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Submarine warfare, fiction or reality?

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SUBMARINE WARFARE,
FICTION OR REALITY

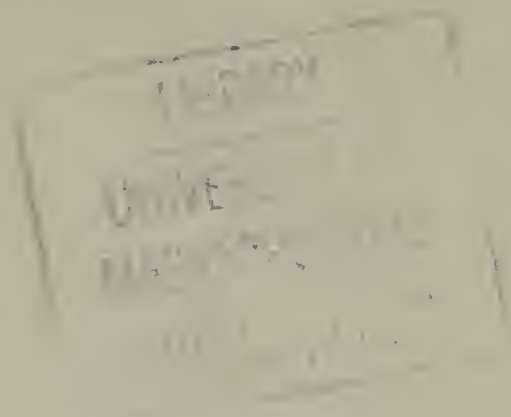
JOHN C. CHESKA, JR.

1962

SUBMARINE WARFARE, FICTION OR REALITY?

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A.B. Amherst College



Thesis submitted to the Graduate Faculty
in partial fulfillment of the requirements
for the degree of
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FOREWORD

"The Battle of the Atlantic was the dominating factor all through the war. Never for one moment could we forget that everything happening elsewhere, on land, on sea, or in the air, depended ultimately on its outcome."¹

- W. S. Churchill

Leyte Gulf, Midway, Coral Sea come to mind when people speak of naval victories by the United States during World War II. It is easy to glorify these victories, and to forget a victory equally significant, the victory over the U-boat in the Atlantic. Without this accomplishment, the supply lines to the European theater of operations could not have been maintained. "It was but one link in the chain of forces and events that led to victory over the Axis. And it was the central, vital link, without which the chain would have fallen into two dangling parts, shackled only at each end, neither strong enough to resist disaster and defeat."² Although the operations against the U-boats in World War II are little known today, in January of 1942 they were of vital importance.

The meeting of the U-boat threat in the Atlantic meant a step towards the defeat of Germany. In order to defeat the U-boat, the United States utilized her military forces, sciences, industry, and the universities. The Navy had to initiate a new military coordinating body, the Tenth Fleet. To bring industry and the universities together to produce improved and new weapons, the National Defense Research

1. Roskill, S. W., The War at Sea, London, 1960, Vol. III, I, p. 245. Hereafter cited as Roskill, War at Sea, III, I.
2. Morison, S. E., The Atlantic Battle Won, Boston, 1956, Vol. X, p. 3. Hereafter cited as Morison, Atlantic Battle Won.

Committee was initiated. Although fighting a naval battle in the Pacific, the United States had to defeat the improved U-boat in the Atlantic.

A complete description of the U-boat battle in the Atlantic is not necessary, for this has already been done by Samuel E. Morison, Vice Admiral Ruge, and others. What is lacking is an accurate account of the number of U-boats the United States sunk. There have been many different accounts given to describe these successes. The question that is raised is the accuracy of these figures, which were published during the war, immediately after the war, and those available now.

Although the Atlantic Battle will not be described as a whole, some information, such as command structure, policy, and material, will be presented to put the data in perspective. Where the United States and Great Britain worked jointly or when British policy influenced American policy, the British policies will be described.

Major emphasis is placed upon the United States public information policy and whether or not it concurred with the actual battle reports. In evaluating United States policy the British public information policy is used for comparison, and also to illustrate its influence upon United States policy. The public had to rely upon the government for its information. Did the United States government accurately inform the public about the U-boat war in the Atlantic?

The U-boat was defeated. Unlike the Pacific naval battles, such as Leyte Gulf, Midway, and Coral Sea, the details of the Atlantic battle have not been clearly described. Why was the U-boat defeated? How was it defeated? What was the score for the American successes

against the U-boats? These questions are still shrouded in doubt.
The victory is clear. The details have long been unclear.

I. COMMAND STRUCTURE AND POLICY

"Their goal was the enemies' seaborne commerce and not the enemy fleet.¹"

- Eric Raeder

"Maintain the lines of communication to Great Britain and also future bases.²"

- Ernest King

The Command Structures and Policies of the opposing navies determined the nature of the struggle under the sea and therefore are vitally significant. The description of the German and United States Naval structures will not attempt to touch upon all the complex organizations but will give those that are pertinent to the U-boat war. This study should include the organization of the navies at the start of the war, any reorganizational changes, or any organizational additions. The personnel occupying the key positions in the naval structures should also be mentioned. The British organization will only include the liaison committees between the United States and Great Britain. In this study both the theoretical structures and the practical working models should be pointed out.

Theoretically, the German military machine had as its leader, the Fuehrer, with the Armed Force Headquarters, commonly designated as OKW, as the strategic control body directing the armed forces as a whole. Each of the major services, Air Force, Army, and Navy had representatives on the OKW staff.³ Under the OKW were the headquarters

1. Raeder, E., Struggle for the Sea, London, 1959, p. 345. Hereafter cited as Raeder, Struggle for the Sea.

2. King, E. J., United States Navy at War, 1941-1945, Washington, 1946, p. 818. Hereafter cited as King, U.S. Navy at War.

3. Taylor, Tillford, Sword and Swastika, New York, 1952, p. 100-105. Hereafter cited as Taylor, Sword and Swastika.

of the individual services (Naval High Command). The command agency for the Navy was OKM. General Admiral Reeder held the position of Commander-in-Chief of the Navy from June 1, 1935 to January 30, 1943. From January 30, 1943 to May 2, 1945, Admiral Doenitz held this position. When Admiral Doenitz took over his new duties as the head of the government, Admiral von Friedeburg became Commander-in-Chief from May 2, 1945 to May 23, 1945. These are the men who led the German Navy during the war.

The Naval Operations Command, SKL, controlled the operations of the Navy. The Chief-of-Staff of SKL from November 1, 1938, to June 10, 1941, was Admiral Schniewind. Admiral Schniewind was succeeded by Admiral Fricke on June 11, 1941. Admiral Fricke's term lasted until February 20, 1943. Admiral Meisel succeeded Fricke on February 2, 1943 and held the post until April 30, 1944. On May 1, 1944, the Chief-of-Staff of SKL was changed to the Chief of Naval Operations. (Der Chief der Seekriegsleitung). Admiral Meisel continued in this capacity until May 22, 1945.

The senior submarine officer was Admiral Doenitz. Admiral Doenitz was Leader of Submarines from January 1936 to September 11, 1941.⁴ From September 12, 1941 to May 1, 1945, Doenitz held the position of Commander of Submarines (Befehlshaber der Unterseeboote), a change of status which reflected the increasing importance of the submarine in Germany's naval effort. Thus, from the first, the command of the submarine fleet was in the hands of Admiral Doenitz. From February 1, 1943, much of the task of conducting the submarine

4. Von Seigles, F. F., Die Hohern Dienststellen Der Deutschen Wilmacht, 1933-1945, Munchen, 1953, p. 55. Hereafter cited as Siegles, Die Hohern.

war was passed to Admiral von Friedeburg as Admiral of Submarines. This occurred when Admiral Doenitz became Commander-in-Chief of the German Navy, without relinquishing his previous functions.

The U-boat fleet was organized into flotillas. There were approximately eighteen fighting flotillas. There were several more flotillas for the training of officers and men.⁵ Several flotillas were also used for the purposes of testing new equipment.

Naval Commands were also set up to govern various areas. These Naval Commands originally consisted of Command West and Command North Sea. As new territories were conquered, additional Naval Commands were necessary. Command Norway was organized on April 10, 1940, and Command Italy was inaugurated on June 20, 1940.⁶ These were the commands involved in the submarine war with the Western Allies. Through them the SKL directed the U-boat activities.

Ranged against Doenitz and his staff were the anti-submarine commands of Britain and the United States, of which only the latter is relevant. From the start of hostilities in Europe, the United States began to organize for war. The United States Navy Department was placed under the control of Frank Knox in June, 1940. At this time, the office of Under Secretary of the Navy was created, with James V. Forrestal as the first incumbent. Admiral Harold R. Stark held the position of Chief of Naval Operations. Admiral King became Commander-in-Chief Atlantic Fleet on February 1, 1940, or in naval terminology Cinclant. Admiral King became Commander-in-Chief United States Fleet (Comich) on December 20, 1941.⁷ The position of Chief of Naval Operations was given to Admiral

5. Lohmann and Hildebrand, Die Deutsche Kriegsmarine 1939-1945, Bad Nauheim, 1956, Vol. I, Chap. 71, p. 2. Hereafter cited as Lohmann and Hildebrand, Die Deutsche.

6. Siegler, Die Hohern, p. 61.

7. Morison, S. E., The Battle of the Atlantic, Boston, 1947, Vol. I, p. 115. Hereafter cited as Morison, Battle of the Atlantic.

King in mid-March 1942. Admiral Stark was appointed Commander United States Naval Forces Europe (Comnavere) on January 1, 1942. Vice Admiral Ingersoll became Commander-in-Chief Atlantic Fleet.

Admiral King as Commander-in-Chief Atlantic Fleet and Admiral Ingersoll as Commander-in-Chief Atlantic Fleet were confronted with the necessity of eliminating the U-boat. Several sections of Admiral King's staff were incorporated to direct the anti-submarine operations. Rear Admiral R. S. Edwards was in charge of anti-submarine problems and coordinating the various staff sections, especially convoy and routing, headed by Admiral Metcalf. Captain Wilder D. Baker was in charge of anti-submarine tactics and preparations.⁸ Admiral Stark started various defensive sections, called Sea Frontiers, each extending 200 miles into the Atlantic. The Eastern Frontier was commanded by Admiral Andrews, later succeeded by Vice Admiral Leary. The Gulf zone was originally commanded by Admiral Munroe, who was succeeded by Admiral Anderson. The Caribbean zone had Admiral Cook, then Admiral Giffin in charge. The Panama Frontier was run by Admiral Train, who was followed by Admiral Kingman. Expansion of the Frontiers resulted in the Moroccan Frontier, with Commodore McCandlish as senior officer.

In October 1942, the Army formed the Army Air Force Anti-Submarine Command (AAFAC) to complement the bombing of the RAF and the Eighth Air Force. Its headquarters were situated in New York City. The unit consisted of two wings, the Twenty-fifth and Twenty-sixth.⁹ Thus, the Army was also working to defeat the U-boat.

8. King and Whitehall, Fleet Admiral King, New York, 1952, p. 450. Hereafter cited as King and Whitehall, Fleet Admiral King.

9. Craven and Cate, The Army Air Forces, World War II, Chicago, 1949, Vol. II, p. 1. Hereafter cited as Craven and Cate. AAF, WW II.

On May 20, 1943, the "Fleet without a ship," more appropriately termed the Tenth Fleet, was inaugurated to help expedite the fight against the U-boat threat.¹⁰ Admiral King, along with his many other duties, became Commander Tenth Fleet. Admiral Low became his chief of staff. The Tenth Fleet was broken down into five divisions. These divisions included the Operations Division, Anti-Submarine Measures Division, including the Anti-Submarine Warfare Operational Research Group, the Civilian Scientific Council, and the Air Anti-Submarine Development Unit Atlantic Fleet (Airesdivlant).¹¹ The Convoy and Routing Division was taken over intact from Cominch headquarters. Thus, with the introduction of the Tenth Fleet the United States Navy was at least organized to prosecute the war against the U-boat in a methodical manner.

In view of these operations in the same waters, the United States Navy and the Royal Navy had to keep each other well informed on policy, intelligence, and operations. Therefore, liaison committees were created. Captain L. Hawlett Thebaud, United States Naval Control Officer at Londonderry, Ireland, had initially this task for the United States.¹² At the Casablanca Conference on January 19, 1943, the first improvements in organization appeared with the establishment of the Allied Anti-Submarine Survey Board on March 8. Although not exactly liaison, it did prepare for cooperation between the two navies. Rear Admiral Kauffman presided, with the other United States member being Commander John Vest.¹³ The British members were Rear Admiral Mansfield and Group Captain Canning (RAF).

10. King and Whitehall, Fleet Admiral King, p. 452.

11. Morison, Atlantic Battle Won, p. 24.

12. Ibid., p. 12.

13. Ibid., p. 12

This Committee was to "make a survey of all matters relating to anti-submarine warfare in the Atlantic Ocean!"¹⁴

Another organization developed at this time was the Combined Procedures Board. The American representative was Captain Vest. This board's duty was to devise a single system of procedures and signals for the navies engaged in warfare against the U-boat. The board met in June, 1943, but could not come to any conclusions. Therefore, the United States and Great Britain went on to develop their own systems and policies for defeating the U-boat and countering German naval policy which governed the U-boat.¹⁵

All the German Naval Commands had to look to the Commander-in-chief, and SKL for instructions relating to operations within the command areas. A small circle in SKL, directed by General Admiral Raeder and later Admiral Doenitz, made the decisions. Their policy-making group included Admiral Schniewind, Admiral Fricke, Frigatenkapitan Wagner, and the head of Raeder's personal staff, Frigatenkapitan Schulte-Monting.¹⁶ These men were involved in advising the Fuehrer, on what policies and decisions should be made. SKL recommended policy, Hitler determined it, both before and after the outbreak of war.

There appears to have been a significant neglect of naval affairs in Hitler's pre-war policies. Hitler's policy appears to recognize the British supremacy at sea. Therefore, Germany should reach an alliance with Great Britain, allowing Germany freedom of action elsewhere. In 1924, Hitler, criticizing German policy toward England in 1914, showed this favoritism for England. "'No sacrifice should have been too great to win England's favour.'"¹⁷ In 1933, Hitler laid down his initial dictum. "'The basis

14. Ibid., p. 12.

15. See Appendix I for British Organizations.

16. Bekker, C. D., Defeat at Sea, New York, 1955, p. 73. Hereafter cited as Bekker, Defeat at Sea.

17. Hinsley, F. H., Hitler's Strategy, Cambridge, 1951, p. 9. Hereafter cited as Hinsley, Hitler's Strategy.

for future German naval policy," according to Raeder, "was his strong determination to live in peace with Italy, Japan, and England."¹⁸ In 1935, Hitler attempted to please England by negotiating the Anglo-German Naval Agreement, with the naval proportion of 35:100 in favor of Great Britain. A stipulation was also made that Germany could equal British submarine construction. Hitler had at this time also settled the question of the type of fleet Germany should have, choosing the balanced fleet.

Only after the Munich Agreement in the autumn of 1938, according to Raeder, did Hitler feel the resistance of England, and ordered a tremendous construction program. Also at this time Hitler decided to step up U-boat construction from a ratio of 45% of British construction to 100%¹⁹

With Hitler's assurance that there would be no war with England until 1944 or 1945, Admiral Raeder in September, 1938, drew up the "Z" plan for future naval construction.²⁰ With the dates 1944 and 1945 in mind, the plan called for a balanced fleet. Six heavy battleships, eight heavy cruisers, seventeen light cruisers, four aircraft carriers, and 221 U-boats were to be completed by 1948. With this balanced fleet attacks could be carried out against British merchant shipping, the British heavy forces dispersed in defense of trade could be attacked, and the British Home Fleet could be tied down.²¹

With the turn of political events because of the attack on Poland on September 1, 1939, the "Z" plan had to be scrapped. The best policy under the new circumstances was to attack the British supply lines. Admiral Raeder, generally considered an advocate of the High Seas Fleet, stated part of the German Naval Policy on September 3, 1939. "Harrying the enemies' merchant navy, and the most promising weapon for that purpose

18. Ibid., p. 6.

19. Ibid., p. 7.

20. Martianssen, Hitler and His Admirals, New York 1949, p. 13. Hereafter cited as Martianssen, Admirals.

21. Hinsley, Hitler's Strategy, p. 2.

is the U-boat. What we need are U-boats and still more U-boats." ²²

On September 1, 1939, in a memorandum to Admiral Raeder, Admiral Doenitz stated "The U-boat is the only way of defeating Britain. The U-boat will always be the backbone of the fleet against England and of political pressure on her." ²³ However, German policy did not solely rely on the U-boat, but rather the primary objective of the navy was to operate against the supply lines of the enemy. Great Britain had to import 50,000,000 tons of supplies annually. ²⁴ The German Navy wished to prevent part of these supplies from reaching their destination.

To accomplish this end, the objective of the Navy was to avoid major actions and to concentrate on merchant shipping. The overall plan called for an attack on Allied merchantmen by groups of pocket battleships, light cruisers, and U-boats. The super battleships, which were better built than the British battleships according to Admiral Raeder, with superior speed and range, would support the operation. They would engage the enemy, if necessary, until the raiding force had retired. Therefore, the attacks on supply lines were theoretically to be carried out by the fleet. However, with some notable exceptions, the task in actual practice devolved upon the U-boat.

Up until December, 1941, German naval policy continued to be attacks on the sea lanes by U-boats and the High Seas Fleet. After the entrance of the United States into the war, German naval policy depended even more upon the U-boat to choke the supply lines to Great Britain. Early in 1942, Hitler ordered the surface fleet to Norway, although Raeder wished to continue surface raids on Allied shipping. With the news on December 30

22. Bekker, Defeat at Sea, p. 21.

23. Hinsley, Hitler's Strategy, p. 3.

24. Martienssen, Admirals, p. 13.

that the heavy cruiser, Admiral Hipper, had been damaged, Hitler decided to decommission all his heavy ships.²⁵ On January 6, 1943, Admiral Raeder handed in his resignation, and Admiral Doenitz became Commander-in-Chief of the German Navy.²⁶

Although the High Seas Fleet was not decommissioned, the U-boat was clearly the major weapon against Allied merchantmen. Both Hitler and Doenitz employed the "tying up" of escort vessels.²⁷ The "tying up" concept referred to the number of escort vessels the enemy had to employ to search for U-boats. Therefore those Allied vessels on U-boat patrol were kept from other activities. Admiral Doenitz also relied upon another concept, "integral tonnage."²⁸ The main task of the U-boat was to sink enemy tonnage without regard to route, place, or cargo. The hope was that merchant sinkings would keep ahead of merchant construction. Therefore, the German U-boats were "to sink as much tonnage as possible with the least losses."²⁹ The "tying up" concept and the "integral tonnage" concepts were to last until the end of the war.

