

NAVAL WAR COLLEGE
Newport, R.I.

Operational Analysis of the Culminating Phase of the Battle
of the Atlantic:
A German *fait accompli*

Report Documentation Page

Report Date 13MAY2002	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle Operational Analysis of the Culminating Phase of the Battle of the Atlantic: A German fait accompli	Contract Number	
	Grant Number	
	Program Element Number	
Author(s)	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) Naval War College 686 Cushing Rd. Newport, RI 02841-1207	Performing Organization Report Number	
Sponsoring/Monitoring Agency Name(s) and Address(es)	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes The original document contains color images.		
Abstract		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	
Classification of Abstract unclassified	Limitation of Abstract UU	
Number of Pages 38		

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

13 May 2002

Abstract

The Battle of the Atlantic was the dominating factor all through the war. Never for one moment could we forget that everything happened elsewhere, on land, at sea, or in the air, depended ultimately on its outcome, and amid all other cares we viewed its changing fortunes day by day with hope or apprehension.

Winston

Churchill

On 15-20 March 1943, 44 U-boats in three wolf pack groups, *Stuermer*, *Draenger*, and *Raubgraf*, conducted a coordinated attack on the allied convoys designated HX229 and SC122. In the most successful convoy attack of the battle, the large concentration of U-boats overwhelmed the convoy escorts and wreaked havoc, sinking 22 ships grossing 146,596 tons, suffering the loss of only one U-boat.

This convoy battle came at the peak of the battle of the Battle of the Atlantic; a time at which the balance could have tipped in either direction. The German and the allies had been standing toe-to-toe, doggedly slugging it out in the longest and most bitterly contested battle of the Second World War.

That the months of spring 1943 ultimately were to be the turning point of the battle is now clear. The victory for the allies can quite easily be based not on a single decisive action or development, rather the combination of a

many actions, tactical, technical, operational and strategic, that rendered the German U-boat arm ineffective by removing their ability to operate on the surface.

However, the Germans shoulder a significant portion of the blame for their failure in the Atlantic; even to the point of denying themselves a chance at victory. The fighting spirit and the determination of the U-boat officers and men that heroically fought in severe weather conditions and withering attack from convoy escorts cannot be challenged. It is at the operational and strategic levels that the German command failed to prepared themselves for a long and drawn out battle, and failed to adapt to the changing conditions on the battlefield. Had they done so, the culmination in the Battle of the Atlantic would not have befallen them as early as May 1943 and the war in Europe might have transpired differently.

This paper will examine the operational aspects of the German offensive in the Battle of the Atlantic during the culminating phase in the first half of 1943 and the factors that led to the German collapse. The lessons learned from the German perspective can be instructive in how a unified approach to this battle would have prolonged Germany's ability to truly affect the allied shipping, and may have influenced the final outcome.

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I. INTRODUCTION

The U-boat attack was our worst evil. It would have been wise for the
Germans to stake all upon it.

Winston Churchill

I will demonstrate that the U-boat alone can win this war alone.
For us there is no impossible.

Grand Admiral Karl Doenitz

The Atlantic proved to be the decisive grounds on which Britain's ability to wage a sustained war against the axis powers rested. The period of August 1942 through May 1943 has proven to be the critical period in the Battle of the Atlantic. During this phase of the battle, the allies turned the tables on a surge in German U-boat successes and rising confidence and precipitated such a severe reversal of fortune that the Commander in Chief (CinC) of the German Navy and U-boat arm, Grand Admiral Karl Doenitz, was driven to the conclusion that a complete withdrawal of U-boats from the North Atlantic was required.¹

The allies' comprehensive approach to countering the U-boat menace, leveraging the capabilities of its air forces, technological advances, and intelligence service, was decisive in a long war of attrition.² However, just as crucial in the victory for the allies was the correspondingly one-dimensional approach taken by Germany. The opposing trends of the battle strategies met in the spring of 1943. Whether or not Germany could have won the battle in the long run is questionable, but the culminating point certainly could have been pushed beyond May 1943.

This paper will examine the operational aspects of the German offensive in the Battle of the Atlantic during the culminating phase in

the first half of 1943 and the factors that led to the German collapse. The lessons that should be learned from the German perspective can be instructive in how a unified approach to this battle would have prolonged Germany's ability to truly affect the allied resupply capability.

Battle of the Atlantic 1939-1942. In first two years of the battle, neither side held a decisive advantage. Both lacked the number of ships it required, and the contest of survival seemed far from over.

Germany had achieved success by continually seeking the allied "soft spots" and concentrating their efforts accordingly. The entrance of the United States into the war in December 1941 provided new opportunities. The early attacks in the Atlantic waters off the coast of the United States in early 1942 caught the Americans completely unprepared and made for successful hunting.³

In the overall shipbuilding, U-boats were losing the internal struggle for resource priority to tanks required for the land war, and the allied shipbuilding effort (beginning to see the benefits of a tremendous U.S. capacity) was just gaining momentum (see Figure 1).

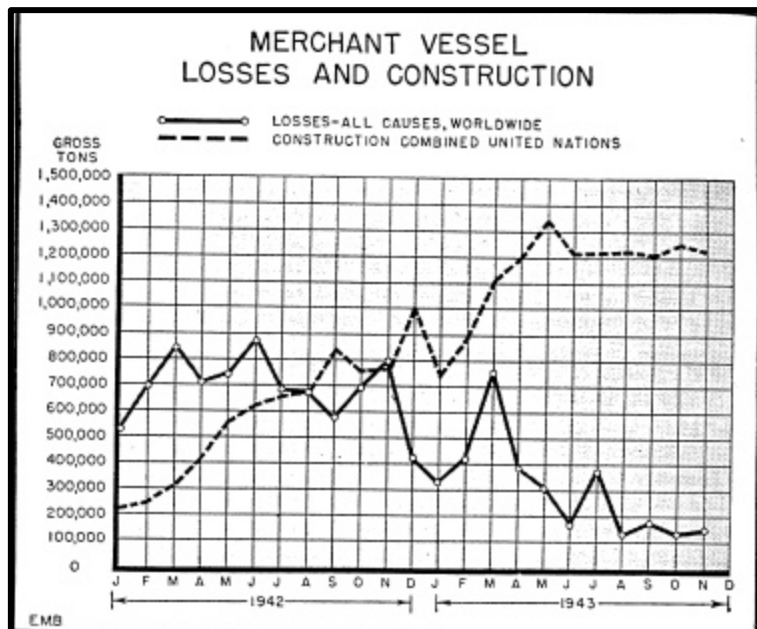


Figure 1. Allied merchant vessel construction. (Source: Morison, The Battle of the Atlantic, September 1939 - May 1943.)

