# Factors for the Allies' Success in Normandy Landings on the Western European Front during the Last Years of World War II

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## Abstract

The Normandy invasion was the most ambitious military operation and the largest seaborne invasion in history. The Allies' invasion of German-occupied France through sea using a large fleet and millions of troops assembled at the UK was a surprise to the defenders of Hitler's Atlantic Wall. Allies carried out comprehensive planning for the invasion. On D-Day, Allied troops landed on the beaches of Normandy in western France. These troops waded ashore into a hail of machine gun fire and fought their way through concrete bunkers and armoured emplacements. More ferocious combat followed when Panzer divisions were brought into play to contain the Allied advances. However, a coalition of Allied forces and innovations developed by them during war preparations helped the Allies to remain victorious. This victory paved the way for the Allies' success on the Western European front during the last years of World War II. This paper, therefore, analyses the Normandy landings in a strategic context to investigate how this paved the way for the Allies to be victorious on the Western European front.

**Keywords:** Normandy landing, allies, Western Europe, WW II.

## Introduction:

First World War (1914-18) remnants flared another global conflict, i.e. World War II which broke out just after 20 years. To obtain dominance over the world, Adolf Hitler, leader of the Nazi Party, bolstered his nation and made strategic alliances, Axis Alliance (Nolan, 2010, p. 107), with Japan and Italy. On 1 September 1939, German troops invaded Poland from the West (p. 857). Hitler's invasion of Poland brought Britain and France into a position where both countries declared war on Germany and World War II began. On 9 April 1940, Germany invaded Norway (p. 796) and Denmark (p. 298) and by early May 1940, German forces swept through Belgium and the Netherlands (p. 358). Three days later, German forces struck French forces at the Northern borders of France. By late May 1940, when France was on the verge of collapse, Italy's dictator B. Mussolini agreed on an alliance with Hitler in the form of the Pact of Steel (p. 826). Subsequently, Italy declared war against Britain and France in early June 1940 (p. 589).

British Expeditionary Force (BEF) was dispatched to defend France in May and June 1940 to combat Nazi forces in Europe. But after a few insignificant successes, the Germans had cornered the BEF around France's northern shore. As a result, BEF fled over the English Channel (p. 327). Churchill lauded the evacuation as a Miracle of Deliverance (Safire, 2004, p. 214) yet his forces left behind a significant amount of equipment (Zetterling, 2000).

On the other side of the European continent, the British attacked Libya which was under the occupation of Italy at that time. During the fight in North Africa, Italian forces were defeated

therefore, to reinforce Italian forces; German forces were deployed in North Africa to prevent Italian defeat. On 27 September 1940, a defence alliance was formulated between Germany, Italy and Japan known as the Tripartite Pact (Symonds, 2014, p. 17). The indirect purpose of the pact was to deter the US from entering the WW-II. Initially in the war, the US remained neutral and aided the British only in the form of arms & ammunition, however, Churchill wanted the US to get involved directly in the conflict but the US maintained its status until the Japanese attack on Pearl Harbour on 7 Dec 1941. After the Pearl Harbour attack, the US announced war against Japan. The same prompted Germany to declare war on the US in the purview of the Tripartite Pact and subsequently, the US declared war against Germany. Meanwhile, Germans had already started heading towards the East and attacked the Soviet Union in mid-1941.

After the entry of the US into WW II, British Prime Minister Winston Churchill and US President Franklin D. Roosevelt agreed to unify the war efforts of their two countries against Adolf Hitler's realm. Both the leaders decided to launch a mighty assault from England to breach the Fortress, ( Beevor, 2014. p. 46) i.e. German coastal defences on Western Europe, and thrust deep into the heart of Germany. However, before the successful invasion from Britain's mainland, the Allies[1] had to achieve the following two interim goals (Belchem, 1981, p. 108). Firstly, they had to win the Battle of the Atlantic and secondly, they had to establish complete mastery over the German air force[2] in Western Europe.

These goals were essentially required to achieve freedom of passage of troops, equipment and stores of all kinds between the North American continent and the UK. To carry out a successful invasion, a military operation code-named OVERLORD (Symonds, 2014, pp. 103-104) i.e. a full-scale assault against the Continent in 1944, was devised by Allied forces. In this regard, leaders of Allied forces had various meetings (Table 1).

**Table 1: Conferences by the leaders of the allied forces**

| Conferences | Year |
|---|---|
| ABC Conference (Symonds, 2014, pp. 13-16). | March 1941 |
| Arcadia Conference (Symonds, 2014, p. 56). | December 1941 – January 1942 |
| Casablanca Conference (Symonds, 2014, pp. 95-99). | January 1943 |
| Trident Conference (Nolan, 2010, p. 1093). | May 1943 |
| Quebec Conference (Symonds, 2014, p. 114). | August 1943 |
| Tehran Conference | November 1943 |

In November 1943, at the Tehran Conference, Roosevelt and Churchill promised Stalin that the second front would be opened by May 1944.

