18

Sea Mule (completely  
assembled) loaded on  
trailer.



Figure 19

Sea Mules in convoy,  
ready for movement to  
launching site.



Figure 20

LCM being launched by  
use of a crane. Bow of  
craft is in water.



Figure 21

Dozer pushing LCM into  
water after truck and  
trailer have been removed.



Figure 22

Same as figure 21. Tank in background is used to keep dozer from nosing into the water.

Figure 23

LCM partially launched

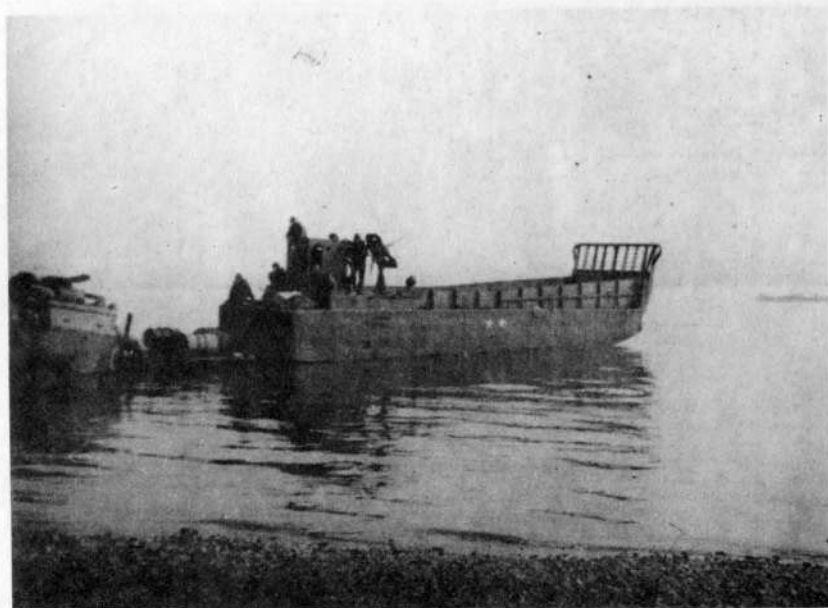


Figure 24

LCM being launched by being pulled off trailer by another boat



Figure 25

LCM completely launched.  
Note tank cable securing  
the dozer.

Figure 26

LCM approaching to carry  
dozer to far shore.  
(Blue Beach)

