

QUICKSILVER IV:
THE REAL OPERATION FORTITUDE

BY

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APPROVAL

The undersigned certify that this thesis meets masters-level standards of research, argumentation, and expression.

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.

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ABSTRACT

This study comprises an analysis of the air plan for Operation Fortitude, the deception plan covering the invasion of Normandy in 1944. The author describes the foundations of Operation Fortitude by briefly describing the events leading up to the invasion of western Europe and the decisions made regarding the need for a deception operation. Next, the writer describes in detail Operation Fortitude and its sub-plans, Operations Quicksilver I-IV, and shows how all six sub-plans fit into the overall deception campaign. Next, the author discusses the Operation Fortitude air plan, describing the character of air operations in support of the deception, including an analysis of the level of effort expended on the deception and the types of targets the Allies struck. Next, the author analyzes the location and timing of the targets and assesses how they assisted both the deception and the Allied invasion. The author concludes by summing up the unique characteristics of the Operation Fortitude air plan. First, unlike other aspects of Operation Fortitude, the air campaign struck actual military targets with real bombs, and comprised as much as 50 percent of the total Allied bombing effort prior to the invasion. Whereas the spy network and fake wireless transmissions could have been exposed for the sham that they were, the bombing campaign stood was very real and was not readily exposed as a deception. Finally, the author includes an appendix with a transcription of the entire Operation Neptune air plan, which includes the Operation Fortitude targets.

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Introduction

*In war-time, truth is so precious that she should
always be attended by a bodyguard of lies*

Sir Winston Churchill

Operation Fortitude was the most complex, ambitious, and successful deception campaign of World War II. Integral to Operation Overlord, the Allied invasion of Western Europe, Fortitude was designed to induce the Germans into believing that the Allies would invade Western Europe at the Pas de Calais rather than at Normandy.¹ Fortitude encompassed the entire gamut of possible means of deception for the time: spy networks, fictitious military units, fake radio transmissions, deceptive movements of real military units, and a very real aerial deception campaign. Much has been written on the more sensational aspects of Fortitude. Entire books are devoted to the Double Cross spy network, which was arguably the foundation for the rest of Fortitude. Pictures of dummy landing craft and fake airfields are in almost every book covering the Normandy invasion. However, history has largely neglected arguably one of the more interesting aspects of Fortitude: the aerial deception campaign fought in the skies over Western France, otherwise known as Operation Quicksilver IV. While the spies under the control of the London Controlling Section (LCS) faced certain death if the Nazi intelligence apparatus divined the true nature of their double cross, British and American aircrews faced death as a matter of course when flying their missions over Western France. Moreover, while spies such as GARBO and BRUTUS knew of the danger they faced when fabricating their stories for the Germans, none of those

¹ Roger Hesketh, *Fortitude: The D-day Deception Campaign*, (Woodstock, NY: The Overlook Press, 2000), x.

flying over France in the days before D-day had any idea that the missions they were flying were supporting an elaborate lie.

How did the Allies incorporate Operation Quicksilver IV into the overall game plan for Overlord? Once Allied leaders selected Normandy as the site for the invasion of Western Europe, planners began selecting targets to support the invasion. At the same time, they were also selecting targets for the deception campaign. Was there a coordination of effort for these two plans, or did planners construct them separately and merge them prior to D-day? What sort of priority did the Allies give to Fortitude targets? Did planners regard Fortitude as a secondary operation, whereby they simply allocated additional aircraft to the diversion? Alternatively, did Operation Fortitude enjoy equal priority to the actual invasion? Moreover, were the targets struck in Quicksilver IV useful to the Normandy landings in and of themselves, or were they simply diversionary targets that would only be useful if troops were to land at Calais? In other words, did the targets have *strategic*, *operational*, or *tactical* significance to the actual landings in Normandy, or did they perhaps have all three?

The majority of what has been written regarding the air campaign surrounding Overlord has been focused on Operation Neptune, which was the actual amphibious invasion at Normandy. When mentioned, the air missions that encompassed Fortitude tend to be subsumed within the overall Neptune air campaign, and not dealt with separately. Very little has been written about the missions flown or the targets struck for Fortitude. What types of targets did Allied planners select for Fortitude, and what types of targets did aircrews actually strike? How did Quicksilver IV fit in with Overlord, and does a record even exist of the details of Operation Quicksilver IV?

How did the Allies determine weight of effort and timing? When mentioned at all, historians mostly say Allied air planners maintained a

2:1 ratio of Fortitude targets to Neptune targets prior to D-day.² For every radar installation or coastal defense battery struck in the vicinity of Normandy, aircrews would strike two similar targets near the Pas de Calais. The purpose of this was to prevent the Germans from gleaning the objective of Neptune by analysis of targets struck. However, this ratio does not seem to appear in any historical documents. What was the Allied plan regarding timing and weight of effort for the Fortitude Air Plan? Was there a pre-determined mix of targets intended to support both Fortitude and Overlord? If so, what was this mix, and did the Allies adhere to the plan? Many of the spies' activities and the creation of fictitious units happened well before any Allied troops began boarding ships for the short journey across the English Channel, but how early did Allied aircraft begin striking targets in support of Fortitude?

As with any conflict, it is easy to focus on the human aspect of war, and forget the sterile aspects of planning and logistics. As important as it is to understand the *who* of Operation Fortitude, understanding the *why* and the *how* is just as crucial. In much the same way as historians have focused on the glamorous aspects of Operation Fortitude, they have also focused on the personalities that made those operations so fascinating; they have devoted entire books to Juan Garcia, otherwise known as GARBO. Yet little has been written about the aircrews that fought, and in many cases died, to keep the Germans from knowing the actual objective of Operation Overlord. Who flew the missions in support of Operation Quicksilver IV? Were they specially trained aircrew, in units specially trained for special missions, like 617 Squadron, who flew the dam buster missions in 1943? Or did the job of bombing radar installations and coastal batteries around Calais in May and June of 1944 simply fall on whichever squadrons happened to be available on that day? What sort of losses did these

² Hesketh, *Fortitude*, 118.

units suffer, and did their members ever fully appreciate the significance of the sacrifices they made for those fighting on the Normandy beachhead?

Finally, what was the ultimate value of Quicksilver IV? Obviously, the Allies were successful in their invasion of Normandy and airpower played a key role in that success. However, was the deception, especially the air component of the deception, worth the blood and treasure spent to keep the lie alive? What, if any, value did the air component of Fortitude have to the overall invasion? If Quicksilver IV had been cancelled before the invasion, what effect would that have had on the success of the invasion? Is it possible that the effort was superfluous and instead the Allies could have relied on less tangible methods of deception?

This work attempts to answer these important questions. Because nobody has yet written in detail on Quicksilver IV, much of this thesis is based on original research, primarily in the British National Archives at Kew Gardens. Chapter 1 provides a brief overview of the Allied deception campaign, describing Overlord at the strategic and operational levels. Regarding the deception effort, it focuses on the foundations of Fortitude by examining the evolution of deception operations in western Europe. Chapter 2 delves into Fortitude South and Operations Quicksilver I-VI, the operational and tactical deception plans within the strategic-level Fortitude. Chapter 3 discusses Quicksilver IV, the Fortitude air plan. It outlines the components and phases of Quicksilver IV, and discusses the broad planning characteristics of the air plan. Chapter 4 addresses the questions of *who*, *what* and *when* regarding Quicksilver IV. It details the individual target lists, focusing on the timing and location of the various target groups that played a part in the deception. Finally, Appendix A is a transcription of the entire Neptune air plan, with charts accompanying the target lists pertinent to the Fortitude deception.

Chapter 1

The Foundations of Operation Fortitude

Like any complicated military operation, Operation Fortitude did not materialize out of thin air. Nor was its formulation linear. Instead, Fortitude was the product of months, if not years, of preparation, planning, and political discourse. While the Allies did not successfully invade Western France until June 6, 1944, the road to the invasion began as early as June 1940, when the Germans pushed the British Expeditionary Force (BEF) off the continent at Dunkirk.¹ From that point on, the British committed themselves to defeating Germany, with an invasion of Europe an obvious means to that end. Initially alone in their fight against the Germans, the British gained the Soviet Union as an ally in June 1941, and then the United States in December 1941.

Symbol

The Casablanca Conference, code named Symbol, was the first of three conferences critical to the formation of Operations Overlord and Fortitude. Held in Morocco in mid-January 1943, the most significant outcome of the conference was the stated goal of Germany's unconditional surrender.² Additionally, while Sir Winston Churchill and President Franklin D. Roosevelt agreed that the first invasion of Europe was to be in Italy, they also directed Allied planners begin preparations for a cross-Channel invasion of western France.³ Subsequently, the

¹ Mary Kathryn Barbier, *D-day Deception: Operation Fortitude and the Normandy Invasion*, (Mechanicsburg, PA: Stackpole Books, 2007), 1.

² Jeremy Black, *World War Two: A Military History*, (New York, NY: Routledge, 2003), 129.

³ Michael Howard, *Strategic Deception in the Second World War*, (New York, NY: W.W. Norton & Company, Inc, 1990), 72.

Allies recognized that to maximize their chance of success, a deception campaign was necessary. Major General Sir Frederick Morgan, appointed as the Chief of Staff to the Supreme Allied Commander (COSSAC) during the conference, began work in April 1943 on “an elaborate camouflage and deception scheme” to keep the Germans guessing as to the actual time and location of the invasion of Western Europe.⁴

Cockade

One of the results of Symbol was the recognition that the Allies needed a plan to cover the planned invasion of Italy. Operation Cockade, as it came to be known, was the strategic deception plan covering this invasion. The primary operational objective of Operation Cockade was to keep the Germans from moving additional troops south once the Allies began operations in Italy.⁵ They accomplished this by creating three subordinate plans. The first, Operation Starkey, was a fictitious British amphibious landing in the Pas de Calais. Operation Wadham indicated an American landing in Brittany, while Operation Tindall was an imaginary British landing in Norway.⁶ Although not as intricate or complex as Fortitude became, sub-operations under Cockade formed part of the basis for Operation Fortitude. Operation Starkey was primarily composed of actual ship movements, augmented by air attacks. Wadham and Tindall, on the other hand, involved the use of fictitious wireless activity, controlled leakage of operational elements, and even dummy vehicles.⁷ While not a major success, Operation Starkey proved to be a valuable dry run for Fortitude, and laid much of the groundwork for future deception operations in Western Europe.⁸

⁴ Roger Hesketh, *Fortitude: The D-day Deception Campaign*, (Woodstock, NY: The Overlook Press, 2000), 1.

⁵ Hesketh, *Fortitude*, 1.

⁶ Barbier, *D-day Deception*, 8.

⁷ Hesketh, *Fortitude*, 2.

⁸ Howard, *Strategic Deception in the Second World War*, 112.

Operation Jael

Whereas Operation Cockade aimed to convince the Germans that an invasion of Western Europe was imminent, by late 1943 the Allies began to want the Germans to believe the opposite. To persuade them, the Allies developed Operation Jael starting in July 1943.⁹ Operation Jael, named after the woman in the Old Testament who deceived the commander of the Canaanites into a sense of false security and murdered him while he was sleeping, had several objectives.¹⁰ First, the Allies wanted the Germans to believe that any plans for an invasion of Western Europe in 1943 or 1944 were postponed, and that the Allies would resort to bombing Germany into surrender instead.¹¹ Any continued Allied ground operations would be limited to Anglo-American operations in Italy and Russian operations in the Balkans.¹² Furthermore, the Allies could explain away any troop buildups in England as additional aircrew for increased air operations.¹³ The key to Operation Jael was that, unlike Operation Cockade, it required the cooperation of not only the United States, but also of Russia.¹⁴ Whereas only Churchill and Roosevelt met for the Casablanca Conference, Stalin met them in Tehran for a conference in early December 1943. It was at this meeting, known as Eureka, where the Big Three agreed upon a date of May 1944 for Overlord. The invasion of France itself received the name Operation Neptune.¹⁵ In addition, they agreed to “a cover plan to mystify and mislead the enemy as regards these operations [which]

⁹ Howard, *Strategic Deception in the Second World War*, 104.

¹⁰ Anthony Cave Brown, *Bodyguard of Lies*, (New York, NY: Harper & Row, 1975), 9.

¹¹ Howard, *Strategic Deception in the Second World War*, 104.

¹² Howard, *Strategic Deception in the Second World War*, 104.

¹³ Howard, *Strategic Deception in the Second World War*, 104.

¹⁴ Brown, *Bodyguard of Lies*, 388.

¹⁵ Thaddeus Holt, *The Deceivers: Allied Military Deception in the Second World War*, (New York: Scribner, 2004), 393.

should be concerted between the Staffs concerned.”¹⁶ Thus from this conference, both Overlord and Operation Bodyguard were born.

Bodyguard

Immediately following the conclusion of Eureka, work began in earnest on Bodyguard.¹⁷ Much like Operation Cockade, Plan Bodyguard was a strategic deception plan to cover the overall Allied plan for the defeat of Germany. Included in this was the need to generate a cover plan for Overlord. As the Allies saw it, they faced two immediate problems. First, the Allies needed to develop a scheme to induce the Germans to position their forces in such a way as to cause the least amount of interference with Overlord.¹⁸ Second, they needed to deceive the Germans as to the timing and location of Overlord.¹⁹ In sum, the Allies felt they could not hide preparations for an invasion of Western Europe, but they wanted to deceive the Germans as to the time and place of the invasion and lead them to believe there were other operations in progress.²⁰ Bodyguard, designed to cover Overlord, gave birth to Fortitude, the operational deception plans meant to cover Neptune.

Operation Fortitude

Approved on 23 February 1944, Operation Fortitude was the cover plan for Neptune.²¹ The overall objective of Fortitude was “to induce the enemy to make faulty dispositions in North-West Europe before and after the Neptune assault” by four methods. The Allies realized they could not realistically expect the Germans simply to ignore Normandy, considering it was an ideal invasion spot. Instead, the Allies strove to help alter the German’s decision-making process. First, the Allies knew they would

¹⁶ Brown, *Bodyguard of Lies*, 389.

¹⁷ Howard, *Strategic Deception in the Second World War*, 107.

¹⁸ Howard, *Strategic Deception in the Second World War*, 107.

¹⁹ Howard, *Strategic Deception in the Second World War*, 107.

²⁰ Howard, *Strategic Deception in the Second World War*, 108.

²¹ Hesketh, *Fortitude*, 372.

have a better chance of carrying out a successful assault if the Germans spread their fortifications along the French coast, rather than concentrating at Normandy. Second, the Allies strove to “lower [the Germans] vigilance in France” prior to the invasion. The Allies understood that if they could make the Germans believe the invasion was far in the future, they had a better chance of achieving tactical, if not operational surprise. Third, once the Germans were aware of the landings, the Allies wanted them to refrain from reinforcing the landing beaches for as long as possible.²² In this way, Fortitude planners sought not only to cover the initial Normandy invasion, but also to keep the Germans off guard after the invasion. Finally, the Allies realized they would have a better chance at achieving a foothold on the continent if they could reduce the “weight and rate of reinforcements” moving to Normandy once the invasion began. In effect, Operation Fortitude had two plans, Operations Fortitude North and Fortitude South, to make its execution more manageable.

Operation North

Ideally, Operation Fortitude North would convince the Germans an Allied invasion of Norway was imminent, requiring German troops to stay in the area even after Neptune began.²³ Furthermore, Allied planners hoped the Germans might actually move troops from continental Europe to Norway. Notionally, the invasion of Norway would take place with eight divisions staged out of Scotland, with the aim of attacking at Narvik and Stavanger.²⁴ Fortitude North, with the exception of limited naval operations and dummy aircraft in Scotland, was comprised primarily of fake radio traffic and the Double Cross spy network.²⁵

²² Hesketh, *Fortitude*, 19.

²³ Holt, *The Deceivers*, 559.

²⁴ Howard, *Strategic Deception in the Second World War*, 115.

²⁵ Hesketh, *Fortitude*, 63.

Despite the success of Fortitude North in reinforcing the Germans to believe there was a threat to Scandinavia, the Germans made no net changes to the troops garrisoned in Norway.²⁶ Hitler always believed that there was a real threat of invasion to Norway, and the Germans had almost doubled the number of troops needed to secure it.²⁷ Thus, even if the Allies had not carried out Fortitude North, there is no evidence to believe that the Germans would have moved troops from Norway to France to counter the invasion of Normandy.²⁸ While historians continue to debate the effect of Fortitude North, the unalterable truth is the Germans never reduced their total strength of twelve divisions in Norway, regardless of the reason.²⁹

Operation Fortitude South

Because the Allies felt it was all but impossible to hide the existence of the troop buildup in southern England, the objective of Operation Fortitude South was not to hide the fact that an invasion was coming, but instead mislead the Germans as to the location and timing of the impending invasion. Whereas Fortitude North sought to lead the Germans to believe the Allies would invade Norway first, Operation Fortitude South attempted to lead them to believe that the invasion in France would come not in Normandy, but rather at the Pas de Calais.³⁰ Beyond that, Fortitude South hoped to lead the Germans to believe the invasion at Normandy, once it occurred, was merely a diversionary invasion, and that the real invasion would take place at Calais afterward.³¹ Unlike Fortitude North, Fortitude South employed practically all means at the Allies disposal. In fact, Fortitude South was broken down into six sub-operations, each employing a discrete means of

²⁶ Howard, *Strategic Deception in the Second World War* 119.

²⁷ Hesketh, *Fortitude*, 167.

²⁸ Hesketh, *Fortitude* 167.

²⁹ Holt, *The Deceivers* 559.

³⁰ Hesketh, *Fortitude* 384.

³¹ Hesketh, *Fortitude* 384.

deception. Operation Quicksilver IV, the air component of Fortitude South, will be covered in more detail in Chapter 2. Ultimately, Fortitude South ran until 6 July 1944, after which time it was overcome by events.

Operation Fortitude South II

The primary purpose of Operation Fortitude South II was to continue the overall Fortitude deception, while changing some of its elements to maintain plausibility as the Allied campaign in France matured. Specifically, formations that were supposedly still in England waiting to invade the Pas de Calais were actually in France, and the Allies feared that once the Germans recognized this inconsistency, their cover plan would be blown.³² Thus, the Allies created Fortitude South II, which included a new story to cover for the presence of units supposedly in England and a demotion of General Patton from the commander of FUSAG to the US 3rd Army.³³ However, they made no changes with respect to air operations, and they continued as planned in the original Fortitude South.³⁴ Fortitude South II continued for an additional 2 months, ending September 8, 1944.³⁵

Conclusion

Fortitude was the product of a number of factors, political and military, strategic and operational. As the Allied grand strategy regarding the defeat of Nazi Germany matured, so did the plans needed to deceive the Germans. Beginning with the desire to make the Germans believe an invasion from England was imminent when it was in fact not, the Allies morphed their deception into one that led the Germans to believe that an invasion from England was to occur much later than actually planned. While airpower did not play a significant role in earlier

³² Barbier, *D-day Deception* 127.

³³ Barbier, *D-day Deception* 127.

³⁴ SHAEF/18250/5/OPS(B), "AIR PLAN FOR 'FORTITUDE SOUTH II'," 23 July 1944, 3A, p 8, The National Archives (TNA): Public Record Office (PRO) WO 219/2231.

³⁵ SHAEF/19011/OPS(B), "Current Cover & Deception Policy," 8 Sept 1944, E38, 1, The National Archives (TNA): Public Record Office (PRO) AIR 37/882.

deception operations, the planners of Fortitude South had a much different idea about its appropriate role. From the beginning, airpower was to play a central, very visible, and operationally vital role in the effort to deceive the Germans at Normandy.

Chapter 2

Fortitude South and Quicksilver

The code word QUICKSILVER is used to cover the various operations which implement the threat to the PAS DE CALAIS area either before or after D-day
Second Draft Cover Plan

In much the same way that Plan Bodyguard contained numerous sub-operations working in concert, Operation Fortitude South was composed of numerous sub-operations.¹ First, Fortitude was broken into two separate phases, using D-day as the changeover point.² During Phase 1 (pre D-day), Fortitude was designed to make the Germans believe that the landing site would be the Pas de Calais.³ Additionally, Fortitude planners sought to induce the Germans into believing that the target date for the invasion was some 45 days later than actually planned, or roughly July 21.⁴ Once the Allies could no longer explain away the invasion's imminence, Fortitude would shift from Phase 1 to Phase 2. The objective of Phase 2 was to convince the Germans to believe the Neptune invasion was merely a diversion to the real invasion at Calais.⁵ By design, Fortitude planners hoped the Germans would hold

¹ Unless otherwise noted, Operation Fortitude South will be referred to simply as "Fortitude."

² Commander in Chief Allied Naval Expeditionary Force, Commander in Chief 21 Army Group and Commander in Chief Allied Expeditionary Air Force, "Operation Overlord, Cover and Diversionary Plans," 30 May 1944, 9A, NPN (1st Page), The National Archives (TNA): Public Record Office (PRO) WO 205/173.

³ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

⁴ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

⁵ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

their forces in reserve for the subsequent invasion at Calais instead of reinforcing their troops in Normandy.⁶

Fortitude consisted of what the Allies termed *diversionary* operations and *cover* operations. While diversionary and cover operations appear similar, there is a critical difference. Diversionary operations are supposed to *confuse* the enemy. A properly planned and executed diversion will leave the enemy unable to determine your objectives. A cover plan, on the other hand, seeks to *mislead* the enemy. A well-conceived cover plan will make the enemy accept a different version of reality. While the scope of diversionary operations and cover operations often overlapped, Allied planners nonetheless differentiated between the two. The Allies never explicitly defined the difference, but based on their scale and objectives, it appears that diversionary operations supported the overall cover operation. While these could easily stand alone, they naturally complemented the cover operation they supported.

Fortitude planners designed diversionary operations to divert the Germans' attention from the actual invasion force once the invasion was underway. In general, the Allies' diversionary plans employed in support of Operation Neptune were operational or tactical in nature. At the tactical level, their purpose was to confuse the Germans, making them unsure as to the actual target of the real invasion force. Furthermore, these operations created additional confusion for local commanders by simulating the appearance of much larger forces than actually existed. At the operational level, the diversions existed to cause the German commanders to be unsure as to whether or not the Allies were conducting additional landings at other locations along the coast of France.