## Causes of Conflict:

Germans invaded most of Europe in the first few years of WW II and they had shown their intentions and plans to go further eastwards (Soviet) and westward (UK). Particularly, by capturing the UK, they could have maintained complete hegemony in the Atlantic and this was a great concern for the US as well (Whitlock, 2004). This brought the idea of defeating the Axis, especially Germany by invading its captured area (i.e. Western France) through the sea (i.e. the English

[1] International military coalition formed mainly by UK, US and Soviet Union during WW-II to oppose the Axis powers, i.e. military coalition primarily between Germany, Japan and Italy.
[2] Luftwaffe

Channel). Moreover, this idea gained further strength immediately after America entered into the war and agreed on a 'Germany First' (Nolan, 2010, p. 450) strategy.

**The military organization of opposing forces:** The organization of opposing forces is as under:

i. **Allied Command Structure:** In January 1943, Roosevelt and Churchill agreed to set up an Anglo-American Inter Services Headquarters and Lieutenant General F.E Morgan was designated as Chiefs of Staff Supreme Allied Commander (COSSAC). Moreover, it was decided that command of OVERLORD would be given to US Army General Eisenhower (Belchem, 1981, p. 10). Later, Eisenhower took over the office of Supreme Headquarters Allied Expeditionary Force (SHAEF) in London and other Field Commands were kept with British military officers. Eisenhower delegated the overall command of British and American forces to British Army General Montgomery for the initial phase of the invasion. Air Marshal (RAF) T.L Mallory was given command of the air assets while Admiral (RN) B.H Ramsay was assigned the job of Allied Naval Commander Expeditionary Force (ANCXF) (Yung, 2006; Belchem, 1981, pp. 12-13).

ii. **German's Command Structure: The** Supreme Commander of German forces was Hitler. Moreover, Field Marshal G. Von Rundstedt was High Commander West and under his command, there were two commanders, Field Marshal Erwin Rommel as Commander Northwest France including Normandy and General Johannes Blaskowitz as Commander Southwest France. (Margaritis, 2019).

**Strategic and Operational Objectives:** The determined strategic and operational objectives of opposing forces are mentioned in Table 2.

**Table 2: strategic and operational objectives**

| Objectives | Allies | German |
|---|---|---|
| Strategic | To Liberate France & defeat Germany | To maintain a strong hold on France and other captured areas |
| Operational | To organise and carry out an operation using resources located in the UK to secure a base (the Western French coast) from which to launch more offensive actions (Belchem, 1981, p. 20) | Thwart cross-channel invasion |

**War strategies and preparations:** The Allied had set the strategy as upon availability of required resources the ultimate aim would be to launch a mighty assault from England to breach the coastal defences of Fortress Europe and thrust deep into the heart of Germany. During the planning of war tactics, the Allied forces analyzed the amphibious attack on the French Western coast at Dieppe which was undertaken in August 1942 (Nolan, 2010, p. 309). In that activity, flawed planning due to limited recce of enemy defences proved disastrous for the Allies. Thousands of Canadian and British soldiers participated in this raid. However, the campaign remained unsuccessful with a casualty rate of 60 per cent (Symonds, 2014, p. 76).

Defeat in the Dieppe Raid provided several lessons for the Allied (Bickers, 1994; Schofield, 2008, p. 9). Detailed reconnaissance of invading the area and thorough preparation/ planning was mandatory and the German Luftwaffe (air strength) and U boats (ASuW strength)

were to be countered. Moreover, sufficient supplies along with the mechanism for lodgment should have been available to meet any contingency while a complete Allie's strength should have been utilized for combined operations with the availability of adequate mechanized equipment/ assets to overcome beach defences.

Moreover, US Joint Publication 3-20 (Joint Chiefs of Staff, 2021) states that Amphibious operations require the unique ability to operate across air, land, and sea. It also requires integrated command and control (C2) to achieve unity of effort and coordinated application of sea control and power projection capabilities. In the purview of this definition of Amphibious Operation and lessons from the Dieppe Raid learnt by Britain, it is analyzed that Allied forces managed to achieve pre-requisites/ requirements of amphibious operation on Normandy beaches. (Caddick-Adams, 2019). The situation and level of preparations of Allied forces prior execution of the amphibious operation are presented in the following paragraphs:

Table 3 mentions deception plans carried out by the Allies. The combined effect of different deception operations remained successful and made German forces believe that the invasion would be undertaken on any place which is near the British mainland but not on the Normandy beaches.