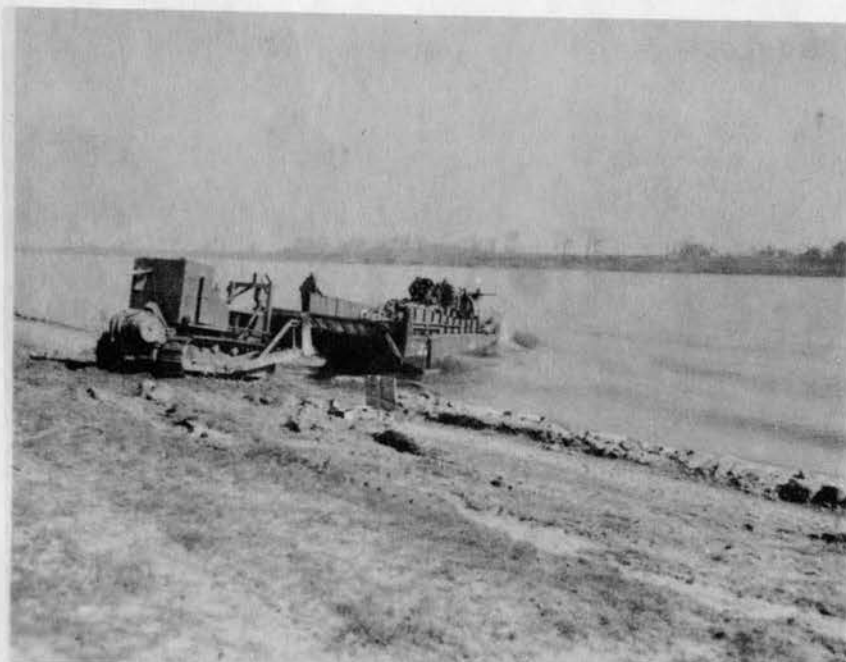
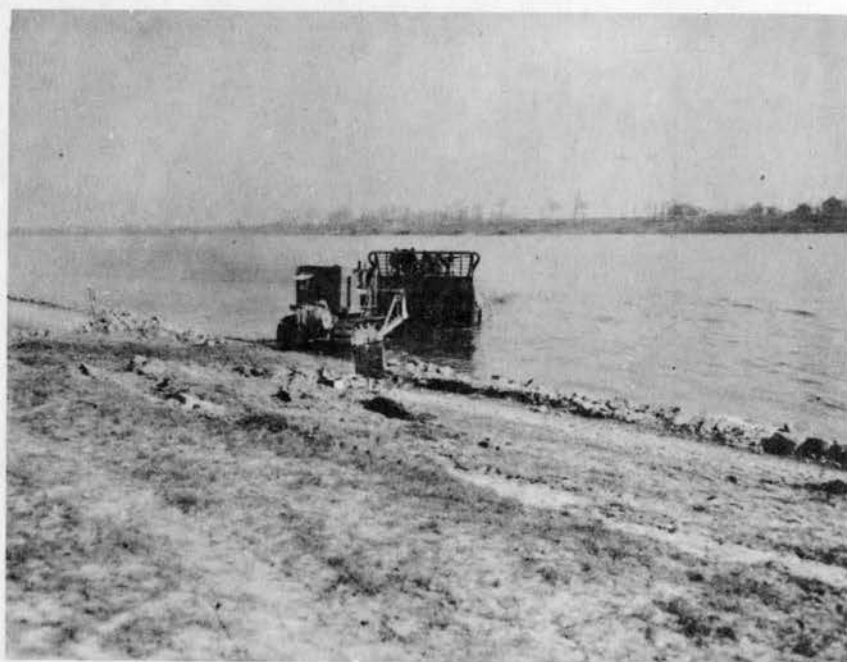


Figure 27

LCM lowering ramp in  
preparation to loading  
dozer.



Figure 28

Tank approaching the waiting LCM.



Figure 29

Tank backing on to LCM.



Figure 30

Same as figure 29. As tank backs on to LCM, it closes the ramp by use of ropes as shown. Mechanical mechanism of ramp closing system was damaged.





Figure 31

LCM being loaded with  
gas cans.

Figure 32

Loading and operation  
of LCVP's at Blue Beach.



Figure 33

Cl 40 Bailey raft anchored  
at near shore. Note five  
storm boats with 55 HP out-  
board motors. (Blue Beach)



Figure 34

Medium tank being carried to far shore on Cl 40 Bailey raft. Man with white helmet in the foreground is "Beachmaster".

Figure 35

Truck carry Treadway Bridge move over approach road on White Beach. (Road constructed of prefabricated somerfelt mat and rock.)



Figure 36

Dump trucks at Wallach Treadway site loaded with rubber pontons.