In contrast to an admittedly desperation-driven, but comprehensive effort by the allies to develop countermeasures to the U-boat threat, the German U-boat arm relied heavily on the "fighting qualities of our submarines and the skill and efficiency of their commanding officers which had increased proportionally as the enemy's defensive measures grew stronger."⁴

The German U-Boat Situation. Based on analysis and exercises conducted in 1938 and 1939, Admiral Doenitz had concluded that Germany would require at least 300 U-boats--100 of which in the actual area of operations at any one time--to have a chance of succeeding in a battle waged against escorted convoys of Britain.⁵ In the spring of 1939, Germany had set out on the construction of a "balanced" fleet under a plan known as the "Z-plan." The plan was based on the Hitler's estimate that war against Britain would not take place before 1944-1945. With the entrance of Britain to the war in September 1939, the notion of building a fleet to match, if not necessarily defeat Britain's at sea was abandoned and the Z-plan was hastily modified to shift the construction focus on battleships and U-boats, with Raeder ordering a monthly production level of 20-30 U-boats.⁶

At the beginning of the war, the U-boat arm strength was 57 U-boats, only 23 of which were ready for immediate service in the Atlantic.⁷ By the start of the phase in which the U-boat offensive in the mid-Atlantic inflicted its highest toll, the U-boat arm had over 350 U-boats (increasing to 435), with the daily average number of U-boats at sea each month exceeding 100 for the first and only time (see Figure 2).⁸

Pre-war analysis of U-boat exercises and maneuvers had considered the potential that the U-boats might be denied the ability to operate surfaced, where they relied on their low profile and ability to hide below the surface to avoid attack from surface or air. This idea also would require an abandonment of the tried and tested principals of concentration of force through surface action in favor of submerged operations, requiring U-boats with much increased submerged speed.⁹

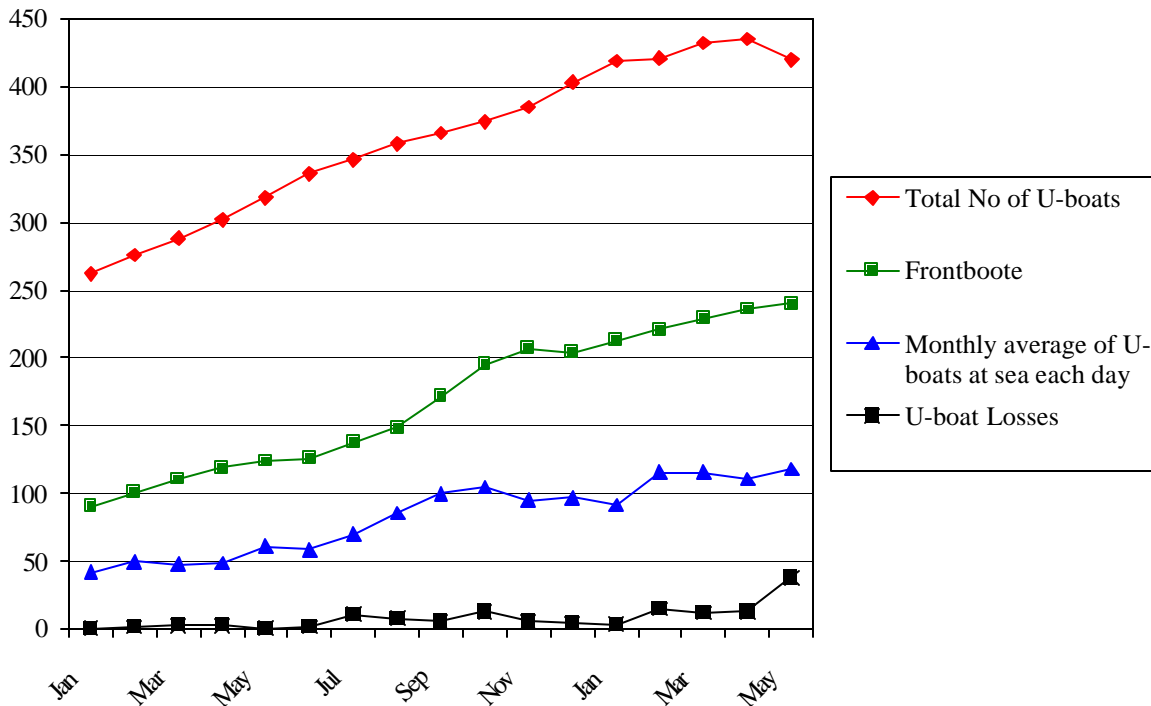


Figure 2. Germany's U-boat Arm, Jan 1942 - May 1943. (Note: *Frontboote* means fully operational U-boats.) (Source: Tarrant, The U-boat Offensive, 1914-1945.)

II. Operational Design

German Objectives. The strategic objective in the Battle of the Atlantic for Germany was to remove Britain from the war being waged in Europe. Operationally, this translated to eliminating Britain's supply lines in the Atlantic on which Britain so heavily relied. Doenitz correctly reported to Adolf Hitler on 1 September 1939, the "focal point [center of gravity] of warfare against England, and the one and only

possibility of bringing England to her knees with the forces of our Navy," was all out attack on merchant shipping, with the U-boat as the primary weapon.¹⁰ The center of gravity, widely dispersed as it was, never changed, and the August 1942-May 1943 phase of the offensive operations simply amounted to a shift of fires from the U.S. coast, where the Americans had finally begun to develop effective countermeasures, to the mid-Atlantic.

