Preparations for D-Day by Richard Ernest Eurich, 1944. [IWM ART LD 4587]

In the Footsteps of
The Allied 21st Army Group
D-Day, 6 June 1944
The Greatest Seaborne Invasion the World has ever known

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Part Three – The Build-up to the Invasion

The first American formation arrived in Northern Ireland in mid-January 1942 as part of the planned build-up for an Allied invasion of Northwest Europe. This build-up was codenamed Operation BOLERO and the troops that arrived were 4,500 men of the US 34th Infantry Division [US 34 Inf Div].

Within two and a half years 1.5 million American military personnel had been transported to Britain, around 700,000 of them arriving between January and June of 1944. During the same period, the British Army doubled in strength from its 1940 establishment to around 3 million men. More than 250,000 Canadian troops had arrived and many thousands of Belgium, Czech, Dutch, French and Polish nationals had joined the fight against Nazi Germany and were deployed in national contingents. This multitude of men and their associated equipment was scattered throughout camps and airfields across Britain.

The quantity of supplies required to equip, arm, and sustain this huge number of men under arms was immense and much of it needed to be transported across the Atlantic.

The first US troops to arrive in Britain, march down Duncrue Street, Belfast on 26 January 1942.

By mid-1943 the U-Boat threat to the Atlantic Convoys had largely been countered through effective air patrols, technological advances, and the application of ULTRA. Consequently, the necessary supply lines from America were now fully open. A staggering 16 million tonnes of supplies, 4,200 tanks and other tracked vehicles, 3,500 artillery pieces, 140,000 transport vehicles and 12,000 aircraft would be required for the invasion and follow-up forces alone.

Stockpiled vehicles and supplies for Operation OVERLORD. [IWM SC 187235]

Once the Allies had decided that the invasion would take place on the Calvados Coast of Normandy, they had to overcome the problem of transporting and supporting the men that carried out the assault. To get them ashore a

variety of specialist craft would be used, and as these had to deliver the troops and the equipment directly onto the beach, they were all flat-bottomed to prevent them from getting stuck. Amongst these specialised craft were:

Landing Craft, Assault [LCA]

The LCA was the most common British and Commonwealth landing craft of the Second World War. They were used to land troops on the British and Canadian beaches of GOLD, JUNO, and SWORD. Some American troops at UTAH Beach were also landed in LCAs as were the 2nd Ranger Battalion [2 Ranger] who assaulted Pointe-du-Hoc.

LCA-1377 of the Royal Navy carries American troops. [USN C-1087]

Landing Craft, Vehicle/Personnel [LCVP]

Also known as the Higgins Boat, the LCVP was made primarily of marine mahogany. It was 36 feet long, about five feet shorter than the British LCA. Operated by a three-man crew, the LCVP could carry an entire 36-man platoon, a jeep with a 12-man squad, or about 3,600kgs of cargo provided the centre of gravity was kept low. The bow ramp had a hinged section that could be opened to allow the coxswain to see forward.

It was armed with two .30 calibre machine guns in cockpits behind the steering position. The bow ramp and sides of the LCVP incorporated ¼ inch 'Special Treatment Steel' armour plate for protection. The craft was powered by either a 225hp Gray Marine diesel engine or a 250hp Hall-Scott petrol engine. It had a single three-blade propeller and single rudder, although there was also a small pilot rudder mounted forward of the screw. The top speed of the LCVP was around 9 knots. Because of their small size and instability, they were transported to the invasion area on bigger more stable ships. Several miles from the shore they were lowered into the water and the troops had to embark to be transported to the shore.

American soldiers embark on LCVPs (Higgins Boats). [NAID 513194]