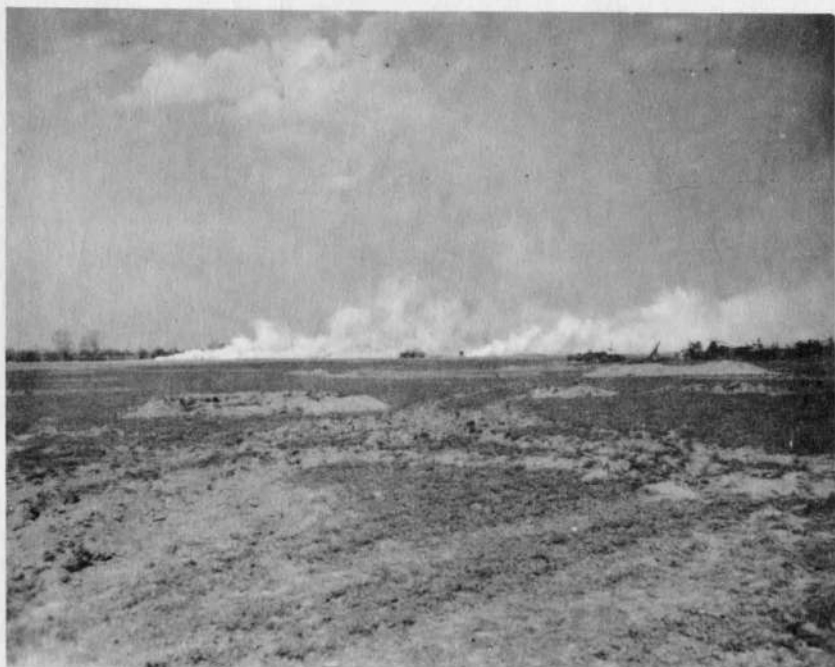


Figure 37

Smoke generators laying  
smoke haze to cover bridge  
construction.

Figure 38

Rubber pontons being  
unloaded from dump truck  
by crane. (Note con-  
struction of platform  
on truck.)



Figure 39

Dump truck backing up to  
water edge to slide rubber  
ponton into water.



Figure 40

Treadway raft under construction.



Figure 41

M-2 Treadway being unloaded.



Figure 42

M-2 Treadway site at White Beach (Wallach).

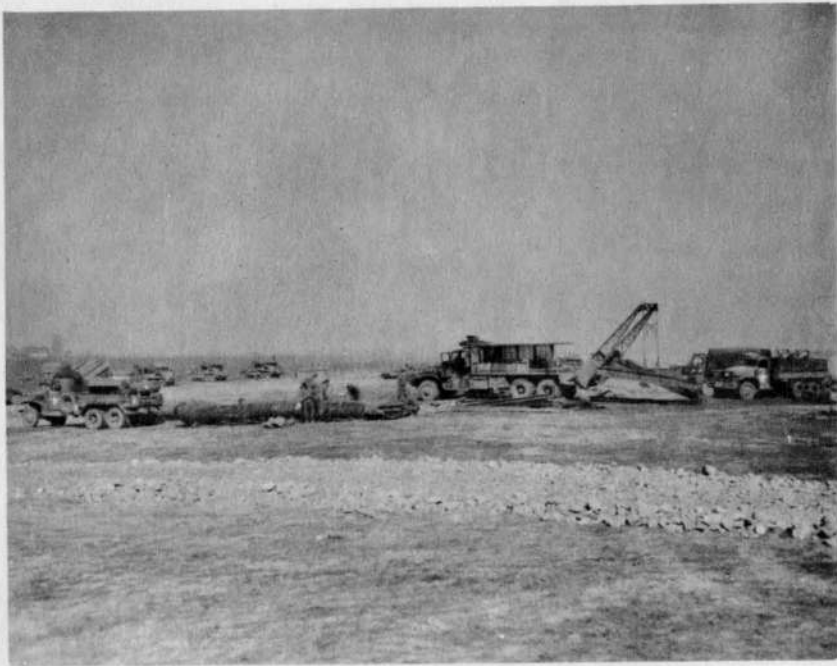


Figure 43

Same as figure 42

Figure 44

M-2 Treadway float  
assembly site (Wallach).