Doenitz correctly viewed the allied shipping constitutes one single great entity. Every ship sunk, regardless of where, brought additional gain in that loss of its cargo impacted the allied armament production and sustainment.¹¹

Planning Factors and Considerations. The factors of force, space and time must be analyzed to have a full appreciation of the operations for the new offensive. There are many to consider, but only a few of the more critical ones will be discussed.

In a battle of attrition, the ability to maintain superior forces over the longest duration is ultimately the deciding factor. In such a sequential attack on the enemy, the reaching the point at which the rate of loss exceeds rate of replacement is fundamental. So, for 1943, German estimates of Allied ship building was that 10.8 million¹ GRT² would be built, requiring an average of 900,000 GRT sunk each month to prevent and increase in shipping capacity.¹² (Factors Force/Time)

(Estimates in million tons)	1942				1943			
	USA	England	Canada	Total	USA	England	Canada	Total
U-boat Command estimate	6.8	1.1	0.5	8.2	8.7	1.1	0.5	10.3
Naval Intelligence	5.4	1.1	0.5	7	900,000 tons per month			10.8

¹ Actual allied shipbuilding was 12,384,000 GRT [Jacobsen, 282]

² Gross Registered Tons

Division estimate Tonnage actually built	5.19	1.3	0.6	6.99	12.29	1.2	0.9	14.39
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Figure 3. Allied shipbuilding in 1942 and 1943. The American shipbuilding industry was reaching its true potential by 1943, as demonstrated by the significant increase. (Source: Hessler, The U-boat War in the Atlantic, 1939-1945, Vol II.)

Weather winter of 1943 was some of the worst of the war. Gale force winds, with correspondingly heavy seas blew for no less than 116 days over a period of 20 weeks.¹³ The poor visibility and punishing conditions during this weather favored neither side, so the edge went to the side that could gain contact first. (Factor Space)

In the latter half of 1942, a lack of convoy escorts and fuel had forced Britain to keep the convoys on the shortest route across the Atlantic.¹⁴ By the end of 1942, with an increasing number of escorts available, and the ability to refuel escort vessels from tankers in the convoy, Britain had returned to the tactic of spreading their convoys over the entire Atlantic.¹⁵ But Germany had finally built up an inventory of U-boats to be able to have an effect in the vast expanse of the Atlantic. In the peak of Germany's offensive (March 1943), there were 112 U-boats at sea. This concentration made evasive convoy routing difficult, and at times fruitless. (Factors Space/Force)

One of the most important intangible factors was the level of training and experience of the U-boat crews. Experience was especially critical in the face of the countermeasures being employed by the allies. Doenitz's faith in the fortitude of his commanders has already been mentioned. But by this point in the battle, maintaining that core of experienced, and battle-proven commanders was proving to be difficult. From the beginning of the war to January 1943, 160 U-boats

had been sunk, taking with them most of the aces and experienced commanders.¹⁶ (Factor Force)

Operational Leadership. The German command and control in the Battle of the Atlantic is shown in Figure 4. Noteworthy are the facts that the U-boat arm shouldered all of the responsibility for waging the war against shipping and that, in effect, the single point of coordination between the *Luftwaffe* and the U-boat Command was Hitler himself.

The *Luftwaffe* and the U-boat Command were unable to conduct any significant coordinated operations.¹⁷

Upon becoming CinC of the Navy, Doenitz retained the position of CinC for U-boats as well, citing his U-boat commanders' reliance on him; no other officer in the Navy possessed the same knowledge and experience as he did.¹⁸ This effectively required Doenitz to be involved in every level of the war, from strategic to tactical. Doenitz had at his disposal a U-boat Command staff of less than two dozen officers.¹⁹

Grand Admiral Doenitz. Doenitz's actual U-boat experience was very limited.²⁰ In 1933, he was designated *Fuehrer der Unterseeboote (FdU)*³, responsible directly to the CinC of the Navy, Grand Admiral Raeder. From this position, he alone was responsible for the operational and doctrinal development of Germany's U-boat arm.²¹

Doenitz was able to overcome his relative lack of U-boat tactical experience during the war. As CinC for U-boats, he maintained close contact with his U-boat commanders, meeting returning U-boats and placing great importance on the frank discussions with his returning commanders to gain an appreciation for the harsh conditions at the front line.²² By taking care of his crews and boats, he was rewarded with their utter devotion and willingness to persevere to the extremes of their endurance at sea.²³ This was the one commodity he needed and valued most, given the fact that the Atlantic was never more than a secondary theater in the struggle for material resources in the German war effort.

Critical Factors - Strengths and Weaknesses. Doenitz had developed an elite force that was close-knit and dedicated.²⁴ Indeed, British

³ Flag Officer for U-boats. In October 1939, he was promoted to Konteradmiral and assumed the title of *Behelfshaber der Unterseeboote (BdU)*, or Commander in Chief for U-boats.

reflection on this critical phase of the battle considers the breaking of the morale and nerve of the U-boat commanders to be the decisive reason that April and May 1943 brought the turning point of the battle.²⁵ Whether at home resting in the Biscay ports or at sea on patrol, they were never immune from air attack.²⁶

Secondly, the Germans had been able to achieve success with their U-boats by doing what submarines do best: avoid detection and surprise their prey. Under Doenitz's direction the U-boats had constantly sought the allied soft spots and used night attacks and the U-boat's ability to submerge to avoid detection to keep the advantage on their side.

In the basic need for preservation of this "invisibility", however, lies the fundamental German weakness and a critical vulnerability that ultimately gave the allies the opportunity to turn the tide of the battle in their favor.

Lacking sufficient submerged speed to keep up with the convoys when maneuvering for position, the U-boats required the ability to operate freely on the surface. U-boats could be denied the opportunity to attack by simply forcing them underwater for long periods.²⁷ Also, the lack of a naval air arm, and the lack of cooperation from the *Luftwaffe* for air reconnaissance and protective cover for the U-boats was a decisive operational and organizational weakness.²⁸

The technical and scientific communities were not employed to the advantage of the German war effort. Hitler's order to stop research into technical fields which could not be completed within a year, and the failure of the Navy Department to establish a technological branch of experts to even keep up with developments is difficult to understand.²⁹ Germany was caught by surprise when the British began fielding countermeasures such as a new short-wave radar in mid-1942.