German U-boats at sea had to abide by policies which were affected by the political situation at that particular time. By the London Pact on Submarine Warfare in 1939, merchant ships could be attacked if guarded by naval or air forces, or if the vessel were armed. Merchant ships, which resisted an order to stop could also be destroyed. Similarly, if the merchant vessel was engaged in a naval engagement or was transporting troops it could be destroyed. On August 4, 1939, Admiral Raeder commanded U-boats to wage warfare on merchant ships by these rules.

25. Morison, Atlantic Battle Won, p. 57.

26. Admiral Raeder's resignation was not accepted, he became Inspector General.

27. Morison, Atlantic Battle Won, p. 59.

28. Ibid., p. 58.

29. Ibid., p. 58.

German U-boat commanders found it extremely difficult to operate under the London Pact restrictions. They found that merchant vessels were running without lights. When the merchant ship was stopped, they would report the position of the U-boat on their wireless sets. Merchant vessels were also being armed by the British government. Even neutrals were arming their merchantmen. For example, U-3 was sunk by gunfire from an armed Swedish merchantman.³⁰ Therefore, the use of the wireless and armed merchant ships made the strict interpretation of the London Pact dangerous to the safety of the U-boat.

Therefore, on September 23, 1939, Raeder asked Hitler for permission to attack ships sending wireless messages giving the location of the U-boat. Clearance was also asked to sink armed merchant vessels. On November 22, 1939, Admiral Raeder pressed Hitler for permission to sink neutral ships, especially Greek ships owned by British companies. He also attempted to get Hitler to declare a "Siege of England."³¹ This would free the U-boat from any restrictions at all.

On October 4, 1939, Hitler gave the order to fire on merchantmen who used their wireless sets after being detained. Neutral ships were excluded from these orders. In mid-October, 1939, Hitler approved the sinking of enemy merchant vessels without warning. It was assumed that they were armed. On October 16, 1939, Hitler after vacillating, again gave his permission to sink passenger ships in convoys.³² Hitler denied permission to attack neutral ships and refused to declare a "Siege of England."³³ Hitler did not want to offend the neutrals, because of his excursion into the Low Countries. He did not wish to offend the neutrals before he was ready

30. Doenitz, Carl, Ten Years and Twenty Days, New York, 1959, p. 51.

Hereafter cited as Doenitz, Ten Years.

31. Hinsley, Hitler's Strategy, p. 33.

32. Martienssen, Admirals, p. 26.

33. Hinsley, Hitler's Strategy, p. 33

to attack them.

On February 23, 1940, Hitler had denied permission for Admiral Raeder to send U-boats to the Halifax area. He refused because of the "psychological effect on the U.S.A."³⁴ However, when the United States on September 1, 1941, began escorting convoys from Newfoundland to Iceland, Raeder again appealed for freedom of action. "'There is no longer any difference between American and British ships.'"³⁵ This statement came on September 11, 1941. The Fuehrer rejected this appeal but left the door open for attacks on American shipping. There would be no outright attacks upon United States warships or merchant ships, even American ships in British convoys. However, Hitler compromised. "'I will never call a U-boat commander to account if he torpedoes an American ship by mistake.'"³⁶

Admiral King probably stated United States prewar policy best on April 18, 1941. "Entrance into the Western Hemisphere is viewed as possibly actuated by an unfriendly interest toward shipping or territory in the Western Hemisphere."³⁷ The lines of demarcation started at 20°W including all of Greenland, the Azores Islands, the whole of the Gulf of the St. Lawrence, the Bahamas, the Caribbean Sea, and the Gulf of Mexico. Therefore, the United States was committed to the protection of these waters against any U-boat threat.

When the United States entered the war, two conflicting anti-U-boat policies were brought forward. The policies revealed a major difference between the Army and Navy. Its solution was the price of effective defensive measures. The Army, its chief exponent being General Arnold,

34. Ibid., p. 59.

35. Martienssen, Admirals, p. 118.

36. Hinsley, Hitler's Strategy, p. 173.

37. Morison, Battle of the Atlantic, p. 14.

wished to follow the British practice, like the RAF's Coastal Command. This practice consolidated all anti-submarine aircraft under the command of the Air Force. On January 14, 1942, the Navy requested the Army Air Force to hand over two-engine and four-engine bombers to Navy crews. General Arnold refused the request. "The AAF is to operate land-based aircraft against suitable targets, wherever found."³⁸ The best statement of Army policy came from General C. W. Russell. The most important objective would be the bombing of sub pens and yards with long range air coverage. The tactics in regard to the submarines would be limited to harrying attacks.³⁹

On the Naval side, Admiral King held sway. He was unimpressed with Hunter-Killer groups. He was unimpressed with the Biscay bombing and harrying offense. The overall plan should be one of defense, of convoy, of B'24's for Newfoundland. The policy should be the protection of 7,000 miles of coastal lanes.

The disagreement came to a head with each service going their separate way. On May 20, 1943 the Tenth Fleet was formed. Its main objectives included the destruction of enemy submarines and the protection of shipping along the East coast, in the Gulf, and in the Caribbean Sea. The control of convoys, the support of anti-submarine operations, and the correlation of anti-submarine training and material development were among its assigned tasks. The Tenth Fleet would use Very Long Range and Long Range aircraft. These aircraft could be commanded by the general or flag officer, either army or navy.⁴⁰ It was difficult to find a place for the Army Air Force in the Tenth Fleet, since the Army wished a combined air force under an air force officer and subject to army methods of discipline.⁴¹

Admiral King appealed to General Marshall. The Army Air Officer would

38. King and Whitehall, Fleet Admiral King, p. 452.

39. Ibid., p. 452.

40. King and Whitehall, Fleet Admiral King. p. 205.

41. Morison, Atlantic Battle Won, p. 26.

be given command of Very Long Range and Long Range aircraft. Joint forces would govern the bases.⁴² The final agreement of July 9, 1943, labeled The Arnold, McNerney, McCain Agreement called for the Army's withdrawal from this aspect of operations as soon as the Navy was ready. This agreement integrated the command of aircraft into the Tenth Fleet. The anti-submarine B-24's, which the Army handled, would be turned over to the Navy, in return for Navy B-24's. The Navy would be responsible for off-shore patrols, reconnaissance, and the protection of shipping. The Army would be responsible for shore bases required for defense of the Western Hemisphere. Long Range Navy patrol planes would be used in addition to the fleet wings for patrol and reconnaissance. Nothing was to be done to interfere with the command, either Army or Navy.⁴³ Thus, the AAFAC died.

Overall policy was reviewed at the Casablanca Conference in January, 1943. The first Allied objective would be the bombing of factories in Europe. The next step would be the bombing of plants in which U-boats were assembled. The bombing of bases at Lorent and Brest would follow. Further down the list could be found tracking of submarines at sea, and the convoying of ships.

It can be seen that the Army wished to use Long Range aircraft to hit factories and plants. The Navy wished to protect the convoys with air and sea power. The overall strategy leaned more towards the use of Long Range and strategic bombing, as can be seen at the Casablanca Conference.

President Roosevelt showed a tendency to interfere and intervene in the details of naval affairs. For example, he acquiesced to Admiral Stark's and King's request for permission to use patrol boats (PC's),

42. Craven and Cate, AAF, WWII, p. 392.

43. Ibid., p. 409.

sub chasers (SC's) and destroyer escorts as the best methods of defense and convoy duty.⁴⁴ This clearly shows President Roosevelt's tendency to look after details in the naval program. With the organization, policies, and personnel, the United States Navy was ready to meet the challenge of the German U-boat and German naval policies.

Hitler decided German naval policy. His advisors, under the guidance of Admiral Raeder, and later Admiral Doenitz, formulated the policies. Before the war major emphasis was placed upon the use of a balanced fleet, in order to attack the sea lanes leading to Great Britain. After December, 1941, and the failure to achieve successes with surface units, German naval policy depended more upon the U-boat as the chief weapon against the enemy. The use of the U-boat as the major weapon against the Allied supply lines, presented the United States with the problem of defense.

President Roosevelt, along with General Marshall and Admiral King constructed the policies which would be employed against the U-boat. The Navy created a new coordinating body, the Tenth Fleet. The Army withdrew from patrols, reconnaissance, and the protection of shipping.⁴⁵ However, the Tenth Fleet was engaged primarily in defense. The overall policy incorporated in January, 1943, called for an offensive against factories, and U-boat pens on the mainland.

The Germans developed an attack against the supply lines. The United States chose to take the offensive, instead of meeting the U-boat in isolated operations, and increasingly set the tone of the naval war, at least on the eastern seaboard and its environs.

44. Jane's Fighting Ships 1943-44, New York, 1944, p. 467. Hereafter cited as Jane's 1943-44.

45. Craven and Cate, AAF, WWII, p. 409.

II. MATERIAL

"I will show that U-boats alone can win this war."¹

- Admiral Doenitz

The battle between the U-boat and anti-submarine forces became a battle of new weapons, location devices, and materials. The U-boat was improved and given new arms and equipment as it met more effective resistance. The Allies countered with new vessels, location devices, and weapons. The German command then countered with new receiving devices, newer U-boats, and new weapons. Thus, the battle of material was one of blow and counter-blow, attack and parry.

In the discussion on the battle of material, it is necessary to understand the characteristics of the U-boat. The U-boat was considered a first-class torpedo carrier. It was suitable for mine laying operations, such as the laying of mines in Chesapeake Bay. It was not suited for joint action with other naval vessels.² Its fighting power is diminished when the size of the U-boat is increased. This fighting power is diminished because of the time it takes to dive being increased. Size also involves more complicated mechanism to enable the U-boat to submerge. It also becomes harder to maneuver and navigate. Therefore, the larger the U-boat, the more material and control problems become apparent.

The German Navy employed many types of U-boats. The U-boats with very small displacements were usually confined to coastal waters. U-boats of this type would include Types II A, B, C, which had displacements between 381 and 460 cubic meters. This type's speed above water ranged between 12 and 13 knots. Underwater speed ranged from 6.9 to 7 knots.³ Many of

1. Doenitz, Ten Years, p. 37.

2. Ibid., p. 27.

3. Gröner, E., Die Schiffe Der Deutschen Kriegsmarine Und Luftwaffe 1939-45, Munchen, 1954, p. 18. Hereafter cited as Gröner, Kriegsmarine.

these, including Type II, C and D, with displacements of 435 and 460 cubic meters respectively were used for oceanic duty as well as coastal operations.

Larger U-boats were built to engage in oceanic long distance operations. The first group in this category was Type VIIA with a displacement of 915 cubic meters.⁴ Its speed on the surface was sixteen knots and submerged eight knots. Another ocean-going U-boat was Type IA, with a displacement of 1,200 cubic meters.⁵ More recent types included Type VII B, C, D, F, and C₄₂, ranging from 1,040 to 1,345 cubic meters.⁶ Their speed on the surface ranged from sixteen to seventeen knots and submerged from seven to eight knots. All these models were propelled while on the surface by diesel engines, and while submerged by electrical batteries.

An invention to help the U-boat overcome the disadvantage of surfacing to recharge the batteries was the schnorkel. The schnorkel consisted of a hollow tube which would allow air to pass but not water. This hollow tube was a steel cylinder, twenty-six feet long. Not only would air be permitted to pass, but gases were exhausted through the tube.⁷ The use of the schnorkel hampered the location devices of the Allied forces, since the wake caused by the schnorkel was hardly visible to the human eye, and undetectable by radar.

The Walter boat was designed to run submerged for long periods of time. The Walter boat, to be ready for production by 1943, represented a closed type propulsion system. A closed type propulsion system needs little outside assistance, such as air to recharge the batteries, in order to function. The submarine was to be propelled by an Ingolin fuel, a combination of diesel

4. Jane's Fighting Ships 1943-4, p. 220.

5. Gröner, Kriegsmarine, p. 18.

6. Ibid., p. 18.

7. Morison, Atlantic Battle Won, p. 317.

oil with H_2O_2 . Thus, Type XVII was to use steam to run the Walter turbine.⁸ This closed propulsion system helped the U-boat achieve a theoretical speed of twenty-five knots under water. Only eight of these U-boats were in the experimental stage at the end of the war.⁹ It can easily be asserted that the means of propulsion of the U-boat had improved to the point that frequent surfacings to recharge batteries became unnecessary.

Later model U-boats incorporated a variety of propulsion systems. Only a few of these U-boats ever became operational. The emphasis in these newer U-boats, Types XXI, and XXIII, was placed on methods of propelling the U-boat. In June, 1943, Type XXI was designed. The battery capacity of this submarine was three times that of older U-boats. The hull was streamlined, enabling the U-boat to reach an underwater speed of seventeen knots.¹⁰ It had a silent motor which worked on soundlessly moving belts. The propellers were accurately designed so that there would be only a slight disturbance of the water. Therefore, this design of the propellers cut down on the sound they gave off.¹¹ Orders were placed for 290 of this type, to be built by March 1, 1945. In April of 1945, U-2511, the first Type XXI appeared. Of the original 290, 120 were built by the end of the war, with sixteen to twenty becoming operational.¹² A smaller model of Type XXI was to be built with a displacement of 300 cubic meters and an underwater speed of seventeen knots. Two hundred and sixty of these were ordered. The greatest achievements of these U-boats were their ability to remain submerged for indefinite periods of time and their underwater speed.

8. Roskill, War at Sea, III, p. 17.

9. Bekker, Defeat at Sea, p. 221.

10. Ruge, F., Der Seekrieg, Annapolis, Md., 1957, p. 308. Hereafter cited as Ruge, Der Seekrieg.

11. Bekker, Defeat at Sea, p. 211.

12. Morison, Atlantic Battle Won, p. 62.

The Germans had to protect the surfaced U-boat. In order to counter Allied location devices, they produced their own receiving devices both physical and electronic. The physical invention was a helicopter, which was used by the U-boat for observational purposes. The helicopter was motorless, but had a foot driven mechanism to keep it in the air. It was made of light metal and had a light seat. A cable was attached from the helicopter to the U-boat. This cable reached a height of 300 meters.¹³ This type of observation relied upon the human eye and binoculars.

Electronic equipment was developed to enable the U-boat to know when it had been detected on the surface by the enemies' radar. This equipment would note or receive the emissions from Allied radar sets. The first of these receiving devices was developed in September of 1942. The purpose of this set, Metox, was to inform the U-boat when it had been hit by a radar wave. This set operated to receive fifty centimeter radar waves.

After heavy losses and the reconstruction of a Braumche tube from a British bomber, the Germans realized that the Allies were using 10 centimeter radar. This knowledge led to the building of a receiving set to detect ten-centimeter radar. The development of the Nexos set took place in August, 1943.¹⁴ By this time the Allies had gone to three-centimeter radar making the Nexos receiver useless, since Allied radar sets were using a different wave length. The Germans worked on a receiving set for three centimeter radar but could not perfect one before the war ended.

The adoption of radar by the German U-boat command was delayed until August 7, 1943. This delay occurred because of the pre-eminence placed on a receiving set to counteract the Allies' radar sets.¹⁵ The wave lengths

13. B6ltz and Herbert, "Science in Submarine Warfare," in Naval Institute Proceedings, Annapolis, 1945, Vol. 71, p. 1258. Hereafter cited as Boltz and Herbert, "Science," NIP. Vol. 71

14. Ruge, Der Seekrieg, p. 97.

15. Bekker, Defeat at Sea, p. 93

of the German sets did not make use of centimeter radar, although some experimentation was carried out along these lines in 1935.¹⁶ New German submarines on the surface not only had the benefit of radar receiving sets but also radar sets.

For U-boats operating below the surface, the Germans developed a locating device based upon sound transmission. This device was the S gear introduced in April of 1945. This apparatus would transmit a series of solitary ticks. Each tick would radiate out and be reflected back when it hit an object. From this echo-reflection the bearing and range of vessels on the surface could be indicated. The U-boat's own course and speed were also registered. The result was an outline of the course of attack the enemy or U-boat would take.¹⁷ Therefore, the S gear allowed the U-boat commander, like Commander Schnee in U-2511, to know what was happening on the surface. This development came too late in the war to be of use.

The weapon for which the U-boat was designed is the torpedo. The development of deadly torpedoes was of essential importance, since by this method alone was the U-boat effective. It was designed for use against merchant and enemy ships.¹⁸ The acoustic torpedo would be attracted to the sound of the propellers of the ship. A modification of the acoustic torpedo was the Wren (T-11), which was attracted to the metallic hull of the ship. The Wren was of particular use against escort vessels because of its attraction to the hull. It could not be diverted by any noise-making devices.¹⁹ The Wren was in production by mid-September, 1943.²⁰ A third torpedo was the Lut, or Fat torpedo. This torpedo would zig-zag

16. Ibid., p. 102.

17. Bekker, Defeat at Sea, p. 93.

18. Ibid., p. 204.

19. Ibid., p. 204.

20. Thursfield, H. G., "A Navy Chronicle," in Brassey's Naval Annual 1941, New York, 1944, p. 46. Hereafter cited as Thursfield, "Navy Chronicle," Brassey.

until it hit its target, rather than travel in a straight line. The Lut was similar to the Wren, because it was attracted to the metallic hull of the ship. These torpedoes, the Acoustic, Wren, and Lut, became the chief means of destruction for the U-boat beneath the surface.