**Table 3: Deception plans and codenames**

| S No | Deception Plans | Codenames |
|---|---|---|
| 1. | To misguide the Germans about the time and exact place (Belchem, 1981, p. 56). | BODYGUARD |
| 2. | A misinformation campaign in which fake radio signals were transmitted to make the enemy believe that an invasion would be carried out in Norway (Buckley, 2006). | FORTITUDE NORTH (Beevor, 2014. p. 22) |
| 3. | To trick the adversary into thinking that the main onslaught would occur in Pas de Calais, a disinformation operation was launched. | FORTITUDE SOUTH (ibid.). |
| 4. | Over Le Havre and Isigny, dummy paratroopers were dropped to fool the Germans into thinking there had been another airborne landing (Horn, 2010). | - |
| 5. | Metal foils were dropped, and when the radars picked them up again, they detected a naval convoy close to La Havre. The effect was strengthened by the display of barrage balloons being pulled by little boats (Yung, 2006). | TAXABLE |
| 6. | A similar operation was conducted at Boulogne as well. | GLIMMER |

In addition to numerous small-scale rehearsals of amphibious operations, there were several major exercises. In this regard, DUCK-I, II, III and exercise FOX were conducted in early 1944 (Symonds, 2014, p. 189). Later on, a major exercise codenamed TIGER was conducted on full scale to rehearse the invasion (p. 194). On 3 May 1944, the Allied began a series of exercises code-named FABIUS that lasted for six days (p. 202). The main purpose of these exercises was to acquaint the combined force constituted of troops from different countries (mainly France, the US, Canada, and Britain) with the environment and modalities of an amphibious operation (Margaritis, 2019).

The Allied invasion fleet was constituted of navies from 8 different countries. They were able to gather approx. 7000 vessels, 195000 personnel and 11000 aircraft. The overall fleet was divided into Western Naval TF, under Admiral A.G Kirk, for support of US sectors and Eastern Naval TF, under Admiral P Vian, supporting British and Canadian areas (Yung, 2006).

Minesweeping Operations of Allies were also carried out. Although, mines remained a formidable threat for the Allied to such extent that Admiral Ramsey declared mines as 'our greatest obstacle to success.' For Operation Neptune, some 250 naval vessels were put in action by the

Allies including the minesweeping force which cleared the 10 NM wide area for traffic to be passed from their swept channels (Yung, 2006; Symonds, 2014, p. 222).

Allies also used Midgets as Navigational Aids. 20 Midgets at Juno Beach and 23 at Sword Beach were entrusted by the Allied to mark limits of the Assault area to diminish any possibility of troops being landed at the wrong place (Schofield, 2008, p. 56). Each midget carried a long mast fitted with green and red flashing lights to guide the assault group (Sharp, 2020, p. 56).

With regards to their Air Force Situation, the Allies had 11000 aircraft in the UK before Operation Overlord which gave an extraordinary edge to Allied air power. Allied operation of air bombing on vital enemy land positions (Operation POINT BLANK) remained effective. Within a fortnight of D-day, the Allied Expeditionary Air Force began the final intensive assault. Hundreds of locomotives and many trains carrying personnel freight and oil were destroyed/ damaged. The coastal defences were already being progressively weakened by air attacks (Ellis & Warhurst, 2020; Bickers, 1994). Allies executed a campaign of sabotage with the help of the French resistance, a group of people from within occupied France (Napier, 2015). The tasks that the Allies assigned to this group included attacks on electrical facilities, damaging underground telephone & teleprinter cables, and providing military intelligence.

Germans had set the strategy to upgrade coastal defences and mass Panzer divisions to thwart cross-channel invasion. Germans were worried by the raids on St. Nazaire in 1942, therefore defences were soon designed and built all along the Atlantic coast.[3] Originally, it was thought that 15000 emplacements manned by 300,000 personnel would be sufficient; however, this goal was not reached owing to resource depletion. Pas de Calais was fiercely guarded to delay the approach of the landing and obstruct the movement of tanks. In this regard, Rommel, who was in charge of the Atlantic Wall's fortifications, gave orders for the placement of mines, huge anti-tank obstacles, metal tripods, and wooden stakes.

German higher commands had critical differences in the deployment of the Panzer division. Field Marshal Rommel was of the view that Panzers should be deployed near shore to stop Allied invasion, whereas Field Marshal Rundstedt and General Geyr were of the view that Panzer formations should be deployed away from beaches e.g. around Paris and be used when the main invasion started (Keegan, 1994; Ellis & Warhurst, 2020 ).

The operational state of the German navy was that by 1944, the power of the German Naval fleet was depleted, and Germans were only aiming for the Atlantic to threaten the shipping carrying supplies for invasion (Schofield, 2008, p. 25). Therefore, German naval forces immediately available in the Channel area consisted of 05 x destroyer, 08 torpedo boats, 30 motor boats and several U Boats Ruge, 1979). This distributed and small naval fleet remained insufficient to counter the armada of the invading fleet (Yung, 2006).

The air situation was also like a naval one. The strength of the Luftwaffe had been eroded by the operations on the Russian front as well as in attempts to thwart the persistent attacks by Allied aircraft on strategic targets in Germany (Williamson, 1983; Schofield, 2008, p. 27). The German Navy set mines all over the Atlantic Wall as part of its intended anti-invasion preparations, however, the mines were useless. Hitler had ordered that a major mine deployment should be delayed until it was evident where the Allies were coming ashore, therefore the mines off the Normandy beaches, in particular, were not as numerous as the Allies had expected (Symonds, 2014, pp. 26-27).