When queried by Doenitz, the scientific community was either non-committal or doubtful that such a capability could exist. According to Doenitz, "The basic research had not been carried out by the Germans."³⁰

Incredibly, Doenitz had no organic scientific research unit until the end of 1943.³¹

By contrast, the allies entered 1943 with renewed resolve to overcome the U-boat menace. Cooperation between political, scientific and military branches, was a critical strength. The formation of an Anti-U-boat Committee--whose first meeting on 4 November 1942 was chaired by none other than Winston Churchill himself--demonstrates the commitment of these allies to overcoming the U-boat menace, in an increasingly desperate situation.³²

The experience level and training were a weakness for the allies throughout the battle to this point in early 1943. The harshness of the winter weather in the North Atlantic took a heavy toll on the allied escort ships and the convoy escort groups suffered when their composition had to be altered due to weather-damaged shipping.³³

Finally, the most troublesome weakness and a critical vulnerability for the allies was the gap in land-based air coverage for their convoys over the mid-Atlantic. The British had been steadily working to close this gap, but at the beginning of 1943, the coverage only extended 600 miles from the air bases in Britain, Canada, and Iceland, leaving at least 200 miles uncovered (see Figure 5).

The Casablanca Conference in January 1943 resulted in the redistribution of aircraft to support the escort and U-boat prosecution mission and made progress toward closing the gap in the Atlantic by RAF, CRAF, USAAF coordinated operations from bases in Iceland, Newfoundland and the UK.³⁴



Figure 5. The Closing of the Air Gap. The red cross-hatched area indicates the portion of the "Black Pit" that was closed by the allies during the August 1942 - May 1943 phase. By the end of the phase, the gap was effectively fully closed with the introduction of escort carriers. (Source: Kemp, "Securing the Sealanes")

III. Operational Scheme

Operational Maneuver. With the convoy escorts reducing the viability of operations off of the Atlantic coast, in mid-1942 U-boat Command decided to shift the weight of the attack (*schwerpunkt*) back to the Atlantic in the areas where there is no air cover and where freedom of action would make wolf pack tactics most effective.³⁵ In his essay The Conduct of War at Sea, Doenitz describes the reasons for the success of the Wolf packs through the end of 1942 and his refusal to abandon the tactic:

If mobile operations employing the so-called wolf-pack system of a number of submarines operating together on the surface were to be given up, it would be impossible to achieve the desired concentration on one convoy. In this

respect, the same conditions apply to sea warfare as land warfare. Here, also, no decisive results can be obtained by static trench warfare, but only by mobile operations.³⁶

The German operational scheme for the spring offensive involved the use of large numbers of boats "in order to disperse the surface escorts and to ensure continuity of contact with the convoy."³⁷ Such a dispersal of U-boats involved wide areas, and, although the U-boat arm had the inventory to have about 100 U-boats operating in the Atlantic, still resulted in long patrol lines lacking in depth. Convoys needed to be picked up early to allow for the attack to be spaced out over several days.³⁸ The German patrol set-up for the establishment of contact on HX229 and SC122 in one of the most devastating convoy attacks of this phase is illustrative (see Figure 6).

Operational Coordination/Synchronization. Two points can be made on coordination. First, as already stated, Germany was without air assets for any of this battle. Once Doenitz became CinC of the Navy, he attempted to use his new status to secure the cooperation from

Hermann Goering, the *Luftwaffe* commander, which he had desperately needed throughout the war. However, he had little success in either convincing the *Luftwaffe* of the critical importance of the Battle of the Atlantic or in obtaining their consent to divert air assets from the land battles in Europe.³⁹

Second, the directing of U-boats from another boat at sea or once in the vicinity of a convoy proved untenable. As a result, the wolf pack tactics relied on U-boat command (and typically Doenitz himself) ashore, up to 1000 miles away, to coordinate the convergence of the U-boats on a convoy and set up for the attack. This method not only required mutual understanding of tactical conditions between U-boat

commanders and ashore commanders, but unrestricted use of wireless radio communications as well.⁴⁰

Operational Intelligence/Security. The direction of U-boats from ashore and the heavy reliance on communications could only be successful if the security of the communications could be assured. On 1 February 1942, Germany employed a new code⁴ by adding a fourth wheel to their encrypting machines. The allies were unable to break this new code until

⁴ Called "Shark." The British referred to this new code as "Triton."