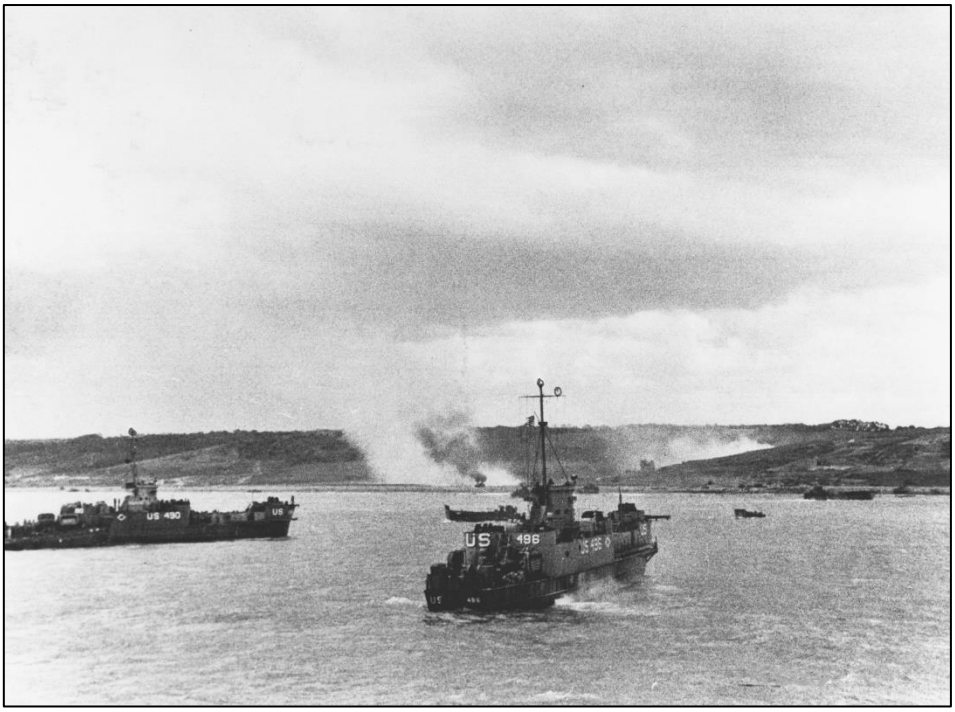
This meant the men getting into them had to climb down from a ship using a cargo net and then time their jump into the LCVP as the boat rose with the sea's swell. This was easy, and many men were injured during training and on D-Day itself doing this. The LCVP was the main landing craft used in the initial assault on D-Day.

Landing Craft, Infantry (Large) [LCI(L)]

The LCI(L) was developed in response to a British request for a vessel capable of carrying and landing substantially more troops than the smaller vessels like the LCA and LCVP.

The resulting vessels were of several classes but designed to carry 200 troops at up to 15 knots and be as capable of landing as the LCA. The LCI(L) was more of a ship than a craft, displacing almost 400 tons when loaded. It was about 200 ft long and could carry up to 200 men.

The LCI(L) was also equipped with machine guns and cannon to support the infantry as they disembarked down two small steel ramps at the front of the vessel. Although not designed to travel over long distances the LCI(L) often did and during D-Day, many of these would be used in a supporting role having been fitted with rockets that were used to bombard the beaches as the assault went in.



USS LCI(L)-490 and USS LCI(L)-496 approach Omaha Beach on D-Day, 6 June 1944. [USNA SC-189987]

Landing Craft, Tank [LCT]

The LCT was initially built by the Royal Navy and later by the US Navy. It was like the LCVP in that it had a single ramp at the front that would be lowered as it arrived at the beach to allow the tanks to drive off. Several different versions were produced which range in size and capacity.

The LCT Mark 1 was first launched in November 1940. It had an all-welded steel hull, a draft of just 3 feet at the bow, and a 12-foot-wide hinged ramp, which enabled tanks to exit directly onto the beaches. During sea trials, it was found to be difficult to handle and only 30 of this type were built, of these 17 were lost during the evacuation of Dunkirk.

The LCT Mark 2 addressed some of the issues of the LCT Mark 1. It was 160 feet long and wider than the Mark 1. It had increased armour to the wheelhouse and gun tubs. 73 LCT Mark 2 were built.

The LCT Mark 3 was 192 feet long with a displacement of 640 tons. Despite the additional weight, it was slightly faster than the Mark 1 and could carry five 40-ton tanks and related support equipment, or 300 tons of deck cargo. It entered service without proper testing and combat operations soon demonstrated that it needed additional longitudinal stiffeners to both the Mark 3s and later the Mark 4s to avoid tensional stresses to the hull. 235 LCT Mark 3s were built.

The LCT Mark 4 was slightly shorter and lighter than the Mark 3 but had a much wider beam at just over 38 ft. It was intended for cross-channel operations as opposed to deep-sea use. Better accommodation for tank crews was also made possible by the increased beam. Its displacement was 586 tons and could carry 350 tons of supplies, or nine Sherman or six Churchill tanks. More than 850 LCT Mark 4s were built.

LCTs near the Isle of White before D-Day. [IWM B 5105]

The LCT Mark 5 was the first of the American-designed LCTs and became the standard LCT in production until it was superseded by the Mark 6. These two versions had the unusual ability to be shipped to combat areas in three separate water-tight sections aboard a cargo ship or be carried pre-assembled on the flat deck of a Landing Ship, Tank [LST]. When ready, the LCT was slid off its chocks and into the water by tilting the LST to the side. If carried in sections, the individual parts were lowered into the water and assembled whilst afloat.