⁶ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

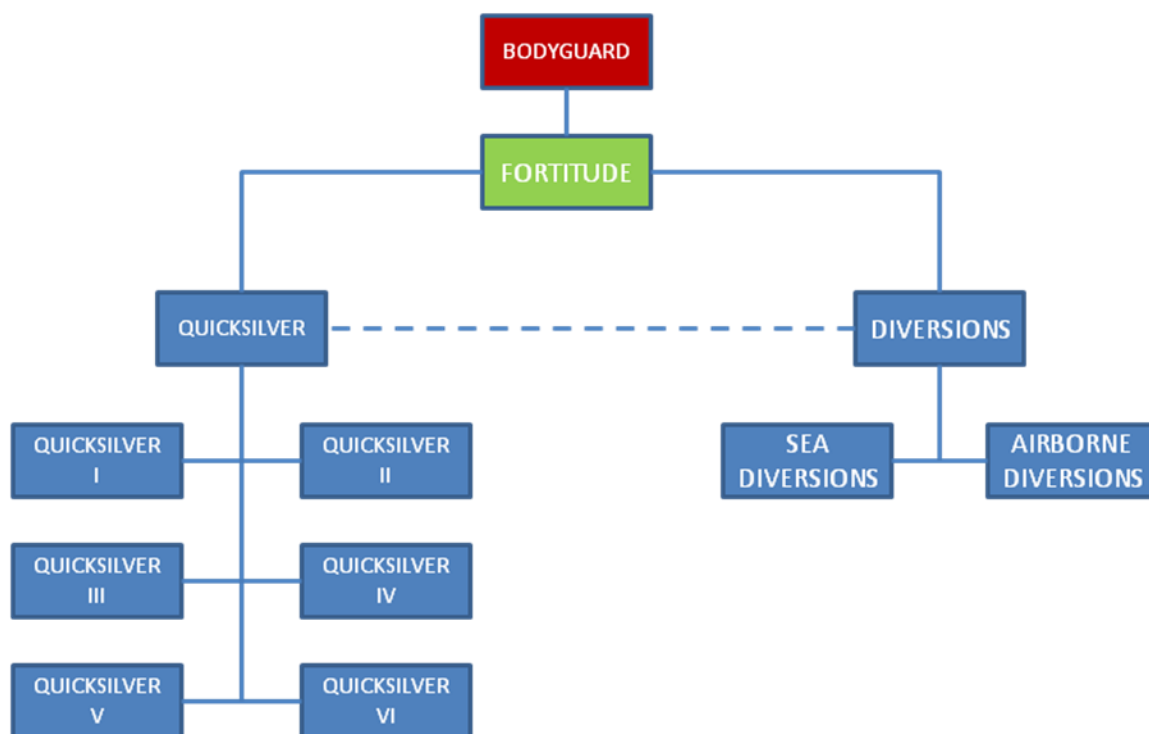


Figure 1. Organization of Operation Fortitude

Source: Author's own work.

The Diversions – Bigdrum, Taxable, Glimmer, and Titanic

The overall objective of the diversionary plans was to confuse the Germans during the Neptune landings. The Allies employed both sea diversions and airborne diversions.⁷ Once the Germans detected the presence of the Neptune invasion fleet, the Allies wanted to divert the Germans' attention to other possible invasion sites, thereby fragmenting their resistance. The air and sea diversions (see figure 2), Operations Bigdrum, Glimmer, and Taxable, began on the night of 5 June (D-1) and continued into the early hours of June 6 (D-day).⁸ Operation Bigdrum was designed to confuse the coastal defense batteries and radar installations on the Cherbourg peninsula, west of the Neptune landing beaches, in the hopes that they might engage the false targets created by

⁷ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (1st Page), TNA WO 205/173.

⁸ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (11th Page), TNA WO 205/173.

ships jamming the coastal radars.⁹ Operation Taxable's objective was further to confuse the Germans and lead them to believe that the invasion fleet was bound for the beaches to the east of Normandy and north of the Seine.¹⁰ Finally, Operation Glimmer was an attempt to confuse the Germans by creating the false impression of an invasion fleet bound for Calais.¹¹ Whereas all three operations employed various levels of electronic jamming and deceptive radio traffic, Glimmer and Taxable also made extensive use of British aircraft dropping carefully timed bundles of Window (chaff) and additional aircraft flying extremely precise racetracks approaching the coast at the same speed as the naval flotilla they were simulating.¹²

⁹ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (11th Page), TNA WO 205/173.

¹⁰ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (11th Page), TNA WO 205/173.

¹¹ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (11th Page), TNA WO 205/173.

¹² Mary Kathryn Barbier, *D-day Deception: Operation Fortitude and the Normandy Invasion*, (Mechanicsburg, PA: Stackpole Books, 2007), 71.

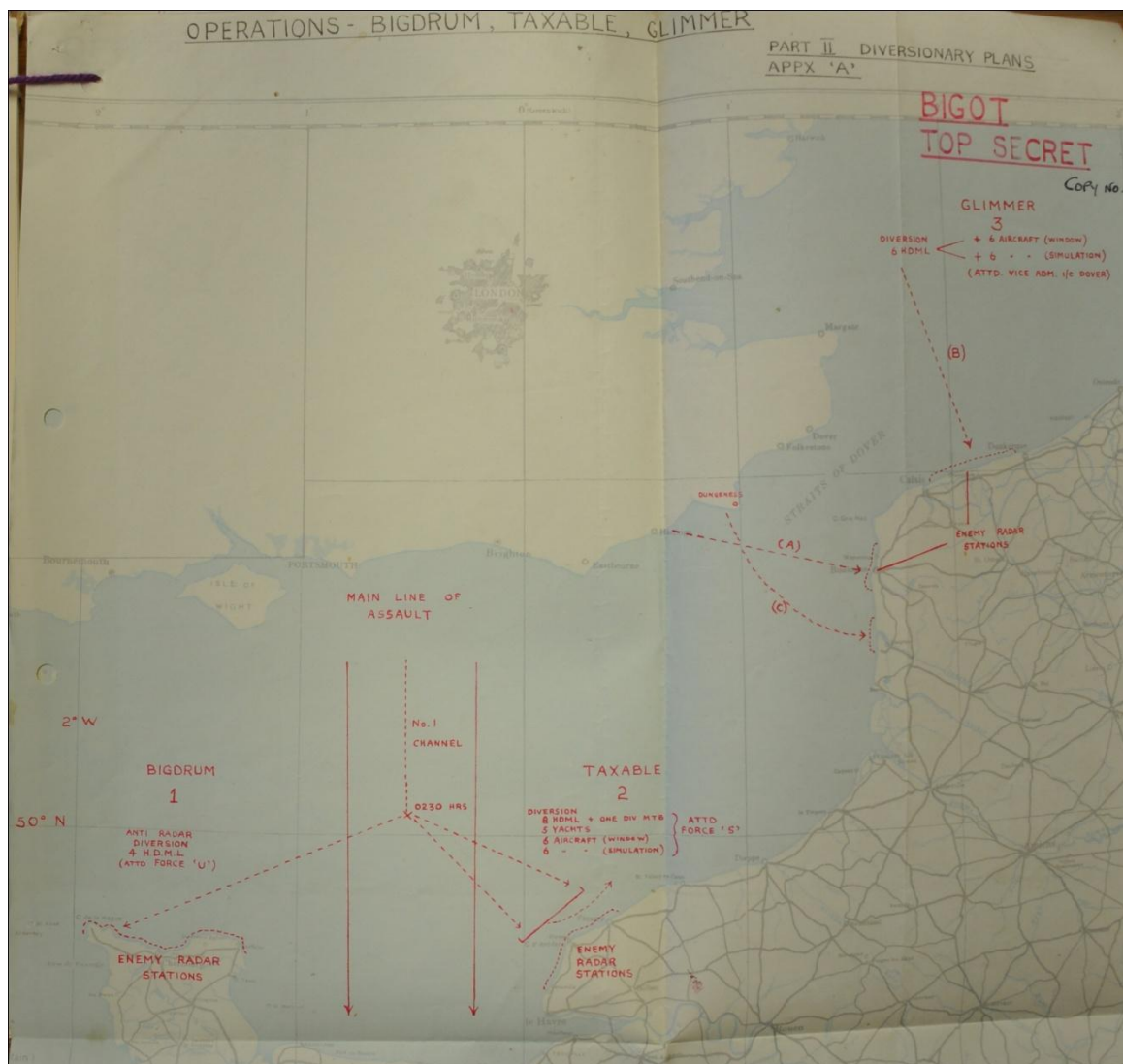


Figure 2. The Air and Sea Diversions – Operations Bigdrum, Taxable and Glimmer
Source: The National Archives, Kew

In conjunction with the sea diversionary plans, the Allies also executed four airborne (not to be confused with aerial) diversionary operations, Operations Titanic I through IV, during the same timeframe as the sea diversionary operations (see figure 3).

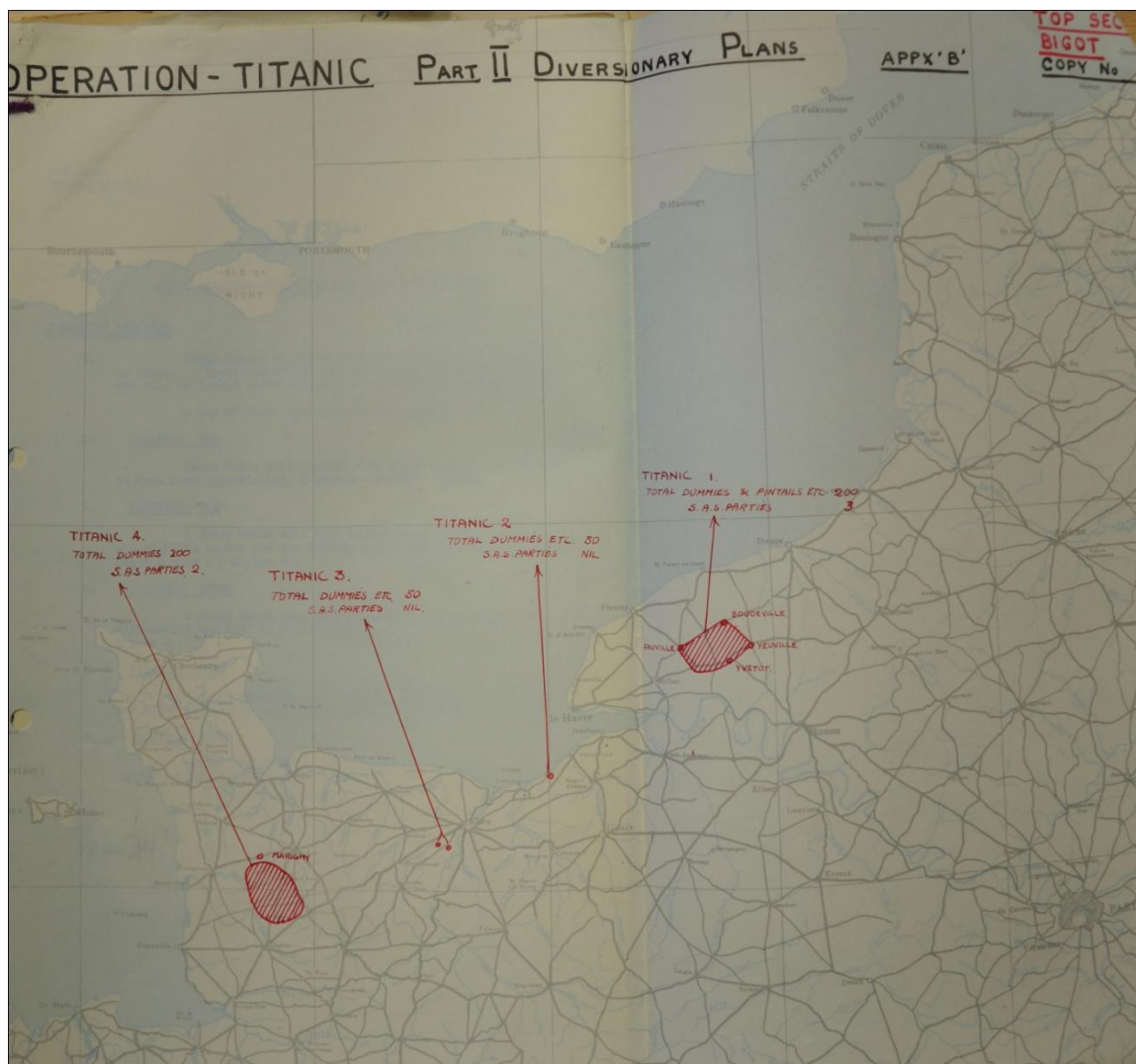


Figure 3. The Airborne Diversions – Operations Titanic I-IV

Source: The National Archives, Kew

Titanic I worked in concert with Taxable by dropping dummy paratroopers inland and to the north of the Seine River, simulating one airborne division.¹³ The objective was for the Germans to retain their reserves north of the Seine River, and to draw German reserves from south of the Seine to the north. To give additional credence to the diversion, three British Special Air Service (SAS) parties would arrive around the drop zone and attack any responding Germans. Finally, the

¹³ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (11th Page), TNA WO 205/173.

SAS were under orders to allow the Germans to survive and retreat so they would report this “invasion” to higher headquarters.¹⁴ Operation Titanic II’s objective was not as bold as that of Titanic I. It included airdropped dummy paratroopers, but did not include follow-up action by SAS parties. Its objective was to delay the movement of reinforcements west of the Dives River from moving westwards toward the Neptune beaches once the invasion was underway¹⁵. Titanic III was a small drop of 50 miniature dummy paratroopers a few miles southwest of Caen. Its objective was to draw a portion of German reserve forces to the southwest, where they could not assist in repelling the amphibious landing. To increase its feasibility, the Allies chose the landing area for Titanic III to coincide with the airborne drop of the British 6th Airborne Division.¹⁶ Finally, Titanic IV was of a similar scope and scale as Titanic I. It involved the drop of 200 dummy paratroopers southwest of St Lo, which was to the west of the Neptune landing beaches. As with Titanic I, SAS parties were to attack any Germans sent to investigate and allow survivors to escape. Additionally, Titanic IV worked in concert with the 101st Airborne Division’s landings.

The Cover Plan – Operation Quicksilver

Operation Quicksilver was the major cover plan within Fortitude. Whereas the diversionary plans merely attempted to create hesitation and confusion, Quicksilver attempted to induce the Germans into believing that the Allies were targeting Calais by means of generating what the Allies termed a *story*. The pre D-day story was that the Allied

¹⁴ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (11th Page), TNA WO 205/173.

¹⁵ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (12th Page), TNA WO 205/173.

¹⁶ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (12th Page), TNA WO 205/173.

invasion of Northern Europe would take place at Calais.¹⁷ Additionally, this story held that the real date for D-day was some 45 days after the actual planned invasion day of June 6.¹⁸ The Allies recognized that the Germans would notice their invasion preparations, and that at some point in time it would be impossible to continue to deceive them as to the timing of the impending invasion. However, Quicksilver would still attempt to place Calais as the main target in the Germans' mind.¹⁹

Once the Neptune invasion was underway and obvious to the Germans, the plan was for Quicksilver to shift into phase 2, or the post D-day story. Phase 2 held that the Neptune invasion was itself a diversionary invasion on the grandest scale, and once the Germans moved reinforcements from Calais toward Normandy, the Allies would begin the real invasion at Calais in earnest.²⁰ One interesting aspect of Quicksilver was that it had no planned end date. Instead, Quicksilver was to remain in effect until the Allies felt the Germans no longer believed the story and that further effort along those lines would no longer reap positive effects.²¹

The Allies created six operations working within Fortitude, code named Operations Quicksilver I thru VI.²² Quicksilver I was the primary plan the other elements of Quicksilver were designed to support. The basic story behind Quicksilver I was that there were two army groups under the command of the Allies for the invasion of France, the FUSAG and the 21st Army Group. The pre D-day story for Quicksilver I was that

¹⁷ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

¹⁸ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

¹⁹ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

²⁰ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

²¹ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (2nd Page), TNA WO 205/173.

²² Barbier, *D-day Deception*, 67.

FUSAG was building up forces in east and southeast England.²³ Post D-day, Quicksilver I held that FUSAG was in position and ready to invade at Calais and was waiting for the Germans to react to the Neptune invasion by sending reinforcements south from Calais to Normandy.²⁴

Operation Quicksilver II, entitled “W.T. [Wireless Transmission] Plan”, was the scheme to coordinate misleading wireless transmissions in support of Fortitude. Quicksilver II’s objective was to create fictitious radio traffic simulating the day-to-day operations of the FUSAG, notionally assembling in England for an invasion at the Pas de Calais.²⁵ The transmission plan contained within Quicksilver was extremely detailed, with the Allies creating an entirely notional organizational chart for the FUSAG command structure, including detailed command nets from the FUSAG all the way down to army, corps, and division levels.²⁶ To add further credibility to the deception, Quicksilver II included plans to simulate two training operations during the month of April.²⁷ The Allies believed that the fictional wireless activity was so crucial to the success of Fortitude and Overlord that they made an exception to the normal security protocols and read-in the wireless operators making the transmissions. Wireless operators were “to be told the true nature of their task; they [were not to be told] stories inconsistent with the facts.”²⁸

Operation Quicksilver III, dubbed “Craft Indication”, was the cover plan designed to add additional credence to Quicksilver II by creating the

²³ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (2nd Page), TNA WO 205/173.

²⁴ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (3rd Page), TNA WO 205/173.

²⁵ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (4th Page), TNA WO 205/173.

²⁶ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (6th Page), TNA WO 205/173.

²⁷ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (3rd Page), TNA WO 205/173.

²⁸ SHAEF/18216/1/OPS, “Special Security,” 10 Mar 1944, NPN, The National Archives (TNA): Public Record Office (PRO) AIR 37/882.

illusion that a naval landing force for the FUSAG existed on the east coast of England. Without a plausible naval flotilla ready to transport the FUSAG to Calais, the Germans were more likely to dismiss this threat. Quicksilver III had three components: dummy landing craft, fictitious wireless traffic, and false “signage” pointing to false embarkation points on the coast.²⁹ The Allies placed approximately 270 dummy landing craft, called “big bobs”, at six locations along the east and south coasts of England between Yarmouth and Lowestoft.³⁰ Unlike the wireless plan for Quicksilver II, which simulated routine headquarters radio traffic, Quicksilver III simulated the day-to-day transmissions between larger ships moored in harbor and anticipating the upcoming embarkation of troops.³¹

Operation Quicksilver IV, the “Air Plan”, was a comprehensive bombing campaign designed to reinforce the entire Fortitude deception. It included bombardment up to and including D-day, and focused primarily on the Calais Area.³² The details of Quicksilver IV will become clear in subsequent chapters.

Operation Quicksilver V, “Increased Activity at Dover”, was designed to show additional activity at the location of the notional combined headquarters unit of the 2nd Canadian Corps.³³ Quicksilver V complemented Quicksilver I in that the 2nd Canadian Corps was one of four corps that was notionally within the FUSAG. Allied planners accomplished this by construction and the erection of wireless

²⁹ “Operation Overlord, Cover and Diversionary Plans,” 2A, NPN (4th Page), TNA WO 205/173.

³⁰ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (7th Page), TNA WO 205/173.

³¹ “Operation Overlord, Cover and Diversionary Plans,” 2A, NPN (4th Page), TNA WO 205/173.

³² “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (3rd Page), TNA WO 205/173.

³³ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (4th Page), TNA WO 205/173.

transmitter antennas. Additionally, the Allies simulated fictitious wireless activity typical of a corps headquarters.³⁴

Finally, Operation Quicksilver VI, “Nightlighting”, sought to add credence to the supposed increase of activity in southeastern England. Vehicle and ship lights, lights from installations, and lighting on fictitious embarkation areas would, planners hoped, mislead the Germans as to the location and timing of the assault. This activity was set to begin in mid-May.³⁵ One reason Quicksilver VI was so important was that the Allies had achieved air superiority over England by spring 1944.³⁶ Because of this, the Germans would have little opportunity to perform routine reconnaissance over-flight of the dummy landing craft set up and simulated in Quicksilver III. Night lighting, however, would not require over-flight, and it would likely be visible to observers on the French coast, or to reconnaissance aircraft flying over the English Channel.

What makes Quicksilver so significant is the scope and detail with which its planners conceived it. Far from being merely a series of disconnected deception efforts, Quicksilver’s component plans were designed from the start not only to complement each other, but also to add plausibility to an overall strategic deception campaign that was designed to explain away the massive buildup of Allied men and materiel in England. Moreover, Quicksilver was more than just an elaborate deception plan that would evaporate once the Neptune invasion began. Quicksilver IV, the air plan, was a robust, predatory air campaign that took real action against militarily significant targets, albeit not in the Neptune area. By combining both diversionary and deceptive elements

³⁴ “Operation Overlord, Cover and Diversionary Plans,” 2A, NPN (4th Page), TNA WO 205/173.

³⁵ “Operation Overlord, Cover and Diversionary Plans,” 2A, NPN (5th Page), TNA WO 205/173.

³⁶ Richard J. Overy, *The Air War: 1939-1945*, (Washington, DC: Potomac Books, 1980), 78.

into one coordinated operation, and cementing these elements together with the very real presence of aircraft and bombs, the Allies wove a web of deception that attracted and then effectively immobilized the Germans.

Chapter 3

The Air Plan

The Fortitude Plan is designed primarily to indicate our intention of assaulting in the Fortitude area, but at the same time it gives an opportunity for attacks to be carried out in the Neptune area, with the implication that they are intended as cover for the Fortitude Plan.

21 Army Group paper on the Fortitude and Neptune Bombing Program, May 26, 1944

Operation Quicksilver IV had two major components. The first was purely deceptive in nature. It used the infrastructure and organization of the other five Quicksilver operations to increase the threat to Calais in the mind of the Germans by carrying out activities that would appear to be precursors to a massive invasion at Calais. The second component of Quicksilver IV called for a “short” bombing campaign against targets near Calais that would further signal to the Germans an Allied plan to invade there.¹ While this program was termed “short” by the Allies, the bombing effort directed toward Operation Fortitude targets in many cases exceeded the effort directed towards Operation Neptune targets in the days leading up to the invasion.

Fortitude Air Plan

The details of Quicksilver IV were contained in Appendix D of the Fortitude Plan.² As with Fortitude, Quicksilver IV had two phases; a pre D-day and a post D-day phase. Phase 1 sought to make the Germans believe that the preparations underway in England were for an invasion at Calais. The first phase of Quicksilver IV had six specific objectives.

¹ Commander in Chief Allied Naval Expeditionary Force, Commander in Chief 21 Army Group and Commander in Chief Allied Expeditionary Air Force, “Operation Overlord, Cover and Diversionary Plans,” 30 May 1944, 9A, NPN (3rd Page), The National Archives (TNA): Public Record Office (PRO) WO 205/173.

² “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

The first was to give the Germans the impression that the target date for the invasion was Neptune D + 45.³ The second involved fighter aircraft flight training in southern England, which was designed to give the impression that those fighter squadrons were preparing for operations around Calais.⁴ Third, planners scheduled training missions for air-sea rescue craft in the channel. In much the same way that the sea diversion plans used deceptive measures to make a small number of ships look like an invasion fleet, the Fortitude planners anticipated similar results from a small number of rescue craft.⁵ Fourth, planners devised a scheme for large-scale operations composed of fighters and bombers starting on D-3.⁶ The bombers would be part of the Operation Overlord Air Plan, while the fighters would practice “shuttle service” operations.⁷ Shuttle service operations were a means for allowing fighters to fly missions from a starting base in England, recover, rearm, and refuel from airfields constructed by engineers in France once the invasion was underway. Additionally, the Allies wanted to give the impression they were trying to conceal these operations by making frequent call sign changes to flights conducting shuttle operations. They planned to accomplish this by making planned radio “indiscretions”, anticipating that the Germans would intercept these transmissions. Fifth, the Allies planned to build additional dummy hardstands at existing airfields to give the impression that the current level of construction was insufficient, and to reinforce further the notion that the

³ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

⁴ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

⁵ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

⁶ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

⁷ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

upcoming invasion would occur much later.⁸ Finally, they planned to carry out small-scale shuttle deployments similar to those previously discussed. These would be different only in the size of the operations and the fact that they would be under the control of sectors in the southeast of England.⁹ Presumably, the Germans would see the larger operations to the north as indicative of an invasion at Calais, while the smaller operations in the southeast would point to a diversionary invasion at Normandy.

The second phase of Quicksilver would begin after D-day, and was intended to maintain the threat of invasion of Calais in the Germans' mind.¹⁰ While Appendix D does not specify whether the programs implemented for the pre D-day period were to continue, it is likely that they were to remain in effect. Phase two explicitly listed only two programs for continuing the deception. First, the Allies planned purposely to disclose the nature and missions of the notional air forces in the southeast of England.¹¹ Finally, they planned to conduct training exercises in the southeast of England stressing coordinated Army/Air Force activity, similar to what would any observer would expect of units during their final workups towards an invasion. Both of these activities were designed to continue to present a threat to Calais, but the Allies were savvy and it is unlikely they would simply have dropped the programs begun in phase one of Quicksilver IV.