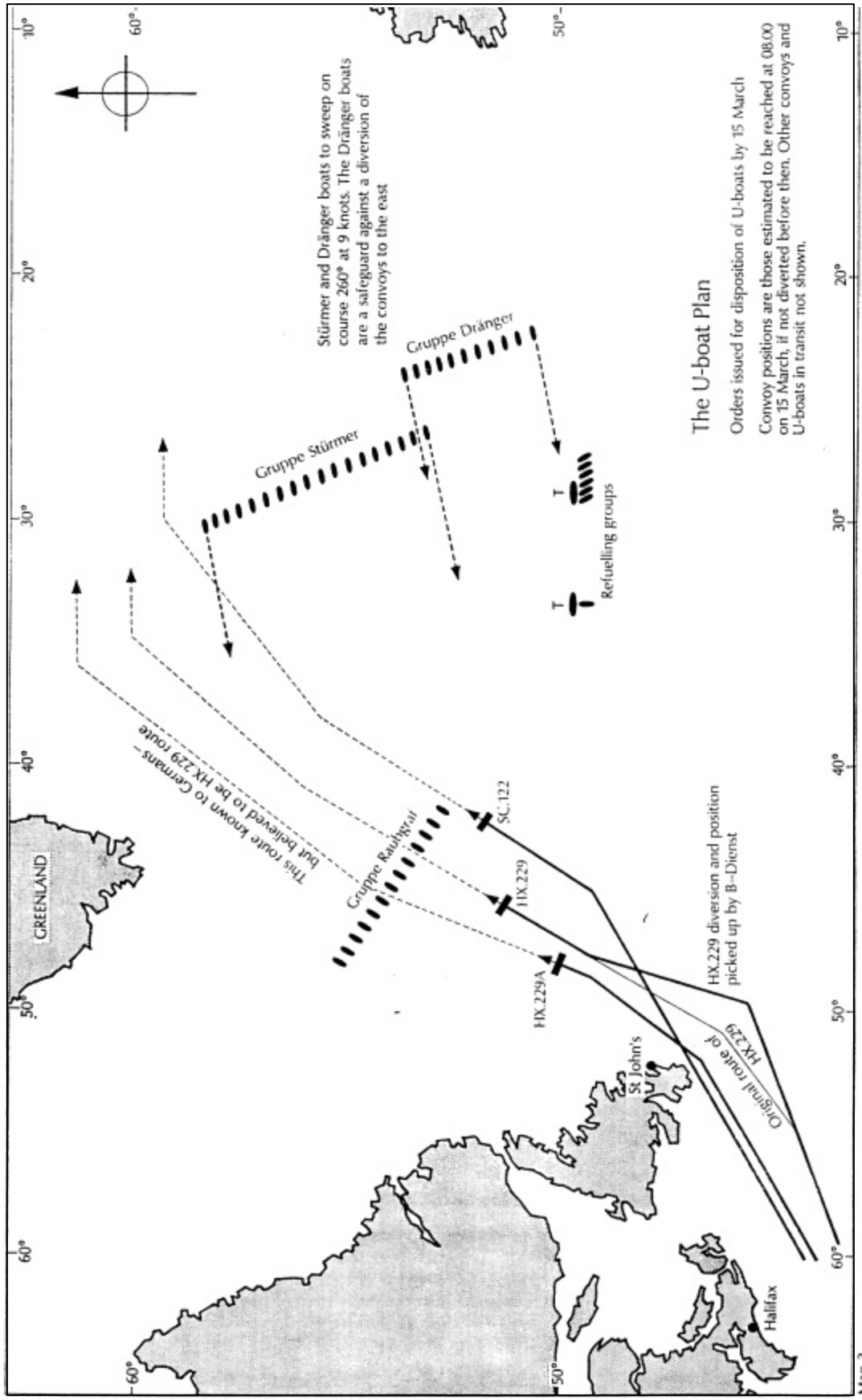


Figure 6. The U-boat plan for attacks on Convoys HX229 and SC122
 (Source: Martin Middlebrook (Convoy))

13 December 1942.⁴¹ At the same time (February 1942), the German code-breaking branch, *B-dienst*, also succeeded in breaking the British cipher, giving U-boat Command timely information regarding the locations of allied convoys.⁴²

Entering 1943 unaware that their code was being broken again, the U-boat Command became concerned that it had not been finding the convoys it thought it would. A clue to the mystery came in the same month as *B-dienst* started intercepting the daily British "U-Boat Situation Report" going to all commanders at sea. The report gave the known and presumed locations of all U-boats. Although the Germans checked their security, their conclusion was that the combination of "pier-watchers" in France and long-range radar detections of sufficient accuracy gave the British the ability to deduce all U-Boat locations. The Naval Intelligence Service remained convinced that the German ciphers were not being broken.⁴³

The communications between U-boat Command and the U-boats provided one last avenue of exploitation; one that ultimately proved devastating to the U-boats. The allied development of an HF/DF⁵ capability further exploited the German reliance on communication by giving ships at sea an opportunity to determine the location of a U-boat every time it transmitted. The Germans never realized that allies possessed this capability.⁴⁴

Operational Protection. In a battle of attrition, loss of any assets, whether in battle, in port or in transit, must be avoided. This was not an trivial problem. Even if the *Luftwaffe* could have provided air assets for the U-boats, the U-boat patrol areas were at such long range that continuous air cover would not have been possible.

In port, German submarine pens constructed in their Bay of Biscay ports⁶ in 1942, were tremendously effective. British Bomber Command had initially avoided hitting French ports out of concern for civilian casualties and not wanting to distract from main aim of bombing Germany.

In January 1943, the situation was dire enough that these ports and German building facilities were placed on the top of the Bomber Commands priority, but the bombing of the pens were of little physical effect. No U-boats were destroyed, and damage to repair facilities were only slowed their progress temporarily.⁴⁵

The allies implemented several measures in the spring of 1943 to further exploit the critical vulnerability of the U-boats--detection--by improving their capability of attack. In March, the first British convoy support group was placed in service.⁷ These escort groups were not encumbered by the need to stay close to the convoy and could operate independently to prosecute U-boats.⁴⁶ Second, the introduction of escort carriers and very long range aircraft into the Allied convoy escort protection in March 1943, finally closed the air gap in the Atlantic for good.

Operational Logistics/Sustainment. With the vast expanses of the Atlantic, the difficulty of maintaining sufficient U-boats on patrol was difficult. The "Milch Cows"⁸, brought into service in April 1942, extended the Bay of Biscay bases from 1000-2000 miles westward. They were lucrative targets for the British anti-submarine effort and their locations were closely guarded, but they allowed Doenitz the freedom of maneuver for his U-boats, and allowed him to keep them on station

⁵ HF/DF - High Frequency Direction Finding, or "Huff-Duff" as it was referred to by the allies.

⁶ Brest, St Nazaire, La Pallice, Bordeaux

⁷ An escort group typically consisted of two sloops, four old destroyers and four new frigates. The composition of each group, however, constantly changed. Six groups (five British and one U.S.) were in service by the end of March 1943.

longer. As effective as the Milch Cows were, in the first half of April 1943, the Germans still had to deal with a "U-boat vacuum" in the North Atlantic, as the furious attacks on the convoys in March had left most of the U-boats without torpedoes, forcing them to return to the Biscay ports.⁴⁷

Principles of War. Two principles of war not addressed or alluded to in the foregoing discussion merit mention: surprise and economy of force.

Surprise. The U-boat's principle advantage was that of surprise. The successes of the latter half of 1942 and the planning for the spring 1943 offensive was mindful of the need to maintain this advantage. However, the combined effects of the allied countermeasures had diminished the element of surprise.

Even in poor weather with limited visibility, the tables were actually turned in favor of the allies with their radar. Germany had considered the threat of radar before the war, but had not implemented any means to counter it.⁴⁸ The employment of the *Metox* search receiver in August 1942 had been a tremendous boon to the U-boats, allowing them to detect an airplane's radar emissions and submerge before they could be attacked.⁴⁹ However, Germany did not realize until February 1943 that the British were employing a 10-centimeter radar whose wavelength was too short to be detected by *Metox*.⁵⁰ Once again, the German scientific community found itself hopelessly behind the emerging technology.