When the U-boat was on the surface, it depended upon torpedoes and anti-aircraft guns. These anti-aircraft guns were used for protection against aircraft. The U-boat on the surface was used as a "flak trap."²¹ An attacking aircraft would be answered by flak from the U-boat. By May, 1943, in response to heavy air attacks, U-boats were equipped with heavier anti-aircraft guns, usually 3.7 centimeter guns.²² (Oerlikons). The major weapons of the U-boat remained the torpedoes, with anti-aircraft guns used primarily for defensive purposes.

In order to protect the convoys, hunt down, and destroy the U-boats, the United States had to employ a variety of vessels. The destroyer was the main fleet weapon, especially the Fletcher class. The Fletcher class accounted for a large proportion of the naval building program.²³ Other classes of destroyers included the Ellyson, Benson, Anderson, Geedly, Danlap, Sommers, Selfridge, and Farragut.²⁴

The destroyer escorts, two hundred of which had been ordered by 1943, did yeoman service. Smaller than the destroyer, about 1300 tons displacement, they could do about twenty knots. The United States adopted the British Hunt class design and built 1300 of them during the war.

By converting C-3 merchant hulls into aircraft carriers, the United States Navy paved the way for the CVC building program. Woolworths, as the

21. Ruge, Der Seekrieg, p. 198.

22. Roskill, War at Sea, III I, p. 255.

23. McMurtice, F. E., "Foreign Navies" in Brassy's Naval Annual, 1944, New York, 1944, p. 78. Hereafter cited as McMurtice, "Foreign Navies," Brassy's 1944.

24. Jane's 1943-4, p. 473.

British called them, or auxiliary (baby) carriers, as the United States called them, proved of value as surface escorts and in hunter-killer groups. These carriers achieved a speed of 16.5 knots and could carry from twenty-four to thirty fighter planes. The United States converted the S.S. Mormacrell to the Long Island, for its first auxiliary carrier.²⁵ Other classes included the Sangamon, Kaiser, and Bogue class.

Aircraft came to play a predominant role in the U-boat struggle. The United States utilized land-based and sea-based aircraft, including blimps. Land-based aircraft were broken into two groups, Very Long Range and Long Range aircraft. Very Long Range aircraft (VLR) included the modified Liberator and the Coronado (PBY-3). Long Range planes (LR) included Liberators, Flying Fortresses (B-17's), Catalinas (PBY's), Marines (PBM's), Ventures (PV's), and others.²⁶ Carrier-based planes included Gruman Wildcats (F₄F₄) and Gruman Avenger torpedo bombers (TBF₁). However, these planes and vessels needed aid in locating and destroying the U-boat.

The major emphasis of the United States and the Allies was the development of materials to detect the U-boat above and below the surface. Many of the devices and methods used were based on physical properties such as sound and light, while others were based on electronic properties.

Although the theories involving the travel of sound through water were not perfected, steps were taken early by the United States to develop underwater sound detection. In the period 1917-1918, the United States fitted destroyers and sub-chasers with hydrophones, which would detect any

25. Morison, Atlantic Battle Won, p. 38.

26. Ibid., p. 43.

audible noises.²⁷ At the close of World War I, Langevin, a French physicist, developed underwater detection, utilizing sound waves of high frequency. The new method was not simply a listening device, but rather sound waves were emitted, hit an object, and the returning echo would be measured. This method was used by the British who called it Asdic. The British converted sound waves from electrical energy by the use of the peizo-electric effects of quartz crystals. The Americans copied Asdic, but used magnetostriction instead of the quartz crystal method. Magnetostriction is "the ability of certain metals to change dimensions under the influence of magnetism."²⁸ The methods of sound detection developed at the end of World War I, enabled the United States to either listen for sounds made by the vibrations of the U-boat's propeller or to receive and measure the reflection of a sound wave from the hull of the U-boat.

Later improvements in World War II to Asdic by the United States included the improvement in measuring devices, the determination of the effects of varying conditions on ship noises, the study of sound in other oceanic areas, and the study of a ship's background noise. There was no real change in principle from the sound devices developed at the end of World War I. The United States coined the name sonar to indicate listening, depth indication, echo ranging, and the location of obstacles.²⁹ Thus, an improved Asdic proved useful in locating submerged U-boats by sound detection.

Another device, based on sound detection, was incorporated by the British in April, 1941. This was the sonobuoy. A sonic buoy was dropped into the water from a merchant ship. This sonic buoy would pick up the sounds of a U-boat and transmit a warning by radio.³⁰ The buoy actually

27. Baxter, J. P., Scientists Against Time, Boston, 1946, p. 171. Hereafter cited as Baxter, Scientists.

28. Ibid., p. 178.

29. Ibid., p. 176

30. Ibid., p. 182

contained microphones set at various depths.³¹ The sonobuoy was used by aircraft in an attempt to keep track of U-boats. Aircraft, therefore, had a sound detection device at their disposal to contact U-boats.

Another physical location device was the Leigh light. This light was used to locate U-boats who were running on the surface at night. The Leigh light would locate, illuminate, and blind the U-boats. In May, 1942, Wellington bombers were equipped with this powerful search light.

Instead of sound and visual detection, electronic detection devices made use of radio waves and radar. Radio waves of high frequencies were used to detect the radio transmissions of the U-boats. This type of radio direction finder, "Huff Duff," was used in World War I and was carried over into the second war.³² The direction finder would plot the signals sent by individual U-boats, wolf packs conversing with each other, or U-boats contacting Admiral Doenitz at headquarters at Lorient, France. Although radio detection was not a World War II development, it was pressed into service for the location of U-boats on the surface.

To locate the U-boat on the surface, radar was developed. Radar is described as "radio detection and ranging."³³ Somewhat like sound waves, radio waves can be produced to strike an object and the echo can be measured.³⁴ This type of radio wave is only effective above the surface of the water. The British in 1940 revolutionized radar development by producing resonant cavity magnetism, which would produce enough power to make radar feasible at wave lengths less than fifty centimeters. Prior to this time, not enough power could be consolidated to produce higher frequencies. With this development, the antenna of the set was smaller, making radar feasible for

31. Bush, V., Modern Arms and Free Man, New York, 1949, p. 65. Hereafter cited as Bush, Modern Arms.

32. Ibid., p. 63.

33. Baxter, Scientists, p. 138.

34. Ibid., p. 136.

aircraft. This development meant that a narrow beam was produced. (The higher the frequency, the shorter and narrower the wave.)³⁵

Therefore, the British were the first to develop a narrow beam radar set of ten centimeters. This set had a greater range, compared to previous sets. The beam was narrower, making the degree of accuracy higher. This meant that the angular bearing of the U-boat on the surface or of an aircraft in the air, was more accurate. Two individual targets close to one another could be distinguished.³⁶ This type of set reflected less clutter from the ground, from waves, and from clouds. The new ten centimeter sets, making the German Metox sets useless, were harder to jam because of the narrower beam.³⁷ By June, 1943, 6,000 sets had been delivered and installed on aircraft, usually Liberators.

The United States, specializing in airborne radar to detect surfaced submarines, developed a radar set to give a narrower and sharper beam than ten centimeter radar. The wavelength was three centimeters, making the German Nexos receiving set useless. The first contracts went to Sperry and Westinghouse to outfit night fighters. Sperry and Philco equipped patrol and torpedo bombers with the same device.³⁸

To supplement sound or radio waves, a device was developed based upon magnetism. In October, 1941, the Magnetic Airborne Detector was developed for the use of aircraft in locating U-boats below the surface. The Magnetic Airborne Detector relied upon the effect a submarine has on the earth's magnetic field. Actually, the device measures or indicates when it has passed near a magnetic body. The first American Catalina Squadron was fitted with the Magnetic Airborne Detector at the beginning of 1944.³⁹

35. Ibid., p. 143.

36. Ibid., p. 144.

37. Ibid., p. 144.

38. Ibid., p. 152.

39. Roskill, War at Sea, III, p. 247

Thus, from either an aircraft or a blimp the submerged U-boat could be discovered and followed.

Aircraft equipped with a Magnetic Airborne Detector were given flares to help track the U-boat beneath the surface. Special float flares were developed for this purpose. The flare had to be projected vertically so that the exact spot could be marked. Otherwise, the flare would be carried forward by the motion of the plane, landing shy of the intended position. Therefore, a plane could follow a U-boat from the markers in the water indicating the U-boat's previous positions.

Work was completed in 1942 on compressed air projectors to "project the flare backward at a velocity substantially equal to that of the aircraft."⁴⁰ Therefore, the submerged U-boat could be followed and a trail marked by flares.

After the submarine was located, means must be devised to destroy the U-boat. Weapons developed to accomplish this task could be divided into two categories: weapons for surface craft and weapons for aircraft. The torpex depth charge, fired from Hedgehogs or Mousetraps, was essentially a surface craft weapon. The airplane used the depth charge, but also used rockets. These two weapons, the torpex depth charge and the rocket, helped eliminate the U-boat.

The torpex depth charge was placed in operation in May, 1942. It had a greater explosive capacity than previous depth charges, being filled with RDX, TNT, and aluminum.⁴¹ To achieve a better pattern, in order to cover a larger area with depth charges, the Hedgehog and Mousetrap were

40. Baxter, Scientists, p. 179.

41. Ibid., p. 42.

developed in June, 1943. Both the Hedgehog and Mousetrap sprayed a pattern of depth charges using spigot guns and rockets.⁴² The Hedgehog contained twenty-four charges, while the Mousetrap, used on smaller surface vessels, had sixteen. There were two types of Hedgehogs, the Mark 10 and Mark 11. Both were equipped with twenty-four projectiles designed to stay level when released. The Mark 10 would disperse the depth charges within two and a half seconds. The Mark 11 was even faster, about 1.8 seconds. Depth charges would be set to explode upon contact with an object, by a time setting, or a depth setting.⁴³

When the submarine surfaced, it became a target for the airplane. The aircraft could drop bombs, or use a newer weapon, the rocket. Aircraft were equipped with rockets of two varieties. One was the shrapnel rocket, which cleared the decks of the U-boat.⁴⁴ The other type of rocket was constructed of solid lead with a shallow projectory to make possible penetration of the U-boat's hull, while the U-boat was on the surface. In 1944, the rocket played an important part in combating the newly invigorated U-boat offense. Avenger torpedo planes were equipped with these rockets. Thus, from 1944 the rocket became a valuable weapon against the surfaced U-boat.⁴⁵

Besides locating devices and weapons, other materials were devised to aid in the war against the U-boat. For the merchant ship, battleship gray had been the normal color. However, during World War I this type of paint was found to produce a gray silhouette against a black sky. Although warships in World War I had used a dazzle type painting, merchant vessels continued

42. Bush, Modern Arms, p. 65.

43. "The Hedgehog," New York Times, in Naval Institute Proceedings, Annapolis, 1945, Vol. 71, p. 519. Hereafter cited as "The Hedgehog," NIP, 71.

44. Bush, Modern Arms, p. 65.

45. Karig and Freeland, Battle Report, the Atlantic War, New York, 1946, p. 98. Hereafter cited as Karig and Freeland, Atlantic War.

with gray. This dazzle type of painting was used by merchant vessels in World War II. This painting resulted in the use of various colors and zig-zag lines, rather than one solid color. This dazzle painting would deceive the enemy both as to course and direction.⁴⁶

The foxer was another deception device. It was a noise-making machine with a speed propellor, which was towed behind a merchant ship. The noise from the foxer would confuse and decoy the acoustic torpedo coming from the German U-boat. This attraction took place because of the acoustic torpedoes' attraction to the noise of the ship's propellers. Two disadvantages to the foxer were brought forward. One was speed. The foxer could not be towed faster than fifteen knots. The second, and far more important, disadvantage developed when the noise-making apparatus cancelled out the merchant ship's own listening device.⁴⁷ The merchant ship used dazzle painting and the foxer to decoy and deceive the enemy U-boats.

Both sides developed materials to detect one another. Both sides developed weapons to defeat one another. Of importance is how the materials were put to use. When were they employed? How were they integrated with the tactics and techniques of operations?

46. Low, A. A., Submarines at War, New York, 1942, p. 221. Hereafter cited as Low, Submarines at War.

47. Roskill, War at Sea, II, p. 40.

III. OPERATIONS

"'Command of the seas is the indispensable basis of security, but whether the instrument that commands swims, floats, or flies, is a mere matter of detail.'" ¹

From the German standpoint, the first six months of war against the United States proved successful. These attacks against merchant ships took place along the American coast line, in the North Atlantic, in the Gulf of Mexico, and in the Caribbean. The Germans concentrated on tankers whose oil was vital to the Allied war effort.

However, by April, 1942, a partial coastal convoy system was incorporated, cutting down on the number of targets. The United States utilized Asdic and the Leigh searchlight.² By August, 1942, Allied aircraft detected the U-boat on the surface, by the use of radar. Before the end of the year the Germans countered with a radar detection device, Metox.

By April, 1943, after ten months of anti-submarine warfare, the Germans had lost the initiative. The number of U-boats lost was rising. The Allies had developed anti-submarine radar devices, and had overcome the counter detection devices of the Germans. New escort carriers and better air coverage gave the Allies an advantage.

The Allies inaugurated an offensive in the Bay of Biscay attempting to catch the U-boats in transit from their bases in France. The Germans countered with alternate routes and air coverage. However, by July, 1943, the German losses continued, because of 10 centimeter radar. The Germans withdrew, biding their time until a new radar receiver, Nexos, the wren torpedo, and the schnorkel, became operational.³

From September, 1943, to January, 1944, the improved U-boats again entered the battle. However, the Allies had also been working on new

1. Roskill, War at Sea, III II, p. 337.

2. Baxter, Scientists, p. 42.

3. Ruge, Der Seekrieg, p. 97.

weapons and equipment. Greater air coverage and better location devices meant the withdrawal of the U-boats.⁴ The U-boats had to fight a delaying action until late 1944 and 1945, when new types of U-boats would become operational. The Germans were forced to fight a losing battle. Their U-boats were delayed and never appeared in the combat scene. Had they done so, they would have presented a challenge as great as the U-boat did at the beginning of the war.

The situation at the beginning of World War II, which confronted the British and eventually the American navies, because of the destructive power of the German U-boats, was appalling. The German U-boat fleet started with fifty-seven operational U-boats, of which twenty-six could be used for operations in the Atlantic or other oceans. About eight or nine U-boats could be in the Atlantic at any one time, because several were in transit and others were undergoing repairs or being refitted. At the time of America's entry into the war the Germans were building about 20.3 U-boats a month.⁵

Before entering the conflict, the United States engaged in operations to insure neutrality. On September 5, 1939, the Air Neutrality Patrol was organized. In the north Catalinas of Patrol Wing Seven were based at strategic points such as Argentia, Newfoundland, and Reykjavik, Iceland. In the south, Patrol Wing Three was stationed at Coco-Solo in the Canal Zone, while in the middle, Patrol Wing Five was stationed at Norfolk, Virginia.⁶ The United States, therefore, began protecting and patrolling its coastal waters in 1939.

Belligerents, other than those countries which had territory in the Western Hemisphere, were warned by the United States to keep their naval

4. Ibid., p. 39.

5. Morison, Battle of the Atlantic, Appendix I.

6. Aviation History Unit, The Navy's Air War, New York, 1953, p. 40. Hereafter cited as Aviation History, The Navy's Air War.

vessels out. As of April 18, 1941, the Atlantic Fleet was instructed to patrol the North Atlantic and the Caribbean Task Force II was responsible for the area northeast of Greenland.⁷

At the Atlantic Conference on August 10, 1941, President Roosevelt and Prime Minister Churchill decided that the United States should escort the Halifax convoys across part of the Atlantic. Therefore, on September 1, 1941, shipping between the two United States bases of Argentia and Iceland was placed under United States Naval escort. Any Allied hitch-hikers enjoyed the benefits of United States naval protection. At Argentia, Newfoundland, the Royal Canadian Navy took over, and at Iceland the Royal Navy assumed control.⁸ Between Newfoundland and Iceland, the United States Navy was responsible for the protection of the convoy. Thus, the United States was engaged in patrolling the sea lanes and protecting the convoys before war was declared.

On December 12, 1941, the decision was made by Hitler, in conjunction with his Admirals, to send twelve U-boats to the coast of the United States to begin Operation Paukenschlag. (Roll of Drums)⁹ Hitler, because of his suspicions that the British might invade Norway, demanded that a strong contingent of U-boats be stationed in Norwegian waters. Therefore, the original number of U-boats was cut to six.¹⁰

These six U-boats, plus additional arrivals, never going above twelve, worked from January to May, 1942, off the American coast and in the Caribbean Sea. On January 5, 1942, the U-boats were operating off the Gulf of St. Lawrence and Cape Hatteras. By the middle of January, 1942, seven were operating off Newfoundland, while in March regular explorations were made off New York Harbor. Mine-laying duties were carried out off

7. Morison, Battle of the Atlantic, p. 14.

8. Ibid., p. 85.

9. Roskill, War at Sea, II, p. 94.

10. Churchill, W. S., The Hinge of Fate, Boston, 1950, p. 111. Hereafter cited as Churchill, Hinge of Fate.

Chesapeake Bay and New York Harbor, closing the ports for two and three days respectively.¹¹ The U-boats, besides laying mines, lay submerged offshore by day, and moved inshore to attack on the surface at night with guns or torpedoes.