⁸ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (8th Page), TNA WO 205/173.

⁹ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (8th Page), TNA WO 205/173.

¹⁰ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (9th Page), TNA WO 205/173.

¹¹ "Operation Overlord, Cover and Diversionary Plans," 9A, NPN (9th Page), TNA WO 205/173.

Culmination of the Threat to Calais

The Allies recognized that there would come a time, after the D-day landings, when the troops already on the ground posed a greater danger to the Germans than the potential for a second invasion at the Pas de Calais. If it became apparent the Germans were planning on abandoning their defensive posture around Calais to move troops south toward Normandy, then the Allies planned to “culminate the threat” against Calais.¹² This culmination, while not planned in detail, would include sufficient close support bombing to suggest the invasion at Calais was beginning.¹³

The Air Plan

While Fortitude involved a tremendous amount of fictitious activity meant to deceive and confuse the Germans, it also included a significant amount of offensive activity aimed at the Germans near Calais. Nowhere is this more apparent than in Quicksilver IV and its integration within the Air Plan. This plan included not only targets to strike on D-day at Normandy, but also included Fortitude targets. It is quite clear that the Allies considered Fortitude critical not only to the success of the Neptune invasion, but also believed that those tasked with executing the Normandy invasion were fully aware of the scope and objectives of the Fortitude air campaign. All documents directly relating to Overlord were not only marked Top Secret, but also bore the additional security caveat BIGOT.¹⁴ The same was true for Fortitude. Thus, if an individual could access the plan for Overlord, he also had access to Fortitude. Moreover, once the Allies finalized plans for Fortitude, they incorporated them into

¹² “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

¹³ “Operation Overlord, Cover and Diversionary Plans,” 9A, NPN (8th Page), TNA WO 205/173.

¹⁴ BIGOT was an additional caveat given to planning documents related to Overlord, Neptune and Fortitude. The caveat BIGOT was a means further to compartmentalize the information contained within the operational plan.

most high-level Overlord planning documents. Therefore, air planners tasked with supporting the Neptune invasion would also have immediate access to the Fortitude air plan.

Level of Effort

One of the pressing questions the planners asked was “What is a reasonable level of effort for the air plan?” During the course of the planning effort, the staffs went back and forth with SHAEF as to the allocation of aircraft. On the one extreme, planners could devote 100 percent of Allied air power against targets directly supporting the Neptune invasion. This would result in the maximum amount of direct support to the invasion, but would hamstring the deception operation dictated by Fortitude. At the other extreme, the Allies could devote 100 percent of Allied air power against targets supporting the Pas de Calais deception. While this might further reinforce the notion that the Allies were planning an invasion at Calais, it would leave the landing force grossly under-supported. Allied planners tried deliberately to balance maximizing the deception while minimizing the level of effort.¹⁵ They did this primarily to conserve aircraft for possible use during and after the Neptune invasion itself. Their recommendation was to use 100 percent of the available day bomber force for D-3, but no more than 50 percent for D-2 and D-1. This was further subdivided between Fortitude and non-Fortitude Targets. On D-3, the plan was to use 100 percent of the total bomber force, with 40 percent allocated to Fortitude, leaving 60 percent available for other tasks. On D-2, planners allocated 30 percent of the available day bomber force for Fortitude targets and 20 percent to other tasks, totaling 50 percent of the total day bomber force. D-1 saw

¹⁵ “Preparatory Air Operations for Operation ‘Overlord’,” NPN (20th Page), The National Archives (TNA): Public Record Office (PRO) AIR 37/1024. NOTE: no date or originating authority was printed on the document. However, several pages of bombing statistics are given, and they state that the numbers were current as of 1800 on 5 May 1944.

an equal split of 25 percent for both Fortitude and non-Fortitude tasks, which also totaled 50 percent of the day bomber force. For the nights of D-3/D-2 and D-2/D-1, planners assigned identical fractions: 30 percent of night bombers for Fortitude targets and 20 percent for other tasks, totaling 50 percent of the total night bomber force.

Furthermore, planners wanted to limit attacks on Fortitude targets to the bomber forces only, leaving fighter aircraft free to respond to unplanned contingencies. It is unclear whether the Allies considered this a possible giveaway to the cover plan. It was possible that the Germans might notice the conspicuous absence of Allied tactical aircraft in the Calais area, and consider the possibility that the presence of fighters over Normandy could be an indicator of the actual landing beaches.

Air Plan Targets

The target list for the Air Plan looks extremely limited by today's standards. Given that SHEAF estimated they would have a total of 1200 heavy daylight bombers and 1000 heavy night bombers, one would presume that the Allies would plan to strike literally hundreds of targets.¹⁶ Using the planned percentages for Fortitude targets, they estimated a total of 4,680 tons of bombs would be dropped on Fortitude targets on the three days and nights leading up to the invasion.¹⁷ Using modern weapons, that would equal 4,680 GBU-31 2000 pound Joint Direct Attack Munitions (JDAM), 9,360 Wind Corrected Munitions Dispensers (WCMD), 18,720 500 lb JDAM, or some combination of those weapons. Given those incredible numbers, one would think that air strikes would reduce Calais and the surrounding area to ruins, and that they would obliterate every possible military structure in the area.

¹⁶ "Preparatory Air Operations for Operation 'Overlord'," NPN (20th Page), TNA AIR 37/1024

¹⁷ The Air Plan documents do not specify whether a "ton" is a long ton (2240 lb), short ton (2000 lb), or metric ton (1000 kg). However, the air plan lists individual bomb weights in pounds, so most likely tonnage was in short tons.

Nothing could be further from the truth. Due to the inaccuracies of high altitude level bombing in 1944, targets frequently required hundreds of bombers and hundreds of tons of bombs. For example, Schedule H, Section C, lists the daytime beach targets struck prior to the landings at Omaha and Utah beaches. It lists 20 targets struck with some 1,934 tons of bombs, ranging from 20lb bombs up to 1000lb bombs, with some targets receiving as much as 129 tons of bombs in a 25-minute period just 5 minutes prior to the landings.¹⁸ Ultimately, it required a tremendous number of aircraft and weapons to strike even a handful of targets. As such, planners focused very closely on the types of targets to strike for Fortitude. If they were not representative of targets Allied aircraft would strike prior to an invasion, then the deception could conceivably fail.

Preparatory Phase

While technically not a formal part of Fortitude, the preparatory phase of Operation Neptune included aspects of the Fortitude deception. This phase began well prior to the commencement of Neptune, and included attacks on targets that would ultimately affect the chances of Allied success during the invasion.¹⁹ The preparatory phase included attacks on airfields, cutting lines of communication (LOCs) including railways and roads, and dropping bridges.

Arguably, one of the more important aspects of the preparatory phase was the bombing of marshalling yards, railroad lines, roads, and bridges, known collectively as the Transportation Plan.²⁰ While

¹⁸ Headquarters, Allied Expeditionary Air Force (AEAF), "Air Targets, Schedule H Assault Programme," 31 May 1944, NPN (19th Page), The National Archives (TNA): Public Record Office (PRO) AIR 37/1122.

¹⁹ Headquarters, AEAF, "A Review of Air Operations, Preparatory and in Support of Operation 'Neptune'," n.d., 7, The National Archives (TNA): Public Record Office (PRO) AIR 37/576.

²⁰ Air Historical Branch, "R.A.F. Narrative (First Draft, Revised). The Liberation of North West Europe, Volume III: The Landings in Normandy," n.d., 22, The National Archives (TNA): Public Record Office (PRO) AIR 41/24.

deception was by no means the primary focus of this effort to isolate the Normandy battle area from German reinforcements and supplies, planners incorporated elements of Fortitude into target selection for this vital plan. Thus, planners included a large number of transportation targets in and around the Calais area. This served not only further to isolate the Normandy area, but also to reinforce the idea that Calais was the target of the Allied invasion.²¹

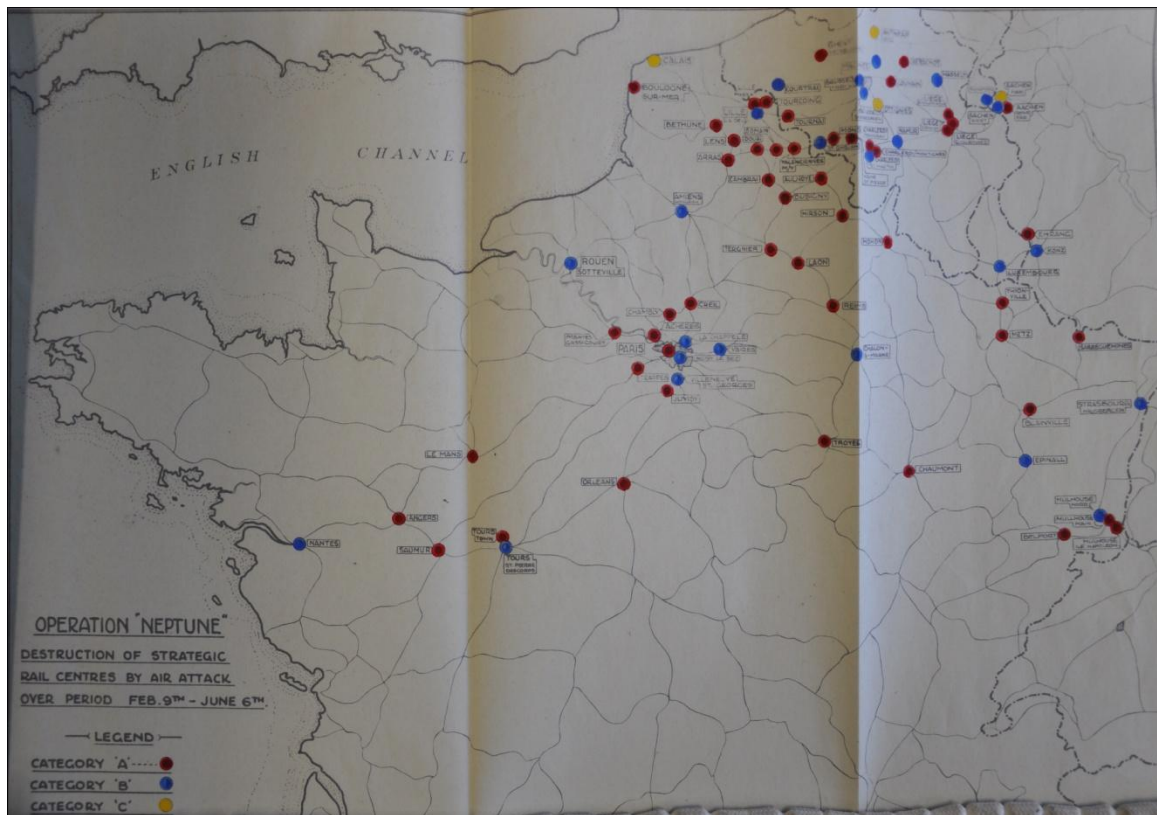


Figure 4. Destruction of Strategic Rail Centers (Feb-Jun 1944)

Source: The National Archives, Kew

Figure 4 shows the rail centers bombed from early February up to D-day. Simply looking at the locations of the targets bombed instantly

²¹ Mary Kathryn Barbier, *D-day Deception: Operation Fortitude and the Normandy Invasion*, (Mechanicsburg, PA: Stackpole Books, 2007), 144.

suggests that the area surrounding Calais took the largest beating. Taking that to its logical conclusion suggests that the invasion of France would take place at the Pas de Calais, not Normandy.

What is significant about the Transportation Plan, and the entire preparatory phase, is the way in which planners included Fortitude objectives seamlessly within the larger plan. The Allies were able to achieve the preparatory objectives while at the same time pointing to Calais as the ultimate invasion objective. Other efforts, such as bombing airfields, had similar results; approximately four airfields near the Normandy beaches were bombed, while 13 were bombed near Calais.²² The result was the same: Even the most detailed analysis suggested Calais, not Normandy, was the site of the impending Allied invasion.

Fortitude Targets

The preparatory phase consisted of Air Plan targets from D-3 through D-day. While Quicksilver IV made specific mention of a post D-day phase, as of May 31st, no targets subsequent to D-day had been approved.²³ With a few exceptions, the number and types of targets to strike changed very little between revisions of the pre D-day target list. Those to be struck in support of Fortitude were listed in the overall Joint Air Plan targets list issued on May 23 and revised May 27. Within the air targets, Fortitude targets were under “Schedule ‘C’ – Fortitude,”²⁴ and were broken down further into day and night targets. Furthermore, there were two separate sets of target serials to be bombed in the event Allied leaders postponed D-day. In general, planners chose to focus their efforts against targets of military value and representative of those that

²² “A Review of Air Operations, Preparatory and in Support of Operation ‘Neptune’,” NPN (Chart between pages 8 and 9), TNA AIR 37/576.

²³ “Air Targets, Index,” NPN (3rd Page), TNA AIR 37/1122.

²⁴ “Air Targets, Schedule C – Fortitude, Section C – Targets for Day Attack, Alternate programme in the event of postponement,” NPN (9th Page), TNA AIR 37/1122.

would be logical choices for preparatory bombing prior to an invasion. Targets fell into three main categories: coastal defense batteries, beach targets, and reserve formations and headquarters units.²⁵

Schedule C, Section A, listed day targets for Fortitude. The targets were broken down into three separate days: D-3, D-2, and D-1. Initially fifteen targets were planned for D-3, but this was whittled down to eleven by May 31st.²⁶ The targets consisted of eight gun batteries, two road centers, and one road/rail center. Of note is the fact that the Allies continued to conduct reconnaissance on Fortitude targets, and that these missions were themselves part of the cover plan. The intent was twofold: first, to convince the Germans that reconnaissance missions indicated a high level of interest in the “future landing site,” and, second, the very real value aerial reconnaissance brought to the Allied effort in terms of both situational awareness and targeting or re-targeting of key installations. For example, planners had previously identified the Abbeville Road/Rail center as a “communications centre”. However, a handwritten note on the target list issued on May 31 indicates that the target had been re-designated a “road & rail centre” by the Allied Expeditionary Air Force (AEAF) based on updated aerial reconnaissance.²⁷ While the change in target nomenclature did not affect whether it was struck or not, the point is the Allies were still revisiting Fortitude targets on the eve of the invasion.

The Allies were clearly committed to making the Fortitude air plan as realistic as possible and they made every effort to ensure that the targets had significant military utility. Once again, aerial

²⁵ “Preparatory Air Operations for Operation ‘Overlord,’” NPN (20th Page), TNA AIR 37/1024

²⁶ 21 A Gp/20651/35/3/G(Plans), Notes from Conference at Bentley Priory, 8 May 1944, 5A, NPN (8th Page), The National Archives (TNA): Public Record Office (PRO) WO 205/528; “Air Targets, Schedule C – Fortitude, Section A – Targets for Day Attack,” NPN (7th Page), TNA AIR 37/1122.

²⁷ “Air Targets, Schedule C – Fortitude, Section A – Targets for Day Attack,” NPN (7th Page), TNA AIR 37/1122.

reconnaissance, combined with French Resistance, the Special Operations Executive (SOE), and other reports, proved vital to success. For D-2, there were seven targets: four batteries, one strong point, and three fortified villages.²⁸ These targets evolved somewhat more than did the targets for D-3. As early as May 4, planners had ten targets listed for D-2: five gun batteries and five beach targets.²⁹ They reduced this to eight total targets on May 17: four gun batteries, one strong point, one fortified village, and two headquarters.³⁰ Planners chose the final seven targets around May 19 and they remained unchanged on May 31. The D-1 targets underwent a slightly different evolution. The total number, initially ten targets, was reduced to seven during the month of May, but returned to ten by May 31. The final target list included four beach targets, two fortified villages, three “localities”, and one fighter control center.³¹

Section B listed night targets. While the night bomber targets remained coastal defense batteries throughout the planning process, planners cut the numbers in half. Whereas on April 26, planners allocated ten targets for each of the two nights prior to D-Day, this was halved by early May.³² Ultimately, they targeted five batteries each night on D-3/D-2 and D-2/D-1. Sections C and D listed day and night targets, respectively, in the event bad weather prompted Eisenhower to postpone the invasion.³³ The plan included targets for D-2 and the night

²⁸ “Air Targets, Schedule C – Fortitude, Section A – Targets for Day Attack,” NPN (7th Page), TNA AIR 37/1122.

²⁹ Notes from Conference at Bentley Priory, 5A, NPN (8th Page), TNA WO 205/528;

³⁰ 21 A Gp/00/345/Ops, “Scale of effort available for Fortitude and Neptune D-1 Bombing Plans,” 6A, 17 May 1944, The National Archives (TNA): Public Records Office (PRO) WO 205/173.

³¹ “Air Targets, Schedule C – Fortitude, Section A – Targets for Day Attack,” NPN (7th Page), TNA AIR 37/1122.

³² 21 A Gp/00/209/40/OPS, “Bombing Programme: FORTITUDE D-3 to D-1: NEPTUNE D-1,” 26 April 1944, 3A, NPN (7th Page), The National Archives (TNA): Public Records Office (PRO) WO 205/173.

³³ In the latest version of the targets list I was able to find (27 May 1944), Section C is absent. The index lists Section C, so I presume that Section C was lost and not deleted.

of D-2/D-1 for two cases. Case One was the “first postponement”, and case two was the “second postponement.”³⁴ The planning documents do not go into any additional specifics on the anticipated timing or length of the postponements. The numbers of targets remained the same, but the targets themselves were different for cases one and two. Additionally, there does not appear to be any explicit provision for postponement in the other target lists. One undated document, written between April 26th and May 17th, refers to an agreement concerning Case Two, the second postponement scenario. In that case, AEAF appears to have agreed to use fighter-bombers to target five bridges and two causeways previously assigned to the 82nd Airborne Division.³⁵ However, there appears to be no mention of this in any formal version of the Air Plan.

Other Cover Plan Targets

To complicate the analysis of the Fortitude Air plan, a significant number of targets designed to support the cover plan were included in the overall Air Plan, but not listed explicitly as Fortitude targets. Some, such as coastal batteries, were a continuation of the preparatory phase, and thus made their way into the Air Plan. Additionally, a significant number of targets were struck inside the Fortitude area but were not explicitly listed as Fortitude or Neptune targets. For example, planners noted there were six rail bridges in the Fortitude area that were part of the AEAF Strategic Rail Plan.³⁶ While not technically part of the Fortitude deception, the fact that they were bombed would not have escaped the Germans’ attention and would likely have entered into their decision calculus regarding the anticipated invasion at the Pas de Calais.

³⁴ “Air Targets, Schedule C – Fortitude, Section D – Targets for Night Attack, Alternatives in event of postponement,” NPN (10th Page), TNA AIR 37/1122.

³⁵ “Scale of effort available for Fortitude and Neptune D-1 Bombing Plans,” 6A, NPN (1st Page), TNA WO 205/173.

³⁶ “Bombing Programme: FORTITUDE D-3 to D-1: NEPTUNE D-1,” 3A, NPN (4th Page), TNA WO 205/173.

Conclusion

While Quicksilver IV was an integrated part of the overall plan for Fortitude, it stood out from most of the other operations in one significant aspect. Quicksilver IV was an integral part of a fully integrated, combined air plan designed to support the Neptune invasion and the Overlord campaign. Unlike many of the diversionary operations, such as Operation Glimmer, the air operations associated with Quicksilver IV were not deceptively large. Instead, planners devoted a considerable percentage of the total aircraft available and struck real targets with bomb loads commensurate with the cover story they were feeding the Germans. While chaff, jamming, fake radio transmissions, and cleverly planted intelligence can induce an opponent to draw broad conclusions based on a small sampling of data, this is a much more difficult proposition with something like air attacks. If the Allies had not actually sortied a realistic number of aircraft, placing aircrews and aircraft at risk, and had not bombed an appropriate number of targets, then the Germans might easily have seen through the ruse. In this way, then, Quicksilver IV helped purchase for Fortitude an authenticity it otherwise may have lacked.

Chapter 4

Air Plan Analysis

The Air Plan was a set of schedules that included target lists, general priorities, and items for action surrounding the Allied invasion. It explicitly incorporated Operation Fortitude targets in only four of 23 total schedules. Schedule C, 'Fortitude', contains four sub-sections: Section A, "Targets for Day Attack"; Section B, "Targets for Night Attack"; Section C, "Targets for Day Attack – Alternative Programme in Event of Postponement"; and Section D, "Targets for Night Attack – Alternative Programme in Event of Postponement."¹ The makeup of the overall Operation Neptune Air Plan sheds a significant amount of light on how planners incorporated Fortitude missions. One can better understand the way in which the Allies implemented by analyzing their target list.

A common theme over the entire Air Plan was the significant amount of manual editing. Targets are hand-written in, while others are lined-through. In most cases, there is no reason given for the changes. However, there are instances where planners annotated additional information. Little editing was done on the Fortitude targets, but it points to the fact that the overall plan was a work in progress, with changes being made up to the point of execution.

Schedule Layout

With few exceptions, each page within the air plan was laid out identically on an oddly sized rectangular piece of paper. Because the copies were mimeographed, the text was purple and is now often difficult to read. At the top, the schedule and schedule title appear in handwritten, oversized letters. Below that, any section letter and

¹ Headquarters, Allied Expeditionary Air Force (AEAF), "Air Targets, Index," 31 May 1944, NPN (3rd Page), The National Archives (TNA): Public Record Office (PRO) AIR 37/1122.

description were typed. Additionally, any ancillary information, such as the overall objective of that particular page, was typed. With few exceptions, the classification TOP SECRET, along with the caveat BIGOT, appears on the upper right corner of the page. Finally, revision dates, if applicable, also appeared in the upper right hand corner.

The majority of information was contained in six columns. The first column is entitled “Serial”, and simply contained the number assigned to each target, or serial. In most cases, each discrete target had an associated serial number. In a few instances, several targets very close together shared one. For example, serial 9 of Schedule D, Section B, consists of two gun batteries identified as the Ozeville I and II gun batteries. More often, serials with more than one target were “area” targets with no clearly identified target location. Schedule DD, Night D-1/D Bombing of Roads, consists entirely of these types of targets. Each of the six serials consists of a general description of a road between three cities.

The second column, labeled “Timing,” was sometimes blank but usually contained some sort of timing information. In the case of Fortitude targets, timing simply consisted of a specific day for striking the targets. In the case of Neptune assault support, target timing was down to the minute.

The third column, entitled “Targets”, contained the target description. In most cases, the target was identified by three pieces of information; the town closest to the target, a description of the target, and its six- or eight-digit map grid.² For example, LA PERNELLE Bty 365200, describes a gun battery near La Pernelle with the grid reference 365200.

The fourth column, “Type of Aircraft Employed,” typically described the category of aircraft assigned to a given serial, but did not specify

² See Appendix A for further information on map grid reference numbers.

aircraft type or unit. Examples include “Day Heavy”, or “T.A.F” [Tactical Air Forces]. In most instances, planners put something in that column, but sometimes left it blank for no apparent reason.

The fifth column, entitled “Effort Allocated”, was usually blank. In a few instances, it contained information on Schedules with targets for Fortitude. This had to do with the fact that Allied planners were careful to allocate specific percentages of the overall bomber force on the days leading up to the invasion.