Economy of Force. The German High Command misunderstanding of the strategic importance of the Battle of the Atlantic and the U-boat's

⁸ Ten U-boats were converted to U-tankers or "Milch Cows" whose purpose it was to provide a sea borne fueling station for the wolf packs.

pivotal role is evident in the manner in which the U-boats were often siphoned out of the Atlantic to conduct less fruitful or effective operations. In November 1942, the month that his U-boats were achieving the highest numbers of tonnage sunk with the wolf pack attacks on the convoys, Doenitz had seen an opportunity for further success squandered when Hitler ordered him to pull sixteen U-boats from Atlantic duty to attack shipping used to support the *Operation Torch* landings in North Africa. Very little success was achieved by these U-boats due to their late arrival. Adding insult to injury, the drain of escorts to support the *Torch* landings left the convoys in the Atlantic less than optimally protected.⁵¹ In one sense though, the German failure to foresee the time and location of North Africa invasion minimized the disadvantage to the U-boat Command, in that no U-boats were drawn out of the Atlantic in a preemptive measure to try to cover the numerous possibilities for the landing.⁵²

IV. Culmination

March 1943 was a tremendously successful months for the U-boats. A total of 780,000 GRT were sunk (the second best month of the battle behind November 1942) and the loss rates of U-boats remained low (9.2% of U-boats at sea compared with 8.9% for the last months of 1942.⁵³ With a fleet of U-boats that was nearing what U-boat Command estimated it should have had at the start of the war, Germany was now seeing the monthly tonnage results they calculated was needed to win. Unfortunately, it is at this point as well that the allies reached the point of self-synchronization with their countermeasure efforts.

By the third week of May, and for the first time in the battle, the rate of U-boat destruction rose dramatically, to a point that exceeded the German's output.⁵⁴ By the end of May, the British air cover, from

land-based and escort carrier-based aircraft had closed "the gap" and had introduced several technological advantages, making surface operations for the wolf packs prohibitive and thus rendering them ineffective against the convoys.⁵⁵ Doenitz was forced to draw the only appropriate conclusion, given the lack of means to counter, and ordered a withdrawal of all U-boats from the North Atlantic on 24 May 1943. Doenitz's BdU War Diary entry on 6 May 1943 summed up the situation rather succinctly, if not stating "...at the moment U-boat operations are more difficult than ever before."⁵⁶

After two and one-half years of hard-fought battle, the culmination point in the Atlantic was reached. That Germany was surprised by the suddenness of the turn of fortune is a product of their inability to recognize and alter their march down the path toward defeat that had begun long before. Tactical and operational successes could not overcome their strategic failings to provide the Navy with the means it needed to keep up with the allies in this kind of attritional warfare. Tellingly, Doenitz's assessment is characteristic of the Germany's one-dimensional response to the challenges the allies had laid before them; that the U-boats had always overcome setbacks "...because the fighting efficiency of the U-boat arm had remained steady" and the operations against the convoys could only resume if the fighting power of the U-boat was radically increased.⁵⁷

Battle of Atlantic after May 1943. Germany faced the previously unthinkable decision of whether or not to continue prosecuting the war against the British supply lines.

The Germans could find very little to effectively counteract the air assets.⁵⁸

Compounding the German need to maximize the effectiveness of its dwindling fleet, the Milch Cows fell prey to the allied aircraft (with help from the code breakers) starting in Jun 1943.⁵⁹ By September, they had all been sunk.

Upon becoming CinC of the Navy, Doenitz had immediately sought agreement with Armaments Minister Speer to transfer the responsibility for Naval construction under Speer, increase the rate of building U-boats (to 40 per month) and begin work on a new type of U-boat with higher submerged speed.⁶⁰ With great anticipation, U-boat Command awaited the delivery of the Type XXI⁹ (expected to be ready in summer 1944, but not delivered until early 1945), which would provide opportunity for submerged operation at higher speed and reduce on-surface battery charging required. The idea conjured up notions of revolutionizing naval warfare by more effectively capitalizing on the U-boat's ability to operate in the underwater realm.

In the end, Doenitz correctly decided that the battle against the supply ships had to continue even if the tonnage war couldn't be won.⁶¹

Continued attacks tied up allied forces, and did not allow for unchallenged resupply. Though the allies could not breathe easily yet, the U-boat would never regain the edge in the Battle of the Atlantic.

V. Conclusions

Several conclusions can be drawn from the German approach to the Battle of the Atlantic, from which valuable lessons can be learned. The lessons are not limited to the operational level, as there are theater-strategic and strategic considerations that impacted the outcome of the battle.

On (theater) Strategic Objective. Germany failed to recognize the strategic importance of removing Britain from the war and accordingly leverage all aspects of national power against this objective. The priorities of the armaments and shipbuilding industry, the scientific community, and the military operational planning were frequently shifted away from primary objective in the Atlantic theater. Doenitz sums it up well:

In reality our leaders learnt [sic] nothing from the First World War. Once again we had plunged into a world conflict with an inadequate number of submarines and, in spite of the lessons of the first war, had failed even in war time to do our utmost to expand the U-boat arm, because our political leaders and their Army and Air Force advisers had believed, at least until 1942, that they could win *on land* a war in which our main opponents were the two greatest sea powers in the world.⁶²

Continual reassessment of the military objectives, especially in prolonged battle must be accomplished. Priorities and planning must adapt to changing circumstances, as well as foresee potential operational branches and sequels.

On Coordinated/Joint Operations. The failure to achieve any sort of cooperation or coordination between the air and naval arms of Germany was a fatal flaw. The entire Battle of the Atlantic was left solely to the U-boat arm. Even if Germany's air assets could not have provided air reconnaissance out to the areas of U-boat patrols, a more beneficial effect would have been achieved by challenging of the air superiority the allies enjoyed over the Atlantic. Protection from the air for transits of the Bay of Biscay alone would have eased the burden. Germany failed to address one of the basic questions of operational planning and determine the resources required to achieve its objectives in the Atlantic. *The reliance on a single arm of the armed forces to*

conduct a battle of strategic importance is dangerous. Following thorough analysis of the enemy's critical factors, the Center of Gravity that must be determined and attacked with an appropriate level of priority and resources.