By April 1, 1942, defensive measures were initiated by the United States with a partial convoy system, some air patrol, and the use of twenty-four borrowed trawlers and ten corvettes from the Royal Navy. The partial convoy system consisted of merchant ships traveling by day and anchoring at night in protective harbors. By May 14, 1942, adequate protection was available so that travel from Hampton Roads to Key West, Florida, Guantanamo Bay and New York, Guantanamo Bay to Puerto Rico to Trinidad, and from Key West to the Western Gulf ports and around the Cape of Good Hope. Thus, by May, 1942, the United States could adequately provide protection for coastal convoys.

The convoy system was essentially a supply train or the reinforcement column of the sea.¹² The ships of a convoy travel together as a unit with escort vessels providing a protective screen. Each convoy is grouped according to speed. Therefore, convoys existed for three speeds, 7.5, 9.5 and 10 knots.¹³ A convoy usually consisted of forty-five to sixty ships.

The escort commander determined the type of action to be taken. The convoy would either steam straight ahead or it would zig-zag. The larger and slower convoys had by necessity to keep a straight course using only mild evasive action. This evasive action consisted of a change of twenty to

11. Roskill, War at Sea, II, p. 95.

12. Morison, Battle of the Atlantic, p. 12.

13. Ibid., p. 12.

fifty degrees on either side of the basic course. This evasive action would last from two to six hours.¹⁴ The slower convoy unable to take evasive action was a prime target for the U-boat.

In the months of June and July, 1942, the U-boats concentrated in the Caribbean Sea and the Gulf of Mexico. U-boats were also operating in the Middle Atlantic, taking advantage of the Greenland Air Gap. U-boats operated in this area because air coverage from Greenland had not been achieved.

The U-boats employed the wolfpack method of attack. The theory behind the wolfpack (Rudel) was to present a spread pattern to the enemy. This made it difficult to run down all the leads obtained from location devices. Therefore, the U-boat was used as a ship of the line.¹⁵ When attempting to locate convoys or gain position, the wolfpack was controlled by Admiral Doenitz from Lorient. When engaged in an operation, the wolfpack was commanded by the senior officer or a control ship.¹⁶ The wolfpack attempted to run ahead of the convoy, surface, out-maneuver the weak escorts, and attack at night.

During this period the U-boat attempted to escape detection from Asdic. The methods utilized by the Germans took advantage of the weaknesses of Asdic. The U-boat would vary its depth because of the inability of Asdic to record whether or not there was more than one U-boat. The U-boat also emitted bubbles to give the same effect.¹⁷ These chemicals, which produced bubbles, reflected strong echoes giving the appearance of several U-boats.

14. Ibid., p. 110.

15. International Military Tribunal, Nuremberg, Nuremberg, 1948, Vol. XIII, p. 414. Hereafter cited as Nuremberg, XIII.

16. Morison, Battle of the Atlantic, p. 25.

17. Baxter, Scientists, p. 42.

When an escort vessel attacked a U-boat, the escort vessel's Asdic became useless, because the vessel's Asdic could not distinguish between the depth charge and the U-boat. Thus, the U-boat could take advantage by varying its depth, or by calculating the depth of the depth charges and diving below this depth.¹⁸

The escort vessels countered these U-boat tactics by using sonar and creeping tactics. Creeping tactics incorporated the use of two escort vessels. The first escort would track the U-boat and coach the second escort vessel, which would be attacking the U-boat.¹⁹ An offensive, utilizing the Leigh searchlight, was also begun against U-boats using the Bay of Biscay on the way to and from France.

From August, 1942, until the end of the year, the U-boats concentrated along the North American coast, in the North Atlantic, off Freetown, South Africa, and off Brazilian and Venezuelan waters. When the U-boat was caught on the surface because of radar or the Leigh searchlight, it chose to fight back with flak guns. However, before the end of the year the Metox was in operating, cutting down on the number of surprise attacks by Allied aircraft.

The United States and Great Britain used 50 centimeter radar in July, 1942, to locate U-boats on the surface. The use of radar and the Leigh searchlight helped the Bay of Biscay offensive. However, at the end of the year radar sightings were diminishing because of the perfection of Metox. Thus, the Bay of Biscay offensive collapsed.

From January to April, 1943, the U-boats operated in the North Atlantic,

18. Ibid., p. 42.

19. Roskill, The War at Sea, III, I, p. 49.

Central Atlantic, and off the northern coast of South America. By April, 1943, the Allies were taking steps toward having complete air coverage, better detecting equipment, and newer weapons. In March, Liberators were outfitted with extra gas tanks. Therefore, Liberators stationed in Greenland could cover the Greenland Air Gap. Ten centimeter radar was installed on aircraft, destroying the value of Metox. Escort vessels were equipped with the Hedgehog and Mousetrap. New auxiliary escort carriers were being commissioned. Merchant ship losses began to decline because of better air coverage, the use of radar, and newer weapons.

The Germans called May, 1943, "Black May."²⁰ The Germans lost heavily. The Allies were using ten centimeter radar in their aircraft. The Germans were at first confused as to the reason for their losses. They finally realized that Allied aircraft were using different radar wavelengths. The remaining U-boats on duty were switched to the Azores Air Gap or to an area southwest of the Azores.²¹ In June, the German U-boats were better equipped to meet the Allied attacks. Anti-aircraft equipment was increased. In September the Wren torpedo would be operational. Again the battle lines were redrawn.

Starting in May and continuing until December, the battle raged in the Bay of Biscay from the approaches of the Atlantic to the European coast line. The Allies attempted to cut the lines of transit by use of the patrol plane. In this offensive, Liberators were equipped with ten centimeter radar and Wellington bombers with Leigh searchlights. Catalina flying boats, Patrol 63, under the command of Lieutenant Commander Edwin O. Wagner, were equipped with

20. Bekker, Defeat at Sea, p. 97.

21. Puleston, W. D., The Influence of Sea Power in World War II, New Haven, 1947, p. 166. Hereafter cited as Puleston, Sea Power.

the Magnetic Airborne Detector (MAD).²² Destroyers also patrolled the Bay and its approaches.

The Germans to counter these attacks and avoid radar detection used the "Piening Route."²³ In July, U-155, commanded by Adolf Piening, proceeded through Spanish coastal waters. Radar could not pick up the U-boats because of the backdrop of the Pyrenees.

Marshall Goering also assisted Admiral Doenitz with Focke-Wulfe 200's (bombers) carrying radio controlled glide bombers to use against warships. German attack bombers (JU-88's) appeared to attack the patrolling Liberators and Sunderlands. These air attacks were successful enough that the Admiralty ordered all ships to retire out of German air range.

The Germans could not understand the reasons for their losses of May to July, 1943. Inevitably, guesses included the use of thermal waves or the radiation of the receiving set, Metox. A test in the Baltic showed that aircraft could pick up radiations from Metox at a height of 6,000 feet and a range of 110 kilometers. Action was taken. U-boat commanders were told not to rely on the Metox set. However, losses continued and eventually the Germans put together the Braunche tube from a downed British bomber. They realized they were up against ten centimeter radar. By August, 1943, the Germans developed a different receiver, Nexos, to receive the ten centimeter radiations. The Wren and better anti-aircraft equipment were also added at this time.²⁴

In September and October, 1943, twenty-two U-boats were stationed in twos and threes off Cape Farewell, Greenland. Admiral Doenitz sent this group to sea with the message: "'The Fuehrer is watching every phase of your struggle, attack, fellow up, sink!'"²⁵

22. Morison, Atlantic Battle Won, p. 95.

23. Ibid., p. 98.

24. Ruge, Der Seekrieg, p. 97.

25. Morison, Atlantic Battle Won, p. 139.

With the use of the Magnetic Airborne Detector, sonobuoys, and rocket-equipped aircraft, the U-boats again suffered heavy losses from August to October, 1943.²⁶ Long Range aircraft were now operating from Tusaira in the Azores, cutting the distance of the Azores Air Gap. On November 12, 1943, Admiral Doenitz and his staff admitted that: "The air menace has curtailed the mobility of the U-boat. The enemy holds all the trump cards. Far-reaching air cover, using location methods against which we have no warning."²⁷ The remaining U-boats were shunted to the Gilbert Straits.

In January, 1944, the U-boats returned to the Western Approaches of the Atlantic. Thirty U-boats were in the Atlantic or the approaches to the Atlantic. Twenty were located west of Iceland. Ten were situated northeast of the Azores in order to attack the Sierra Leone and Gibraltar convoys. Even the Mediterranean was reinforced. Of twenty-six U-boats attempting passage into the Mediterranean, two were destroyed and twelve were recalled. The remaining U-boats entered into the Mediterranean. All these U-boats were equipped with the schnorkel, anti-aircraft equipment, and Nexos receiving sets.

In May, 1944, only three merchant ships were sunk out of 3,600 crossing, in a total of 105 convoys. The merchant ship losses were small because of improved and more abundant escort vessels, air-sea escorts, three centimeter radar, rockets, and the Magnetic Airborne Detector. By the end of May, the Germans practically abandoned the North Atlantic, leaving only five U-boats stationed off West Africa and three en route to the United States.

Now United States aircraft and sea escorts were equipped with three centimeter radar, the Magnetic Airborne Detector, rockets, Hedgehogs, and

26. Ruge, Der Seekrieg, p. 39.

27. Roskill, War at Sea, III II, p. 50.

Mousetraps. The only hope for the Germans was to await the delivery of the new U-boats, Types XXI or XXIII, equipped with the S gear. Only two became operational with U-2511 and U-3008 going to sea. These newer boats never saw action. A radio message on May 5, 0300 hours halted any engagements. "'As of May 5, 0300 hours, cease fire. For U-boats at sea attacks forbidden. Break off immediately pursuit of enemy. Return to Norwegian harbors, Commander-in-Chief U-boats.'"²⁸

In January, 1942, German U-boat commanders could choose their targets. American defensive measures appeared to be negligible. Even with the installation of a partial convoy system, German U-boat success continued along the American coast line. The area of operations would change, enabling the U-boats to operate unhampered. U-boat successes continued in the North Atlantic, the Gulf of Mexico and the Caribbean. However, by May, 1943, the Allies installed 10 centimeter radar on their aircraft, making the German Metox set obsolete. The U-boats awaited the development of the Nexos receiving set, while the United States was in the process of perfecting 3 centimeter radar. In August, 1943, the U-boat again entered the Atlantic, equipped with the schnorkel and wren torpedoes. The Allies equipped planes with the Magnetic Airborne Detector, three centimeter radar, and the rocket. The Germans never regained the offensive.

28. Bekker, Defeat at Sea, p. 219.

IV. THE SUBMARINE WAR AS THE PUBLIC SAW IT.

"Truth crushed to earth, shall rise again,
Th' eternal years of God are here
But error, wounded, wither in pain
And dies among his worshipers."¹

The war that was fought at sea was re-fought in newspapers in the United States. These newspapers had to rely on government information as the major source of supply for news on the U-boat war. Therefore, both the United States Government and the British Government attempted to give the public selected information on the U-boat theater of operations. It was important to the Government that the American and British peoples know the effectiveness of the anti-submarine campaign and the progress that was being made. It was necessary for the United States Government to release news in order to combat the fears of the people that the U-boat war was not progressing very well, especially with the news of merchant ship sinkings, such as the sinking of the Congra reported on January 17, 1942.² Newspaper reports were also needed in order to combat German propaganda, such as the German claims of sinking 924,000 tons in the month of May, 1943.³ Therefore, the question can be raised as to the official policy of the United States and Great Britain toward news on the U-boat war and how this policy actually materialized.

The American policy, concerning information on the U-boat threat and anti-submarine actions, was divided into two phases. Phase One was the period from the beginning of the war to March 16, 1943. The policy in this period was to give no information at all. This no-information policy included engagements with the enemy, successes against the enemy, and the successes of

1. Harris, W. R., Tyranny on Trial, Dallas, 1954, p. 488. Hereafter cited as Harris, Tyranny.

2. "New U-boat Victim Confirmed by Navy." The New York Times, XCI, 30, 674 (June 17, 1942). p. 1.

3. Thursfield, H. C., "Chronicle of 1943" in Breese's Naval Annual, 1943, New York, 1943, p. 28.

the enemy. The attitude of the Navy was "Let us cheer the disappearance (of U-boats) and be contented to wait the explanation of the mystery."⁴ Therefore, an appeal was made by the Navy; "Every American can regard silence and secrecy as his own personal anti-submarine weapons."⁵ Naval policy was not stagnant and was changed on March 18, 1943, by the United States Navy Department. The United States would now make known when submarine encounters had taken place, and what the results were. The news released by the United States was usually a month to three months behind the actual occurrences. These policies had an effect on how the submarine war was reported.

The anti-submarine war was broken down into varying categories such as areas of action, localities of specific actions, enemy losses, and Allied losses. With regard to the areas of action, an identification of areas where U-boats were operating, the policy permitted no information in Phase One. When specific actions took place, the Navy would not describe the action. President Roosevelt on January 21, 1942, defended this policy when he stated: "To disclose definite action against the submarines would be unwise."⁶ In Phase Two the information ban was eased considerably, although dates and specific location were rarely given. In Phase Two, American successes were reported more frequently.

Merchant and naval sinkings by U-boats were not released in Phase One until several months after the engagement. Further, on November 15, 1942, the Navy forbade the disclosure of the names of sunken ships, whether naval

4. "Navy Strikes 'Strong Blows' as U-Boats Continue Attack," The New York Times, XCI, 30, 678 (Jan. 21, 1942), p. 1. Hereafter cited as "Navy Strikes 'Strong Blows'", NYT, XCI, 30, 678 (Jan. 12, 1942), p. 1.
5. "Navy Reports Victories Over Submarines," The New York Times, XCI, 30, 681, (Jan. 24, 1942), p. 1. Hereafter cited as "Victories", NYT, XCI, 30, 681, (Jan. 24, 1942).
6. "Navy Strikes 'Strong Blows'", NYT, XCI, 30, 678, (January 21, 1942, p. 1.

units or merchantmen.⁷ In Phase Two this policy was continued. This can be seen from the questions raised by The New York Times regarding merchant sinkings. "Why," it was asked, "conceal the fact of merchant sinkings. Hitler brought the war to our doorsteps."⁸

The overall policy of the British government toward U-boat coverage was to release the news at the best possible time. From the beginning of the war until March, 1943, the British followed a no-news policy with slight moderations. The First Lord of the Admiralty, Mr. A. V. Alexander, would release information at times regarding the success of British methods. In Parliament on October 21, 1942, this release was attacked by Mr. Clement Davies. The London Times naval correspondent described this attack. "It constituted a change of policy and that if such statements should be published at all, they should be made in the House of Commons rather than elsewhere."⁹ Therefore, Phase One could be seen as an attempt to keep pertinent information at a low level, but the Admiralty was willing to release information at times.

On March 18, 1943, the curb was lifted, allowing articles giving information on battles occurring within a week of the reported event. "It has not hitherto been the practice of the Admiralty to make public any details of operations versus U-boats until a period of some weeks after they had taken place."¹⁰ The veil was lifted. This lifting of restrictions could be considered the second phase of public releases by the Admiralty.

7. "U-Boats Destroy Five More Ships," The New York Times, XCI, 30, 731, (March 15, 1942), p. 1.
8. "The Sea War," The New York Times, XCII, 31, 119, (April 7, 1943), p. 24.
9. "U-Boat Sinkings," The London Times, 49, 380, (Oct. 30, 1942), p. 4.
10. "Increased Sinkings of U-Boats," The London Times, 49, 546, (May 15, 1943), p. 4.

The Admiralty attempted to formulate these policies to handle four different categories of information. In Phase One and Two the policy concerning the general locality of U-boat operations was not stringent. When reports were given, little information was given on the specific locality of the engagement. Enemy losses in Phase One were not as guarded a secret as in the United States. For example, on January 28, 1942, in The London Times, U-433 was reported sunk by the Corvette H.M.S. Marigold.¹¹ In Phase Two, the Admiralty was willing to release figures on the success of the anti-submarine war more readily. The Admiralty did not release much information on merchant shipping losses. In Phase One merchant shipping losses were mentioned from time to time. In Phase Two, the British in coordination with the United States would make a statement on merchant losses.

To coordinate statements on merchant losses and U-boat sinkings, President Roosevelt and Prime Minister Churchill began issuing reports on the U-boat war. These statements were started during Phase Two, in October, 1943. They dealt more with the ratio of merchant ships sunk to the number of submarines sunk, than to exact figures on merchant vessels or U-boats sunk. For example, on December 10, 1943, it was announced that more U-boats than Allied ships were sent to the bottom in November. Similarly on May 10, 1944, the joint report said that United Nations' activity versus the U-boat was continuing at a highly satisfactory level.¹² Thus, in Phase two, the United States and Great Britain attempted to coordinate their reports.

11. "U-Boat's Brief Life," The London Times, 49, 263, (Jan. 28, 1942) p. 9.

12. "U-Boats Held in Check," The New York Times, XCIII, 31, 518, (May 10, 1944), p. 4.