The sixth, and final, column was “Remarks.” This contained a variety of text. In some cases, the remarks column contained additional information on weather backup (divert) targets. In other cases, it included detailed information on weapon types, fuzing data, and cratering criteria.³

Fortitude Target Locations

The geographic layout of the Neptune and Fortitude air targets suggests that planners did not have clearly defined boundaries between the two operating areas. Instead, the target layout suggests that individual planners or groups of planners may have worked different target schedules. For example, in Schedule B, there is a very definite boundary between Neptune and Fortitude targets for both day and night attacks. All batteries south and west of Le Havre (inclusive) appear as Neptune targets, while everything north and east of Le Havre is clearly a cover target. On the other hand, in Schedule C, there are no targets south-west of the Somme River. In fact, apart from a target in Amiens, all others in Schedule C are north and east of the Authie River, on which lies the small town of Berck. More telling, however, is the sequencing of targets over the 3 days and nights prior to the invasion. Targets were not randomly broken into groups and assigned to a day without careful

³ “Air Targets,” 31, NPN (7th and 8th Pages), TNA AIR 37/1122.

consideration. Instead, planners grouped targets in a logical manner, suggesting a carefully timed plan leading to an invasion.

Schedule C, Section A – Targets for Day Attack

Section A, dated May 31st, contains a total of 32 targets, or serials as they were termed in the Air Plan, on a two-page list.⁴ Aside from targets inland, the coastal targets are spread evenly along approximately 47 miles of coastline between Berck and Calais. Section A is subdivided into three groups, organized by day: D-3, D-2, and D-1. Of the 11 targets comprising D-3, eight are gun batteries, while the other three are road or rail centers. D-2 consists of eight targets, of which half are gun batteries, with the other half consisting of strong points or fortified villages. D-1 originally consisted of thirteen targets, but planners crossed out two of the original document. Of the remaining eleven, nine were towns, “localities”, or fortified villages. The final target, serial 32, was a fighter control center at Bryas. One target, serial 26, was illegible, but was most likely a fortified village.⁵

⁴ The latest version of the Air Plan that I have found was included in AIR 37/1122. It is attached to a memorandum from Headquarters, AEAf entitled “Allocation of Bombing Effort”, and is dated 31 May 1944. However, several Schedules near the end have revision dates as late as 1 June 1944.

⁵ WO 205/529 also contains Schedule C, Section A, but parts are significantly different. D-3 is identical, as are Serials 12-19 of D-2. However, Serials 20-26 were covered over by a cutout of serials 27-33. It is unclear if this was a substitution for D-1, or if the serials were added to D-2.

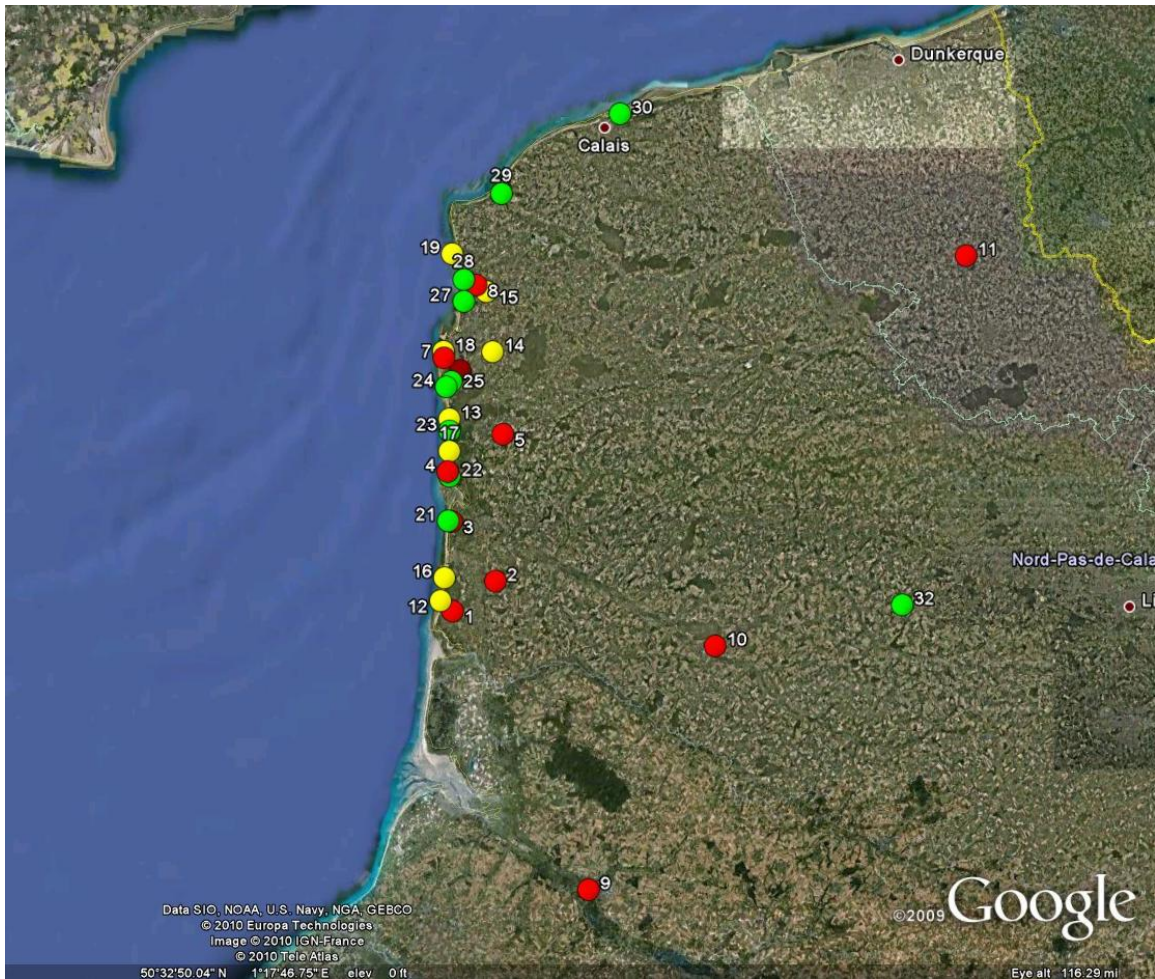


Figure 5. Schedule C, Section A (Fortitude Day Targets)

Source: The author's own work.

Figure 5 illustrates the Fortitude day targets. The colored circles represent the target locations, while the numbers associated with each circle reference the serial number associated with that target. Red circles are for D-3 targets, yellow circles are for D-2 targets, and green circles are for D-1 targets.

When examined closely, a pattern emerges from the timing and type of targets. On D-3, the majority of the targets are gun batteries and transportation centers. Of the four targets farther than 5 miles from the coast in Section A, three appear on the D-3 list, and all three are transportation centers. D-2 switches from gun batteries and a sprinkling

of transportation centers to a fifty-fifty mix of gun batteries and fortified villages. Unlike the transportation centers, which were relatively deep inland, the fortified villages for D-2 were all coastal towns. D-1 completed the transition from focusing on gun batteries, to a near total focus on coastal towns and strong points. The one exception is Serial 32, which was a fighter control station some 36 miles inland near the town of Bryas. From the point of view of a defender, the progression of targets over the three days would not appear random. Instead, it would present a carefully planned program designed first to destroy the Germans' long-range artillery and isolate the beaches by destroying road and rail centers. Once the guns were out of action and the defenders isolated, the program shifted gears and began softening up the defenses along the beaches. Finally, targeting the fighter control center at Bryas signaled the intent of preventing the Germans from coordinating air defenses.

Schedule C, Section B – Targets for Night Attack

The night Fortitude target list, assigned to British heavy bombers, was considerably smaller and simpler than the day targets list. Whereas there were over 30-day targets, broken up into a mix of gun batteries, transportation hubs, and strong points, all 10 night targets were gun batteries.

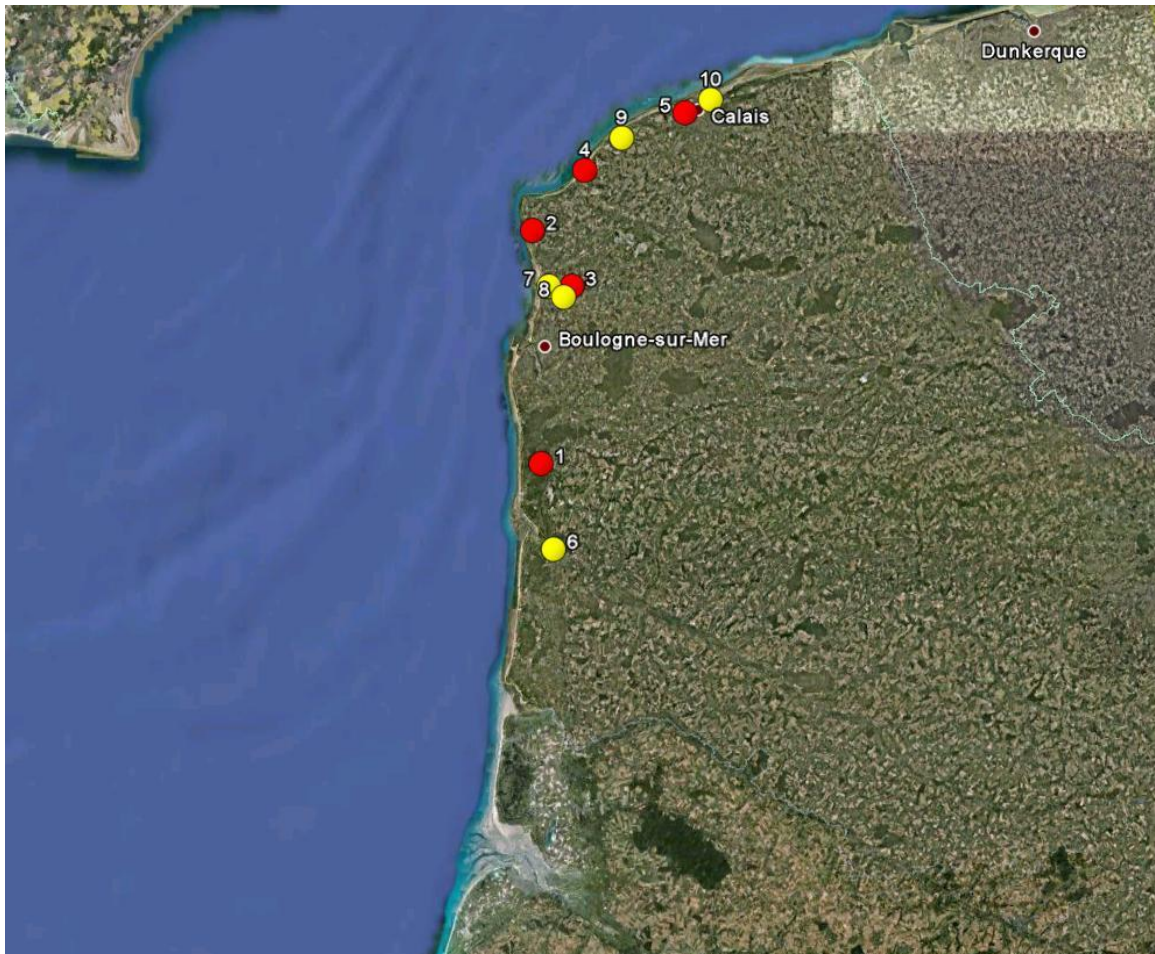


Figure 6. Schedule C, Section B (Fortitude Night Targets)

Source: Author's own work.

Figure 6 represents the Fortitude targets identified for night bombardment. The colored circles represent the target locations, while the numbers associated with each circle reference the serial number associated with that target. Red circles correspond to D-3/D-2 targets, while yellow circles are for D-2/D-1 targets.

Fortitude night targets extended along approximately 37 miles of the coast roughly between Etaples, on the north bank of the Canche River, and Calais. The one exception is a small cluster of three gun batteries northeast of Wimereux. Other than reinforcing the suggestion

that the Allies were focusing a considerable effort on the Calais area, the laydown and timing of the Night schedule says little else.⁶

Schedule C, Sections C and D – Targets for Day and Night Attack/Postponement

The last two schedules in the Fortitude section were unique to the Air Plan. They included a day and night schedule, Sections C and D respectively, in the event Allied leaders postponed the invasion. No other schedules addressed this possibility.

The targets in Schedule C, Section C were broken down into two sets of eight targets. The initial eight were to be used in the event of the first postponement of the invasion, while the latter set was reserved for a second delay. The only other information appears in the remarks section, which stated that in the event of a postponement, the targets for D-1 were to remain the same as in the original Air Plan. There is no mention of what to do with targets for D-3. Section D follows a similar pattern.

Curiously, these two sections offer no reason for the inclusion of postponement targets. The number and character of the targets was identical to the original: four gun batteries and four towns for the day targets, and five gun batteries for the night targets. Nevertheless, the targets were different between all three: the four guns were different for the original, and for each postponement, as were the towns. There is no clear reason for this, nor are there additional instructions regarding the postponement. It is possible that the Allies would have used these schedules if they had to postpone the invasion after conducting strikes on D-2. That way, if aircraft struck targets on the original target list, the Allies would have an additional two days of backup targets they could

⁶ “Air Targets, Schedule C – Fortitude, Section B – Targets for Night Attack,” 17 May 1944, NPN (5th Page), The National Archive (TNA): Public Records Office (PRO) WO 205/529.

use to keep the bombing campaign running without simply re-striking the same targets again. Unfortunately, there appears to be no information available regarding this possibility, nor was it clear whether Allied aircraft struck these targets after General Eisenhower postponed D-day from 4 – 6 June 1944.⁷

Schedule B - Coastal Batteries

Schedule B, Sections A and B, contain a list of coastal gun battery targets that were to be struck prior to the invasion. While Fortitude targets had specific days assigned to groups of targets, the coastal batteries listed in Schedule B were not given specific dates. Instead, the Air Plan merely directed that aircrews strike them any time prior to D-3. While the air plan itself gave no clues as to when aircrews might first have struck these targets, later schedules within the Air Plan have dates as early as May 15 assigned to targets.⁸ In fact, an undated report on Air Operations in support of Neptune prepared by Allied Expeditionary Air Force (AEAF) Headquarters states that bombardment of coastal defense batteries began as early as May 10.⁹ Unlike other target schedules, Schedule B contains a mix of targets assigned to direct support of both Operations Neptune and Fortitude. In a manner similar to the rest of the Air Plan, Section A contains day targets, while Section B contains night targets.¹⁰

⁷ “Air Targets,” NPN (9th and 10th Pages), TNA AIR 37/1122.

⁸ Schedule E, Pre D-day Cutting of Railways, states that specific railways should not be cut prior to Y-15. Y-Day was the day after which planners could make no additional changes to the overall plan for Overlord. Y-Day was set at June 1st, 1944.

⁹ Headquarters, AEAF, “A Review of Air Operations, Preparatory and in Support of Operation ‘Neptune’,” n.d., 18, The National Archives (TNA): Public Record Office (PRO) AIR 37/576. The scope of the report covers the preparatory phase up to D+21 (June 28th). The report implies that the operation is still ongoing.

¹⁰ “Air Targets,” NPN (5th and 6th Pages), TNA AIR 37/1122.



Figure 7. Schedule B, Section A (Day Coastal Battery Targets)

Source: The author's own work.

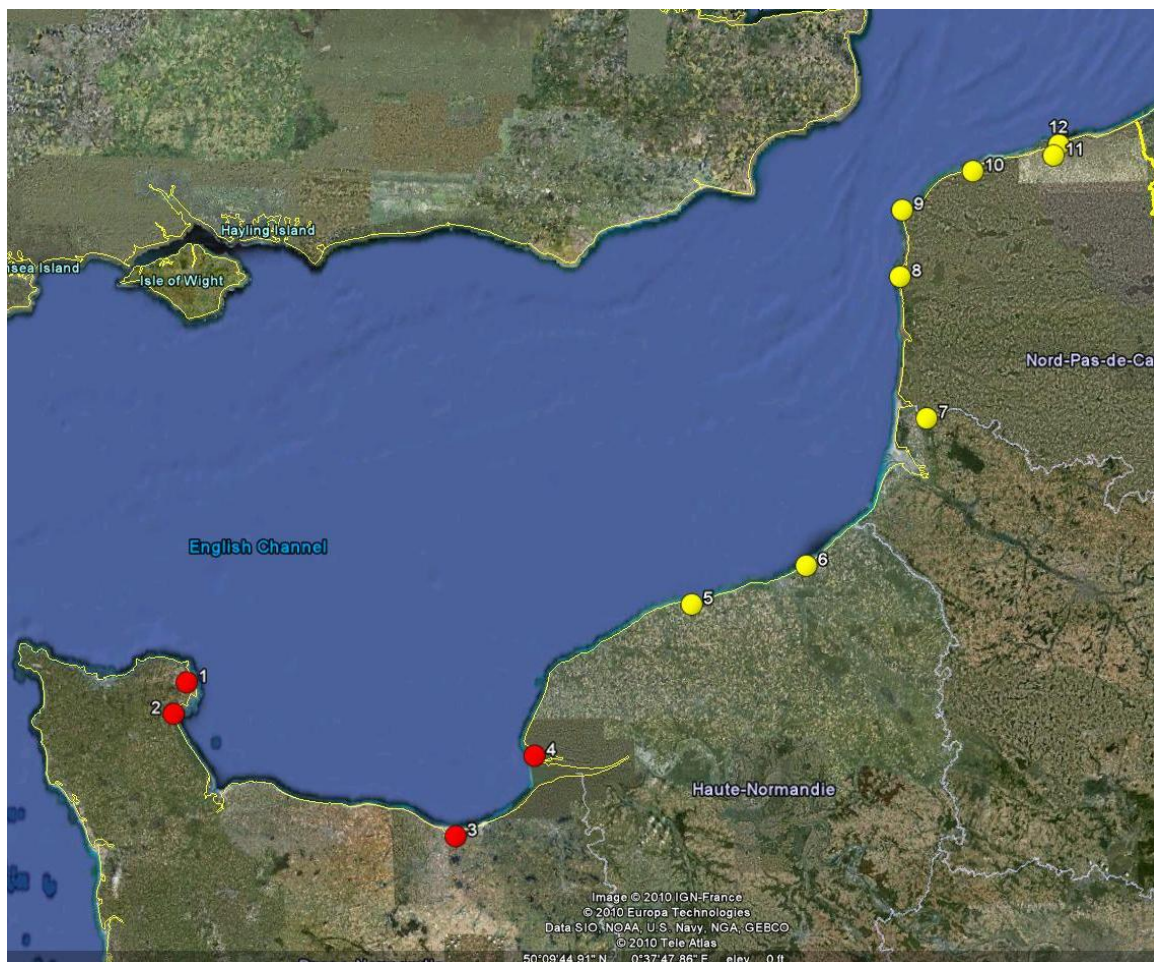


Figure 8. Schedule B, Section B (Night Coastal Battery Targets)

Source: The author's own work

Figures 7 and 8 represent the coastal battery targets identified in Schedule B. The colored circles represent target locations, while the numbers by the circles represent the appropriate serial number. Targets identified within Schedule B as “Neptune” targets have red circles, while non-Neptune targets are yellow.

One often repeated “fact” associated with Fortitude is how the Allies bombed two targets outside the Neptune area for every target inside the Neptune area. This is simply not true. This misunderstanding comes directly from the coastal battery target list of the Air Plan. To begin with, the remarks section contains the now famous statement, “In order to support the cover plan for every target bombed inside the

NEPTUNE area two targets are bombed outside the area.”¹¹ This statement, which applies only to Schedule B, has long been taken out of context and applied universally to Fortitude targets. This recurred in the AEAF after-action report on air operations. Page 10 describes the Allied methodology for identifying and targeting coastal batteries that could affect the Neptune invasion. It also states that the Allies targeted two batteries outside the target area for each one inside the target area. However, there is no mention of other target types.

Fortitude South II

Operation Fortitude South II, approved by SHEAF on 19 July 1944, was an operation designed to continue the threat to Calais while explaining away inconsistencies with the original Fortitude South story.¹² In the original Fortitude South story, the First United States Army Group (FUSAG) was composed of both fictional and real army units. However, after some two months of progress in western France, the Allies were concerned that the Germans would identify units supposedly still in England as actually fighting in France. Without a plausible story, the Allies feared the Germans would realize that Fortitude South was a ruse and that Calais was not under any threat of invasion. Thus, the Germans would feel less compelled to maintain a large number of troops at Calais.¹³

From the Allied air forces' perspective, very little changed between Fortitude South and Fortitude South II. The XIX Tactical Air Command, the notional organization in charge of the air forces held in reserve to support the Calais invasion, was replaced with the fictitious VIII Tactical

¹¹ “Air Targets,” NPN (5th and 6th Pages), TNA AIR 37/1122.

¹² SHAEF/18250/OPS(B), “Plan ‘Fortitude South II’,” 19 July 1944, 38H, NPN (1st Page), The National Archive (TNA): Public Records Office (PRO) WO 106/4310.

¹³ “Plan ‘Fortitude South II’,” 38H, NPN (3rd Page), TNA WO 106/4310.

Air Command.¹⁴ The overall plan for the air component comprises six lines of text. The notional concentration and training of fighter groups in England remained in place. Furthermore, the bombing campaign supporting Fortitude South was to remain in place for Fortitude South II.¹⁵ As the air plan for Fortitude South II noted, the one already in place for Overlord, to include Fortitude South, was sufficient to maintain the story suggested by Fortitude South II.¹⁶

Despite the careful planning and preparation made for the post D-day air plan, the fog and friction of war reduced the plan to a mere skeleton of what it should have been. When Helmuth von Moltke the Elder stated, “No plan of operations extends with any certainty beyond the first contact with the enemy,” it was as true in 1944 as it was in 1871. Even before the Allies retired Fortitude South and instituted Fortitude South II, Allied planners were pulling AEAFF assets from the Fortitude South plan into direct support of Neptune.¹⁷ Weather and operations of “higher importance” caused some Fortitude South targets to remain un-struck. Nonetheless, despite the fact that the focus of air operations did not fall where planned, SHAEF still considered the cover plan important to the invasion’s long-term success.

Because the move eastward from Normandy was a dynamic process, Allied planners constantly had to re-evaluate and re-address the targets selected for bombing. They submitted revised target lists to AEAFF every two weeks.¹⁸ Despite the constant haranguing from SHEAF, AEAFF leaders were apparently redirecting aircraft to other types of targets. An

¹⁴ SHAEF/18250/5/OPS(B), “Air Plan for Fortitude South II,” 23 July 1944, 3A, NPN (1st Page), The National Archives (TNA): Public Records Office (PRO) WO 219/2231.

¹⁵ “Plan ‘Fortitude South II,’” 38H, NPN (4th Page), TNA WO 106/4310.

¹⁶ SHAEF/18250/5/OPS(B), “Air Plan for Fortitude South II,” 23 July 1944, 3A, NPN (1st Page), The National Archives (TNA): Public Records Office (PRO) WO 219/2231.

¹⁶ “Plan ‘Fortitude South II,’” f 38H, NPN (3rd Page), TNA WO 106/4310.

¹⁷ AEAFF/TS.F.42/OPS, “Fortitude – Air Operations,” 11 July 1944, 1A, NPN (1st Page), The National Archives (TNA): Public Records Office (PRO) WO 219/2231.

¹⁸ SHAEF/18250/OPS(B), “Fortitude South II Air Operations,” 1 August 1944, 6A, NPN (1st Page), The National Archives (TNA): Public Records Office (PRO) WO 219/2231.