[3] about 3000 miles, from Spain to Norway

**Significant Innovations:** Germans were somehow correct in their anticipations about the difficulties involved in the large-scale invasion on the Western coasts of France, however, the coalition of forces, engineering innovations and military equipment improvisations undertaken by Allied forces falsified all the German anticipations. There were several important innovations which influenced the progression and outcome of war through accomplishing significant tasks carried out by each. For instance, on D-Day, thousands of sources were employed to ferry personnel and supplies over the English Channel. On heavily fortified beaches, a variety of vessels, from small to enormous in size, were utilised to land troops and heavy machinery like tanks. The largest and most significant ships built for landing were Landing Ship Tanks. It could carry twenty tanks, thirty heavy trucks, or twenty-one hundred tons of cargo including forty light trucks or jeeps on its upper deck.

Hobart's Funnies and AVREs vehicles, during D-Day, were intended to carry out specialized duties and support ground soldiers. Duplex Drive (DD), which resembled swimming pools, was also incorporated. AVREs (Assault Vehicles, Royal Engineers) were equipped with short-barreled guns. Mine clearance tanks contained a rotating cylinder of chains that punched the ground to its front to detonate mines in its path. Other AVREs also had specialized features like flame-throwing tanks. For spreading reinforced matting on sandy beaches so that other vehicles can drive across the supple surface, it also comprises carpet layer tanks.

Mulberry Harbours was another significant innovation that comprised two temporary portable harbours, Harbour A and Harbour B, developed by the British Admiralty and War Office to facilitate the rapid offloading of cargo onto beaches that were required to be stationed off Normandy. The whole idea of these artificial harbours was that in case of bad weather, the reinforcement of troops and supply could not be affected. Mulberry A was deployed off Omaha Beach while the other was at Gold Beach. Mulberry B was placed in the British zone, whereas, Mulberry A served the Americans at OMAHA beach. However, a terrible Channel storm caused it to be destroyed (Nolan, 2010, p. 903).

Another innovative idea related to logistics was Pipe Line Under The Ocean (PLUTO). The 280-mile pipeline from Shanklin Chine (UK) to Cherbourg (France) was used for supplying the fuel for allied vehicles. It supplied the fuel for vehicles and aircraft of Allied forces from Britain to Europe.

Innovations in German Beach Defences included several above-surface and underwater-ready barriers that Rommel created to be hidden during mid- and high tides. Most beaches had a series of challenges as they moved from the sea to the land. For instance, *Belgian Gates* were steel-framed buildings ten feet tall, positioned parallel to the shore. The top had anti-tank mines attached. *Teller Mines* were installed on posts that were 200 yards from the shore, angled seaward, and covered during high tide. Slant-angled mine-tipped logs were pushed into the sand. Likewise, *Hedgehogs*, named for their spikes, were obstacles meant to either tear the bottoms out of anything landing or hang them up long enough for forces to respond. They were placed at low tide, to deter approaching ships and aircrafts from landing on beaches. If a tank or other large vehicle attempted to drive over them, they would inevitably get stuck on it, or even have the metal pierced. When the tide was high, a mine would tip six-foot-tall steel rail obstacles that would take the bottom out of anything landing. *Walls of Barbed Wire and Mine Fields* crisscrossed the beaches and paths leading off the beaches resulted in slowing the advancing troops, and prevented them from overwhelming a position with sheer numbers making them easier targets. *Pillboxes*, the little concrete bunkers, protected Machine gun nets and anti-tank weapons. About 28,000 pillboxes and other hardened field fortifications were constructed in Britain in 1940 as part of the British anti-

invasion preparations of World War II. About 6,500 of these structures still survive (Som & Ku, 2024).

**Conduct of Operation: Area of Military Operations - Landing Beaches:** The selection of area for the amphibious operation was thoroughly deliberated by Allied forces in which coastal defences laid by enemy forces and operational requirements were catered to (Belchem, 1981, pp. 22-23). In this regard, the Netherlands and Belgium were not a good choice in the purview of army requirements. There were hundreds of canals and waterways which constituted major obstacles for infantry movement.

Pas de Calais Pas-de-Calais was the target of Operation Fortitude, which was an Allied plan to deceive the Germans that the invasion of Europe at D-Day was to occur here, rather than in Normandy. River Somme was the major constraint at this location as no army could operate efficiently astride a water line because it restricted the ability to switch resources and hindered rapid advancement. Being closer to Britain's mainland, Germany had heavily fortified this site and it was known to the Allied. Therefore, invasion planners discarded the Somme Estuary. Le Havre was also ruled out because of known heavy coastal defence artillery around Le Havre. The Allied navy never wanted their naval vessels to come under the range of Le Havre.