In the United States, the implementation of this policy could be seen in The New York Times. In the first phase, general statements were predominant on the success of anti-submarine measures. It was reported that some recent visitors would never enjoy the return trip.¹³ Other releases would hint that an unspecified number of submarines were liquidated off the Atlantic Coast. Other reports hinted that the percentage of one-way traffic was increasing. On January 25, 1942, the article, "Navy Hints Again at the Sinking of U-boats,"¹⁴ appeared, in which it was reported that countermeasures against U-boats were continuing favorably. Exact figures on U-boat sinkings were seldom given. One of the few times was in April, 1942. The number of U-boats sunk by United States Forces was given as twenty-eight.¹⁵ These statements reflected the press reports from January, 1942, to May, 1942 of Phase One.

From May, 1942, to the end of Phase One, enough information was given to the press to indicate that German U-boats were being sunk. On February 23, 1943, it was reported that a destroyer of unstated nationality had sunk a U-boat a few miles south of Pico Island in the Azores. Other reports indicated that the USS Campbell rammed a Nazi submersible, 1000 miles out on the Atlantic.¹⁶ Thus, during the latter part of Phase One more reports were given of German U-boat losses.

During Phase One, reports on merchant losses were given either in official naval department statements or by unofficial Associated Press counts.

13. "Victories," NYT, XCI, 30,681, (Jan. 24, 1942), p. 1.

14. "Navy Again Hints Sinking of U-Boats," The New York Times, XCI, 30, 682, (Jan. 25, 1942), p. 7.

15. "U. S. Pilots Get 3 U-Boats," The New York Times, XCI, 30, 749, (April 2, 1942), p. 1.

16. "Convoys Rout U-Boat Packs," The New York Times, XCI, 30, 687, (March 18, 1942), p. 1.

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For example, on March 31, 1942, the Associated Press reported a total of one hundred merchant sinkings, since the beginning of hostilities. The official count at this time was twenty-two merchantmen sunk.¹⁷ A Navy spokesman on January 20, 1943, put the total merchantmen sunk at 655 since the beginning of the war.¹⁸ Therefore, it can be seen that reports were presented in The New York Times on the state of U-boat and merchant-ship losses in Phase One, even though a period of no information was in effect.

After the accelerated successes of the Allies in 1943, more information became available. The news releases included more information on the individual battles in the Atlantic and other operational areas. These reports were rarely up-to-date or detailed. For example, on April 24, 1943, a German U-boat was reported destroyed in the Caribbean by a petrol bomber, "several months ago."¹⁹

The policy of Phase Two was carried out in the reports on the number of U-boats sunk. On September 8, 1943, the United States reported that in three months; May, June, and July, twenty-nine U-boats were sunk. Twenty-four of these twenty-nine were credited to naval units. Mr. Angus MacDonald, Minister of National Defense for Great Britain, on March 10, 1944, gave a more precise picture of Allied success in 1943. He described the foe's losses in 1943 as heavy, with more than 200 German, Italian, and Japanese submarines sunk.²⁰ According to these sample reports, more news on individual sinkings and the total number of U-boats sunk, was being given.

17. "U-Boat Men Knew Ships' Cargo," The New York Times, XCI, 30, 747, (March 31, 1942), p. 7.

18. "66 Believed Lost with British Ship," The New York Times, XCII, 31, 042, (Jan. 20, 1943), p. 8.

19. "German Submarine Sunk in Caribbean," The New York Times, XCII, 31, 166, (May 24, 1943), p. 3.

20. "Foe's Losses Called Heavy," The New York Times, XCII, 31, 457, (Sept. 8, 1943), p. 13.

In Phase Two, merchant shipping losses were given in accord with the agreement on joint statements by Roosevelt and Churchill. Therefore, statements would appear such as "Allied Ship Losses at Record Low."²¹ Other statements hinted that the U-boat was becoming "the hunted rather than the hunter."²² Thus, the policy of combined reports on the U-boat war appeared during Phase Two.

The carrying out of British policy with regard to Phase One and Two could be seen by examining The London Times. The policy of giving some information could be seen in Phase One of the U-boat war. Mr. A. V. Alexander, on October 21, 1942, described 530 U-boats as either damaged or sunk by Allied forces. These figures did not include French successes before June of 1940. Some American kills had been included.²³ Another set of figures was given in February, 1942. This report stated that 130 U-boats had been sunk so far in the war.²⁴ Two often contradicting reports by the British and Americans on Allied successes were released in Phase One.

In Phase One, merchant shipping losses were not as publicized as in American newspapers. Reported merchant shipping losses in Phase One gave very little information. On September 15, 1942, it was reported: "Four merchant ships sunk,"²⁵ and listed the Ottawa and Raccoon as sunk. On February 12, 1943, Prime Minister Churchill indicated that in the first year of the war, every U-boat lived long enough to kill nineteen

21. "Allied Ship Losses at Record Low," The New York Times, XCIII, 31, 457, (March 10, 1944), p. 1.

22. "500 U-Boats Sunk in War," The New York Times, XCIII, 31, 610, (August 10, 1944), p. 1.

23. "The War at Sea," The London Times, 49, 372, (Oct. 21, 1942), p. 2.

24. "130 U-Boats Sunk," The New York Times, XCI, 30, 709, (Feb. 20, 1942), p. 3.

25. "Four Merchant Ships Sunk," The London Times, 49, 341, (Sept. 15, 1942), p. 3.

merchant ships. In the second year, U-boats accounted for twelve ships a piece, while the average dropped to seven and a half ships for the third year.²⁶ Thus, in Phase One the British allowed more information on merchantship losses to be published.

After the veil was lifted, The London Times published more specific data on the losses of U-boats. Individual engagements and sinkings were reported sooner. For example, North Atlantic aircraft of the Coastal Command destroyed five U-boats in ten days.²⁷ These successes were reported within a week of the engagement. Similar reports were announced concerning bombing raids on enemy posts. Thus, it was announced on April 1, 1945, that the United States Eighth Army Air Force with 650 Liberators and Flying Fortresses had killed seven U-boats at Bremen and one at Hamburg.²⁸

During Phase Two, the number of U-boats sunk during the war or for certain periods of the war, was released more often. Vice Marshal A. B. Elwood, RAFC Coastal Command, stated on September 8, 1943, that between May and August, 1942, thirty U-boats a month had been killed.²⁹ A statement was issued on June 30, 1943, by Mr. Malcolm MacDonald, British High Commissioner in Canada. He stated that the total number of U-boats sunk came to one a day. It can be seen that reports on the progress of Allied successes against the U-boat followed the policy statements on Phase Two.

The motivation behind the United States adopting a no-information

26. "Mr. Churchill on Casablanca Decisions," The London Times, 49, 468, (Feb. 12, 1943), p. 5.

27. "5 U-Boats in 10 Days," The London Times, 49, 559, (May 31, 1943), p. 4.

28. "Eight U-Boats Sunk by Bombers," The London Times, 50, 105, (April 1, 1945), p. 1.

29. "90 U-Boats in May, June, and July," The London Times, 49, 645, (Sept. 8, 1943), p. 3.

policy for Phase One was twofold. One reason was to maintain silence in order to deal a blow to Nazi morale. This reason was based upon the belief that the enemy not knowing about the fate of non-returning U-boats, would grow fearful. Therefore this apprehension of not returning would make the U-boat service increasingly unpopular. The second reason was a military one. President Roosevelt in January, 1942, most aptly described the military viewpoint. "It would invite everyone to inspect a map showing the location of United States Naval vessels."³⁰ Thus, the American policy decision was motivated by a military and a psychological concern.

With the success of the U-boats and the building by Germany of twenty or thirty submarines a month, this strict censorship of losses was questioned. The Navy on March 4, 1942, recognizing the fact that the American public was getting a picture of merchant losses without any U-boat sinkings, considered issuing the news of victories faster.³¹

This policy of no information because of military and psychological concerns by no means escaped without criticism or discontent. The discontent centered around the lop-sided attacks by U-boats on merchant ships. Should these attacks go unreported? At Trenton, New Jersey, on February 9, 1942, 125 delegates to the New Jersey Press Convention criticized the Navy for its "no news" policy.³²

The reasons for the shift in emphasis in Phase Two was the use of the wolfpack by the Germans. By the use of many U-boats in operation

30. "Navy Strikes 'Strong Blows'", NYT, XCI, 30, 678, (Jan. 21, 1942), p. 5.

31. "News of Victories May Be Sped by Navy," The New York Times, XCI, 30, 720, (March 4, 1942), p. 3.

32. "Navy Report Criticized," The New York Times, XCI, 30, 698, (Feb. 10, 1942), p. 13.

against a convoy, the loss of one U-boat would be known to the other members of the wolfpack. This information would be relayed to Lorient, France. Therefore, the waiting for an overdue U-boat would be cancelled. Other reasons would include partial Allied success and the British policy on war information. In The New York Times on March 19, 1943, it was reported that the British had a decided effect on the American change in policy.³³

The motivation for the policy formulated in Phase Two was to give the public information which stressed Allied successes. This could be the reason why the ruling forbidding the release of the names of sunken merchant vessels or naval units was kept, during this period. This secrecy was criticized by columnist Edwin L. James, who charged that this policy left the public puzzled. He insinuated that public opinion became confused when the Truman report of March, 1943, stated that merchant ship losses totalled 1,000,000 tons a month. Secretary Knox disputed these figures in March, 1943, stating that this figure referred to the total loss in gross tons for the year 1942. Edwin L. James also pointed out that the confusion as to merchantship losses was further aided by Nazi propaganda.³⁴ Thus, if the merchant losses were not published, the public would remain confused and Nazi propaganda would have a better opportunity to take hold. By relying on the publication of American success, the Navy was attempting to play down merchant losses.

The British reasoning on their policy in Phase One followed the American reasoning closely. However, one of the major reasons for

33. "U-Boat Curb Eased," The New York Times, XCII, 31, 100, (March 19, 1942), p. 13.

34. James, E. L., "Secrecy on Ship Losses Leaves Public Puzzled," The New York Times, XCII, 31, 107, (March 25, 1943), Sec. IV E, p. 37.

British silence was a military one. This method was intended to delay a new U-boat from replacing the lost ones.³⁵ In other words, by remaining silent, it would take the Germans longer to discover that a U-boat had been lost, and to replace it with another one. This essentially was the motivation behind the British policy in Phase One.

The British changed the emphasis of their policy for the same reasons as the Americans. The British found there was a need to keep up public interest and encouragement. Thus, because of the need for encouragement, and the German use of the wolfpack, the policy was changed.

British motivation in the second phase was aptly summed up by Mr. Brendan Bracken, the First Lord of the Admiralty. The principle should be the speediest possible release of all communiques dealing with operational news³⁶ with an even balance between press and radio. Behind these statements is the fact that the British wished to concentrate on the German losses.

The Allied merchant losses were primarily given in the Roosevelt-Churchill announcements. These reports were initiated to help coordinate the American-British news releases. Therefore, discrepancies and contradictions were cut down.

The results of these policies can be seen in the picture that was presented to the public in Phase One, Phase Two, at the end of the war and in postwar estimates. In Phase One the public was presented with reports on the operations of U-boats along the American coast. For

35. "Victories," NYT, XCI, 30, 681, (Jan. 24, 1942), p. 2.

36. "Release of News," The London Times, 49, 845, (March 30, 1944), p. 2.

example, on April 13, 1942, Hanson Baldwin reported "Eight to twelve U-boats off our Coast," focussing on Hatteras.³⁷ In reports on individual engagements, indications were given that U-boats were being sunk. On February 26, 1943, it was reported that three U-boats were sunk and four more damaged in the Western Atlantic.³⁸ However, merchant ship losses accounted for a bulk of the reporting. On March 31, 1942, the Associated Press reported one hundred merchant ships sunk, since the start of the war. It was true that statements were made concerning the actions against the U-boat, but the predominant image is the operation of U-boats along the Coast and the success of these U-boats in sinking merchantmen.

Phase Two brought the fulcrum to the opposite side. The public was made aware of the U-boat losses, but little was said on merchant losses. Individual engagements and total sinking reports gave the appearance of Allied successes against the U-boat. Merchant losses were confined to the coordinated reports of Roosevelt and Churchill. These reports also indicated the U-boat losses.

At the end of the war, the public was presented with a number of reports on the success of American anti-submarine methods against the U-boat. In All Hands, in June 1945, Admiral Jonas H. Ingram, Commander-in-Chief, Atlantic Fleet, reported that the United States Navy had definitely sunk 126 U-boats and probably more.³⁹ Admiral Bellinger, Commander of the Atlantic Fleet Air Arm stated that 81 of the 126 U-boats were sunk from the air. On June 11, 1945, The New York Times stated that

37. Baldwin, H. W., "Air Power in the War, III," The New York Times, XCI, 30, 760 (April 13, 1942), p. 4.

38. "56 Enemy Ships Sunk By Our Navy," The New York Times, XCI, 30, 714, (Feb. 26, 1942), p. 1.

39. Ingram, J. H., "All Hands," in the Naval Institute Proceedings, Annapolis, 1945, Vol. 71, p. 856.

U-boat losses were set at 713 with 151 being credited to United States forces.⁴⁰ The New York Herald Tribune gave 151 to the United States and Allied forces under American control. The British Empire was credited with 462, while 100 were destroyed by other causes. These figures do not include U-505, which was captured by American forces on April 6, 1944.⁴¹ At the end of the war the generally accepted result was 151 U-boats for the United States forces. This result appeared in The New York Times and New York Herald Tribune.

The extent of German submarine losses has been debated for years after the war. This debate has led to a number of different estimates of the German losses. Admiral King in his report, United States Navy at War, in 1946, states that nine U-boats were sunk in 1939, twenty-two in 1940, thirty-five in 1941, eighty-five in 1942, one hundred thirty seven in 1943, two hundred and forty one in 1944, and one hundred and fifty three

⁴² in 1945. The total is 682 U-boats. Dudley Knox, author of A History of the United States Navy, in 1948 credits the British with 561 U-boats. The United States is credited with 177 U-boats. Another sixteen U-boats were credited to both the United States and Great Britain, because of joint action. To these 177 U-boats another 62 could be added, because of United States Army Air Force bombing raids in the interior of Germany. Another fourteen U-boats were attributed to French, Dutch, Norwegian, and Czech units.⁴³ No mention was made of the accomplishments of the Royal Canadian Navy.

40. "U-Boat Losses Set at 713," The New York Times, XCIV, 31, 915, (June 11, 1945), p. 3.

41. "713 U-Boats Sunk," in the Naval Institute Proceedings, Annapolis, 1945, Vol. 71, p. 871.

42. King, USN at War, p. 206.

43. Knox, History of the United States Navy, New York, 1948, p. 529.

Prime Minister Churchill attributed to the Allies credit for sinking 780 U-boats out of 781 German and 35 Italian submarines. The British accounted for 524. The United States was credited with 174. Eighty-two U-boats were sunk because of other nationalities or unknown causes.⁴⁴

In 1946, the United States published the "Yellow Book,"⁴⁵ entitled German, Japanese, and Italian Submarine Losses in World War II. This publication gave the loss of German U-boats as 781 vessels. This evaluation was made by the Chief of Naval Operations Committee on Damage to Enemy Submarines, and its British counterpart, The British Admiralty Assessment Commission. When this figure, 781, is broken down, the British were given a final total of 411 U-boats destroyed. The United States Armed Forces received a total of 166, while the Canadians and Australians accounted for forty and twelve U-boats respectively.⁴⁶ The claims of the four Allies totaled 629 German submarines.

In 1955, the Naval Historical Division published a United States Naval Chronology, World War II. This work listed the contributions of the United States to the anti-submarine war. This contribution amounted to 170 U-boats. This figure was broken down into actions in various zones of operations, like the Caribbean, South America, United States Coast, English Coast, Mediterranean, and the Atlantic Ocean. In the Caribbean, American forces accounted for twenty U-boats. Off the United States Coast and off the English Coast the count was six and eight U-boats respectively. In the Mediterranean, American forces accounted for eight

44. Churchill, W. S., My Finest Hour, Boston, 1949, p. 6.

45. Morison, The Battle of the Atlantic, p. Appendix 1.

46. German, Japanese, and Italian Submarine Losses in WWII, Annapolis, Md., 1946, p. 1.

U-boats. In the Atlantic, the largest and busiest operational zone, the count rose to seventy-four U-boats. Another forty-two were destroyed by bombing raids by United States Army Air Forces.⁴⁷ Thus, the total of U-boats destroyed amounted to 170.

Although the true picture could not be given until after the war, controversy as to the proper figure on U-boat losses still continues. This figure has fluctuated between 126 U-boats and 174. During the war, the public was not told the number of U-boats sunk. Now, after the war the public cannot help being confused by the range of figures brought before it. What was the real accomplishment of the United States forces against the U-boat? And why do the discrepancies treated above exist?

⁴⁷. Naval Air Bombings have been included under the 170 U-boats.