August 1 directive from the SHEAF G-3, Major General H.R. Bull, complained that the Fortitude South II air campaign had not progressed satisfactorily, and that he feared this lack of progress would fail to paint the desired picture for German intelligence.¹⁹ General Bull relayed this concern two days later to the SHEAF Chief of Staff, Lieutenant General W.B. Smith, who in turn reiterated Gen Bull's statements to AEAFF on August 8. While an important part of the Fortitude story, further explanation of the disagreement and its fallout is beyond the scope of this paper.

In the directive dated August 8, 1944, Smith pressed the AEAFF to strike targets on the Fortitude South II list. Smith felt that continuing Fortitude South II was critical to the overall success of Overlord, even though the initial landings had taken place some two months prior.²⁰ In that directive, Smith instructed AEAFF to disregard the airfield and POL targets on the list in favor of striking rail bridges and coastal radars.

General Eisenhower terminated Operation Fortitude South II, and thus Operation Fortitude, on September 8, 1944.²¹ At that point, the Allies decided that the Germans were engaged in a general retreat from Western Europe and in a state of complete disarray. Therefore, they felt that the Germans would no longer react to the continued employment of a large-scale cover plan.²² Further deception efforts were to continue by threatening the German northern flank and rear communications.²³ To dissuade the Germans from ending their retreat and either standing their ground or attempting a counterattack, the Allies adopted a new, albeit generalized, cover plan. The story behind this plan was that the Allies

¹⁹ "Fortitude South II Air Operations," 6A, NPN (1st Page), TNA WO 219/2231.

²⁰ SHAEF/18250/OPS(B), "Fortitude South II Air Operations," 8 August 1944, 37, NPN (1st Page), The National Archives (TNA): Public Record Office (PRO) WO AIR 37/882.

²¹ SHAEF/19011/OPS(B), "Current Cover and Deception Policy," 8 September 1944, 38, NPN (1st Page), The National Archives (TNA): Public Records Office (PRO) AIR 37/882.

²² "Current Cover and Deception Policy," 38, NPN (1st Page), TNA AIR 37/882.

²³ "Current Cover and Deception Policy," 38, NPN (1st Page), TNA AIR 37/882.

still maintained a significant reserve of men and material in England in the event that the opportunity for another airborne or amphibious invasion of Western Europe presented itself.²⁴ While the Allies still maintained the FUSAG as a virtual Army in England, it no longer had an immediate purpose, and instead was supposedly relegated to a strategic reserve the Allies could use if the opportunity presented itself.²⁵ Operation Fortitude had, for all intents and purposes, ceased to exist.

²⁴ "Current Cover and Deception Policy," 38, NPN (1st Page), TNA AIR 37/882.

²⁵ "Current Cover and Deception Policy," 38, NPN (2nd Page), TNA AIR 37/882.

Conclusion

To prepare a sham action with sufficient thoroughness to impress an enemy requires a considerable expenditure of time and effort, and the costs increase with scale of the deception. Normally they call for more than can be spared...

Carl von Clausewitz

Of all the components of Operation Fortitude, the contribution of airpower has received the least attention from historians and other scholars. There are a number of reasons for this unfortunate omission. First and foremost among these reasons was the audacity of the Allied deception through the use of “special means”, such as double agents and an array of phantom armies, created out of thin air by presenting the Germans with information they seemed to want to believe. Special means ended up taking center stage after the war, and the story of the air component receded into a few paragraphs in various books. More importantly, however, the character of Operation Quicksilver IV contributed to its anonymity. Whereas many aspects of the other Quicksilver operations stood by themselves, planners integrated Quicksilver IV thoroughly within the broader Air Plan. For that reason, many people have likely overlooked Quicksilver IV altogether or treated it as a mere footnote to a much larger operation. However, despite the size and scope of Quicksilver IV, a number of factors make it stand out from the rest of Fortitude. In short, it is very worthy of further research and study based entirely on its own merits.

An integrated air plan implies more than simply aggregating a number of unconnected targets together within one document. A well-integrated plan means that each of the parts works together toward a common set of objectives, and that their sum is greater than the individual parts. The planners of the Neptune invasion incorporated not

only Fortitude targets within the plan, but also wove the objectives of Fortitude throughout the plan. While not named in the Fortitude plan, the coastal batteries identified in Schedule B were clearly there due to Fortitude's larger requirements for deception. If the planners who identified the coastal batteries that were a factor in the invasion had not been aware of Fortitude, then the target list may have been much shorter, or aircraft may have struck more targets in the Neptune area. Instead, they chose twice as many targets outside the landing area so they could deceive the Germans.

The same is true for the Transportation Plan leading up to the invasion. If the only objective had been to isolate the Normandy battle area and prevent reinforcements and resupply, there were other ways to do that. The Allies could just as easily have destroyed the LOCs in and around Normandy by concentrating their air power there. Instead, they chose a more subtle, yet equally effective plan. By focusing their efforts further northwest, the Allies accomplished the same objective, moving the Germans' attention away from Normandy and drawing it north toward Calais. Without fully integrating the efforts of Fortitude within the greater Neptune plan, the Allies would not have achieved the same economy of force, which would have prevented them from reinforcing the deception to the greatest possible extent.

If nothing else, Quicksilver IV represented the only aspect of Fortitude that was completely tangible. All other aspects of Quicksilver involved elements that were either fictitious, such as the radio traffic in Quicksilver II, or deceptive in nature, such as the dummy landing craft in Quicksilver III. In contrast, there was nothing imaginary about Quicksilver IV. It involved real airmen and aircraft, dropping real bombs on real targets that had real value to the Germans, and taking the associated risks in the process. Whereas other aspects of Quicksilver merely suggested an Allied course of action, Quicksilver IV demonstrated to the Germans with great clarity and force what the Allies were

planning. There was nothing imaginary about bombs falling on coastal batteries or beach fortifications. Unlike contrived radio transmissions, there was nothing ephemeral about hundreds of bombers dropping their payloads on targets in and around Calais. The Allies did not need to spell anything out for the Germans; instead, their actions spoke for themselves.

Air operations do not begin and end with kinetic strikes. For air power to be effective, airmen need to collect a considerable amount of reliable intelligence. One sure signal to the enemy that something is of importance is the level of intelligence collection employed. While they did not consider it an explicit part of the Fortitude air plan, the Allies expended a considerable amount of effort in aerial reconnaissance over the Calais area. An after-action report on cover and deception in the European Theater of Operations (ETO) briefly described the way in which reconnaissance contributed to the cover plan.¹ The Allies recognized that to make the bombing campaign plausible, it had to be both preceded and followed by aerial reconnaissance missions, and the reconnaissance missions over Calais were carried out with the same thoroughness as were missions over Normandy.² Furthermore, aircrew flying the missions had no idea they were supporting a cover operation. Those who were “read in” to the details of Neptune and Fortitude were prohibited from flying missions over enemy territory, thus ensuring that any Allied aircrew shot down and captured would not compromise the deception.³

Not only did Quicksilver IV represent a concrete aspect of Fortitude; it also struck militarily significant targets. If the Allies had

¹ “Appendix No. 3, Informal Supplementary Report to Joint Security Council: Cover and Deception in Air Force Operations, ETO.” in *Covert Warfare: Intelligence, Counterintelligence, and Military Deception During the World War II Era*, ed. John Mondelsohn, (New York: Garland Publishing, 1989), Document 18, NPN.

² *Covert Warfare: Intelligence, Counterintelligence, and Military Deception During the World War II Era*, Document 18, NPN.

³ *Covert Warfare: Intelligence, Counterintelligence, and Military Deception During the World War II Era*, Document 18, NPN.

wanted to take the easy way out, they could have picked some towns at random and dropped a few bombs on them in an attempt to make it look like they were focusing on the Pas de Calais. Instead, the Allies targeted actual gun batteries, headquarters units, and beach fortifications. Furthermore, the order in which they struck these targets reinforced the notion that the Allies were systematically preparing the area for invasion. Instead of striking targets randomly, the Allies took the time and effort to develop a phased target list that would readily have supported an actual invasion of France at Calais. Moreover, while the destruction of many of the beach fortifications around Calais would have little impact on the Neptune invasion, of the 42 primary day and night targets identified in the Fortitude portion of the Air Plan, 22 were artillery pieces, including rail guns and extremely large-caliber pieces. Even if the Germans had not bought the Fortitude story, the Quicksilver IV bombing effort would have significantly attrited much of the indirect fire support capability the German reinforcements would have had at their disposal. Furthermore, the Allies struck several road and rail centers inland which would have complicated the Germans' ability to move troops south in the event they did not buy the Fortitude deception.

In addition to the targets listed under the Fortitude schedules, the Allies struck coastal batteries in and around Calais. They struck these targets to accomplish the negative object of preventing the Germans from discerning the true target of the invasion effort. However, the coastal batteries around Calais were hardly wasted targets. Of the 32 total coastal batteries identified in the Air Plan, only 11 were directly in support of the Neptune invasion, while 14 were near Calais. While the destruction of the batteries around Calais would not have supported the invasion of Normandy directly, neutralizing them freed up more of the English Channel around Calais for Allied naval operations, given the fact that Calais guarded the narrowest point in the English Channel.

Finally, the Allies went to the extra effort needed to identify alternate targets in the event that senior leaders postponed the invasion, as in fact happened. The Air Plan suggests these targets would be struck after D-2 in the event of a postponement. Instead of re-striking the same targets on subsequent nights, or not striking anything at all, the Allies went to considerable effort to identify additional targets of military significance in the cover area.

Whereas Clausewitz said that the effort required to create a plausible deception is frequently too great, the Allies obviously felt otherwise. From the outset, the Allies carefully analyzed the resources available and discussed heatedly what they needed to do to make the deception a success. While many planners might either dismiss the idea of a deception campaign outright as being too costly, or else plan the real operation and then throw whatever air assets the Allies had left over at the deception, the Allies entered into planning with the understanding that Quicksilver IV would take a sizeable fraction of the total aircraft available. It is telling that on June 5, the Allies allocated equal numbers of bombers to Fortitude and Neptune targets.⁴ If the Allies had felt that Quicksilver IV was merely a sideshow to the real fight, then the effort would likely have been considerably less. Moreover, the Allies made a conscious effort to conserve their bomber force by keeping half in reserve on 4-5 June. Nonetheless, they still allocated half of the remainder to striking Fortitude targets.

Perhaps the most telling aspect of the role of air power in Fortitude is the conspicuous omission of Quicksilver IV in most after-action reports compiled immediately after the invasion. Most reports only mention the cover plan in the context of the diversionary operations, such as Big Drum and Taxable. However, there is little mention of the targets struck in the Calais area. In fact, the Allies appear to have stopped differentiating

⁴ "Preparatory Air Operations for Operation 'Overlord'," NPN (20th Page), The National Archives (TNA): Public Record Office (PRO) AIR 37/1024.

between Neptune and Fortitude because they were so closely associated with each other. Unlike Fortitude North, which was almost entirely disconnected from Neptune, Fortitude South supported it directly both in the deception and in terms of military utility. Dropping bridges in Calais and striking coastal batteries was hardly a wasted effort, even tactically or operationally. Therefore, it is likely that the Allies came to see Fortitude as just another aspect of Neptune and not as a different plan altogether.

In the end, the Allies decided that while Clausewitz may have been right regarding the amount of time and effort needed to formulate a successful deception, the costs of not doing so had the potential to be more than could be spared. The Allies were truly worried they might be repelled at the beaches of Normandy if they did not draw the Germans' attention elsewhere. While the Allies had an array of spies and a fictitious army at their disposal, air power helped the plan coalesce by striking real targets in ways that reinforced the Germans' preconceived notion that the invasion would come at the Pas de Calais. Air power served to reinforce a crucial story the Allies sold and the Germans bought.

Appendix A

The Air Plan

The following is the Neptune Air Plan transcribed and is current as of May 31, 1944. During the course of my research I was unable to find a revised Air Plan dated after May 31st. Of note, the copy I found was missing the night targets for the Fortitude Air Plan. I have included the night targets from the most recent revision I found, dated May 23rd.¹

Notes on Data Entries

In an effort to eliminate any errors in interpretation, I have made every attempt to keep the text in the tables identical to the original text. This includes misspellings, punctuation, and abbreviations. In the event the original text was unclear, I have included explanatory notes, based on my own insights, in an effort to provide clarity. The original text is in normal font. Text that was handwritten in is in italics. Text that was manually crossed out is in a strikethrough font.

Notes on Coordinates and Conversion

The coordinates in the Air Plan have a four- or six-digit map grid that was the Allied standard, as directed by SHAEF on March 14, 1944.² While all targets are given in the map grid laid out in the SHAEF memo, the majority of the grid references are given in a non-standard format. According to the SHAEF directive, all map grid references would be identified by the appropriate two-letter reference square, followed by a four or six number map grid reference. For reasons not entirely clear,

¹ All information for this appendix was taken from documents contained in AIR 37/1122 and WO 205/529. All documents are originally marked "BIGOT" and "TOP SECRET". Documents from AIR 37/1122 were declassified, but no date was given for declassification. Documents in WO 205/529 are also declassified, but the document folder was marked "CLOSED UNTIL 1972".

² War Office. *Notes on G.S.G.S Maps of France, Belgium, and Holland* (London: War Office, 1943), 618-620.

the majority of the targets identified in the Air Plan are simply referenced by a town name followed by a four or six digit map grid reference.

Presumably, planners were familiar enough with the Neptune and Fortitude areas and could identify the reference square in question.

In many cases, the targets are not even associated with a town or locality. The Fortitude Night targets are a prime example of this. In this case, all targets fall along the coastline, and within the same map grid square. Determining the correct map grid took some trial and error. Essentially, doing so involved plotting the same grid reference on multiple grid squares and seeing what made sense. Since these targets related to Operation Neptune and Fortitude, the majority were within a few miles of the beach. Thus, if the grid square was wrong, then the target plotted either in the water, or significantly inland. Therefore, in all but a handful of instances, it was relatively easy to ascertain the correct grid square.

However, the problem becomes less straightforward in the area from approximately Caen to Dieppe. In this area, two separate (and incompatible) grid areas overlap. These are the French Lambert Zone 1 and the Nord de Guerre Grid. In this area, French Lambert Zone 1 grids vO, Vp, Vt, and Vu overlap with Nord de Guerre Grids vG, vL, and Vm. Unless one is familiar with the area, it would be very easy to plot the target in the wrong grid zone. Unlike other areas, targets could easily fall in a reasonable location, neither too far from the beach, nor in the water.

In other cases, planners appear to have used the “shorthand” version, where only the last letter of the grid reference square is annotated. For example, Schedule D, Section A, Serial 3 is simply identified as “Headquarters”, with a grid reference of T448701. Presumably, this is French Lambert Zone 1, grid square vT, and not Norde de Guerre Grid vT. On the French Lambert Zone 1, this target plots in the vicinity of Carentan on the southern Cotentin Peninsula in Normandy. Plotting the same coordinates on the Norde de Guerre Grid

puts the same coordinates some 10 mile southeast of Rheims in north central France, which is not a reasonable location for a pre D-day target.

Schedule 'B' Pre D Day Bombing Coastal Batteries									
Section A - Day									
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)	
1	Any day before D-3	LA PERNELLE Bty 365200	(NEPTUNE)	" "	(a) In order to support the cover plan for every target bombed inside the NEPTUNE area two targets are bombed outside the area.	FLZ1 / VO	N 49° 37' 21"	W 001° 18' 40"	
2		FONTENAY SUR MER Bty 368044	(NEPTUNE)	" "		FLZ1 / VO	N 49° 28' 57"	W 1° 17' 48"	
3		POINT DU HOE Bty 586938	(NEPTUNE)	" "		FLZ1 / VT	N 49° 23' 47"	W 0° 59' 23"	
4		OUSTREHAM I Bty 117797	(NEPTUNE)	" "		FLZ1 / VO	N 49° 17' 18"	W 0° 15' 07"	
5		HOULGATE Bty 256809	(NEPTUNE)	" "		FLZ1 / VO	N 49° 18' 12"	W 0° 03' 41"	
6		BENERVILLE Bty 422107	(NEPTUNE)	" "		NGGZ / VL	N 49° 20' 23"	E 0° 02' 32"	
7		LE HAVRE / LE GRAND CLOIS Bty 467307	(NEPTUNE)	" "		NGGZ / VL	N 49° 31' 22"	E 0° 04' 33"	
8		ETREVIAT / ST MARIE AU BOSQ Bty 565452		" "		NGGZ / VL	N 49° 39' 42"	E 0° 11' 26"	
9		FECAMP I Bty 687529		" "		NGGZ / VL	N 49° 44' 29"	E 0° 20' 54"	
10		FECAMP II Bty 713556		" "		NGGZ / VL	N 49° 46' 04"	E 0° 22' 51"	
11		DIEPPE Bty 152673		" "		NGGZ / VM	N 49° 54' 35"	E 0° 58' 25"	
12		LE TREPORT / AULT Bty 521856		" "		NGGZ / VM	N 50° 06' 08"	E 1° 27' 53"	
13		ETAPLES Bty 676317		" "		NGGZ / VG	N 50° 31' 37"	E 1° 37' 43"	
14		ETAPLES / ST CECILY Bty 644371		" "		NGGZ / VG	N 50° 34' 23"	E 1° 34' 39"	
15		HARDELOT Bty 651436		" "		NGGZ / VG	N 50° 37' 55"	E 1° 34' 47"	
16		WIMEREUX Bty 694603		" "		NGGZ / VG	N 50° 47' 05"	E 1° 37' 16"	
17		BASINGHAM / MARQUISE Bty 733660		" "		NGGZ / VG	N 50° 50' 19"	E 1° 40' 11"	
18		CALAIS / SANGATTE Bty 815763		" "		NGGZ / VG	N 50° 56' 13"	E 1° 46' 28"	
19		GRAVELINES Bty 991805		" "		NGGZ / VH	N 50° 59' 12"	E 2° 01' 11"	
20		FORT MARDICK Bty 188849		" "		NGGZ / VH	N 51° 02' 22"	E 2° 17' 42"	
21		DUNKIRK Bty 221846		" "		NGGZ / VH	N 51° 02' 20"	E 2° 20' 32"	

Appendix B. Schedule B, Pre D Day Bombing Coastal Batteries,

Section A - Day

Source: The National Archives, Kew



Appendix B (Continued)
Source: The author's own work

Schedule 'B' Pre D Day Bombing Coastal Batteries								
Section B - Night								
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)
1	Any Night Before D-3/D-2	BARFLEUR Bty 394228	(NEPTUNE) Night Heavy		(a) In order to support the cover plan for every target bombed inside the NEPTUNE area two targets are bombed outside the area.	FLZ1 / VO	N 49° 38' 56"	W 1° 16' 23"
2		MORSALINES Bty 354139	(NEPTUNE)			FLZ1 / VO	N 49° 34' 02"	W 1° 19' 20"
3		SALENNELLES Bty 155776	(NEPTUNE)	"		FLZ1 / VO	N 49° 16' 14"	W 0° 11' 55"
4		VILLERVILLE Bty 486256	(NEPTUNE)	"		NdGZ / VL	N 49° 28' 44"	E 0° 06' 33"
5		ST VALERY-EN-CAUX Bty 972642		"		NdGZ / VL	N 49° 52' 01"	E 0° 43' 40"
6		DIEPPE Bty 307721		"		NdGZ / VM	N 49° 57' 54"	E 1° 10' 58"
7		BERCK Bty 688105		"		NdGZ / VG	N 50° 20' 16"	E 1° 40' 10"
8		BOULOGNE Bty 650512		"		NdGZ / VG	N 50° 42' 00"	E 1° 34' 10"
9		CALAIS Bty 674700		"		NdGZ / VG	N 50° 52' 13"	E 1° 34' 54"
10		CALAIS Bty 886792		"		NdGZ / VG	N 50° 58' 04"	E 1° 52' 19"
11		GRAVELINES Bty 121818		"		NdGZ / VH	N 51° 00' 19"	E 2° 12' 12"
12		MARDICK Bty 139845		"		NdGZ / VH	N 51° 01' 57"	E 2° 13' 33"

**Appendix C. Schedule B, Pre D Day Bombing Coastal Batteries,
Section B - Night**

Source: The National Archives, Kew



Appendix C (Continued)
Source: The author's own work

Schedule C: Fortitude								
Section A - Targets for Day Attack								
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)
1		By 637198 4 x 105 mm howa	Day Heavy		No timings	NdGZ / vG	N 50° 25' 03"	E 1° 35' 15"
2		By 693231 4 x 155 mm hows	" "		have been	NdGZ / vG	N 50° 27' 04"	E 1° 39' 44"
3		By 644309 6 x 155 mm guns	" "		given in the	NdGZ / vG	N 50° 31' 03"	E 1° 35' 04"
4		By 644371 6 x 155 mm guns	" "		section.	NdGZ / vG	N 50° 34' 23"	E 1° 34' 39"
5		By 716412 4 x 150 mm hows	" "		Attacks should	NdGZ / vG	N 50° 36' 54"	E 1° 40' 27"
6	D-3	By 669495 4 x 155 mm hows	" "	40% Day Bomber Force	be spaced out	NdGZ / vG	N 50° 41' 10"	E 1° 35' 54"
7		By 650512 4 x 150 mm guns	" "		as much as possible,	NdGZ / vG	N 50° 46' 53"	E 1° 37' 33"
8		By 697599 4 x 150 mm hows	" "		throughout	NdGZ / vM	N 50° 06' 24"	E 1° 49' 40"
9		ABBEVILLE 7884 Road & Rail Communication Centre	" "			NdGZ / vG	N 50° 22' 46"	E 2° 02' 53"
10		HESDIN 9613 Road Centre	" "		each day and	NdGZ / vG	N 50° 48' 53"	E 2° 29' 40"
11		CASSEL 3159 Road Centre	" "		on D-1 must	NdGZ / vH	N 50° 25' 45"	E 1° 33' 58"
12		By 623212 3 x 170 mm guns	" "		finish in the	NdGZ / vG	N 50° 37' 55"	E 1° 34' 47"
13		By 651436 6 x 155 mm guns	" "		late afternoon	NdGZ / vG	N 50° 42' 26"	E 1° 39' 19"
14		By 711515 4 x 150 mm guns	" "	30% Day Bomber Force		NdGZ / vG	N 50° 46' 27"	E 1° 38' 38"
15	D-2	By 709590 3 x 305 mm guns	" "			NdGZ / vG	N 50° 27' 17"	E 1° 34' 22"
16		MERLIMONT PLACE 6324 Fortified Village	" "			NdGZ / vG	N 50° 35' 45"	E 1° 34' 48"
17		Strong Point 648396	" "			NdGZ / vG	N 50° 42' 26"	E 1° 34' 07"
18		Le Portel 6552 Fortified Village	" "			NdGZ / vG	N 50° 48' 58"	E 1° 34' 59"
19		AUDRESSELLES 6764 Fortified Village	" "			NdGZ / vG	N 50° 27' 53"	E 1° 46' 10"
20		MONFREPPEL 7724 Road Centre	Day Heavy and Medium			NdGZ / vG	N 50° 31' 05"	E 1° 34' 44"
21		LE TOUQUET 6431 Fortified Town	" "			NdGZ / vG	N 50° 34' 04"	E 1° 34' 51"
22		Beach Locality 646365	" "	25% of Day Heavy Bomber Force and Medium Bombers		NdGZ / vG	N 50° 37' 06"	E 1° 34' 48"
23		Locality 650421	" "			NdGZ / vG	N 50° 40' 04"	E 1° 34' 25"
24		Beach Locality 650476	" "			NdGZ / vG	N 50° 40' 25"	E 1° 34' 58"
25		Locality 657482	" "			NdGZ / vG	N 50° 45' 47"	E 1° 36' 15"
26	D-1	*OBSCURED IN THE PHOTOGRAPH*	" "			NdGZ / vG	N 50° 47' 15"	E 1° 36' 14"
27		WIMERPUX 6858 Fortified Village	" "			NdGZ / vG	N 50° 53' 02"	E 1° 40' 11"
28		Beach Locality 682607	" "			NdGZ / vG	N 50° 58' 25"	E 1° 52' 47"
29		Locality 737710	" "					
30		Beach Locality 892798	" "					
31		ST-OMER 148532 Telephone Exchange	" "					
32		AMBIENS 1157 Telephone Exchange BRYAS 197163 Higher Control Station	" "					