Normandy Beaches provided access to the most appropriate area for leading formations which required reorganization, repairing equipment and landing fresh divisions to build up concentration to maintain offensive posture. Moreover, the Air Force needed to establish airstrips to increase the operational range of aircraft. Caen airfield was also in the vicinity therefore, Normandy beaches were the unanimous choice for an invasion. Despite the advantages of Normandy beaches, constraints were that it was at a larger distance as compared to other sites and had no established port **(**Belchem, 1981, pp. 23-24). During the selection of landing sights, the Allied made extensive efforts to gather the maximum information about the beaches where the landing was to be undertaken (Sharp, 2020, pp. 25-27). Through Aerial Photography and reconnaissance, information was gathered with the core purpose of building up a picture of landing grounds and studying beach defences. Hydrographic surveys were carried out and bottom samples were collected covertly at night in small boats to gather the information that would be used to calculate beach gradients for landing units. Benson Maps i.e. Large-scale maps, were created to highlight cliffs, boulders, small roads, machine gun positions, bunker locations, and lengths of bridges as natural obstacles to interior progress.

Weather conditions of the landing area were also studied and it was deduced that the invasion required a set of conditions which included a phase of the moon (visibility at night for air operations), tidal conditions (for landing) and time of the day (shortly before dawn). These conditions were available for only a few days each month. Group Captain James M. Stagg was the key individual who was responsible for performing meteorological predictions. According to him, the weather on 5 Jun was unsuitable for landing due to high winds and heavy seas. However, he also reported that the weather on 6 Jun would improve for cross-channel invasion. Keeping in view these weather impediments it was decided to delay the operation from 5 Jun to 6 Jun 1944. The next favourable tidal conditions (without a desirable full moon) were available after two weeks, i.e. 18-20 Jun 1944. However, with prolonged delay, the Allied might lose the element of surprise. On the other hand, as per predictions of German meteorologists, stormy weather would prevail for the next two weeks (Symonds, 2014, pp. 215-216). The army wanted to attack high tide to reduce the losses on the beach. Whereas, the navy wanted to attack at low tide so that the beach obstructions would be exposed and could be neutralized to facilitate a safe landing by an aircraft.

Finally, it was decided to land on a rising tide so that the assault troops would not be exposed for too long on the beaches (Sharp, 2020, p. 41-42; Symonds, 2014, pp. 229-230).

**Employment Patterns of Allied and German Forces:** Allied forces were deployed in the Western (2 x beaches) and Eastern Flanks (3 x beaches) of Normandy in five different locations (Symonds, 2014, pp. 175-177). US forces were assigned the Western flank in which Western Task Force was comprised of the 1st US Army under the overall command of Lt Gen. Omer Bradly and Western Naval Task Force was under the overall command of R. Adm A.G Kirk USN (Belchem, 1981, pp. 66-67). The Utah Beach was given under the 4th and 90th Infantry Div and 82nd & 101 Airborne Div while the Omaha Beach was given under the 1st and the 29th Infantry Divs.

British and Canadian forces were assigned the eastern flank under the overall command of Second Army Lt Gen Miles Dempsey with approximate personnel (Belchem, 1981, pp. 66-67). The Gold Beach was given under the 50th British Div, Juno Beach was given under the 3rd Canadian Div while the Sword Beach was given under the 3rd Infantry Div and the 6th Airborne Div.

15 divisions were being constructed in Germany, and there were divisions stationed in France, Holland, and Belgium in addition to another 18 in Denmark and Norway. Many German regiments were under-strength because combat losses had drained their younger troops throughout the war, especially on the Eastern front.

**Military operations during the conflict:**

i. **Aerial Bombing:** By midnight, the invasion had begun with an air offensive involving approximately 2200 Allied forces against coastal targets, batteries, and further inland. The Germans had 570 aircraft in Normandy. Because time was limited for aerial bombing and aircraft were concerned about inflicting casualties on their troops, many of them delayed their attacks and missed the beach defences (Sharp, 2020, p. 42; (Belchem, 1981, p. 74).

ii. **Minesweeping Operations:** (Schofield, 2008, pp. 44-45 & pp. 74-76). More than 250 minesweepers began their operation soon after midnight and started clearing areas for the invasion. This operation was completed just after sunrise. Minesweepers cleared the 10 NM wide area for traffic to be passed from there swept channels were established. In total 10 channels were swept, two for each assault force in such a fashion that one channel was designated for fast convoys and another for slow convoys (Ellis & Warhurst, 2020).

iii. **Naval Bombardment:** Three battleships including 8 cruisers and 28 destroyers were in Western Task Force. In the Eastern Task Force, there were two Battleships, 12 Cruisers and 37 Destroyers (Ellis & Warhurst, 2020).

iv. **Airborne Landings:** The goals of airborne landing operations as the main force arrived were to impede or stop the enemy's ability to plan and launch counterattacks. Critical bridges and road crossings had to be taken to neutralise German coastal defence guns and rapidly widen the beachhead, particularly on the landing sites' eastern and western flanks ( Belchem, 1981, p. 74).