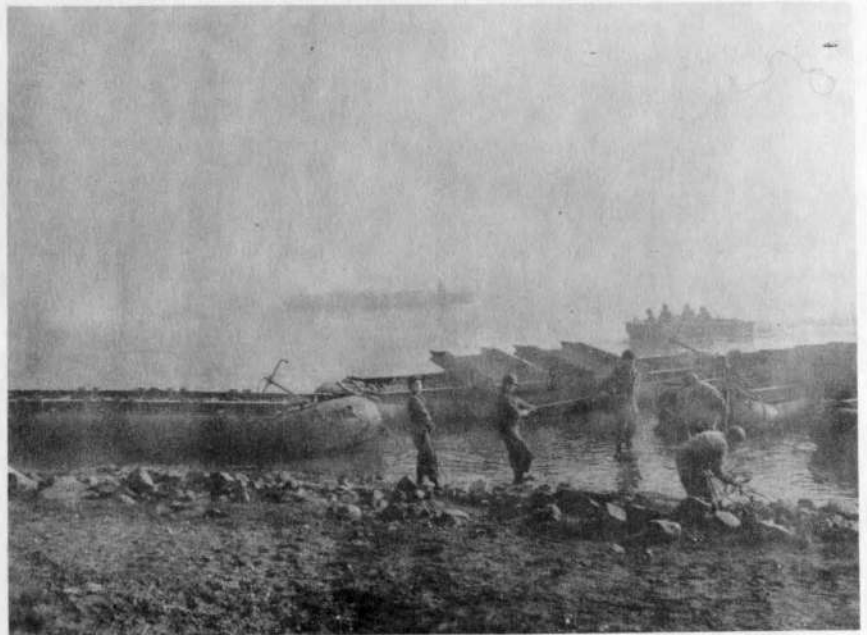


Figure 45

Treadway raft completed.  
(Note effect of smoke haze).



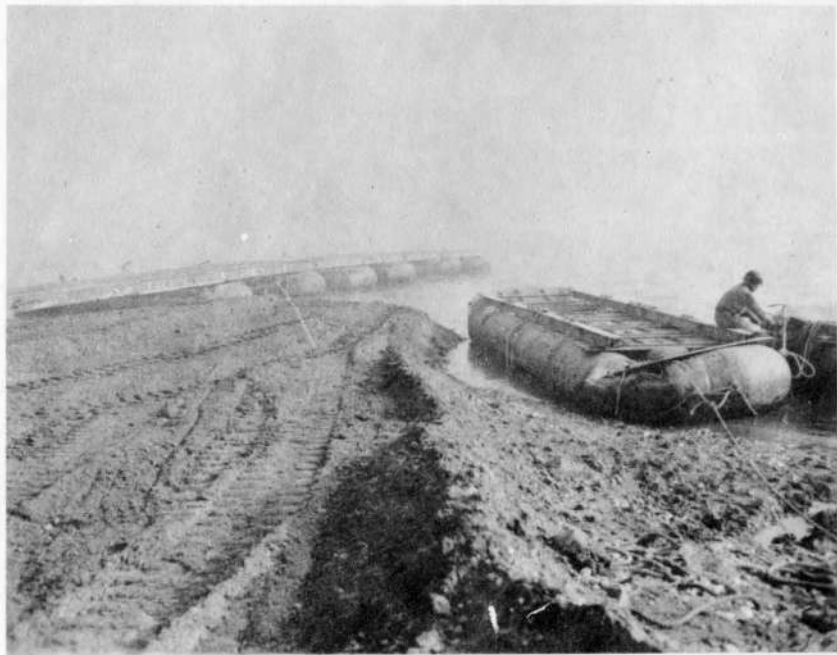


Figure 46

M-2 Treadway Bridge under  
construction.



Figure 49

Same as figure 48

Figure 50

Same as figures 48 & 49



Figure 51

Wallach M-2 Treadway  
Bridge nearing completion.





Figure 52

Wallach M-2 Treadway  
Bridge opened for  
traffic.

Figure 53

Same as figure 52







Figure 55

Damaged floats caused  
by collision of C1 40  
Bailey raft at near  
shore end of M-2 Treadway  
at Wallach.