Appendix D. Schedule C, Fortitude, Section A – Targets for Day Attack

Source: The National Archives, Kew

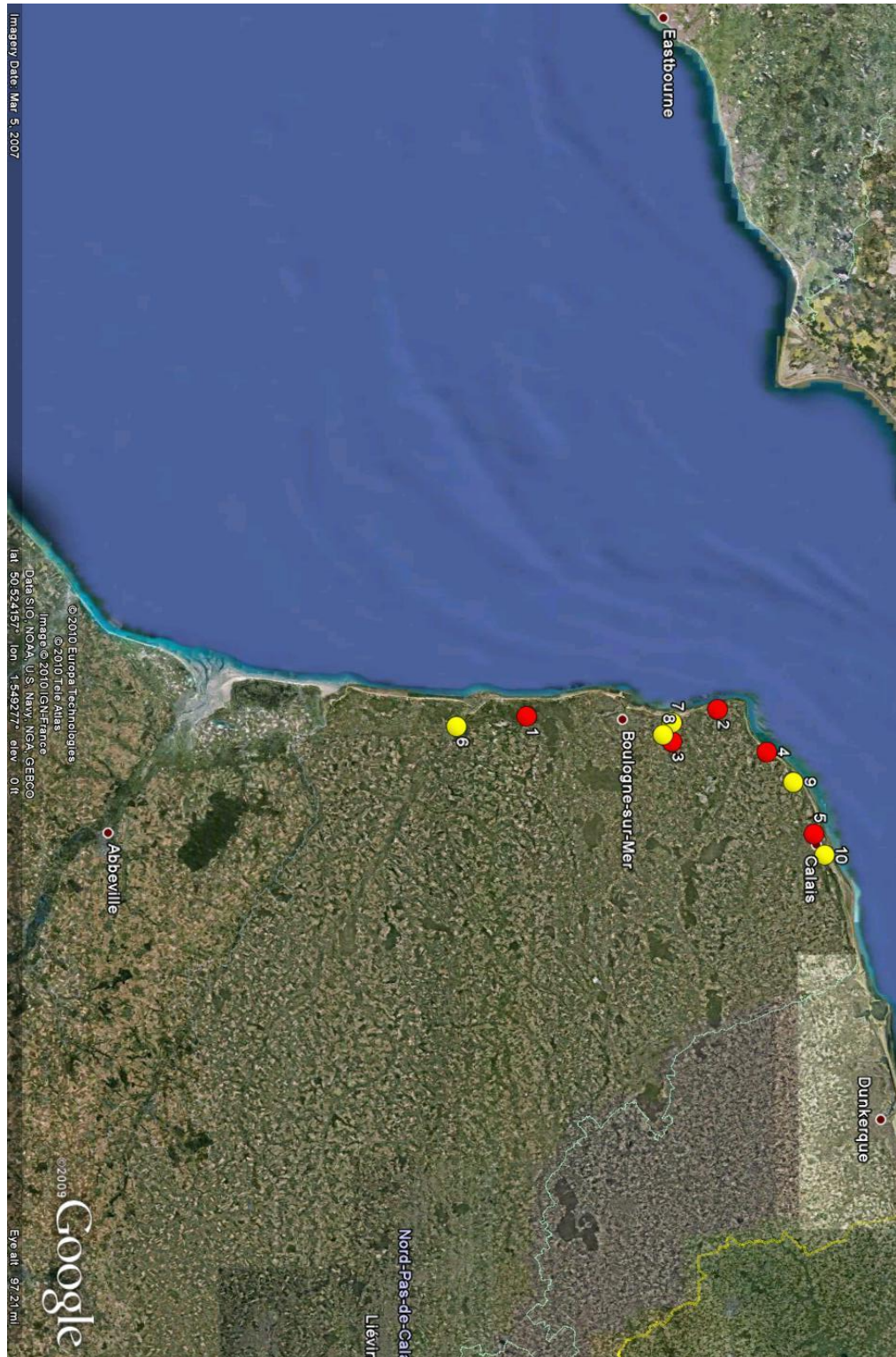


Appendix D (Continued)
Source: The author's own work

Schedule 'C' Fortitude								
Section B - Targets for Night Attack								
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)
1	Night D-3/D-2	Bty 670411 4 x 150 mm guns	Night Heavy	30% of Night Bomber Force	(a) No timings have been given in the section. Attacks should be spaced out as possible throughout each night.	NdGZ / vG	N 50° 36' 39"	E 1° 36' 34"
2		Bty 681665 4 x 381 mm guns	" "			NdGZ / vG	N 50° 50' 22"	E 1° 35' 44"
3		Bty 719601 1 Heavy Railway Gun	" "			NdGZ / vG	N 50° 47' 05"	E 1° 39' 24"
4		Bty 743726 4 x 170 mm guns	" "			NdGZ / vG	N 50° 53' 55"	E 1° 40' 35"
5		Bty 857780 2 x 280 mm guns	" "			NdGZ / vG	N 50° 57' 18"	E 1° 49' 55"
6	Night D-2/D-1	Bty 676317 4 x 210 mm guns	" "	30% of Night Bomber Force		NdGZ / vG	N 50° 31' 37"	E 1° 37' 43"
7		Bty 694603 2 x 280 mm guns	" "			NdGZ / vG	N 50° 47' 05"	E 1° 37' 16"
8		Bty 709590 3 x 305 mm guns	" "			NdGZ / vG	N 50° 46' 27"	E 1° 38' 38"
9		Bty 786758 3 x 406 mm guns	" "			NdGZ / vG	N 50° 55' 49"	E 1° 44' 02"
10		Bty 886792 3 x 194 mm guns	" "			NdGZ / vG	N 50° 58' 04"	E 1° 52' 19"

Appendix E. Schedule C, Fortitude, Section B – Targets for Night Attack

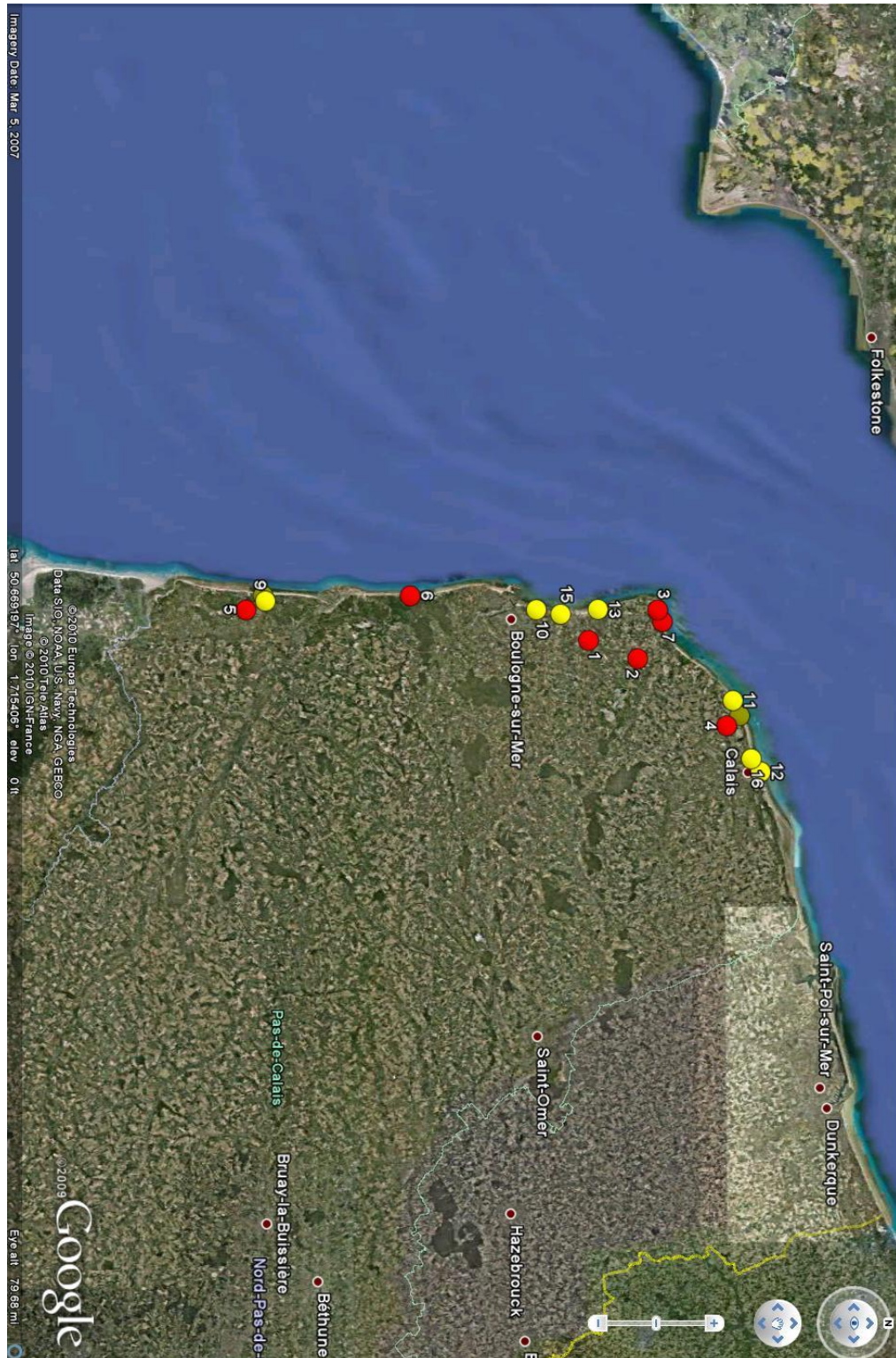
Source: The National Archives, Kew



Appendix E (Continued)
Source: The author's own work

Schedule 'C' Fortitude								
Section C - Targets for Day Attack								
Alternative programme in event of postponement								
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)
1	D-2 (First Postponement)	Bty 714620 4 x 105 mm gun how			In the event of postponement the D-1 programme A will be held up and these alternative programmes put in for the new D-2	NDGZ / xG	N 50° 48' 05"	E 1° 38' 51"
2		Bty 738672 4 x 155 mm hows				NDGZ / xG	N 50° 50' 59"	E 1° 40' 32"
3		Bty 687698 4 x 280 mm guns				NDGZ / xG	N 50° 52' 10"	E 1° 36' 01"
4		Bty 819763 4 x 150 mm hows				NDGZ / xG	N 50° 56' 14"	E 1° 46' 48"
5		Headquarters strongpoint 651290				NDGZ / xG	N 50° 27' 55"	E 1° 36' 04"
6		HARDELOT PLAGE 6543 Fortified Village				NDGZ / xG	N 50° 37' 35"	E 1° 34' 44"
7		Locality 700702				NDGZ / xG	N 50° 52' 26"	E 1° 37' 06"
8		Locality 809778				NDGZ / xG	N 50° 57' 00"	E 1° 45' 51"
9	D-2 (Second Postponement)	Bty 643272 4 x 150 mm guns				NDGZ / xG	N 50° 29' 03"	E 1° 35' 14"
10		Bty 676566 4 x 240 (?) mm guns				NDGZ / xG	N 50° 45' 01"	E 1° 36' 00"
11		Bty 792772 3 x 150 mm guns				NDGZ / xG	N 50° 56' 36"	E 1° 44' 27"
12		Bty 872796 4 x 75 mm guns			30% of Day Bomber Force	NDGZ / xG	N 50° 58' 14"	E 1° 51' 06"
13		Headquarters strongpoint 681633				NDGZ / xG	N 50° 48' 38"	E 1° 35' 58"
14		Locality 637270				NDGZ / xG	N 50° 28' 55"	E 1° 34' 45"
15		Locality 683592				NDGZ / xG	N 50° 46' 27"	E 1° 36' 25"
16		Locality 857787				NDGZ / xG	N 50° 57' 41"	E 1° 49' 53"

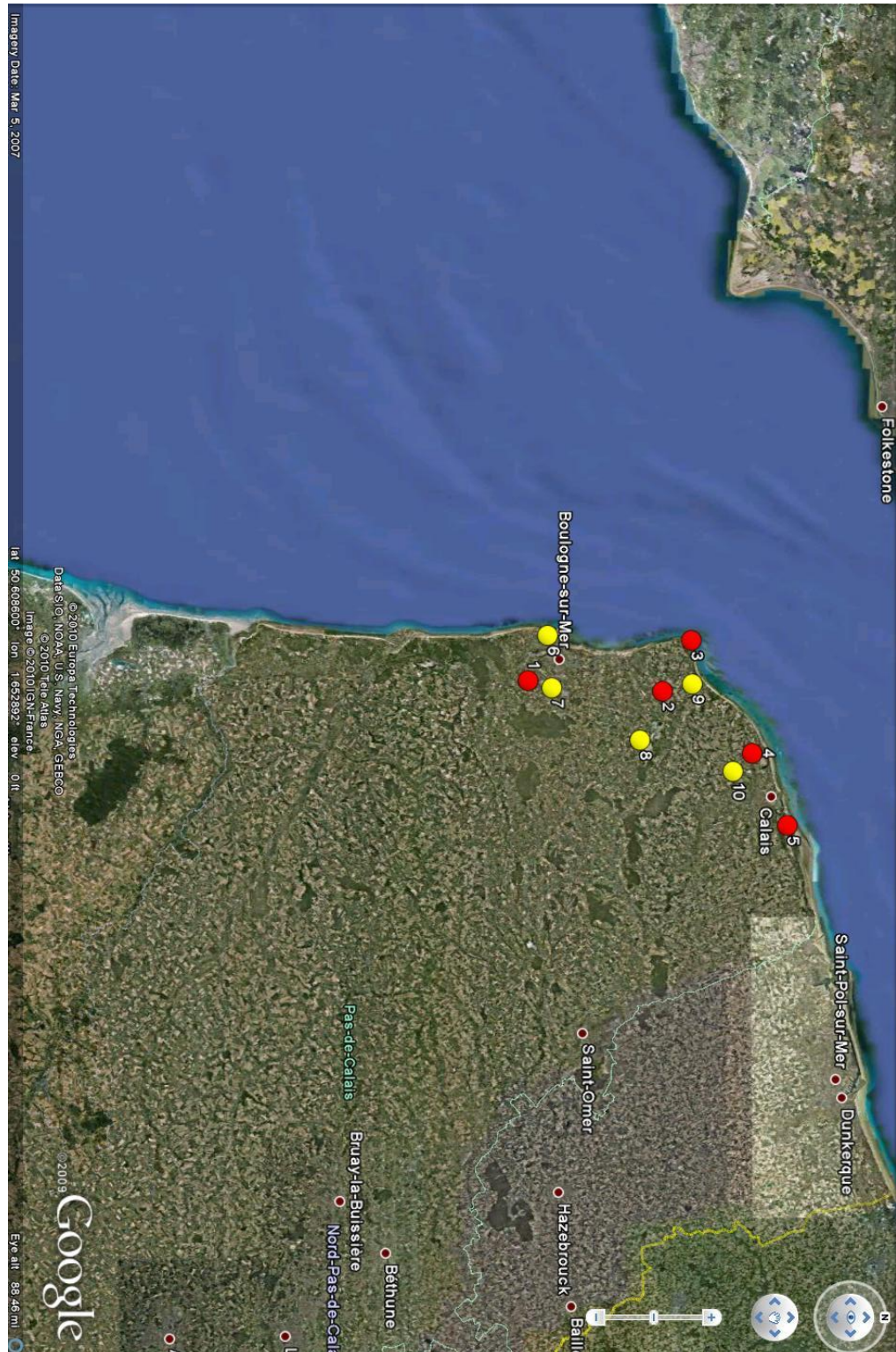
Appendix F. Schedule C, Fortitude, Section C – Targets for Day Attack, Alternative Programme in event of postponement
Source: The National Archives, Kew



Appendix F (Continued)
Source: The author's own work

Schedule 'C' Fortitude								
Section D - Targets for Night Attack								
Alternatives in event of postponement								
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)
1	Night D-2/D-1 (First Postponement)	Bty 707498 4 x 105 (?) mm gun hows	Night Heavy	30 % of night bomber force	No timings have been given in this section. Attack should be spaced out as much as possible throughout each night	NdGZ / vG	N 50° 41' 30"	E 1° 39' 06"
2		Bty 733660 2 x 280 mm guns	" "			NdGZ / vG	N 50° 50' 19"	E 1° 40' 11"
3		Bty 674700 3 x 170 mm guns	" "			NdGZ / vG	N 50° 52' 13"	E 1° 34' 54"
4		Bty 817763 3 x 280 mm guns	" "			NdGZ / vG	N 50° 56' 13"	E 1° 46' 38"
5		Bty 908799 2 x 240 mm guns	" "			NdGZ / vG	N 50° 58' 33"	E 1° 54' 09"
6	Night D-2/D-1 (Second Postponement)	Bty 654526 3 x 170 mm guns	" "	30% of night bomber force		NdGZ / vG	N 50° 42' 46"	E 1° 34' 25"
7		Bty 718526 4 x 105 mm guns	" "			NdGZ / vG	N 50° 43' 03"	E 1° 39' 50"
8		Bty 790628 1 x 280 mm Railway Gun	" "			NdGZ / vG	N 50° 48' 51"	E 1° 45' 15"
9		Bty 727697 3 Railway Guns	" "			NdGZ / vG	N 50° 52' 17"	E 1° 39' 26"
10		Bty 837738 2 x 280 mm Railway Guns	" "			NdGZ / vG	N 50° 54' 58"	E 1° 48' 30"

Appendix G. Schedule C, Fortitude, Section D – Targets for Night Attack, Alternative Programme in event of postponement
Source: The National Archives, Kew

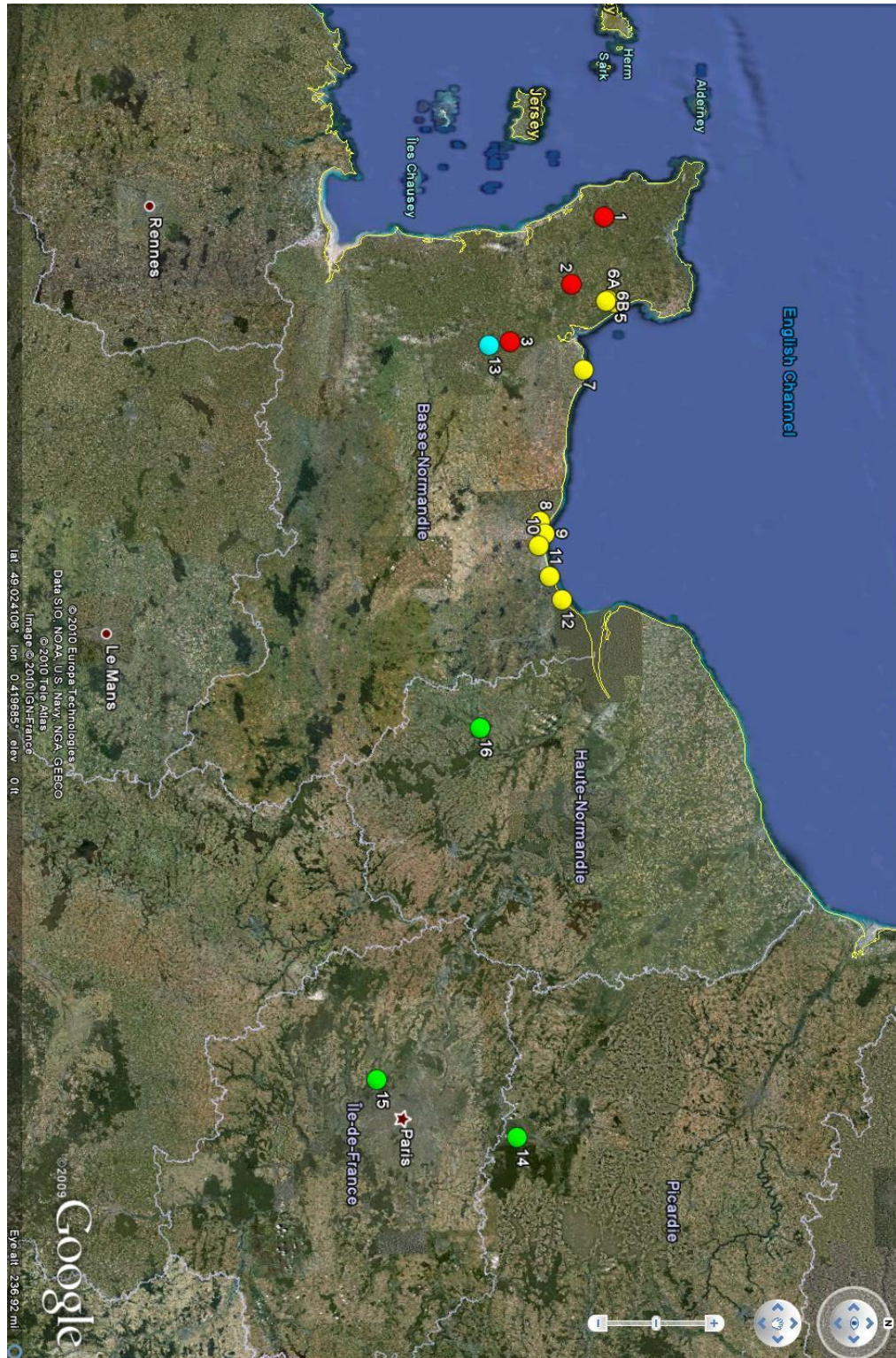


Appendix G (Continued)
Source: The author's own work

SCHEDULE D-1 NEPTUNE D-1 BOMBING									
SECTION A - SURPRISE NOT CONSIDERED LOST									
FINAL LIST									
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS)	Longitude (DD MM SS)	
1	D-1 Afternoon and evening	Headquarters A. O 08600185	TAF			FL21 / VO	N 49° 26' 47"	W 1° 41' 00"	
2	"	Headquarters B. T 30579065	"			FL21 / VT	N 49° 21' 21"	W 1° 22' 27"	
3	"	Headquarters C. T 488701	"			FL21 / VT	N 49° 10' 46"	W 1° 06' 35"	
4	"	CHATEAU DE COURCY BTY 361054	Day Heavy			FL21 / VO	N 49° 29' 28"	W 1° 18' 25"	
5	"	PONTENAY SUR MER BTY 368044	"			FL21 / VO	N 49° 28' 57"	W 1° 17' 48"	
6	"	AZEVILLE I and II BTY 359023 and 363017	"			FL21 / VO	N 49° 27' 48"	W 1° 18' 28"	
7	"	POINTE DU HOE BTY 586937	"			FL21 / VT	N 49° 27' 29"	W 1° 18' 06"	
8	"	COLLEVILLE SUR ORNE BTY 076782	"			FL21 / VT	N 49° 23' 44"	W 0° 59' 22"	
9	"	OUISTREHAM I BTY 117797	"			FL21 / VT	N 49° 16' 25"	W 0° 18' 27"	
10	"	SAULENNELLES BTY 155776	"			FL21 / VT	N 49° 17' 18"	W 0° 15' 07"	
11	"	HOUEGATE BTY 256809	"			FL21 / VT	N 49° 16' 14"	W 0° 11' 55"	
12	"	BENERVILLE BTY 422107	"			FL21 / VT	N 49° 18' 12"	W 0° 03' 41"	
13	"	TELEPHONE EXCHANGES	"			NdGZ / VL	N 49° 20' 23"	E 0° 02' 32"	
14	"	ST LO 498632	Day Heavy			FL21 / VT	N 49° 07' 04"	W 1° 05' 30"	
15	"	CHANTILLY S 150792	Medium			NdGZ / VS	N 49° 11' 28"	E 2° 26' 49"	
16	"	JOBY-EN-JOSAS R 917356	"			NdGZ / VR	N 48° 47' 05"	E 2° 10' 19"	
	"	BERNAY Q 810802	"			NdGZ / VQ	N 49° 06' 03"	E 0° 36' 50"	