On Operational Protection. The lack of any sustained effort to address the primary threat to the U-boat, detection on the surface, proved fatal. The submarine pens were unquestionably effective protecting U-boats in port. Further, owing to Doenitz's keen operational sense, Germany was very effective at finding the allied "soft spot" and shifting U-boat operations accordingly, but the noose was tightening around the U-boat's critical vulnerability. The U-boats needed to maintain the ability to surprise and/or overwhelm the convoys.

Absent sufficient numbers to accept high attrition rates, or the capability to run at high speeds submerged, Germany did little to anticipate the enemy's advances in countermeasures, and merely reacted with defensive means. *Operational planning must ensure that the force that is most important to the success of the operation is maintained at sufficient strength to be effective. This requires a proactive view on the current and potential threats to that force.*

On training and experience. Numerous examples are available to demonstrate the increase in effectiveness of forces that have the benefit of coordinated training or significant experience on their side.

Early U-boat loss rates in the Atlantic can be attributed to the immediate implementation of the convoy system by Britain, as well as to the inexperience of the U-boat captains and crews. Similarly, the loss of escorts due to weather or damage had a detrimental effect on their ability to function as a coordinated team. An analysis of the sinkings

in the Atlantic yields some interesting revelations: Of 1,171 U-boats commissioned during the war, only 321 sank or damaged a ship. Further, almost one-third of the Allied shipping sunk was at the hands of a small number (30) of relatively experienced professional officers.⁶³ *There can be no substitute for the development of a robust training program to prepare forces for battle, especially for the battle of attrition. Simulation of actual combat conditions, to the greatest extent possible, is critical to ensure those sent into combat are not fully effective in the fog of war.*

On the integration of technology. In combat, especially prolonged combat, the old saying "necessity is the mother of invention" is relevant. The repeated German failure to pursue technological advantage is remarkable. Even before the war, the problem of surface detection of U-boats on the surface by radar was discussed, but little or nothing was done to address and counter this threat.⁶⁴ For the first half of the war, Doenitz had no technical staff at his disposal to remain abreast of current developments, and to study the problem of preventing detection of U-boats on the surface. As a result, Germany was continually caught by surprise when the allies rolled out a new capability. *The scientific community should be continually pressed to provide the military with new and advanced technologies. At the same time, the intelligence branch must aggressively seek to identify when new technologies are introduced based on changed in the enemy's patterns.*

On Command and Control. The German C2 organization for the Battle of the Atlantic was compressed and inadequate. The lack of coordination and cooperation with the *Luftwaffe* has already been discussed. The fact that all CinCs reported directly to Hitler required all operational

coordination to be conducted at the strategic level of command. Additionally, although Doenitz was adept at both the operational and strategic levels of command, his direct involvement all the way down to the tactical level, even once he became CinC of the Navy, was a burdensome distraction. *Commanders at the strategic and operational levels of war need to be able to focus on the military operations at that level. Combat that will require the assets of more than one branch of the armed forces must have a joint force commander assigned at the operational level.*

On deception. Germany knew that the allies had a good understanding of the U-boat situation based on communication intercepts obtained by *B-dienst*. There is little evidence of deception being used at any level to achieve some kind of advantage. Despite Germany's problem of limited assets, some examples of deception that might have been employed are attempts at misdirection through misleading communications (which would have had the added benefit of confirming or denying that the German codes had been broken), attempts to draw convoy escort groups away from the convoys while attacking with a separate pack of U-boats, and use of air assets to provide reconnaissance in areas away from actual U-boat patrols. *Deception is a vital part of any operation. The force multiplying effect of innovative deception plans can give an inferior or poorly resourced smaller force the advantage in battle.*

NOTES

- ¹ Karl Doenitz, Memoirs: Ten Years and Twenty Days (translated by R.H. Stevens) (Cleveland, OH: World Publishing, 1990), 341.
- ² Karl Roebing, Great Myths of World War II (Fern Park, FL: Paragon Press/Dynapress, 1985), 74.
- ³ Stephen W. Roskill, The War at Sea 1939-1945, Vol II, (Reading, U.K.: Her Majesty's Stationery Office, 1956), 95-96.
- ⁴ Ibid., 242.
- ⁵ H.A. Jacobsen and Jurgen Rohwer, ed., Decisive Battles of World War II: The German View (New York, NY: G. P. Putnam's Sons, 1965), 261.
- ⁶ Ibid., 33-34.
- ⁷ Jacobsen and Rowher, 261.
- ⁸ V.E. Tarrant, The U-Boat Offensive, 1914-1945 (Annapolis, MD: U.S. Naval Institute, 1989), 116.
- ⁹ Doenitz, Karl. The Conduct of War at Sea: An Essay (Washington, DC: Division of Naval Intelligence, 1946), V-4.
- ¹⁰ Fuehrer Conferences on Naval Affairs 1939-1945, (Annapolis, MD: U.S. Naval Institute Press, 1990), 36.
- ¹¹ Doenitz, Memoirs, 228. Stephen Roskill, in The War at Sea, points out that, the success of the landings in North Africa notwithstanding, at the beginning of 1943, the fuel stores in Britain had been reduced to 300,000 tons of commercial bunker fuel (consumption was running about 130,000 tons per month), and the number of escorts and air assets were still too few to prevent concern that future offensive plans might be affected by a lack of shipping.
- ¹² Jacobsen and Rowher, 282.
- ¹³ The Battle of the Atlantic: The Official Account of the Fight Against the U-boats 1939-1945 (London: His Majesty's Stationery Office, 1946), 54.
- ¹⁴ Doenitz, Memoirs, 241.
- ¹⁵ Jacobsen and Rowher, 280.
- ¹⁶ Tarrant, 113.
- ¹⁷ Eliot A. Cohen and John Gooch. Military Misfortunes: The Anatomy of Failure in War (New York: Vintage Books, 1991), 92. There were a few instances of air reconnaissance and protection flights in the Bay of Biscay and the Arctic, but both Raeder and Doenitz were continually rebuffed in their attempts to obtain support from the *Luftwaffe*.
- ¹⁸ Doenitz, Memoirs, 321.
- ¹⁹ Cohen and Gooch, 92.
- ²⁰ W.E. Hart, Hitler's Generals (Garden City, NY: Doubleday, Doran, 1976), 184-185. Doenitz's duty during two years in World War I included an initial assignment as an apprentice in U39 under World War I ace Walter Forstmann, then command of UC25. While skipper of the underwater cruiser UB-68 during a cruise in the Mediterranean in 1919, Doenitz attacked a British convoy off Malta and was immediately counter-attacked. UB-68 was brought to the surface, and Doenitz ordered abandon

ship despite having suffered little damage. Having scuttled his ship, he spent the last of the war in a prison camp in England.