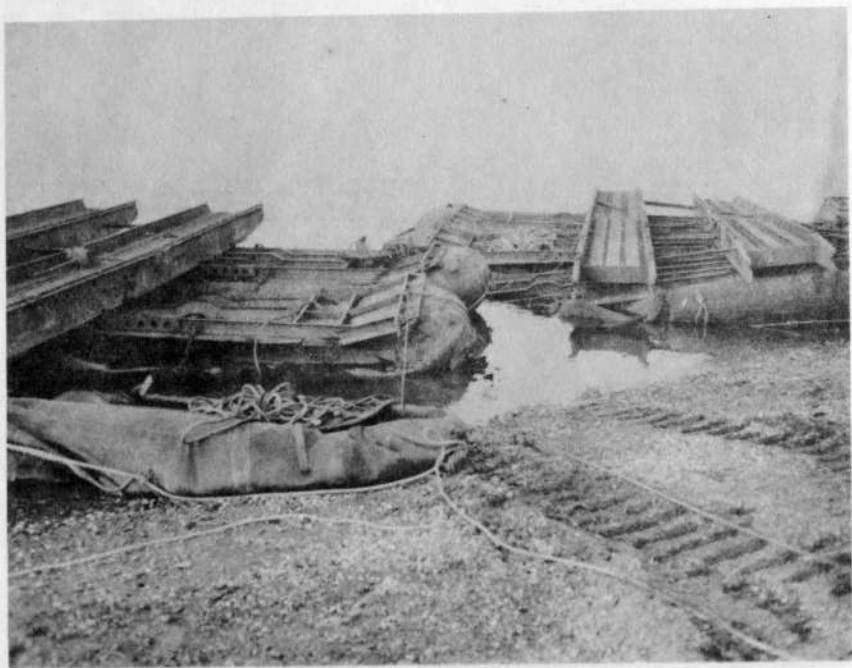


Figure 56

Same as figure 55



Figure 57

Same as figures 55 & 56



Figure 58

Treadway float being filled to repair damaged bridge.



Figure 59

M-2 Treadway reopened for traffic.



Figure 60

Heavy Ponton equipment moving forward for construction of reinforced heavy ponton bridge at White Beach.



Figure 61

Same as figure 60

Figure 62

Reinforced Heavy Ponton  
Bridge under construction.



Figure 63

Heavy Ponton Bridge  
opened for traffic.