**Appendix H. Schedule D, Neptune D-1 Bombing, Section A – Surprise
Not Considered Lost**

Source: The National Archives, Kew

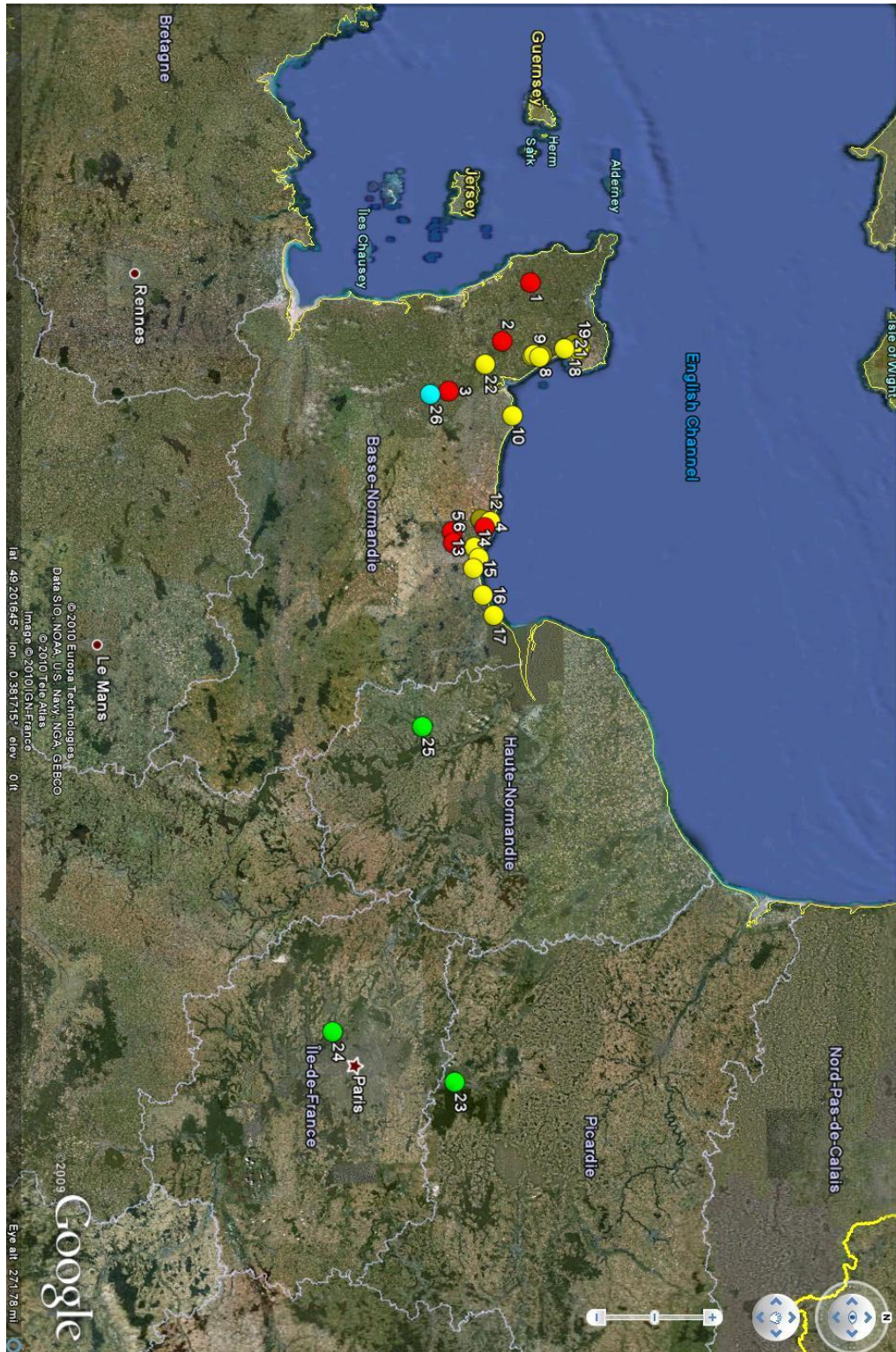


Appendix H (Continued)
Source: The author's own work

SCHEDULE D: NEPTUNE D-1 BOMBING							
SECTION B - SURPRISE IS CONSIDERED LOST							
ALTERNATIVE TO SECTION A							
FINAL LIST							
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks	Grid / 1:100K Reference Square	Latitude (DD MM SS) Longitude (DD MM SS)
1	D-1 afternoon and evening	Headquarters A. O 08600185	"			FLZ1 / VO	N 49° 26' 47" W 1° 41' 00"
2	"	Headquarters B. T 30579065	"			FLZ1 / VT	N 49° 21' 21" W 1° 22' 27"
3	"	Headquarters C. T 488701	"			FLZ1 / VT	N 49° 10' 46" W 1° 06' 35"
4	"	Headquarters TAILLEVILLE 00338228	"			FLZ1 / VU	N 49° 18' 26" W 0° 24' 35"
5	"	Headquarters 01667008	"			FLZ1 / VU	N 49° 11' 53" W 0° 23' 09"
6	"	Headquarters BIEVILLE 05807043	"			FLZ1 / VU	N 49° 12' 11" W 0° 19' 42"
7	"	CHATEAU DE COUROY BTY 361054	Day Heavy			FLZ1 / VO	N 49° 29' 28" W 1° 18' 25"
8	"	FONTENAY SUR MER BTY 368044	"			FLZ1 / VO	N 49° 28' 57" W 1° 17' 48"
9	"	OZEVILLE I and II BTY 359023 and 363017	"			FLZ1 / VO	N 49° 27' 48" W 1° 18' 28"
10	"	POINTE DUY HOE BTY 586937	"			FLZ1 / VO	N 49° 27' 29" W 1° 18' 06"
11	"	MOULINEAUX BTY 972808	"			FLZ1 / VT	N 49° 23' 44" W 0° 59' 22"
12	"	GRAVE SUR MER BTY 981844	"			FLZ1 / VT	N 49° 17' 37" W 0° 27' 06"
13	"	COLLEVILLE SUR ORNE BTY 076782	"			FLZ1 / VT	N 49° 19' 34" W 0° 26' 28"
14	"	OUISTREHAM I BTY 117797	"			FLZ1 / VU	N 49° 16' 25" W 0° 18' 27"
15	"	SALENELLES BTY 155776	"			FLZ1 / VU	N 49° 17' 18" W 0° 15' 07"
16	"	HOULGATE BTY 256809	"			FLZ1 / VU	N 49° 16' 14" W 0° 11' 55"
17	"	BENERVILLE BTY 422107	"			FLZ1 / VU	N 49° 18' 12" W 0° 03' 41"
18	"	HAMEAU-VALETTE BTY 336197	"			NGGZ / VL	N 49° 20' 23" E 0° 02' 32"
19	"	LA PISSETTERIE BTY 343191	"			FLZ1 / VO	N 49° 37' 07" W 1° 21' 04"
20	"	COIMBOT BTY 323174	"			FLZ1 / VO	N 49° 36' 48" W 1° 20' 28"
21	"	LA FOSSE BTY 339138	"			FLZ1 / VO	N 49° 35' 50" W 1° 22' 03"
22	"	Road Centre CARENTAN 3984	Day Heavy			FLZ1 / VT	N 49° 33' 56" W 1° 20' 35"
23	D-1 afternoon and evening	FLIGHTER CONTROL STATIONS					
24	"	CHANTILLY S 150792				NGGZ / VS	N 49° 11' 28" E 2° 26' 49"
25	"	JOUY-EN-JOSAS R 917356				NGGZ / VR	N 48° 47' 05" E 2° 10' 19"
		BERNAV Q 810802				NGGZ / VQ	N 49° 06' 03" E 0° 36' 50"
		TELEPHONE EXCHANGE					
26	"	ST LO 498632				FLZ1 / VT	N 49° 07' 04" W 1° 05' 30"
27	"	Bridge 096894				Because no grid reference squares were given, it was impossible to determine the locations of serials 27-33. Several targets fell within a few miles of rivers, but none were close enough to be definitive. Therefore, I have not included any coordinates, because their locations would be pure speculation	
28	"	Bridge 104899					
29	"	Bridge 121881					
30	"	Bridge 147889					
31	"	Bridge 197947					
32	"	Bridge 196984					
33	"	EMBANKMENT 190905					

Appendix I. Schedule D, Neptune D-1 Bombing, Section B – Surprise Is Considered Lost, Alternative to Section A

Source: The National Archives, Kew

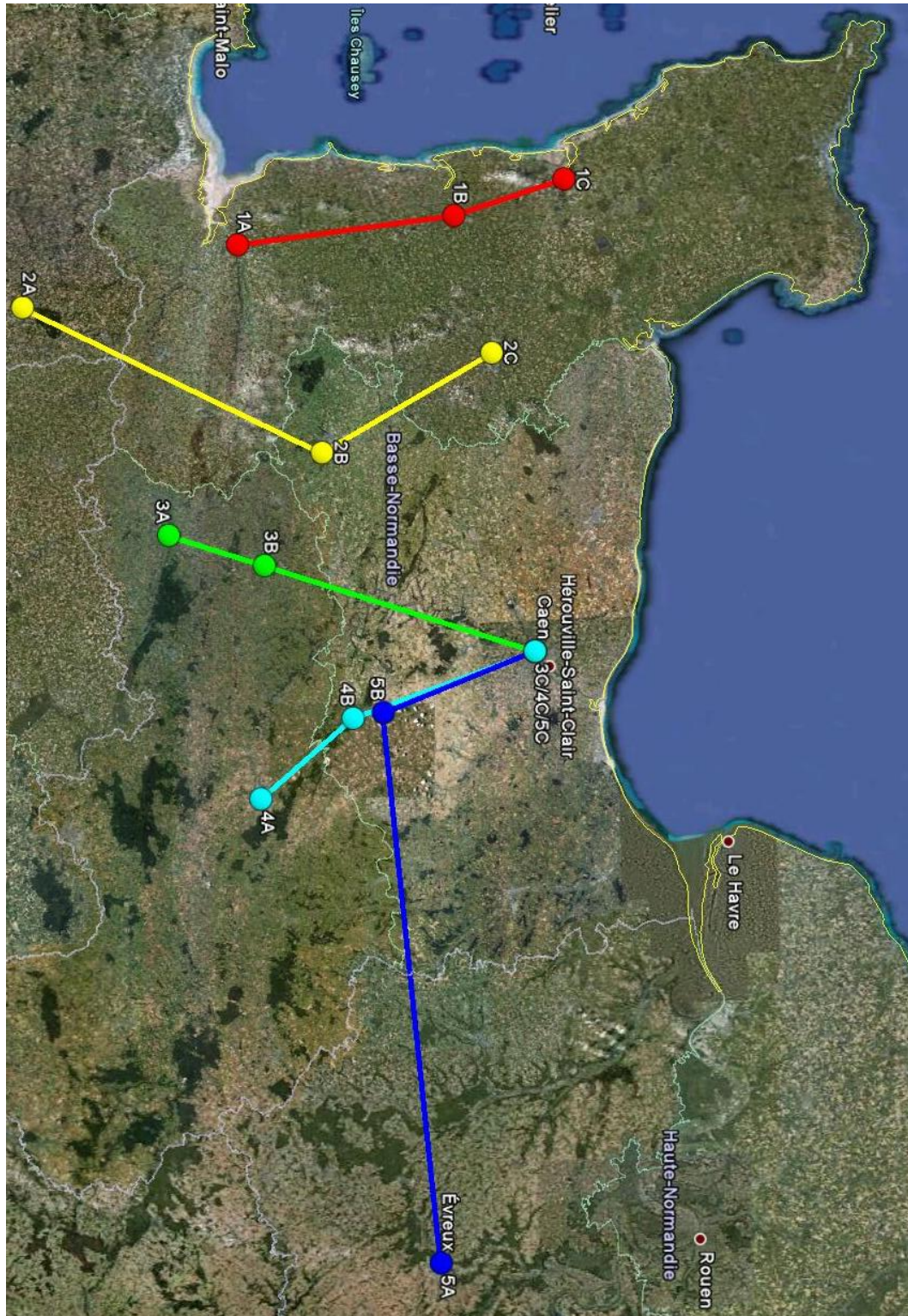


Appendix I (Continued)
Source: The author's own work

SCHEDULE DD NIGHT D-1/D BOMBING OF ROADS				
Serial	Timing	Targets	Type of Aircraft Employed	Remarks
1		Road AVRANCHES T2817 - COUTANCES T 2456 - LESSAY T 1876	No 2 Group T.A.F	CONFIRM TO AEAF BY 0900 HRS D-1
2		Road FOUUGERS Y 3878 - VIRE T 6631 - ST LO T 4962		
3		Road DOMFRONT T 8003 - FLERS T 8620 - CAEN U 0368		
4		Road ARGENTAN U 2818 - FALAISE U 1435 - CAEN U 0368		
5		Road EVREUX R 1968 - LISIEUX Q 5387 - CAEN U 0368		

Appendix J. Schedule DD, Night D-1/D Bombing of Roads

Source: The National Archives, Kew

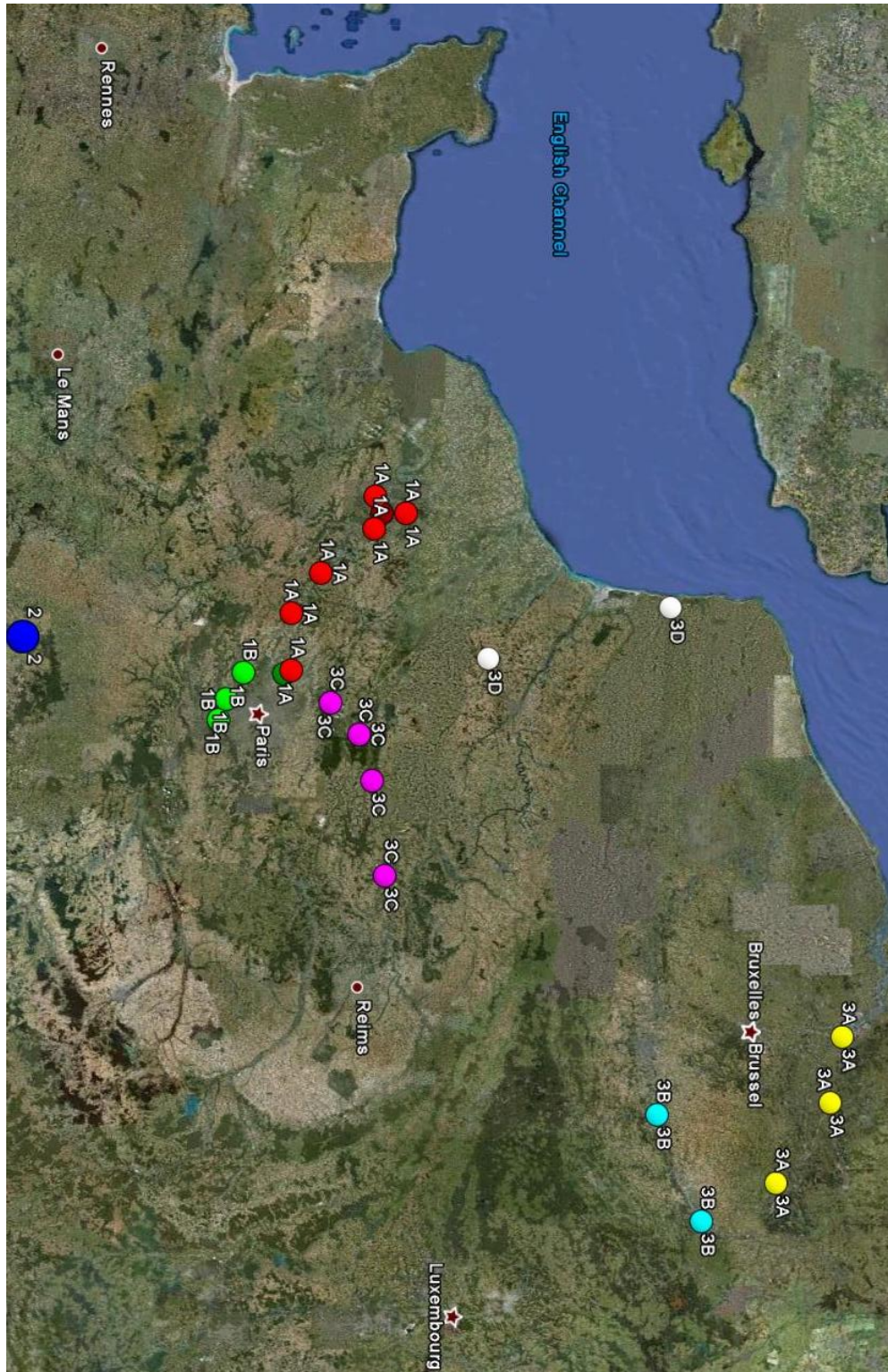


Appendix J (Continued)
Source: The author's own work

SCHEDULE E - PRE D DAY CUTTING OF RAILWAYS					
OBJECT - WITHOUT PREJUDICING THE SECURITY OF THE NEPTUNE PLAN TO CUT SUCH RAIL COMMUNICATIONS BEFORE D DAY AS WILL DIRECTLY HINDER THE RAIL MOVES OF ENEMY RESERVES TO THE NEPTUNE AREA					
FINAL LIST					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
1	General Start NOT before Y-15 but the later the better, and finish by D-4 inclusive	1. MOVEMENT FROM NE FRANCE AND BELGIUM TO NEPTUNE (a) The enemy will use any of the available routes crossing the SEINE at :- CONFLANS STE HONORINE MANTES GASSICOURT VERNON LE MANOIR ORVAL OISEL ROUEN (b) Traffic will also be routed through the following junctions of the GRANDE CEINTURE:- ACHERES VERSAILLES-ST. CYR MASSY-PALAISEAU JUVISY Method of attack on above to be decided by AEAFF 2. ROUTES EAST TO WEST AND SOUTH TO NORTH THROUGH ORLEANS 3. TARGETS WITH PRIMARY OBJECT "COVER" AND SECONDARY OBJECT LONG TERM EFFECT ON RAIL MOVEMENTS, BRIDGES ON:- (a) <u>ALBERT CANAL</u> (b) <u>MAAS</u> (c) <u>OISE</u> ANTWERP (3) NAMUR BEAUMONT HASSELT LIEGE (3) CREIL HERENTHALS VERBERIE SOISSONS (d) VIADUCTS AT ETAPLES AND POIX			1. Following restrictions apply owing to "cover" :- (a) Bombing of OISE, MAAS, and ALBERT CANAL bridges essential before any further bombing of SEINE or of ORLEANS (b) No bombing of LOIRE towns other than ORLEANS 1. Both junctions must be cut. Both junctions must be cut. Both junctions must be cut.
2	About D-6				2. Day to day review of progress and selection of target to be made by AEAFF Inter Service Committee
3					Some of these bridges have already been destroyed

Appendix K. Schedule E, Pre D Day Cutting of Railways

Source: The National Archives, Kew



Appendix K (Continued)
Source: The author's own work

SCHEDULE G - AIR SUPPORT AND COVER FOR AIRBORNE OPERATIONS					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
1	Night D-1/D Day	<u>US FORMATIONS</u> Close support of echelons of Paratroops of 82 and 101 Airborne Divisions during fly-in.			(a) Air cover is being provided as follows:- (i) <u>Night D-1 to D Day</u>
2	~~Dawn~~ <u>D Day</u> NIGHT D-1/D-Day	Close support for 52 gliders 82 Airborne Division 50 gliders 101 Airborne Division			34 night fighters over the convoys. night fighters patrolling the enemy coast. 20 intruders attacking airfields, searchlights, anti-aircraft positions, etc.
3	Dusk D Day	Close support for 170 gliders 82 Airborne Division +32 <u>GLIDERS 101 A/B DIV.</u>			(ii) <u>Dawn D Day</u>
4	Dawn D+1	Close support for 200 gliders 82 Airborne Division			Normal top cover. Close escort of one United States Group or three British fighter squadrons per 52/58 gliders, with probably rather more on the United States front during their crossing of the coast.
5	~~Dusk~~ <u>D+1</u>	~~Close support for 170 gliders 82 Airborne Division~~			(iii) <u>Dusk D Day</u>
6	CT-5 hrs to CT-4 hrs	<u>BRITISH FORMATIONS</u> Neutralisation of searchlight and interference of flak between ST AUBIN U0285 and TROUVILLE L4513			Protection on approximately the same scale as for dawn on D Day, but some diminution of the scale may have to be accepted if the plan to fly in as many as 200 gliders for 82 Airborne Division is confirmed.
7	CT-5 hrs to CT-4 hrs	Distraction of searchlight and flak in area CAEN 0368 <u>INCLUDING LIGHT A.A. BTY AT 121771</u>			(iv) <u>Dusk and Dawn D+1</u>
8	CT-4 hrs 30 mins (landing begins)	Close support for two paratroop brigades 6 Airborne Division			same scale of escort.
9	CT-2 hrs (landing begins)	Close support for 68 gliders 6 Airborne Division			(b) It will be noted that other targets in support of American and British Airborne Forces are included in Schedules D and H.
10	2100 hrs D Day	Close support for 250 gliders 6 Airborne Division			

Appendix L. Schedule G, Air Support and Cover for Airborne Operations

Source: The National Archives, Kew

SCHEDULE "H" ASSAULT PROGRAMME					
SECTION A - HEAVY NIGHT BOMBERS					
FINAL LIST					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
1	CT-2 hrs to CT-1 hr	LA PERNELLE II Bty 372198	Night Heavy		
2	NOT after midnight D-1/D	FONTENAY SUR MER Bty 368044	" "		
3	NOT after midnight D-1/D	ST MARTIN DE VARREVILLE Bty 405980	" "		
4	CT-2 hrs to CT-1 hr	MAISY I Bty 533918	" "		
5	CT-30 mins	POINTE DU HOE Bty 586937	" "		
6	CT-1 hr	LONGUES Bty 797871	" "		
7	CT-45 mins	MONT FLEURY Bty 918861	" "		
8	CT-15 mins	OUISTREHAM I Bty 117797	" "		
9	CT-4 hrs 50 mins to	SALENELLES Bty 155776	" "		
10	CT - 4 hrs 40 mins				
	CT-2 hrs to CT-1 hr	HOULGATE Bty 256809	" "		