v. **Beach Landings:** Soon after dawn, the landings at beaches were started. H-hour was the time set for landing at beaches (Schofield, p. 60) keeping in view the

respective gradient of beaches. The objective of the landing force at Utah Beach was to seize control of the crossroads and link up with troops of the 101st airborne division. 23000 troops of the 4th & 90th US Infantry Divisions were landed. Advancing through beach obstacles, US troops finally seized crossroads to Utah and by the end of D-day, they managed to link up with US airborne divisions (Belchem, 1981, pp. 86-88). 1st and 29th Infantry divisions (33000 troops) were assigned to land at Omaha Beach. Here, the landing was catastrophic because air bombing in this area remained ineffective due to low clouds. Point de Hoc, a prominent headland (height 30m) situated between the Omaha and Utah beaches, were also captured (Symonds, 2014, p. 265). Germans had established formidable defences and recently deployed the 352nd infantry division in this area and it was not known to the Allies. However, by the end of the D-day landing troops cut road links to Omaha at the cost of 2700 casualties (Belchem, 1981, pp. 90-95).

vi. Gold Beach was under the responsibility of the British 50 division with objectives to capture crossways and roads leading to Gold Beach. 25000 troops of British Infantry divisions landed and by the end of D-day, they penetrated 6 miles in land and linked up with Canadians from Juno Beach (Belchem, 1981, pp. 100-106). At Juno Beach, the troops arrived intending to cut the Caen – Bayeux road. 21500 Troops of the Canadian Infantry Division landed and by the end of D-day, they managed to link up with the forces at Gold Beach however could not link up with Sword Beach (Belchem, 1981, pp. 107-108; Zuehlke, 2004) where forces were given the task of linking up with the 6th British airborne division and to capture the Caen airfield. 29000 troops of the British Infantry Division landed and by the end of D-day, they could not link up with the 6th airborne div and could not capture the Caen airfield until 21 July ((Belchem, 1981, pp. 110-112).

**Estimated Center Of Gravity (COG):** The estimated strategic and operational COGs of the Allies and Germans are mentioned in Table 4.

**Table 4: estimated strategic and operational COGs**

| COG | Strategic | Operational |
|---|---|---|
| Allied | Coalition of Forces | Amphibious force |
| Germans | Adolf Hitler | Beach defences & German forces in the Normandy area |

The analysis of the Allied Perspective of COG reveals that the Allies had massed up thousands of troops & materials in Britain to establish the gigantic Amphibious Force and it took them more than three years. To get victory on the Western Front, the Allies heavily relied on newly raised amphibious forces which subsequently got the victory on Normandy beaches and paved the way for the change of course of WW-II. Hence, amphibious force is considered the operational COG of Allied forces.

On the other hand, the analysis of the German Perspective of COG indicates that a full-strength Panzer division (328 tanks) was available with Germans at the start of WW-II, however, by mid-1943, this number was shrunk to just 75. Fighting power declined due to a lack of fuel and a war-damaged industry that was unable to produce tanks at a rate comparable to either Soviet or

Western tank production. Later in the war, the Germans were unable to match the levels of fighting attrition experienced on many fronts (Nolan, 2010, p. 893).

**Analysis of German's Operational Consistency:** (Podliska et al., 2021, p. 9) Hitler believed that the Allies if defeated on the beach, would not make another invasion attempt. He could then focus on defeating Russian forces. The same was strategized with Fuhrer Directive 51, 3 November 1943. The directive ordered commanders to upgrade coastal defences and mass Panzer divisions. In defending about 3,000 miles of the Atlantic Wall, the Germans assessed the defence of the coastal environment based on forces available, anticipated threats and terrain. Germans expected that they would be able to move and resupply troops rapidly to the invasion area via rail. However, neither the Atlantic Wall was completed as per the plan nor the safety of rail & road infrastructure was ensured against enemy air bombing raids through the reinforcement of the Luftwaffe (Hooton, 1999). Panzer divisions were considered the most formidable punch against seaborne landings on the Western coasts of France. Due to fighting on different fronts (Denmark, Soviet Union) continuous depletion of the Panzer division's tanks or assault guns also could not be reinforced with the requisite numbers of men and materials. Hence, none of the plans remained consistent to counter the seaborne invasion which ultimately caused the defeat of German forces.

**Analysis of Allied's Operational Consistency:** Allied forces knew that for a large-scale seaborne invasion, they had to gather enough resources in the form of men and materials. Accordingly, the plan was devised and troops and materials from different countries were massed up in Britain. As the outcome of this plan, an invasion fleet of navies from 8 different countries was developed which constituted 7000 naval vessels and 195,000 personnel. The plan of winning of battle of the Atlantic and achieving air superiority over the Luftwaffe was also successfully achieved before the invasion (Williamson, 1983). Moreover, a plan to destroy German road & rail infrastructure was also accomplished. Deception plans were also purposeful in deceiving the enemy about the exact location of the invasion. Hence, it is considered that all the devised plans of Allied forces remained under focus and were consistently completed.

**Analysis of Overlord - Reasons for Victory of Allied Forces and Defeat of Germany:** Several factors contributed to the victory of the Allied and the defeat of the Germans in various domains of war planning and strategies. In the Allied forces, the Navy, Army and Air Force were centrally placed under SHAEF which was headed by one US commander, i.e. Eisenhower. Therefore, command and control of Allied forces remained unified and played a vital role in the convergence of efforts and resolution of tactical and operational issues. On the contrary, the German Air Force and Navy West Command were ordered to report directly to their high commands rather than the Western Commander Rundstedt. Moreover, a difference of opinion among the German leadership (Ellis & Warhurst, 2020) regarding the deployment of forces played a significant role in Germany's defeat.