²¹ Hart, 188.

²² Jacobsen and Rowher, 273.

²³ Martin Middlebrook, Convoy. (New York, NY: William Morrow and Co., Inc., 1977), 74.

²⁴ This is exemplified by remarks regarding the problems of leadership on U-boats made by Wolfgang Luth, one of Germany's premier aces, as late in the battle as 17 December 1943, at a convention of naval officers: "It is the duty of every captain to have faith in his men.... For beyond this, we know for a fact that our young men are thirsting for action with unqualified devotion. This is an important advantage over the Anglo-Americans. If our men are led into action in the National Socialist spirit with revolutionary ardor, then they will always follow gladly on new assignments and to new attacks."

²⁵ The Battle, 60.

²⁶ The Battle, 60.

²⁷ Gerhard L. Weinberg, A World at Arms (Cambridge, U.K.: Cambridge University Press, 1994), 370.

²⁸ Doenitz, An Essay, IV-4.

²⁹ Jak P. Mallmann Showell. U-boats Under the Swastika (Annapolis, MD: U.S. Naval Institute, 1987), 62.

³⁰ Doenitz, Memoirs, 233.

³¹ Cohen and Gooch, 92.

³² The Battle, 53.

³³ Ibid., 59.

³⁴ Ibid., 58.

³⁵ Doenitz, Memoirs, 237.

³⁶ Doenitz, An Essay, V-3.

³⁷ Tarrant, 108.

³⁸ Ibid.

³⁹ Gunter Hessler, The U-boat War in the Atlantic 1939 -1945 Vol III (London: Her Majesty's Stationery Office, 1989), 3,46.

⁴⁰ Doenitz, An Essay, V-5.

⁴¹ David Syrett, ed., The Battle of the Atlantic and Signals Intelligence: U-boat Situations and Trends, 1941-1945, (Aldershot, England: Ashgate Publishing, 1998), xvi.

⁴² Doenitz, Memoirs, 242.

⁴³ Ibid., 324-325.

⁴⁴ Weinberg, 371.

⁴⁵ Jacobsen and Rowher, 287-288.

⁴⁶ Ibid., 294

⁴⁷ Doentiz, Memoirs, 335.

⁴⁸ Doenitz, An Essay, V-4. Pre-war recognition of the threat of the air arm and identification of potential counters: three possible courses of action - protection against the beams (absorption); development of a search receiver; and development of a detecting device. Little hope placed in the detection device given the low height at which the device from the surface of the water. Full absorption of radar beams was not possible (only reduced). The only other option considered was the abandonment of surfaced tactics and operate submerged. This option required the building of U-boats with much greater submerged speed.

⁴⁹ Tarrant, 110.

⁵⁰ Showell, 65.

⁵¹ Jacobsen and Rowher, 279

⁵² Doenitz, Memoirs, 277-279. Reflecting on the Naval Intelligence Service's failure to forecast the location and timing of the *Operation Torch* landings, Doenitz provides a general assessment of the intelligence service's overall performance: "The German Intelligence Service under Admiral Canaris failed completely, just as it had failed throughout the war to give U-boat command one single piece of information about the enemy which was of the slightest use to us."

⁵³ Hessler, 112 (Plan 60).

⁵⁴ The Battle, 64.

⁵⁵ Clay Blair, Hitler's U-Boat War: The Hunted, 1941-1945, (New York, NY; Random House, Inc., 1998), 710-711. Allied aircraft were credited with 204 unassisted sinkings and 30 more in cooperation with surface escorts. Aircraft from the Jeep [escort] Carriers were credited with 39 unassisted sinkings and 12 in cooperation with surface ships.

⁵⁶ Jacobsen and Rowher, 302.

⁵⁷ Doenitz, Memoirs, 341.

⁵⁸ In an attempt to directly counter the air threat, "aircraft trap" U-boats, specially configured so to protect the U-boats crossing the Bay of Biscay were ready for service in July 1943. The results of the first deployment of such a trap, *U-441*, was so dismal that U-boat Command was forced to conclude, "the U-boat was a poor weapon with which to fight aircraft."

⁵⁹ Richard Compton-Hall, The Underwater War, 1939-1945 (Poole, Dorset, U.K.: Blanford Press, 1982), 105.

⁶⁰ Albert Speer, Inside the Third Reich: Memoirs by Albert Speer (translated by Richard and Clara Winston) (New York, NY: Galahad Books, 1995), 273.

⁶¹ Jacobsen and Rowher, 309.

⁶² Doenitz, Memoirs, 333.

⁶³ Showell, 17-18. These 30 officers, which represents only 2% of all of the U-boat commanders, were responsible for sinking a almost 800 of the 2,775 allied ships sunk, and all had joined the Navy before between 1929 and 1935 (Hitler instituted conscription in 1935).

⁶⁴ Showell, 60-62. Reflective of the short-sightedness of the German naval command regarding threats to U-boats, Doenitz made the following comment made after the war while reviewing a book manuscript: "...I have no clear recollection of the conversation aboard [the light cruiser] *Koenigsberg* [which served as headquarters for Doenitz's staff during exercises in the autumn of 1938] and cannot quite see its significance... One cannot demand that a commander throws reality overboard because of a futuristic comment about a technical invention which might be capable of detecting submarines on the surface."

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