V. THE NUMBER OF U-BOATS ACTUALLY SUNK

"We, an Island Power,....dependent on the sea, can read the lesson and understand our own fate had we failed to master the U-boats."¹

- Winston S. Churchill

The difficulty in accurately determining the number of U-boats sunk by United States Forces is suggested from the varying figures published in American successes. This difficulty arises out of the problem of when a U-boat was sunk and by whom. There are four reasons for these varying figures. The first involves the inaccuracy of reports by escort vessels and aircraft of the United States. The second occurs because some operations against U-boats were carried out by escort craft of two different nationalities. Who should receive credit for the kill? For example, when British Air Squadron 224 teamed with the United States Army A/S 4 Squadron to sink U-404 on July 28, 1943, the credit for the sinking was given to both nationalities.² The third reason is the placing of forces of one nationality under control of another nationality. It was decided at the Atlantic Convoy Conference on March 1, 1943, that the United States would place an escort carrier and five destroyers under British control for convoy duty in the North Atlantic.³ When this group sunk a U-boat, did the United States or Great Britain receive the credit? The fourth problem arises from the joint bombing attacks on German ports by the United States Army Air Forces and the Royal Air

1. Roskill, War At Sea, III, p. 37.

2. United States Naval Chronology World War II, Washington, 1954, p. 57. Hereafter cited as U.S. Naval Chronology.

3. Roskill, War At Sea, II, p. 211

Forces. Whose bombs accounted for the destroyed U-boats? Therefore, the difficulty in solving these problems, with the added problem of complete errors, leads to the varying figures on U-boat losses.⁴

Here the German data on losses suffered is of great assistance in minimizing error. Of 1,111 U-boats commissioned during the war, the German Navy lost 817 U-boats.⁵ Admiral Doenitz speculates that out of these 817, 753 were destroyed, while others were damaged or surrendered. The German breakdown includes 603 lost by naval action. Sixty-two were lost because of unknown causes, while seven were lost through accidents.⁶ Besides the 603 lost U-boats, eighty-one U-boats were sunk by Allied bombing attacks in port or by mines. However, a statistical breakdown on sinkings by the different nationalities is lacking.

Eric Gröner in 1954, attempts to give a more detailed record of the German losses, by consulting the German records. He indicates that 101 U-boats were destroyed by United States forces. His work, Die Schiffe Der Deutschen Kriegsmarine Und Luftwaffe 1939-1945, did not always distinguish the nationality of the attacking vessel or aircraft. This is particularly true of aircraft. Therefore, the description as to how a particular U-boat was sunk, often leaves the identity of the attacking aircraft or vessel unrevealed. For example, the listing of U-682 reads "31. 3. 45 + Hamburg / Fli-Bo,"⁷ meaning that on March 31, 1945, U-682 was sunk by a plane at Hamburg. An example of where all data is known is "U-629 8.6. 44+ Kanal W. Brest / Brit. Fli-Bo."⁸ This notation indicates that U-629 was sunk in the Channel west of Brest by British aircraft on June 8, 1944. Therefore, it can be seen that the

5. Ruge, Der Seekrieg, p. 37

6. Doenitz, Ten Years, Appendix 6.

7. Gröner, Die Schiffe, p. 55

8. Ibid., p. 54.

the number 101 is almost certainly not complete and that only the comparison of all available data will provide a reasonably accurate result.

In order to solve the problems of sinkings involving different nationalities, of combined bombing attacks, and units under British control, certain rules must be established. All U-boats sunk by units consisting of more than one nationality, will be credited to the combined nationalities. Neither nationality will receive individual credit. Both the United States and Great Britain would therefore receive credit for U-404. This decision rests on the premise that it is impossible to distinguish who actually sunk the U-boat. Similarly, when U-boats are sunk during a combined strategic bombing attack by the United States Army Air Forces and the Royal Air Force, credit will be given both, with no individual credit. When United States vessels and aircraft were operating under British control, the credit for any U-boat sinkings would go to the British and vice versa.

In order to achieve accuracy and to substantiate the number of U-boats sunk by United States Forces, four sources were consulted. United States publications, United States Naval Chronology WW II, and German, Japanese, and Italian Submarine Losses in WW II, gave the American side. On the German side, Die Schiffe Der Deutschen Kriegsmarine Und Luftwaffe 1939-1945 provides valuable information. The War at Sea, by Captain S. W. Roskill, is used as a confirmation report. To help define the area in which the last operations of the U-boat were taking place, the U-boat's previous actions are also helpful. Therefore, with the various presumptions and the attempt to cross check, an accurate representation of the success of

American operations against the U-boat can be obtained.

In the final analysis, the figure decided upon to represent the contribution of the United States Armed Forces in the anti-submarine war was narrowed down to 148 confirmed U-boats. Twenty U-boats were credited to United States Forces acting in cooperation with another country. Of these twenty U-boats, eleven were killed in operations at sea, while nine sinkings occurred during bombing raids.

To make it easier to organize and to study where these 148 U-boats were sunk, various areas will be marked out. These area boundaries are necessary to facilitate the handling of the material and also to provide an examination of the success of United States Forces in these various areas. These areas include the Atlantic and its surrounding entities, such as the Caribbean, North Sea, and Mediterranean Sea. Specifically, these zones include the American Coast Line, Middle America, the South American Coast, Atlantic Group A, Atlantic Group B, the European Coast, and the Mediterranean Sea. Two German U-boats that were sunk outside of the areas of inspection have not been included in the total. These craft, U-537 and U-183, were sunk in the Java Sea.⁹ All the remaining U-boats discussed will be found in the operational zones specified.

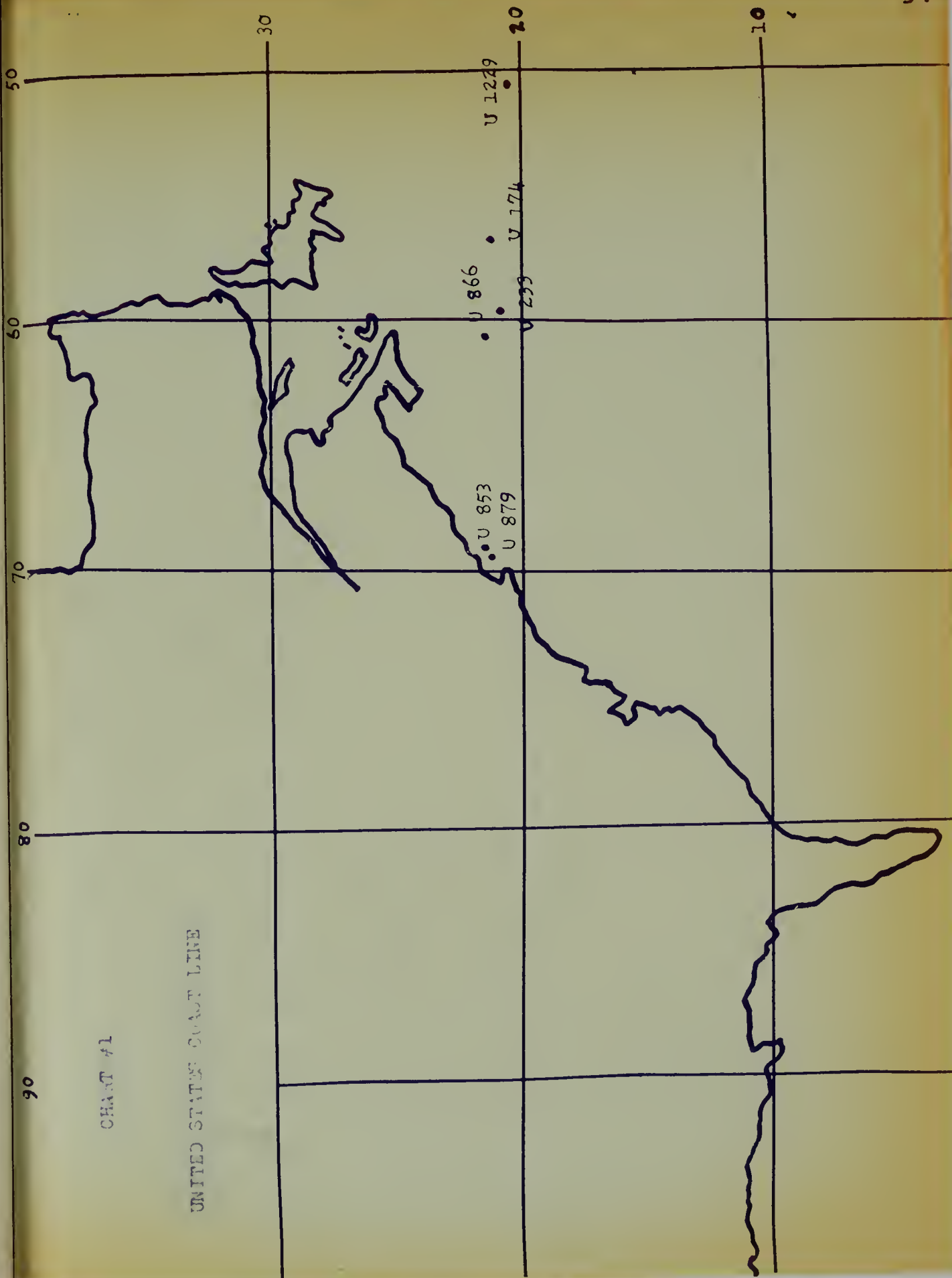
The first zone is that of the American Coast Line. The boundary runs from Northern Newfoundland to approximately Northern New Jersey. Specifically, the boundary of this zone is found from 50°N 50°W to 40°N 50°W.¹⁰ The question is raised as to the number of U-boats sunk in this zone.

9. Ibid., pp. 48 and 53.

10. See Chart #1.

CHART #1

UNITED STATES COAST LINE



The actual number of confirmed sinkings within this zone is rather small considering the number of merchant ships engaged there by the enemy early in the war. The total comes to six U-boats. Four of these six were sunk by escort vessels and two by attacks from the air. In 1943, only one U-boat, U-174, was sunk. This occurred on April 27, by Aircraft VB-125. Not until 1944 was another U-boat sunk in this zone of operations. Two U-boats were then accounted for, U-233, by the USS Baker and USS Thomas, and U-1229, by Aircraft VC-42. In 1945 three U-boats were sunk, all by surface craft. U-866 was accounted for by the USS Lowe, USS Menger, USS Pride, and USS Reuben Jones. On May 6, 1945, the USS Atherton and the USS Moberly killed U-853.¹¹ It can readily be seen that the American coast line was not a major battle ground. In fact, the greatest successes occurred when the U-boat battle was waning, in 1945.

The Middle American zone included the lower part of the United States coast and the Caribbean. The Middle American zone extended along the coast from Northern New Jersey to Florida, encompassing the Caribbean Sea and the Gulf of Mexico. The specific boundary consists of 40°N by 60°W by 10°N 60°W and extends as far west as the Gulf of Mexico.¹² Unlike the American coastal zone, the Middle American zone had a higher number of sinkings.

Fifteen U-boats were destroyed in this zone. Eight U-boats were destroyed by aircraft, either land-based or carrier-based. Five of the vanquished U-boats were sunk by sea vessels, while two were destroyed by a combined attack by air and sea forces. In 1942, nine submarines were sunk. July was the largest month with three submarines destroyed. One, U701,

11. See Appendix 3

12. See Chart #2



• U 550

• U 521

U 85 • U 701

• U 576

U 352

U 166

U 157

• U 759

• U 159

• U 359

U 654

U 615

U 153

CHART #2

MIDDLE AMERICA

was destroyed by air, while the other two were destroyed by an air/sea combination. These two U-boats were U-153 and U-576. In 1943, five U-boats were never to return home. July was the most eventful month with three U-boats killed. VP-32, a Naval Land-Based aircraft sank U-759, U-159, and U-359. In 1944, the only accountable action was the sinking of U-550 by USS Grandy, USS Joice, and USS Peterson.¹³ The major battle here was fought in 1942 and 1943. Few sinkings occur after 1943, which would leave the author to believe that the U-boats switched to other areas.

The action off the South American coast was similar to the Middle American zone. The geographic boundary of this zone follows the South American coast. This boundary ranges out into the Atlantic from 10°N 30°W to 10°S 30°W.¹⁴ However, the author has not accurately kept the boundary, with regard to 10°N. The author has changed this, when it was felt that the sinking was closer to the South American coast, and therefore, warrants being included in this zone. This violation accounted for the U-boats U-548, U-572, and U-1062.

In this zone, including the three violations, twelve U-boats were sunk. Nine were credited to aircraft, while three were the result of action by sea craft. In 1942, only U-512 was killed, accounted for by United States Army Aircraft 99, on November 2, 1942. In 1943, a total of nine were sunk. In May, 1943, U-128 was destroyed by USS Moffett, USS Jouett, and VP-74, Navy Land-Based Air. This U-boat was sunk on May 17, 1943, not May 28, 1943.¹⁵ July 1943, was again a large month, with five U-boats being sunk. These U-boats were all accounted for by United States aircraft.¹⁶ In 1944, U-106 was destroyed by the USS Fressenden.

13. See Appendix 4.

14. See Chart #3.

15. U.S. Naval Chronology, p. 50.

16. See Appendix 5.



and in 1945, U-548 by the USS Coffman, USS Bostwick, and USS Thomas.¹⁷ The overall picture shows the intensity of the battle in 1943, with the increased destruction of U-boats in July of 1943.

The Atlantic zone includes the North Atlantic, South Atlantic, and the African Coast Line.¹⁸ In order to arrive at the best possible discussion of the Atlantic battle, two distinct areas have been formulated. The line of demarcation is the longitudinal line 30°W. Group A consists of all sunk U-boats west of 30°W, while Group B consists of all U-boats sunk east of 30°W.

Thirty-two U-boats were sunk in Area A.¹⁹ Eight were sunk by sea craft, while twenty-two were sunk by aircraft. U-801 and U-66 were sunk by the combined air and sea units. In 1942, only one U-boat, U-503, was killed. In 1943, the number rose to sixteen. In the first five months, from January to May, only five U-boats were destroyed.²⁰ Two came in March, two in May and one in April. In June, July, and August, twelve U-boats were destroyed, with August accounting for six. There is some question as to whether U-84 and U-185 were killed on the 24th or 30th of August. From September to December five U-boats were sunk, one in September, two in October, and two in November. In 1944, six were sunk, with four being destroyed in the first four months of the year. In 1945, five U-boats went to the bottom. Of the total, thirty-two, the year 1943 accounted for half, with August being the big month, with six U-boats sunk.

In Area B, east of the demarcation line, 30°W,²¹ forty-five U-boats were engaged and destroyed by United States Forces. Of these forty-five,

17. See Appendix 5.

18. See Chart #4.

19. See Chart #4.

20. See Appendix 6.

21. See Chart #4.

twelve were sunk by sea craft, and twenty-nine sunk by aircraft, while four were destroyed in a combined effort. One of these four, U-604, was scuttled after being attacked by the USS Moffett and VP-129, a Naval Land-Based Aircraft.²²

In 1942, six submarines were sunk. All were in the latter part of the year, except for U-519, which was destroyed on February 10, 1942. In 1943, there were twenty-seven sinkings. In the first four months only three U-boats were sunk, U-225, U-524, and U-156.²³ In May, June, and July, there were fifteen sinkings. July had eight of them. In the remaining months, ten were accounted for by United States Forces. The number of submarine sinkings diminished in 1944, ten being sunk, with five of these in the first four months. Five more were added in the next three months. In 1945, only one U-boat was destroyed, U-248, by the combined actions of USS Hayter, USS Otter, USS Varian, and USS Hubbard. The results show a slow rate of sinkings in 1942, with a concentrated effort in July and August, 1943.

Off the English and European coast damage to the enemy U-boats by United States forces was slight. This operational zone included the coast of Europe and Great Britain, the English Channel, North Sea, Bay of Biscay, and the Baltic Sea. Specifically, the area ranged from 60°N 10°W to 40°N 10°W, excluding the Mediterranean Sea and its approaches, particularly between Spain and Africa.²⁴

The operations in this zone accounted for three U-boats by American forces. All three were destroyed from the air. On November 12, 1943, U-508 was sunk by VB-102, a Navy Land-Based plane. The other two sinkings

22. U.S. Naval Chronology, p. 59.

23. See Appendix 7.

24. See Chart #5.

CHART #5

EUROPE

1974 Sea & Day 10000



U 2055 • U 1107

• V 508

occurred in 1945 on the 25th and 30th of April, accounting for U-1007 and U-1055.²⁵ The American forces did not play a major role in this zone of operations.

The Mediterranean zone achieved results which were even less impressive than those of the European zone. This zone consisted of the Mediterranean Sea and its passages, from 30°N 0°W, 45°N 0°W to 43°W 45°N, 43°E, 30°N.²⁶ Of the two U-boats sunk in this area, both were sunk by sea craft. U-375 was sunk on July 30, 1943 by the USS PC-624, while U-73 was killed on December 16, 1943, by the USS Woolsey and USS Trippe.²⁷ Although the Mediterranean and European coastal waters did not produce very large results, the United States Army Air Force bombings on harbors and the approaches produced better results.

Thirty-three U-boats were lost because of attacks by the United States Army Air Forces. These attacks were largely carried out against Pola, Toulon, Salamis, Bremen, Hamburg, Wilhelmshaven, Kiel, and Trondheim. In 1943 only one U-boat was destroyed in port.²⁸ In 1944, thirteen U-boats became the victims of the bombings with seven sunk at Toulon from February 6, 1944, to August 6, 1944. This date of February 6 is questionable since U-380 could have been hit on March 11, 1944.²⁹ In 1945, nineteen U-boats were sunk between February 24, 1945, and April 4, 1945. Kiel was hit the hardest, losing ten U-boats. Wilhelmshaven lost three and Bremen five, in this same period. Therefore, the total number of U-boats sunk by bombing, thirty-three, brings the complete total of U-boats sunk by American forces to 148.