Training and rehearsals conducted by the Allied forces before the D day helped them to rectify various shortcomings and built the confidence of their troops. Germany had already anticipated the invasion was imminent, however, a lack of coordination among commanders of Western Command resulted in no joint training exercises or operations before D day, being conducted.

Allied were very efficient in weather prediction which enabled them to exploit the short window of opportunity available for landing. Germans on the other hand thought that the invasion

was unlikely due to prevailing inclement weather. Moreover, multiple deception plans enabled allies to deceive Germans of the exact landing site and date while the German Command considered the landings as a feint and still considered Pas de Calais (20 miles across the English Channel from Dover) as the actual landing site for invasion. Therefore, Normandy beaches were not fully fortified. German intelligence agents employed in the UK could not provide any vital information which could help in the war. In this regard, better security measures for the secrecy of Operation Overlord's plan especially the exact location of the landing prevented the Germans from planning an effective counter plan. German forces could not maintain the secrecy of the information as the Allied forces knew the less fortified areas of the Atlantic Wall and the dilapidated state of under strong forces.

Comprehensive planning carried out by the Allies for cross-channel invasion with clearly defined operational responsibilities of all stakeholders made the landings successful. On the contrary, The authoritarian approach of Hitler denied coordinated planning and deprived Field Commanders of their rightful authority and initiative.

The use of innovations like Hobart funnies, Mulberry harbours and PLUTO denied the Germans of an appropriate response and proved significant for sustained operations. The innovative fortifications of the Atlantic Wall increased the difficulties of landing forces. On D-day, several troops of the landing force died without facing the enemy, just because of these beach fortifications.

**Analysis of Conflict In Light Of Principles of War:** Analysis of the Normandy Landings in light of Principles of War (Tzu, 1910) reveals that the aim of the Allied during Normandy was to establish a secure beachhead on the western French coast from which further offensive operations could be launched. Planning of invasion was started in 1940 and the selection of time and place remained under deliberation for coming years. Further to keep the aim alive, Allied forces followed better command and control. Moreover, the Allies gathered resources like equipment, troops, and machinery and trained their men. Furthermore, deception operations were conducted but the Allies also played a role in maintaining their aim. On the contrary, German high commands were aware of an invasion however, due complicated command & control structure and limited resources available to defend the long coast of the Atlantic, Germans could not maintain and achieve their aim.

Right from the onset till the building of troops, conducting exercises and cooperation between all nations of Allied forces at all tiers had depicted the motivation and morale of Allied forces. On the other hand, German forces were composed of soldiers/ prisoners from many other countries and they were not pursuing a single cause, therefore, they had shown limited interest. Hence, conscripts from many countries and less trained troops caused the low motivation & morale of Germans.

A robust physical security of assets and personnel provides dominance over the enemy. It encompasses both physical and information security. In this regard, the Allies denied access to visitors to the southern coast of England with the reason to stop infiltration of any German agent. Moreover, bogus maps were developed and used for training troops during the exercises. French resistance was receiving the information from Allies to conduct assigned tasks. In this regard, coded communication with French resistance was maintained with security. Germans in this aspect were lacking as they had failed to anticipate the position of landing. Moreover, air supremacy achieved by the Allies denied Germans to undertake air reconnaissance which ultimately hampered

the intelligence gathering efforts. French resistance was a devastating element which helped Allied forces against the Germans.

Significant degradation of German air power, achieving great innovations, softening of beach defences by naval bombardment at close ranges and flying approximately 25ft for aerial photography is testimony to Allied offensive behaviour. Moreover, the support provided through naval bombardment at close ranges and airborne assaults kept the offensive posture of the Allies, alive (Yung, 2006). Germans had limited naval and air power on D day therefore maintaining an offensive posture was not possible for them. Moreover, at the time of the invasion, Germany was fighting on different fronts and, hence, could not reinforce the offensive punch, i.e. Panzer divisions.

Normandy invasion presented an example of effective deception to achieve surprise. First, to postpone the attack of date and second to indicate that the attack will come from any place other than Normandy. This was achieved through exploiting weather conditions effectively. Engineering innovations were also elements of surprise for German forces. On the German side, forces at Omaha Beach were reinforced with the 352$^{nd}$ Infantry division and this was not known to the enemy, therefore, Allied forces had a maximum number of causalities on Omaha Beach.

The Allied Forces displayed a remarkable concentration of effort. The concentration of hundreds of ships, aircraft and men by the Allied at crucial times and in space helped them to focus on their main aim. During the campaign, almost 5 million Allied troops crossed the English Channel (Vego, 2009, p. 415; Buckley, 2006. p. 415). Moreover, the support provided through air strikes and Naval Gun support remained examples of concentration of effort. Germans could not predict the exact location of the invasion therefore forces German forces and resources could not be deployed effectively against the largest sea-borne division. Moreover, the decision dilemma for the deployment of Panzer divisions was another factor which prevented the Germans from concentrating their efforts. Furthermore, German commanders were embroiled in inner issues and under-strength German forces which were deployed on multiple fronts (Zetterling, 2000).