Landing Ship, Tank [LST]

The LST had several variants, all similar in design, and equipped with a large set of bow doors behind which a ramp was located. The LST was flat-keeled to allow the ship to beach and fully “dry out” whilst remaining upright. The twin propellers and rudders had protection from grounding.

HMS Boxer was the first purpose-built LST designed by the British and had a speed of 18 knots. In addition to its crew, it could carry 200 men, 13 Churchill tanks and 27 other vehicles. HMS Boxer and her two sister vessels, HMS Bruiser and HMS Thruster, were later converted to Fighter Direction Ships for the Normandy landings.

The British and Americans collaborated on the improved design for the LST Mark 2. This incorporated elements of the first British designs including enough buoyancy to keep the ship afloat even when the tank deck was flooded. To meet

the conflicting requirements of deep draft for ocean travel and shallow draft for beaching, the Mark 2 was designed with a ballast system that could be filled for ocean passage and pumped out for beaching operations. An anchor and mechanical winch system was also incorporated, to aid the ship to pull itself off the beach.

An LST unloading a Sherman tank at UTAH Beach. [USNA SC 199797]

The construction of LSTs was assigned a high priority, for example, a keel laid down for an aircraft carrier was removed to make room for several LSTs to be built in its place. The first keel for an LST Marl 2 was laid down on 10 June 1942 at Newport News, Virginia, and the first standardized LSTs were floated out of their building dock in October. By the end of 1942, 23 LSTs had been commissioned.

The construction of LSTs mainly took place at 'cornfield shipyards' along inland waterways using plants converted from heavy industry. Movement of the vessels was made more difficult by bridges along the route and many had to be modified by the US Navy to permit passage.

As the fabrication techniques developed, the construction time and cost of building an LST were reduced. By 1943, an LST could be built in just four months, and, by the end of the war, this had been cut further to two months. Over 1,000 LST Mark 2s were built, and although considerable efforts were made to keep the design constant, by mid-1943 certain changes were introduced based on operation experience.

The elevator installed in the earlier vessels to transfer equipment between the tank deck and the main deck was replaced by a hinged ramp. This allowed vehicles to be driven directly from the main deck onto the tank deck and then across the bow ramp to the beach or causeway, thereby speeding up disembarkation.

Later modifications included the addition of a navigation bridge; adding a water distillation plant; adding strength to the main deck to carry the smaller Landing Craft Tank (LCT); and an upgrade in armour and armament.

Hobart's Funnies

In addition to the variety of specialised craft employed during the invasion, several specialised armoured fighting vehicles were also designed. These specialised armoured fighting vehicles came about due to the failed Dieppe raid and the subsequent consideration of how a successful landing might be achieved. In April 1943 the 79th Armoured Division [BR 79 ARMD Div] was formed, and Major General Sir Percy Hobart was put in command. He was tasked with designing innovative ways to facilitate the landings, including tanks for engineers, tanks for clearing mines, and amphibious tanks.

Major General Sir Percy Hobart.

Most of the designs were based upon modified versions of the American M4 Sherman and British Churchill tanks. Although comparatively slow, the Churchill tank had good cross-country performance and heavy armour. The Sherman, whilst less armoured, was lighter and faster. It was mechanically reliable and plentiful in supply. These innovative armoured fighting vehicles became known as 'Hobart's Funnies'. The Armoured Vehicle Royal Engineers [AVRE] was the term given to a range of Churchill tanks developed in several guises to carry out engineering tasks including mounts for large-calibre weapons, anti-tank ditch and obstacle-clearing, and deployable roadways and bridges.

The Churchill 'Petard' was a Churchill-based AVRE designed to destroy thick walls, concrete bunkers, pillboxes, and other hard obstacles. The standard gun of the Churchill tank was replaced by a 290mm spigot mortar that fired a bunker-busting round. The mortar fired an 18kg high explosive projectile known as a 'flying dustbin' because of its

shape and size. It had a range of over 130 metres but was most effective from around 70 metres. The mortar had to be reloaded externally by a crewman and as many as ten rounds might be needed to breach a 6 feet-thick concrete wall.

A Churchill Petard. [IWM B 8737]

The Churchill Fascine was designed for anti-tank ditch and similar obstacle crossing. This carried a bundle of wooden poles or rough brushwood lashed with wires.

A Churchill tank carrying a Fascine. [IWM H 29043]

The bundles were each around 8 feet in diameter and roughly 12 feet wide, weighing approximately 4 tons each. One bundle was carried on the hull deck at the front of the tank. It could be released to fill a ditch or serve as a platform. Multiple fascines could be used to fill larger ditches. Although the Churchill Fascine could only carry one bundle ready for deployment, additional bundles could be towed on a trailer.