25. See Appendix 8a.

26. See Chart #6

27. See Appendix 8b.

28. See Appendix 9.

29. U. S. Naval Chronology, p. 80.



CHART #6

MEDITERRANEAN SEA

One other U-boat must be mentioned. U-505 was captured on April 6, 1944, by the USS Guadalcanal, a baby flattop, in conjunction with the destroyer USS Pillsbury.³⁰ This U-boat cannot be recorded as destroyed but rather was placed in the possession of United States Forces.

Six U-boats have been reported as sunk by United States Forces, but have also been recorded as sunk by other nationalities. U-588 was credited to the Canadian vessels, Wetaskieven, and Skeane,³¹ While U-761 and U-392 were accounted for by the British. The British also sunk U-186, U-2323 struck a mine on July 29, 1944, and destroyed itself.³² Therefore, these destroyed U-boats cannot be credited to the American total.

Aircraft appears to have played a predominant role in the destruction of U-boats. Of the total 148, bombing missions accounted for thirty-three. This leaves 115 U-boats that were sunk by air and sea forces at sea. Aircraft accounted for seventy-four of these U-boats, while sea craft accounted for thirty-four. Air/sea attacks destroyed eight U-boats. Aircraft, therefore, accounted for 63.5% of those U-boats sunk at sea. Thus, the predominant part played by the airplane can be seen.

30. See Appendix 10.

31. Groner, Die Schiffe, p. 52.

32. Ibid., p. 54.

VI. CONCLUSION

"There must be a beginning of any great matter, but the continuing unto the end until it be thoroughly finished yields the true glory."¹

-Sir Francis Drake to Lord Walsingham.
17th May, 1587.

The U-boat was defeated by May, 1944. The U-boat had been driven from the Atlantic Ocean and its approaches. The U-boats had lost the offensive in May, 1943, because of American improvements on weapons and location devices. Even improvements like the schnorkel could not overcome the American scientific advances. The U-boats were forced to fight a delaying action until newer U-boats became available. They came too late to save the German naval effort. Part of the defeat could be attributed to German U-boat policy.

German U-boats attempted to sink as many merchant ships as possible, regardless of cargo. On April 11, 1943, Admiral Doenitz described the pitfalls of this policy. "The submarine war will be a failure if we don't sink more ships than the enemy is able to build."² By March, 1943, the Germans had more U-boats (110) in the Atlantic than ever before.³

Yet, May, 1943, brought increased U-boat sinkings. Admiral Doenitz had underestimated the capacity of the United States to build escorts and devise detection instruments. The U-boats were discovered and destroyed. American successes were possible because of new weapons, escort craft, and location devices.

The number of sinkings might have been higher if the United States had not placed so much stress on certain policies. At the Casablanca Conference in 1943, the objectives included the bombing of factories in

1. Roskill, War at Sea, III II, p. 251.

2. Morison, Battle of the Atlantic, p. 401.

3. Ibid., p. 407.

Europe, the plants in which U-boats were assembled, and the bases at Brest and Lorient.

It can be seen from the bombing statistics that the bombing of shipyards did not affect production greatly.⁴ When questioned at Nuremburg, Albert Speer, former Reich Minister of Armament and War Production, testified that production in the yards was reduced about ten percent. By bombing the electrical industry, the Allies hoped that motor batteries would be kept from the U-boats. Although the accumulator battery factories at Posen, Vienna, and Hazen were damaged, the most important one at Hanover was never touched.⁵ Production continued to meet the needs. Thus, if the Allies had chosen more appropriate targets, the U-boat damage by bombing probably would have been greater.

The damage done to the submarine pens such as Lorient and Brest was slight. The bombing of the submarine pens during the war inflicted little damage with only one bomb ever penetrating the Brest pen.⁶ Therefore, it seems safe to conclude that the stress placed upon this operation could have been better used elsewhere. More stress might have proved profitable in hunter-killer groups, tracking at sea, attacks on U-boats in transit, or more suitable bombing targets.

In sinking 148 U-boats, the United States illustrated the predominant use of aircraft as a weapon against the U-boat. Aircraft, land-based or carrier-based, sank 63.5 percent of those U-boats sunk at sea. Another 33 U-boats (out of 148) were sunk by bombing missions. Undoubtedly, aircraft played an important role in defeating the U-boat.

In order to make the airplane effective, the invention of detection

4. See Appendix 3.

5. Effects of Strategic Bombing on the German War Economy, Washington, 1946, III, p. 275. Hereafter cited as Strategic Bombing, III.

6. Roskill, War at Sea, II, p. 352.

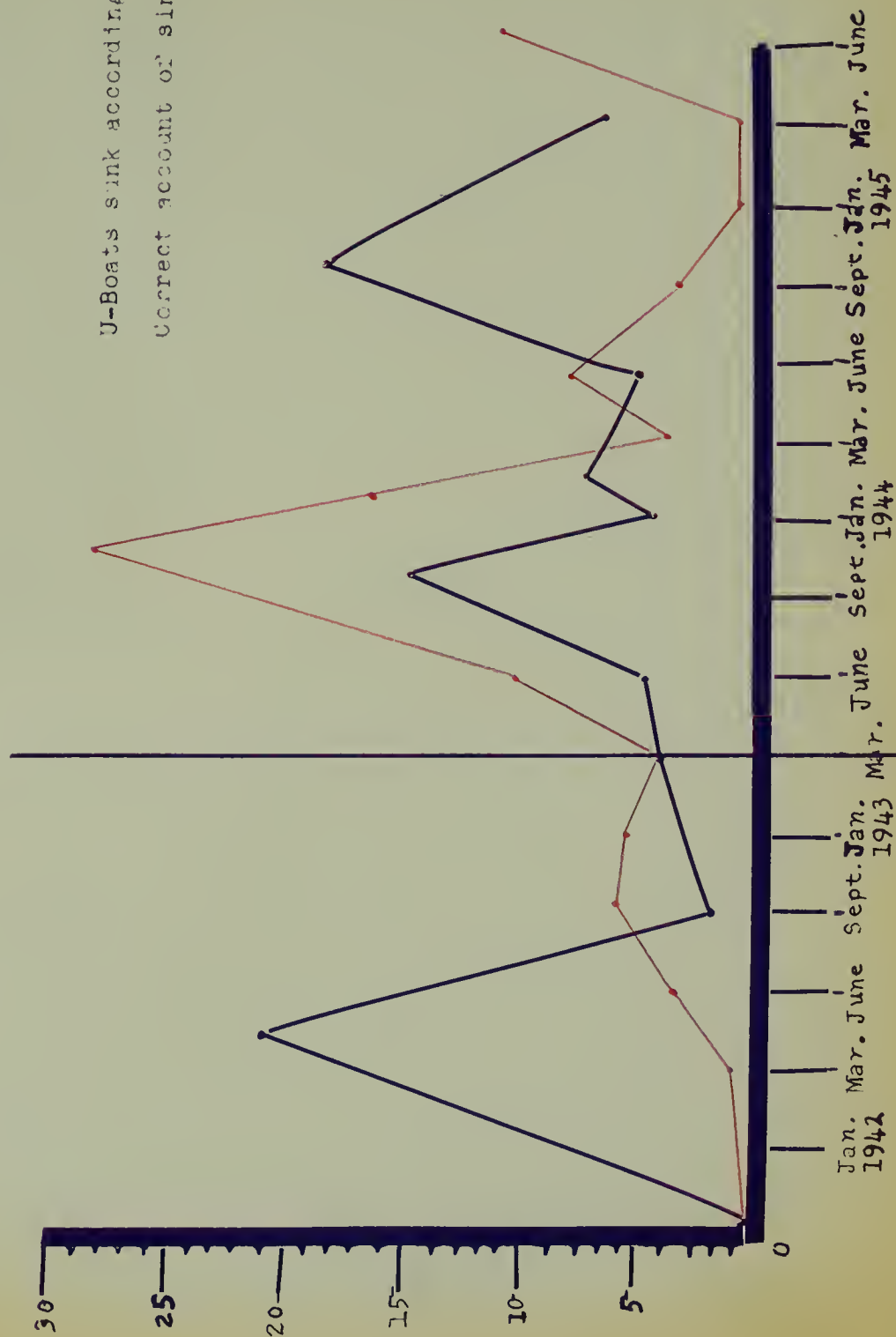
GRAPH #1

U-Boats

Number of U-Boats sunk
per period during war.

U-Boats sink according to N.Y. Times

Correct account of sinkings



devices was necessary. The German Commander of U-boats, Admiral Doenitz, stated that, "The equipment of radar next to the atomic bomb, was the decisive war-winning invention."⁷ Another device which was helpful was the Magnetic Airborne Detector, but this instrument came out in 1944, after the main battle had been won. Along with radar, the planes proved effective because of their scoring punch. The addition of the torpex depth charges and rockets enabled aircraft to take their toll.

The U-boat campaign was a challenge to the American people and the United States Navy. The Navy had to fight in two oceans. In the final results, 143 U-boats were sunk. Although this figure seems small, the defeat of the U-boat relied upon the patience and vigilance of the men searching for these U-boats. The final defeat of the U-boat depended upon the capacity of the United States to produce aircraft, merchant vessels, and location devices, which the German economy could not match.

The newspapers attempted to keep up with the number of U-boat sinkings. During the Phase One period, the number of reported sinkings in The New York Times was 29 U-boats destroyed by American forces. The number of U-boats reported sunk by March, 1942, was far in excess of the number actually sunk. Therefore in Phase One, the public was receiving an over-estimation of American successes.⁸

In Phase Two, The New York Times reports were considerably below the actual sinkings. From the period beginning June, 1943, and ending March, 1944, this was generally true. The high number of sinkings in September, 1944, could be explained by the fact that press releases on U-boat losses were a few months behind. The public, therefore, rarely received accurate or up-to-date information on the U-boat war. It can be said that the summary of the results, 151 U-boats sunk, was very close to being accurate.

7. Nuremberg, XIII, p. 279.

8. See Graph #1.

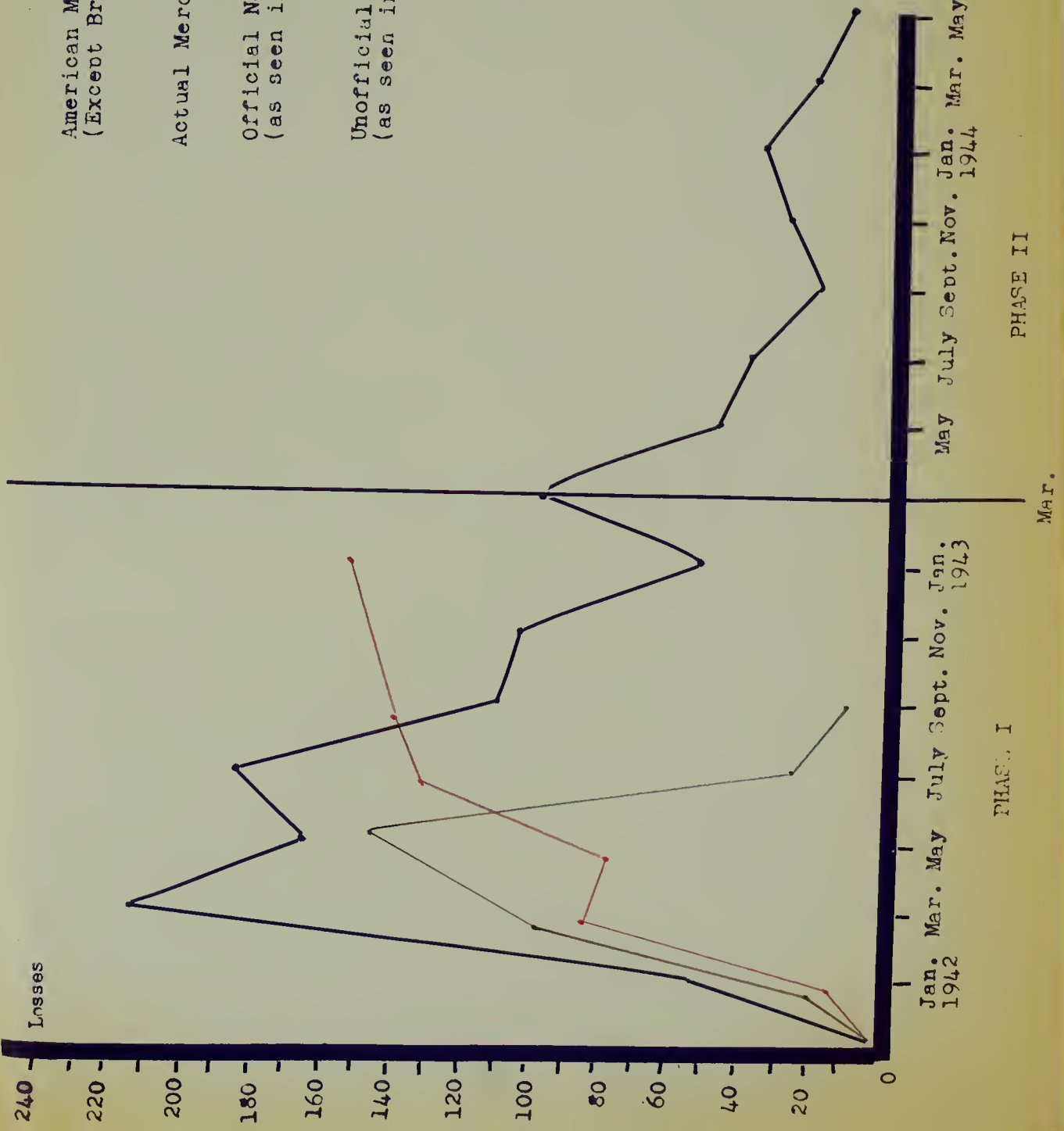
GRAPH #2

American Merchant Ship Losses
(Except British and Neutrals)

Actual Merchant Ship Sinkings

Official Naval Sinkings
(as seen in the N.Y. Times)

Unofficial AP Sinkings
(as seen in the N.Y. Times)



The New York Times also attempted to keep the public informed about United States merchant ship losses. There were usually two types of press releases concerning the number of merchantmen sunk. One was an unofficial Associated Press estimation and the other was the official Naval report. The reporting of merchant ship losses was most prevalent during Phase One. In Phase One, both the official and unofficial reports were far below the actual number of sinkings.⁹ The exception occurred from September, 1942, to January, 1943, when the Associated Press estimate was far in excess of the correct number. Thus, it can be seen that the public was not being well informed on U-boat successes. There seems to have been an attempt by the Government to misinform the public on the course of the U-boat war. It is improbable that the discrepancies between reports and realities were the result of honest error.

The motivation behind the United States public information policy was primarily a military concern. The authorities felt that the various actions could not be publicized because it would allow the enemy to pinpoint United States naval vessels.¹⁰ The description would also tell the enemy when a U-boat was sunk. It is improbable that the war effort could have been affected by the description of anti-submarine actions.

In Phase One, little news was released on U-boats sunk by United States craft. Information could have been given without indicating the place or the names of the units involved. In Phase Two, information was given, but it was usually several months behind the engagement. The use of the wolfpack by the enemy enabled the Germans to have information on any U-boat sinkings and United States naval units. Therefore, information could have been given to the public without seriously impairing the war effort.

9. See Graph #2.

10. "Navy Strikes 'Strong Blows,'" NYT, XCI, 30, 678 (Jan. 21, 1942), p. 5.

Admiralty Organization in 1941'



APPENDIX 2

GERMAN U-BOATS¹

A. U-Boats

<u>Type</u>	<u>Displacement</u>	<u>Speed</u> <u>Over</u> <u>Under</u>	<u>Armament</u>
IA	1200 m ³	<u>17.8</u> knots 8.3	6 torpedo tubes (4B2H) 1-10.5 flak 1-2 flak
IIA	381 m ³	<u>13.0</u> knots 6.9	3 torpedo tubes 1-2 flak 4-2 flak
B	414 m ³	<u>13.0</u> knots 7.0	3 torpedo tubes 1-2 flak 4-2 flak
C	435 m ³	<u>12.0</u> knots 7.0	3 torpedo tubes 1-2 flak 4-2 flak
D	460 m ³	<u>12.7</u> knots 7.0	3 torpedo tubes 1-2 flak 4-2 flak
VIIA	915 m ³	<u>16.0</u> knots 8.0	5 torpedo tubes (4B1H) 1-8.8 flak 1-2 flak
B	1040 m ³	<u>17.2</u> knots 8.0	5 torpedo tubes (4.1) 1-3.7 flak 2-2 flak 14 mines
C	1070 m ³	<u>17.0</u> knots 7.6	5 torpedo tubes (4.1) 1-3.7 flak 2-2 flak 14 mines
D	1285 m ³	<u>16.0</u> knots 7.3	5 torpedo tubes (4.1) 1-3.7 flak 2-2 flak 14 mines
F	1345 m ³	<u>16.9</u> knots 7.9	5 torpedo tubes (4.1) 1-3.7 flak 2-2 flak 14 mines

1. Gröner, E., Die Schiffe, pp. 18-22.

APPENDIX 2 Cont.