The provision of aircraft for close air support to an invasion fleet of thousands of ships, a naval bombardment on coastal guns to protect infantry troops and airborne operations for seizing and controlling areas to afford protection to landing infantries from enemy reinforcements was a historical example of comprehensive cooperation. Moreover, massing up numerous naval and air platforms, planning by SHAEF, training exercises and deception plans depicted a high standard of cooperation. On the German side, the complicated command structure maintained by Hitler and conflicts in high command over war strategy, especially concerning tackling the landing troops whether onsite (Normandy beaches) or inside the mainland have remained the bones of contention.

The principle of The Economy of Effort (Tzu, 1910) demands the allocation of balanced combat potential to achieve desired objectives (Gillani, 2022). Allies did not exercise this principle as a huge number of men and resources were utilized. However, citing their mission i.e. Liberation of France and keeping in mind the scale of operation and the number of risks and hazards involved, the planners tried to safeguard from every risk and resultantly by passing this principle. Germans on the other hand followed this principle by fortifying the areas, despite having limited resources, which were most likely for landings. Added to that, an uninterrupted supply of personnel and logistics was fundamental to this huge mission. Allied success resorted to their immaculate planning in the form of PLUTO. Transportation of commodities and arms/ ammunition via merchant vessels augmented the sustainability of Allied forces. The German supply lines were sabotaged/ threatened by the French resistance and air bombardment.

Allies remained flexible in their operations. Due to the Allies' air supremacy and maritime superiority, they were able to plan and execute their operations with flexibility. However, the timely deployment of panzers to repel the invasion is one example where the Germans were lacking Flexibility. Moreover, the sabotage activities of the French resistance also affected the flexibility of German operations (Dolski et al., 2014).

**Strategic Impact of the Conflict:** The success of the Normandy landings had some visible impacts on the succeeding events. For instance, it paved the way for victory in France and eventually victory in Western Europe. By December 1944, virtually all of France, most of Belgium, and part of the southern Netherlands were liberated while on 8 May 1945, Germany signed an unconditional surrender at Reims, France.

**Lessons learnt:** Many pertinent lessons can be drawn from the study of conflict. For instance, the importance of coalition and cooperation of forces in modern warfare needs no emphasis. For Normandy landings, the Allies made a strong coalition and exercised seamless integration of Allied land, air and sea forces which ultimately helped them to stand victorious. In this era of global digitization, it is very difficult to achieve surprise and deception due to technological advancements. However, it has not taken away the efficacy of surprise. Therefore, the effective working of intelligence networks and other sources of information in peacetime must be ensured.

Maritime superiority is essential as Normandy landings would not be possible without allied maritime superiority. The support provided by the Allied naval fleet, e.g. carrying troops, minesweeping operations, Naval Gun support etc., remained vital in the success of the operation. Also, the Air supremacy achieved by Allied forces over the Luftwaffe remained a vital element in accomplishing the successful landing of the vast armada. Landing forces remained in air cover throughout the operation, therefore, the depleted Luftwaffe could not impede the landing forces.

Allied made the best use of technology of that time and innovated such machines that could bring them the desired results. Therefore, technologically advanced weapons have a greater probability of inflicting damage on the enemy, if cannot guarantee overall victory. Likewise, it became obvious that without a strong logistic line, no war could be sustained. Therefore, logistics is considered the lifeline of any combat operation and it needs comprehensive planning to prioritize and cater for the requirements of forces at all stages of the war. The Normandy landing is a classical example where the Allies' operations remained successful due to sustained logistics. Moreover, training and rehearsals conducted by Allied forces in the UK, though brought causalities for the Allies, remained helpful on D-day. This indicates that training and rehearsals of any operation give confidence to the force and enhance the probability of success.

Accurate weather forecasting undertaken by the Allies during Normandy landings played an important role in the success of the invasion. Had the Allies' weather forecasting been inaccurate, the outcome of the invasion would have been devastating. Therefore, accurate weather forecasting is vital for combat operations.

## Conclusion:

The Normandy invasion was both the greatest seaborne invasion and the most ambitious military operation in history. The defenders of Adolf Hitler's Atlantic Wall were unprepared for the Allies' invasion of German-occupied France by water, which involved a sizable navy and millions of troops amassed in the United Kingdom. The Allies carefully prepared the invasion. On

June 6, 1944, Allied forces descended upon the beaches of Normandy in western France. These soldiers battled their way through concrete bunkers and armoured emplacements as they waded ashore under machine gun fire. When panzer divisions were sent out to stop Allied advances, fiercer combat broke out. Nonetheless, a combination of Allied soldiers and technological advancements made during the war's preparations allowed the Allies to maintain their victory. This victory paved the way for the Allies' success on the Western European front during the last years of World War II.

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