A variant of the Churchill AVRE was developed for getting over a seawall. This was known as the Armoured Ramp Carrier, or Ark, and was a turret-less Churchill tank with hinged ramps at both ends. It could be driven into a gap or up against a sea wall allowing other vehicles to drive across the top of it. Once it had been driven into place it could remain until a more permanent crossing replaced it. Deeper gaps could be filled by using two Arks with one vehicle atop the other, whilst wider crossings such as shallow rivers could be bridged by placing a row of Arks end to end.

A Churchill tank using an Ark as a ramp to get over a seawall. [IWM H 36593]

The Churchill Small Box Girder Assault Bridging tank [Churchill SBG] was designed for bridging anti-tank ditches and similar obstacles. These were Churchill tanks fitted with a small box girder bridge attached to their front that could span up to a 30-foot gap, supporting up to 40 tons in weight. The bridge could be laid and detached without the crew exposing themselves to enemy fire. Once it had served its purpose the small box girder bridge could be recovered by the Churchill SBG for reuse.

Another Churchill AVRE was the Churchill ‘Bobbin’. This was a Churchill Petard fitted with a 10-foot-wide spool of flexible matting that was 110 yards long and designed to turn soft or slippery ground into a road suitable for use by other vehicles. Mounted on the front of the Churchill Petard, the reel of matting was spooled out onto the ground beneath the tank forming a roadway for both itself and the vehicles that would follow. Originally the mats were made of hessian, but durability issues resulted in the change to canvas cloth reinforced with steel poles. Once past the

problem terrain, the carpet-laying frame and empty bobbin could be removed, and the tank could revert to other support roles using its petard mortar and other weapons.

A Churchill Small Box Girder Assault Bridging Tank. [IWM B 14582]

A Churchill Bobbin. [IWM H 37859]

Clearing paths through minefields was, perhaps, one of the most important tasks carried out by the Hobart's Funnies. Two Sherman tank variants were produced for clearing mines: the Sherman 'Bullshorn' and the Sherman 'Crab'. The 'Bullshorn' was a Sherman tank fitted with a large plough on the front to sweep aside any mines.

Sherman ‘Bullshorn’. [IWM H 36602]

The Crab, also known as the Flail, was the more common design and this had a vehicle-mounted device that created a safe path through a minefield by deliberately detonating land mines. The mine-clearing device had 40 heavy chains with fist-sized steel balls (flails) fitted to a revolving drum. These were attached to a horizontal drum mounted on two arms at the front of the vehicle.

A Sherman Crab (Flail) tank. [IWM STT 9486]

Connected to an extra gearbox and driven off the main engine, the drum rotated thrashing the ground with the chains to detonate the land mines in its path. The Sherman Crab was also particularly effective at clearing a path through sections of barbed wire.

In addition to the AVRE designs, two further tanks were produced to carry out specific roles. These were: The Sherman Duplex Drive amphibious tank [Sherman DD] and The Churchill Crocodile flame-throwing tank [Churchill Crocodile].

The Sherman DD tanks worked by erecting a canvas flotation screen that enabled it to displace enough water to remain buoyant. It had twin propellers powered by the tank's engine to drive it through the water. The base of the canvas flotation screen was attached to a horizontal mild steel boat-shaped platform welded to the tank's hull. The screen was supported by horizontal metal hoops and by 36 vertical rubber tubes. Compressed air bottles and pipes inflated the rubber tubes to give the curtain rigidity. The screen could be erected in fifteen minutes and quickly collapsed once the tank reached the shore.

A Sherman DD tank with its canvas floatation screen collapsed. [IWM MH 3660]

The flotation system was designed to be expendable, and the tank crews removed the parts they could once ashore. Some units, however, retained the flotation equipment and their tanks were also used in later amphibious operations. The DD tanks would go in with the first wave of troops to provide immediate armoured support for the infantry.

The Churchill Crocodile was a Churchill tank fitted with a flame-thrower to replace its hull-mounted machine gun. The flame-thrower had a range of over 100 metres, much greater than any man-portable device. The Churchill Crocodile towed an armoured trailer, which carried 1,800 litres of fuel for the weapon and enough nitrogen propellant to fire 80 one-second bursts. The trailer was connected to the tank using an armoured coupling that could be jettisoned from inside the tank.

A Churchill Crocodile, flame-throwing tank. [IWM TR 2313]

The Churchill Crocodile was both a physical and psychological weapon that could provide close infantry support and was particularly useful in clearing defensive positions such as pillboxes.