**Appendix M. Schedule H, Assault Programme, Section A – Heavy
Night Bombers**

Source: The National Archives, Kew

SCHEDULE "H" ASSAULT PROGRAMME					
SECTION B - MEDIUM BOMBERS (EARLY ECHELON)					
FINAL LIST					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
1	HU-20 min to HU-5 min	BARFLEUR BTY 394228	Medium		
2	HU-20 min to HU-5 min	MAISY I BTY 533918	"		
3	HO-20 min to HO-5 min	POINTE DU HOE BTY 586938	"		
4	As near CT as possible	OUISTREHAM II BTY 103779	"		
5	" " " "	OUISTREHAM I BTY 117797	"		
6	" " " "	BENNERVILLE BTY 422107	"		

Appendix N. Schedule H, Assault Programme, Section B – Medium Bombers (Early Echelon)

Source: The National Archives, Kew

SCHEDULE "H" ASSAULT PROGRAMME					
SECTION C - TARGETS FOR CLOSE SUPPORT TO THE ASSAULT					
PART I					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
		<u>BEACH LOCALITIES UTAH AT</u>			<u>BOMBS AND FUZES</u>
1	HU-13 mins to HU-5 mins	435992	Day Medium	108 tons	(a) Serials 1-7 will be attacked with 250 lb bombs with instantaneous fuzes.
2	" " " " "	442982	" "	108 "	
3	" " " " "	451969	" "	108 "	
4	" " " " "	429000	" "	72 "	
5	HU-8 mins to HU-5 mins	442972	" "	108 "	(b) Serials 9,12,18-20 will be attacked with mixed loads of 500 and 1000 lb bombs fuzed with .1 second nose and .01 second tail settings.
6	" " " " "	448958	" "	72 "	
7	" " " " "	456953	" "	72 "	
		<u>BEACH LOCALITIES OMAHA AT</u>			
8	HO-30 mins to HO-5 mins	668903	Day Heavy	88.2 "	(c) Serials 8,10,11,13-17 will be attacked with mixed loads of 20 lb and 100 lb bombs with instantaneous fuze settings.
9	" " " " "	637928	" "	129 "	
10	" " " " "	646919	" "	88.2 "	
11	" " " " "	649916	" "	88.2 "	
12	" " " " "	955912	" "	129 "	
13	" " " " "	666906	" "	88.2 "	
14	" " " " "	677900	" "	88.2 "	
15	" " " " "	678896	" "	88.2 "	
16	" " " " "	688894	" "	88.2 "	<u>TIMINGS</u>
17	" " " " "	693893	" "	88.2 "	<u>ALTERNATIVE TARGETS</u>
18	" " " " "	699890	" "	129 "	
19	HO-20 mins to HO-5 mins	748880	" "	86 "	
20	" " " " "	756878	" "	107.5 "	(d) Bombers which arrive over serials 1-7 after HU-5 mins or which are prevented by cloud or smoke from seeing these primary targets will attack alternative targets as follows:-
					MAISY I Bty 533918
					MAISY II Bty 528916
					MAISY Ila Bty 531914
					Beach locality 493904
					Beach locality 505916
					Beach locality 512924
					Beach locality 527934
					Beach locality 538934
					Beach locality 545932
					(e) Bombers which arrive over Serials 8-20 after HO-5 mins, or which are prevented by cloud or smoke from seeing these primary targets will attack alternative targets as follows:-
					Main roads and intersections in FORET DE CERISY 6570
					<u>TARGETS FOR ANY SURPLUS BOMBERS</u>
					(f) Any surplus bombers will attack targets between HU-15 mins and HU-5 mins selected from the following:-

Appendix O. Schedule H, Assault Programme, Section C – Targets for Close Support to the Assault, Part I

Source: The National Archives, Kew

SCHEDULE 'H' ASSAULT PROGRAMME					Revised 27 May 1944
SECTION C - TARGETS FOR CLOSE SUPPORT TO THE ASSAULT (Continued)					
PART II					
Serial	Timing	Targets	Type of Aircraft	Effort Allocated	Remarks
21	H Br-40 mins to H Br + 10 mins	BEACH TARGETS BRITISH SECTOR 30 CORPS FRONT LONGUES BAY	Day Heavy		(a) 100% cratering is acceptable for the following serials:-
22	H Br-30 mins to H Br	ARROMANCHES I Bay	"		
23	H Br-20 mins to H Br +10 mins - 5 Mins	ARROMANCHES	"		
24	H Br-30 mins to H Br hour - 5 mins	ARROMANCHES III Bay	"		21-24; 28; 33; 36; 38-41; 43; 48.
25	H Br-30 mins to H Br-10 mins	LE HAMEL	"		44; 45; 46; 47; 53.
26	H Br-30 mins to H Br-15 mins	LE HAMEL	"		(b) 25% cratering is acceptable for the following serials:-
27	H Br-30 mins to H Br-15 mins	Locality	"		
28	H Br-30 mins to H Br-15 mins	VER SUR MER Bay	"		
29	H Br-20 mins to H Br hour	MONT FLEURY Bay	"		29,30.
30	H Br-10 mins to H Br-5 mins	Locality	"		
31	H Br-15 mins to H Br-10 mins	LA RIVIERRE	"		(c) 10% cratering is acceptable for Serial 31
32	H Br-30 mins to H Br-10 mins	LA RIVIERRE	"		
33	H Br hour to hour + 10 mins	Rocket emplacement 883833	"	2460 tons	(d) All the remainder are to be bombed with 100 lb bombs with instantaneous nose fuzes and no tail fuzes.
34	H Br-30 mins to H Br-5 mins	BEACH TARGETS BRITISH SECTOR 1 CORPS FRONT Locality	"		
35	H Br-30 mins to H Br-5 mins	COURSSELLES	"		
36	H Br-30 mins to H Br-5 mins	88 mm Bay	"		
37	H Br-30 mins to H Br-5 mins	BERNIERES	"		
38	H Br-30 mins to H Br-5 mins	ST AUBIN	"		
39	H Br-30 mins to H Br-5 mins	PERIERES SUR LE DAN Bay	"		
40	H Br-30 mins to H Br-5 mins	PETIT ENFER	"		
41	H Br-30 mins to H Br-5 mins	LION SUR MER	"		
42	H Br-30 mins to H Br-10 mins	Locality	"		
43	H Br-30 mins to H Br-5 mins HOUR- 5 mins	LOUSTREHAM	"		

**Appendix P. Schedule H, Assault Programme, Section C – Targets
for Close Support to the Assault (Continued), Part II**
Source: The National Archives, Kew

SCHEDULE 'H' ASSAULT PROGRAMME					Revised 27 May 1944
SECTION C - TARGETS FOR CLOSE SUPPORT TO THE ASSAULT (continued)					
PART II					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
44	HBr-30 mins to HBr Hour	Locality 13857905	Day Heavy	)	ALTERNATIVE TARGETS
45	" " " " "	FRANCEVILLE 15207931	" "	)	(e) Bombers which are prevented by cloud or smoke from seeing their formation targets (serials 21-52) will attack alternative targets as follows:-
46	HBr-10 min to HBr+10 min	MOULINEAUX Bty 972809	" "	)	Locality 876752
47	" " " " "	COLLEVILLE SUR ORNE Bty 076782	" "	)	CARPIQUET airfield 9668 (including groups of buildings 97526774 and 96226742).
48	" " " " "	OUISTREHAM II Bty 103780	" "	)	Bridges in THIERY HARCOURT 9347
49	" " " " "	TAILLEVILLE 00338228 H.Q.	" "	)	VILLERS BOGAGE 8157
50	" " " " "	Battle HQ 01667008	" "	)	(f) Bombers which arrive over Serials 21-52 after the last time stated in the timing column or finding the whole coastal strip clouded up, will attack alternative targets as follows:-
51	As near HBr Hour as possible (but NOT after HBr+10 mins	BIEVILLE 05807403 H.Q.	" "	)	VIRE 6331
52	" " " " "	ST AUBIN D'ARQUENAY 07307748 H.Q.	" "	)	FLERS 8621
53	Between HBr Hour and HBr+2 Hours	CAEN U 0368	" "	)	FALaise 1436
				)	ARGENTAN 2018
				)	TARGETS FOR ANY SURPLUS BOMBERS
				)	(g) Any surplus bombers will be used
				)	(i) to supplement the 20% effort allotted for CAEN if considered necessary, between H Br Hour and H Br+2 hours.
				)	(ii) to attack targets between H Br-40 mins and H Br-20 mins selected from the following:-
				)	BENNERVILLE Bty 422107
				)	HOULGATE Bty 236809
				)	VILLERVILLE Bty 486156
				)	HAVRE (the 2222 2222 Bty 222222
				)	POSTPONEMENT
				)	(h) if D day is postponed to the second or third of the three available days, Part II of this Schedule remains the same except that any surplus bombers will be used:-
				)	(i) to supplement the 20% effort allotted for CAEN
				)	(ii) to attack the following batteries between H Br-140 mins and H Br-70 mins:-
				)	LONG2222 Bty 797871
				)	PONT F122222 Bty 918861
				)	and not as in note (g) above.

Appendix Q. Schedule H, Assault Programme, Section C – Targets for Close Support to the Assault (Continued), Part III

Source: The National Archives, Kew

SCHEDULE "HH" AIR SMOKE REQUIREMENTS					
Serial	Timing	Tasks	Type of Aircraft Employed	Effort Allocated	Remarks
1		NOWTF - for screening naval forces	Bostons	One sqn	(a) Arrangements for serials 1 and 2 to be made between Naval Commanders and Second TAF
2		NCETP - for screening naval forces	Bostons	One sqn	
3		~~82 and 101 Airborne Divisions - for screening aircraft crossing the enemy coast.~~			
4		First US Army) Will be able to call on Second Army) further sorties of serials 1 and 2. Sqns will be available all day. Turn round time is estimated at 2-3 hours.			
					(b) Arrangements for serial 3 to be made between AEA/IX Air Force and Airborne Divisions.

Appendix R. Schedule HH, Air Smoke Requirements

Source: The National Archives, Kew

SCHEDULE J - BOMBING AFTER THE ASSAULT ON 'D' DAY					
OBJECT - TO DELAY DAY MOVEMENT OF ENEMY RESERVES					Revised 2 June 1944
Serial	Timing	Tasks	Type of Aircraft Employed	Effort Allocated	Remarks
1		1. ROAD CENTRES			
2		CAEN			(a) General Priority
3		VILLERS BOGAGE			(i) Road movement close in to bridgehead
4		ST LO			(ii) More distant road movement
5		COUTRANCES			(iii) Rail Movement
6		THURY HARCOURT			(b) Serial ? NOT to be attacked after H+7 1/2 hours
7		LISEUX			(c) Serials 13-26 at CCU
8		FALAISE			
9		ARGENTAN			
10		CONDE SUR NOIREAU			
11		PONTAUSAULT			
12		VIRE			
		PONT LEVEQUE			
		2. COASTAL DEFENSE BATTERIES			
		US SECTOR			
13		AIGREMONT Bty 378204			
14		LA PERNELLE II Bty 372198			
15		HAMEAU-VALETTE Bty 336197			
16		LA PISSETERIE Bty 343191			
17		COMBOT Bty 323174			
18		LA FOSSE Bty 339138			
19		LESTRE Bty 342102			
		BRITISH SECTOR			
20		LE MONT Bty 249779			
21		GONNEVILLE SUR MER Bty 254784			
22		HOULGATE Bty 256809			
23		Bty 280807			
24		Bty 407086			
25		BENERVILLE Bty 422107			
26		VILLERVILLE Bty 486156			
		3. ROAD AND RAIL TRAFFIC ACROSS LOIRE			
		BRIDGES BETWEEN INCLUDING NANTES			

Appendix S. Schedule J, Bombing After the Assault on D Day

Source: The National Archives, Kew

SCHEDULE J - BOMBING AFTER THE ASSAULT ON 'D' DAY					
OBJECT - TO DELAY DAY MOVEMENT OF ENEMY RESERVES (Continued)					Revised 2 June 1944
Serial	Timing	Tasks	Type of Aircraft Employed	Effort Allocated	Remarks
		4. OTHER TARGETS ~~PRE-ARRANGED OR~~			
		AT CALL			
27		Bridge at CABOURG DIVES SUR MER 219792			(d) Serials 27-48 at call
28		BRICQUEBEC 1104			
29		BAYEUX			
30		VALOGNES			
31		LES PIEUX 0010			
32		CARENTAN 3984			
33		PERIERS 2772			
34		ISIGNY			
35		Locality 857853			
36		Locality 84853			
37		Locality 786875			
38		PORT EN BESSIN 7587			
39		LE MONT Bty 249779			
40		GONNEVILLE SUR MER Bty 254874			
41		Bty at 280807			
42		Bty at 407086			
		RIVER DIVE			
43		DIVES SUR MER			TTD 4901W/D/6
44		TROARN			TTD 4901W/D/3
45		ANNERAY BR 252608			TTD 4901W/D/1
46		MEZIDON			MR 250560
47		ST PIERRE			MR 264497
		RIVER ORNE			
48		COUDRAY			TTD 4901W/D/8

**Appendix T. Schedule J, Bombing After the Assault on D Day
(Continued)**

Source: The National Archives, Kew

SCHEDULE J - BOMBING AFTER THE ASSAULT ON 'D' DAY					
OBJECT - TO DELAY DAY MOVEMENT OF ENEMY RESERVES (Continued)					
Serial	Timing	Tasks	Type of Aircraft Employed	Effort Allocated	Remarks
49		5. ENEMY COLUMNS ON ROADS CAEN - CARENTAN			(e) Bombing limitations on Serials 49-60 to be settled at UXBRIDGE
50		FOUGERES - ST VIRE - ST LO / ISIGNY			
51		FOUGERES - AVRANCHES - COUTANCES - VALOGNES - CHERBOURG \ BAYEUX			
52		EVEREUX - LISIEUX - CAEN			
53		DREUX - ARGENTAN - CAEN			
54		CHARTRES - BOISSY - ARGENTAN			
55		CHATEAUDUN - LE NOGENT - ALENCON			
56		LAVAL - FLERS - ST REMY			
57		SAUMUR - LE MANS - ALENCON - ARGENTAN			
58		ANGERS - LAVAL			
59		NANTES - RENNES - FOUGERES			
60		NANTES - LAVAL - FOUGERES			

**Appendix U. Schedule J, Bombing After the Assault on D Day
(Continued #2)**

Source: The National Archives, Kew

- 2 -

Serial	Timing	Targets in order of priority	Type of Aircraft Employed	Effort Allocated	Remarks
5		5. <u>RESERVE FOR UNFORSEEN TARGETS AND AT CALL</u> Towns to be bombed if enemy troop movement through them is shown by air reconnaissance VALOGNES 2408 LES PIEUX 0010 CARENTAN 3984 BAVEUX 7879 Unforseen targets may also have to be attacked using the reserve under this serial.	Medium Bombers		Effort to be decided after estimating commitment in items 1-4
6		6. <u>Columns on the Move</u> (EVEREUX - LISIEUX - CAEN First (FOUGERES - VIRE - ST LO Priority (DREUX - ARGENTAN - CAEN (FOUGRES - AVRANCHES - COUTANCES (LAVAL - FLERS - ST REMY (SAUMUR - LE MANS - ALENCON - ARGENTAN Second (ANGERS - LAVAL Priority (NANTES - RENNES - FOUGERES (NANTES - LAVAL - FOUGRES	Fighter Bombers		Top priority for Fighter Bombers except for serial 9
7		7. <u>TARGETS TO BE COVERED BY FIGHTER-BOMBERS AT CALL OF SECOND BRITISH ARMY</u> VAUX SUR AUPE battery 792831	Fighter Bombers		Pre-arranged, and to be attacked unless cancelled by Representative 21 Army Group UXBRIDGE
	H/Br. HB + 2 1/2 hours	Locality 857853 " 848854 " 786875 PORT EN BESSIN 7587 LE MONT battery 249779 CONNEVILLE SUR MER battery 254784 Battery at 280807 " " 407086			)))) May be called for, but no aircraft need specifically be allotted beforehand.)))
8		8. <u>TARGETS TO BE COVERED BY FIGHTER-BOMBERS AT CALL OF FIRST US ARMY</u> BRICQUEBEC 1104	Fighter Bombers		May be called for if enemy movement observed passing through village. Object of attack is to cause a road block.
9		9. <u>PRE-ARRANGED TARGET IN SUPPORT OF 6 AIRBORNE DIVISION</u> Bridge at CABOURG - DIVES SUR MER 219792	Fighter Bombers		To be attacked unless cancelled by Representative 21 Army Group UXBRIDGE.
	H/Br. HB + 4 1/2 hours				

Appendix V. Unknown Schedule (page 2 of ?)

Source: The National Archives, Kew

ANNEXURE 1 TO SCHEDULE J			
RAIL TRAFFIC FROM SOUTH AND SE FRANCE TO NEPTUNE			
	(a) Trains will be sent on routes crossing the LOIRE at principal bridges at:-		
	NANTES		
	SAUMUR		
	TOURS		
	ORLEANS		
	(b) If Bridges are NOT destroyed the enemy will use routes passing through the following junctions:-		
	ST PAZANNE		
	CLISSON		
	CHOLET		
	MONTREUIL-BELLAY		
	CHINON		
	ST PIERRE DES CORPS		
	VIERZON		
	(c) If all bridges over LOIRE have been destroyed enemy will either:-		
	(i) Detrain SOUTH of LOIRE and move by PT		
	<u>OR</u>		
	(ii) Travel by train round ORLEANS i.e. between ORLEANS and PARIS		

Appendix W. Annexure 1 to Schedule J

Source: The National Archives, Kew

Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
2		<u>2. COAST DEFENSE BATTERIES</u> Two batteries from three below may require to be attacked in conjunction with a commando assault. HOUIGATE 257810 BENNERVILLE 422107 VILLERVILLE 486156			
3		<u>3. ENEMY COLUMNS ON THE MOVE</u> Routes in probable order of priority LE MANS - MAMERS - ALENCON - NONAET - ARGENTAN - FALAISE FOUGERES - AVRANCHES - COUTANCES LAVAL - FLERS - ST REMY FOUGERES - VIRE - ST LO NANTES - EYREUX - LISIEUX NANETS - DREUX - ARGENTAN ROUEN - BRIONNE - LISIEUX			
4		<u>4. SUITABLE ROAD CENTRES FOR ILLUMINATION</u> To be selected from following:- PONT L'EVÊQUE LISIEUX CAEN ST LO COUTANCES LESSAY ALENCON ARGENTAN FLERS VIRE GRANVILLE AVRANCHES			

Appendix X. 2nd Unknown Schedule (page 2 of ?)

Source: The National Archives, Kew

SCHEDULE K - BOMBING ON NIGHT D/D+1				
OBJECT - TO DELAY NIGHT MOVEMENT OF ENEMY RESERVES				
Serial	Timing	Targets	Type of Aircraft Employed	Remarks
1	Night D/D+1	1. COMBINED ROAD AND RAIL CENTRES (a) To be selected from the following:- <u>Group A.</u> DOL. AVRANCHES VIRE FLERS ARGENTAN LISIEUX <u>Group B.</u> RENNES LAVAL LE MANS <u>Group C.</u> COUTANCES ST LO FALAISE THURY HARCOURT (b) Alternative groups for use in the event of bad weather in the NEPTUNE area:- <u>PRIORITY 1</u> ACHERES R85 VERSAILLES ST-GER-MATELOTS R83 MASSY S02 PALAISEAU / R92 MASSY R92 JUVISY S02 <u>PRIORITY 2</u> LONGUEIL S39 CREIL S18 <u>PRIORITY 3</u> SROUX M53 ROUXMESNIL M26 <u>PRIORITY 4</u> ABBEVILLE M78 AMIENS N05 TERGNIER N72 LAON O01 SOISSONS S89 (c) Final decision to be taken at 1500 hours D day.		1. Rail and road movement assessed as having equal priority for heavy bomber attack. 2. Special consideration required of routes for use of flares.

Appendix Y. Schedule K, Bombing on Night D/D+1

Source: The National Archives, Kew

SCHEDULE L - BOMBING DAY D+1					
OBJECT - TO DELAY DAY MOVEMENT OF ENEMY RESERVES					
Serial	Timing	Targets	Type of Aircraft Employed	Effort Allocated	Remarks
	<u>DAY D+1</u>	Targets to be selected from following:-			
1		<u>SEINE ROAD BRIDGES</u>			
		About 12 bridges between ROUEN and CONFLANS STE. HONORINE			
2		<u>RAIL MOVEMENTS FROM AMIENS AREA</u>			
		See Annexure 1 attached			
3		ROAD CENTRES)			
4		LOIRE ROAD BRIDGES) As in Schedule J			
5		LOIRE RAIL BRIDGES OR JUNCTIONS)			
6		ENEMY COLUMNS ON THE ROADS	Fighter-bombers		
7		ENEMY TRAINS IN MOTION	Fighter-bombers		

Appendix Z. Schedule L, Bombing Day D+1

Source: The National Archives, Kew

ANNEXURE 1 TO SCHEDULE L			
RAIL TRAFFIC FROM NORTH EAST - POST D-DAY			
	(a) IF SEINE BRIDGES ARE NOT OUT OF ACTION		
	Routes running through following junctions will be		
	DIEPPE		
	MONTEROLIER-BUCHY		
	CHARLEVAL		
	GISORS		
	CONFLANS STE HONORINE		
	(b) IF ROUTES ACROSS SEINE ARE OUT		
	Routes through PARIS will be used, particularly through GRAND CEINTURE		
	junctions of:-		
	ACHERES		
	VERSAILLES-ST-GYR MATELOTS		
	MASSY PALAISEAU		
	JUVISY		
	(c) IF NEITHER THE ROUTES ACROSS SEINE NOR THROUGH PARIS ARE USABLE		
	the enemy will route traffic through following junctions:-		
	CORBELL		
	BOURBON MALES HERBES		
	MONTARGIS		
	LES BORDES		

Appendix AA. Annexure 1 to Schedule L

Source: The National Archives, Kew

ACTION ON BOMBING PROGRAMME			
	Action to be taken		
Date		By whom	Schedule
D-6	Map References and annotated photographs of HQ in NEPTUNE D-1 programme to reach AEA	21 Army Group	D Sections A and B
D-3	Fighter Bomber programme for the Assault to be confirmed with AEAF	ANCXF Armies	H Section D
		21 Army Group	
D-3	Final selection of NEPTUNE D-1 targets to reach AEAF	ANCXF 21 Arby Group	D Sections A and B
D-3	Heavy Night bombing Programme night D-1/D to be confirmed with AEAF	ANCXF 21 Army Group	H Section A
D-3	Coast Defense Batteries for bombing after the Assault on D Day to be selected and sent to AEAF	ANCXF 21 Army Group	J
D-2	Medium Bombers (Early Echelon) Programme to be confirmed with AEAF	ANCXF 212 Army Group	H section B
	Heavy Day Bombers. D Day (First Sorties) to be confirmed and selection of targets for 20% Heavy Day Bombers (Second Army Sector) to reach AEAF.	ANCXF Armies 21 Army Group	H Section C
	Final selection of road centers into two lists for bombing after the Assault D Day to be made	21 Army Group	J
D-1	Notification of any postponement to be made	SHAFF	C Sections C and D
D	Decision on list A or B for road centers to be bombed by second sorties to reach AEAF by HO Hour	21 Army Group	J
	Decisions on road and rail centres to be attacked during night D/D+1 to reach AEAF by 1500 hrs.	21 Army Group	K
			DD

Appendix CC. Action on Bombing Programme

Source: The National Archives, Kew

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