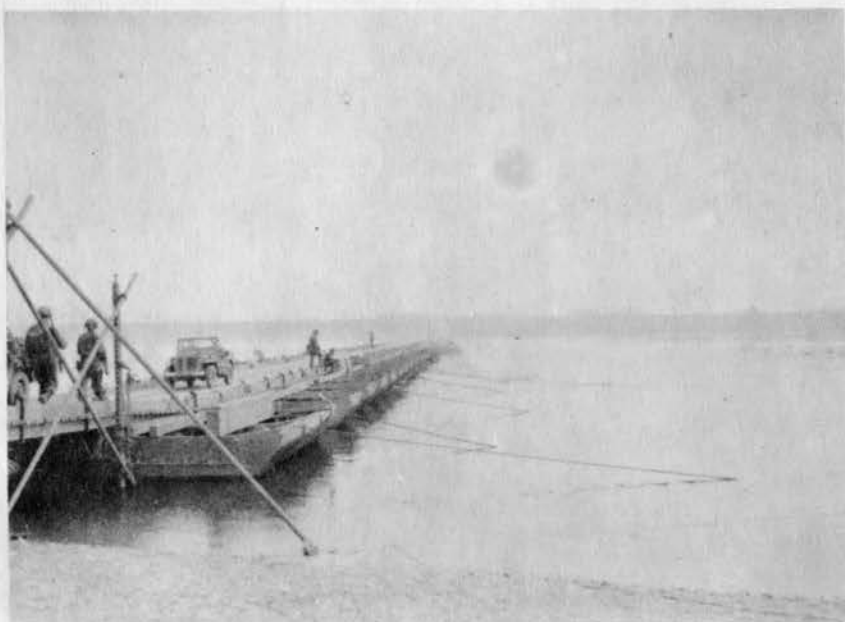




Figure 64

Infantry Support Raft

Figure 65

Loaded Infantry Support Raft

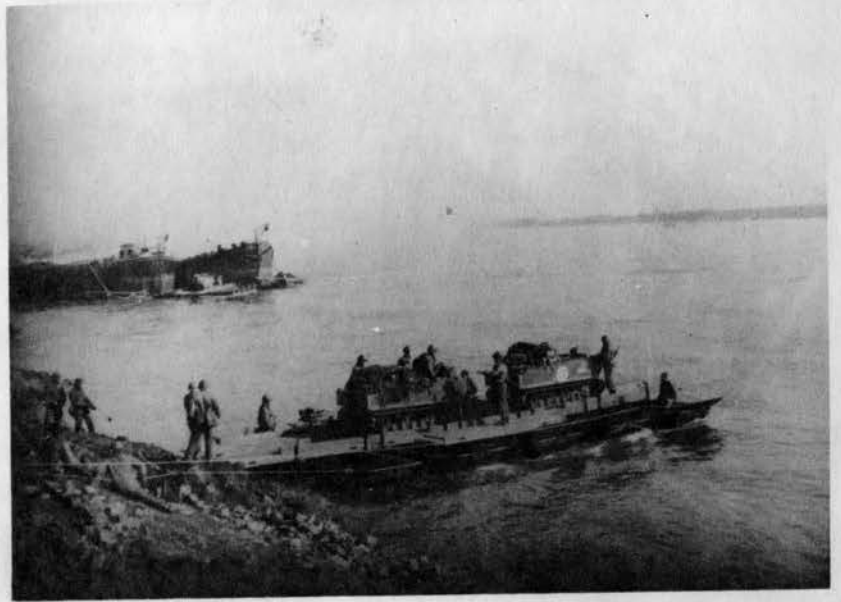


Figure 66

Loaded Bailey Raft





Figure 67

Signs at Wallach,  
Germany indicating routes  
to various crossing sites.

Figure 68

LVT's assemble in rear  
of dike after completion  
of assault crossing.



Figure 69

FW's returning from  
far shore.





Figure 70

PW's returning from far shore. (Note splash boards).



Figure 71

PW's being guarded by engineers



Figure 72

The youngest and oldest PW's captured.

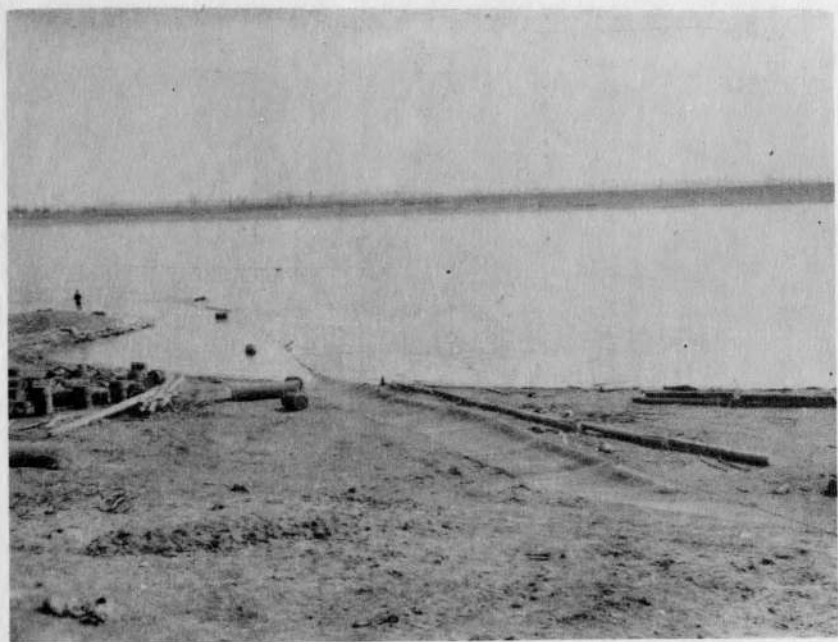


Figure 73

Four cable mine boom  
under construction at  
Red Beach.

Figure 74

Prefabricated bailey crib  
to be used as anchor for  
M-1 Treadway Bridge at  
Blue Beach.



Figure 75

M-2 Treadway Bridge and  
DD Bailey Bridge being  
constructed over Lippe River  
between Hunxe and Grudenberg  
Germany soon after Rhein  
Crossing was completed.



Figure 76

An improvised anchor

Figure 77

Boom installed by Army  
Engineers at Lohmannsheide



Figure 78

Admiralty Net Boom  
installed by Army  
Engineers.





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