Training for this huge and complex force was carried out before the invasion at all levels. The ground forces were exercised at Platoon, Company, Battalion and Combat Team levels, whilst the naval, air and support units were exercised in larger formations to test their abilities to carry out their part in the invasion. The first large training exercise, Exercise TIGER, was carried out on the South Devon coast at Slapton Sands in April 1944.

American soldiers exiting from an LCVP (Higgins Boat) during Exercise TIGER. [NARA]

These revealed the general sense of chaos that could be expected due to communication problems, lack of mission comprehension, poor crisis management and more. On 27 April 1944 coordination and communication problems resulted in several friendly fire deaths during the morning and a convoy carrying troops of the US 1st Engineer Special Brigade [1 Engr S Bde] was attacked by German E-boats that same night while positioning itself for the exercise. These incidents resulted in the deaths of 946 American servicemen of the US VII Corps that would attack UTAH Beach on D-Day. More complex and testing manoeuvres were conducted at several other locations over the following months and many of these problems were addressed, but this was at the cost of unusually high numbers of fatal casualties and serious injuries amongst the troops taking part.

The success of the invasion now relied upon accumulating the necessary men, gathering all the specialised equipment, and choosing a time when the weather would be favourable. Calm weather was essential for the assault due to the inherent instability of many of the small craft and specialised equipment to be used. A low spring tide was vital to expose as many of the beach obstacles as possible and at least a clear half-moon was required for the parachute drops.

The date set for the invasion of Northwest Europe at the Tehran Conference in December 1943, was May 1944. As May approached, however, General Eisenhower realised that the necessary number of ships and landing craft needed to transport the invasion force across the English Channel would not be ready. The invasion was thus postponed until June and there were five favourable days when the tide and moon state would be right, between the 5 and 7 June and the 19 and 20 June. At a meeting on 17 May 1944, General Eisenhower decided on 5 June 1944 as the date for the invasion.

Artillery being loaded onto LSTs at Brixham Harbour.

Loading for the assault began on 31 May 1944. That same evening, the naval operations began with minesweepers moving into the English Channel. Their job was to clear lanes for the great armada of ships transporting the seaborne troops to the beaches.

Men of the US 1st Division marching along the front at Weymouth. [US-NA 12008267]

As May turned into June the weather was fine, but on 3 June 1944 the weather started to close in with strong winds sweeping up the English Channel and stormy seas developing. By 4 June 1944, a large storm had blown up leaving General Eisenhower with the agonising decision of whether to proceed.

Soldiers of the US 1st Division carrying out final preparations at Weymouth. [US-NA 12008269]

In France on 3 June 1944, Generalfeldmarschall Rommel too was debating the weather. As the weather worsened, he went to see Generalfeldmarschall von Rundstedt to tell him he intended to go to Germany to talk to the Führer to get two of the Panzer Divisions transferred to Army Group B's area. At 06:00 hrs on 4 June 1944, in heavy rain and strong winds, Generalfeldmarschall Rommel left for Germany. In the afternoon of 5 June 1944, Generaloberst Dollmann also left his Headquarters to go to a planning conference at Saint Lô; most of his divisional commanders also left their headquarters to attend.

At 06:00 hrs on 4 June 1944, General Eisenhower postponed the invasion by at least one day hoping that more favourable weather conditions would arrive. The next 24 hours saw the men of the seaborne forces sealed aboard their ships as they waited in their cramped conditions for the weather to change. At their bases throughout Southern England, the pilots and men of the airborne forces also marked time.

On the evening of 4 June 1944, the Chief Meteorologist, Group Captain James Stagg, informed General Eisenhower that there would be a break in the weather of about 36 hours around 6 June 1944. General Eisenhower subsequently met with the SHAEF commanders at Southwick House in Hampshire and asked them for their opinions. Air Chief Marshal Tedder and Air Chief Marshal Leigh-Mallory were both against launching the invasion, and General Montgomery and Lieutenant General Bedell Smith were in favour.

The weather was still bad, but with a brief lull expected, should they go? Any more delay and the seaborne troops may not be fit to fight. Worse, the Germans might see what was happening and where the invasion would come ashore. At 21:45 hrs on 4 June 1944 with rain pouring down outside his headquarters, General Eisenhower decided, "OK, we'll go." — D-Day was set for 6 June 1944. The long-awaited Allied invasion of Northwest Europe was about to begin.

Look Forward

In Part Four of D-Day, 6 June 1944 – The Greatest Seaborne Invasion The World Has Ever Known, I look at Security and Deception in the run-up to the invasion.

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