Type	Displacement	<u>Speed</u> <u>Over</u> <u>Under</u>	Armament
IXA	1480 m ³	<u>18.2</u> knots 7.7	
B	1430 m ³	<u>18.2</u> knots 7.3	6 torpedo tubes (4,2)
C	1540 m ³	<u>18.2</u> knots 7.3	1-10.5 flak 1-3.7 flak
C ₄₀	1545 m ³	<u>18.2</u> knots 7.3	1-2 flak, 22 mines as of 1942 4-2 flak 1-3.7 flak
D ₁	2150 m ³	<u>15.8</u> knots 6.9	
D ₂	2150 m ³	<u>19.2</u> knots 6.9	
X	2710 m ³	<u>16.4</u> knots 7.0	2 torpedo tubes (2H), 66 mines 1-3.7 flak, 4-2 flak
XI	4650 m ³	<u>23.0</u> knots 7.0	8 torpedo tubes (6,2B) 4-12.7 ₂ 2-3.7 flak 2-2 flak, 1 helicopter
XIV	2300 m ³	<u>14.4</u> knots 6.2	4 torpedoes 2-3.7 flak 1-2 flak
XVII B	415 m ³	<u>8.5</u> knots 21.5	2 torpedoes
G	385 m ³	<u>8.5</u> knots 21.5	2 torpedoes
K	425 m ³	<u>14.0</u> knots 16.0	2 torpedoes
XVIII	1887 m ³	<u>15.5</u> knots 24.0	6 torpedo tubes (6E) 4-3 flak ₂
XXI	2114 m ³	<u>15.5</u> knots 17.5	6 torpedo tubes (6B) 4-2 flak ₂ , 12 mines 4-3 flak ₂ , (Vorgesehen)
XXIII	274 m ³	<u>9.7</u> knots 12.5	2 torpedo tubes (2B)

APPENDIX 3

EFFECTS OF STRATEGIC BOMBING ON LATE MODEL GERMAN U-BOAT
 PRODUCTIONS AND OPERATIONS¹
 (of Bombing Alone)

I. U-Boat Types	Type XXI	Type XXIII
A. Production		
1. Number ordered (by end of war)	381	95
2. Number produced (by end of war) ²	202	13
3. Number denied (by bombing attack)	60	19
4. Number actually delivered	119	63
B. After Commission		
1. Sunk by bombing	15	2
2. Still in training	91	38
3. Number not full operational	12	17
4. Number in Full operation	1	6

1. Webster, C., and Frankland, W., Strategic Air Offensive Against Germany, 1939-1945. London, 1961, Vol. IV, p. 276.

2. The number produced was affected by priorities, reallocation of materials, and manpower.

APPENDIX 4

U-BOATS SUNK OFF THE UNITED STATES COAST BY UNITED STATES FORCES
 FROM 50°N 50°W to 40°N 50°W

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-174	April 27, 1943	VB-125	13°35'N 36°18'W
U-233	June 7, 1944	<u>USS Baker</u> , <u>USS Thomas</u>	42°16'N 59°49'W
U-1229	August 20, 1944	VC-42 (<u>USS Bogue</u>)	42°20'N 51°39'W
U-866	March 11, 1945	<u>USS Lowe</u> , <u>USS Menger</u> <u>USS Pride</u> , <u>USS Mosby</u>	43°18'N 61°08'W
U-879	April 19, 1945	<u>USS Buckley</u> , <u>USS Reuben Jones</u>	42°19'N 61°45'W
U-853	May 6, 1945	<u>USS Atherton</u> , <u>USS Moberly</u>	41°13'N 71°27'W

APPENDIX 5

U-BOATS SUNK IN MIDDLE AMERICAN ZONE BY UNITED STATES FORCES

FROM 40°N 60°W to 10°N 60°W

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-85	April 14, 1942	<u>USS Ropes</u>	35°55'N 75°13'W
U-352	May 9, 1942	<u>USS Icarus</u>	S. Cape Hatteras
U-157	June 13, 1942	<u>US CG Thetis</u>	24°13'N 82°03'W
U-158	June 30, 1942	VP-74	32°50'N 67°28'W
U-701	July 7, 1942	USA-396	34°50'N 67°28'W
U-153	July 13, 1942	USA PC-59, <u>USS Lansdowne</u>	09°56'N 81°29'W
U-576	July 15, 1942	VS-9 and <u>US Unicorn</u> ¹	Off Cape Hatteras
U-166	August 1, 1942	US CG Squadron 212	28°37'N 90°45'W
U-654	August 22, 1942	USAA Squadron 45	North of Colon
U-521	June 2, 1943	<u>USS PC-565</u>	37°43'N 73°16'W
U-159	July 15, 1943	VP-32	18°58'N 73°44'W
U-759	July 26, 1943	VP-32	18°56'N 75° W
U-359	July 28	VP-32	15°57'N 68°30'W
U-615	August 6, 1943	VP-205, VP-204, VP-130	12°38'N 64°15'W
U-550	April 16, 1944	<u>USS Grandy</u> , <u>USS Joice</u> <u>USS Peterson</u>	40°09'N 69°44'W

1. Merchant Ship

APPENDIX 6

U-BOATS SUNK OFF SOUTH AMERICA BY UNITED STATES FORCES

FROM 50°N 50°W to 40°N 50°W

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-512	October 2, 1942	USAA-99	06°50'N 52°25'W
U-164	January 6, 1943	VP-83	01°58'S 39°23'W
U-507	January 13, 1943	VP-83	01°38'S 39°52'W
U-128	May 17, 1943	<u>USS Moffet, USS Jouett</u>	10°00'S 35°35'W
U-590	July 9, 1943	VP-94	03°22'N 48°36'W
U-513	July 19, 1943	VP-74	27°17'S 47°34'W
U-662	July 24, 1943	USAA-VP-74	03°36'N 27°56'W
U-598	July 26, 1943	VP-32	04°05'S 33°23'W
U-572	August 3, 1943	VP-205	11°33'N 54°05'W
U-161	September 27, 1943	VP-74	12°30'S 35°35'W
U-1062	September 30, 1944	<u>USS Freesenden</u>	11°35'N 34°44'W
U-548	April 30, 1945	<u>USS Coffman, USS Bostwick</u> and <u>USS Thomas</u>	36°34'N 74°00'W

APPENDIX 7

U-BOATS SUNK IN THE ATLANTIC IN AREA A
WEST OF LONGITUDE 30°W

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-503	March 15, 1942	VP-82	45°50'N 48°50'W
U-130	March 12, 1943	<u>USS Champlin</u>	37°10'N 40°21'W
U-175	April 17, 1943	<u>USCG Spencer</u>	48°50'N 34°43'W
U-657	May 14, 1943	VP-84	60°10'N 32°52'W
U-569	May 22, 1943	VC-9 (<u>USS Bogue</u>)	50°40'N 35°21'W
U-217	June 5, 1943	VC-9 (<u>USS Bogue</u>)	30°18'N 42°50'W
U-118	June 6, 1943	VC-9 (<u>USS Bogue</u>)	30°49'N 33°49'W
U-388	June 20, 1943	VP-84 (<u>USS Bogue</u>)	57°36'N 31°20'W
U-487	July 13, 1943	VC-13 (<u>USS Core</u>)	27°15'N 34°18'W
U-67	July 16, 1943	VC-13 (<u>USS Core</u>)	30°05'N 44°17'W
U-43	July 30, 1943	VC-29(<u>USS Santee</u>)	34°57'N 35°11'W
U-117	August 7, 1943	VP-205, VP-204, VP-130, (<u>USS Card</u>) & US Bomber 10	39°33'N 38°21'W
U-664	August 9, 1943	VC-1 (<u>USS Card</u>)	40°12'N 37°29'W
U-525	August 11, 1943	VC-1 (<u>USS Card</u>)	41°29'N 38°55'W
U-84	August 26, or 24, 1943	VC-13 (<u>USS Core</u>)	27°09'N 37°03'W
U-185	August 26, or 24, 1943	VC-13 (<u>USS Core</u>)	27°00'N 37°06'W
U-847	August 27, 1943	VC-1 (<u>USS Card</u>)	21°19'N 37°58'W
U-220	October 27, 1943	VC-1 (<u>USS Block Island</u>)	48°53'N 33°30'W

APPENDIX 7 Cont.

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-584	October 31, 1943	VC-9 (<u>USS Card</u>)	49°14'N 31°55'W
U-405	November 1, 1943	<u>USS Borie</u> (Plane ?)	49°00'N 31°14'W
U-850	November 20, 1943	VC-19 (<u>USS Bogue</u>)	32°54'N 37°00'W
U-544	January 17, 1944	VC-13 (<u>USS Guedalcensal</u>)	40°30'N 31°20'W
U-801	March 16, or 17, 1944	VC-6 (<u>USS Block Island</u>) <u>USS Corey</u> , <u>USS Bernstein</u>	16°42'N 30°28'W
U-1059	March 19, 1944	VC-6 (<u>USS Block Island</u>)	13°10'N 33°44'W
U-488	April 26, 1944	<u>USS Frost</u> , <u>USS Huse</u> , <u>USS Bucher</u> , <u>USS Snowden</u>	17°54'N 38°05'W
U-66	May 6, 1944	VC-55 (<u>USS Block Island</u>) <u>USS Buckley</u>	17°17'N 32°29'W
U-880	April 16, 1945	<u>USS Stanton</u> , <u>USS Frost</u>	47°35'N 30°26'W
U-1235	April 15, 1945	<u>USS Stanton</u> , <u>USS Frost</u>	47°53'N 30°26'W
U-518	April 22, 1945	<u>USS Carter</u> , <u>USS Neal A. Scott</u>	43°26'N 38°23'W
U-546	April 24, 1945	<u>USS Flaherty</u> , <u>USS Neunger</u> <u>USS Chatels</u> , <u>USS Varian</u> , <u>USS Hubbard</u> , <u>USS Jansen</u> <u>USS Pillsbury</u> , <u>USS Keith</u>	43°53'N 40°07'W
U-881	May 6, 1945	<u>USS Ferquhar</u>	43°18'N 47°44'W
U-490	June 12, 1944	<u>USS Frost</u> , <u>USS Inch</u> , <u>USS Huse</u> , <u>USS Croston</u>	N. Atlantic

APPENDIX 8

U-BOATS SUNK IN THE ATLANTIC IN AREA B

EAST OF LONGITUDE 30°W

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-464	August 20, 1942	VP-73	61°21'N 14°40'W
U-408	November 5, 1942	VP-84	67°40'N 18°32'W
U-173	November 16, 1942	<u>USS Woolsey,</u> <u>USS Swanson, USS Quick</u>	33°40'N 07°35'W
U-611	December 10, 1942	VP-84	58°00'N 22°44'W
U-626	December 15, 1942	<u>USCG Ingham</u>	56°46'N 27°12'W
U-519	February 10, 1943	USA Squad 2	47°05'N 18°34'W
U-225	February 21, 1943	<u>USCG Spencer</u>	51°25'N 27°28'W
U-156	March 8, 1943	VP-53	Mid-Atlantic
U-524	March 22, 1943	USA-1	30°15'N 18°13'W
U-182	May 15 or 16, 1943	<u>USS Meckenzia</u>	33°55'N 20°35'W
U-467	May 25, 1943	VP-84	62°25'N 14°52'W
U-200	June 24, 1943	VP-84	59°00'N 28°18'W
U-951	July 7, 1943	USA A/S 1	37°40'N 15°30'W
U-232	July 8, 1943	USA A/S 2	40°37'N 13°41'W
U-506	July 12, 1943	USA A/S 1	42°30'N 16°30'W
U-160	July 14, 1943	VC-29 (<u>USS Santee</u>)	33°54'N 27°13'W
U-509	July 15, 1943	VC-29 (<u>USS Santee</u>)	34°02'N 26°02'W
U-527	July 23, 1943	VC-9, <u>USS Bogue</u>	35°25'N 27°56'W

APPENDIX 8 Cont.

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-613	July 23, 1943	<u>USS Badger</u>	35°32'N 28°36'W
U-706	August 2, 1943	USA A/S 4	46°15'N 10°25'W
U-604 (Scuttled)	August 11, 1943	VB-129, VB-107 <u>USS Moffett</u>	05°00'S 20°00'W
U-336	October 4, 1943	VC-9 or VC-128 ?	43°18'N 28°58'W
U-422	October 4, 1943	VC-9 (<u>USS Card</u>)	43°18'N 28°58'W
U-402	October 13, 1943	VC-9 (<u>USS Card</u>)	48°56'N 26°41'W
U-460	October 6, 1943	VC-9 (<u>USS Card</u>)	62°43'N 27°17'W
U-378	October 20, 1943	VC-13 (<u>USS Core</u>)	47°40'N 28°27'W
U-848	November 5, 1943	VB-107, USA-1	10°09'S 18°00'W
U-849	November 25, 1943	VB-107	06°30'S 05°40'W
U-86	November 29, 1943	VC-19 (<u>USS Bogue</u>)	39°33'N 19°01'W
U-172	December 12, 1943	VC-19 (<u>USS Bogue</u>) <u>USS Badger</u> , <u>USS Dupont</u> <u>USS Clemson</u> , <u>USS Ingraham</u>	26°19'N 29°58'W
U-645	December 24, 1943	<u>USS Schenk</u>	North of Azores
U-271	January 28, 1944	VB-103	53°15'N 15°52'W
U-177	February 6, 1944	VB-107	10°35'S 23°15'W
U-603	March 1, 1944	<u>USS Bronstein</u> , <u>USS Bostwick</u>	48°55'N 26°10'W
U-704	March 1, 1944	<u>USS Thomas</u> , <u>USS Bronstein</u>	49°10'N 26°00'W
U-515	April 9, 1944	VC-58 (<u>USS Gusdalcenal</u>) <u>USS Pope</u> , <u>USS Chatelan</u> , <u>USS Pillsbury</u> , <u>USS Flaherty</u>	34°35'N 19°18'W

APPENDIX 8 Cont.

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-685	May 10, 1944	VC-58 (<u>USS Guadalcanal</u>)	33°25'N 18°59'W
U-549	May 29, 1944	<u>USS Eugene Elmore</u> & <u>USS Ahrens</u>	31°13'N 23°03'W
U-543	July 2, 1944	VC-59, <u>USS Wakefield</u>	25°34'N 21°36'W
U-154	July 3, 1944	<u>USS Inch</u> , & <u>USS Frost</u>	34°00'N 19°30'W
U-860	July 13, 1944	VC-9, (<u>USS Salmon</u>)	25°27'S 05°30'W
U-248	January 16, 1945	<u>USS Hayter</u> , <u>USS Otter</u> , <u>USS Varian</u> , <u>USS Hubbard</u>	47°43'N 26°37'W
U-857	April 7, 1945	<u>USS Gustavson</u>	49°19'N 10°23'W
U-662	July 24, 1943	VP-94	03°36'N 27°56'W
U-467	May 25, 1943	VP-84	62°25'N 14°52'W

APPENDIX 9

A. U-BOATS SUNK OFF EUROPEAN COAST BY UNITED STATES FORCES
FROM 60°N 10°W to 40°N 10°W

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-508	November 12, 1943	VF-103	46°N 07°30'W
U-1107	April 25, 1945	VFB-107	48°12'N 05°42'W
U-1055	April 30, 1945	VFB-103	48°N 05°30'W

B. U-BOATS SUNK IN MEDITERRANEAN SEA BY UNITED STATES FORCES
FROM 0°W 45°N to 0°W 30°N

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-375	July 30, 1943	USS PC-624	36°40'N 12°28'E
U-73	December 16, 1943	USS Woolsey, USS Trippe	36°07'N 00°50'W

APPENDIX 10

U-BOATS SUNK BY STRATEGIC BOMBING BY USAAF

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Location Sunk</u>
U-622	July 24, 1943	Trondheim
U-81	January 9, 1944	Pola
U-380	February 6, 1944 or March 11, 1944	Toulon
U-410	February 6, 1944 or March 11, 1944	Toulon
U-421	April 29, 1944	Toulon
U-586	July 5, 1944	Toulon
U-872	July 29, 1944	Bremen
U-471	August 6, 1944	Toulon
U-642	July 5, 1944 or August 6, 1944	Toulon
U-952	August 6, 1944	Toulon
U-969	August 6, 1944	Toulon
U-565	September 24, 1944	Salamis
U-596	September 24, 1944	Salamis
U-3007	February 24, 1945	Bremen
U-2515	March 11, 1945	Hamburg
U-2530	March 11, 1945	Hamburg
U-96	March 30, 1945	Wilhelmshaven
U-429	March 30, 1945	Wilhelmshaven
U-3508	March 30, 1945	Wilhelmshaven
U-72	March 30, 1945	Bremen
U-430	March 30, 1945	Bremen
U-329	March 30, 1945	Bremen
U-870	March 30, 1945	Bremen
U-884	March 30, 1945	Off Helling
U-2340	March 30, 1945	Hamburg
U-348	March ?, 1945	Hamburg
U-1221	April 3, 1945	Kiel

APPENDIX 10 Cont.

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Location Sunk</u>
U-2542	April 3, 1945	Kiel
U-3505	April 3, 1945	Kiel
U-237	April 4, 1945	Kiel
U-749	April 4, 1945	Kiel
U-3003	April 4, 1945	Kiel

APPENDIX 11

U-BOATS SUNK BY UNITED STATES FORCES IN COOPERATION WITH
OTHER NATIONALITIES

<u>U-Boat</u>	<u>Date Sunk</u>	<u>Sunk By</u>	<u>Location Sunk</u>
U-404	July 28, 1943	USA A/S 4 & British 224 air	45°53'N 09°25'W
U-576	March 15, 1944	US VC-95 & British 176 & 206 & Canadian <u>Prince Rupert</u>	46°18'N 27°34'W
U-371	May 4, 1944	USS <u>Pride</u> , USS <u>Campbell</u> & French <u>Senegalais</u> & British <u>Blankney</u>	37°49'N 05°39'E
U-94	August 28, 1942	Canadian <u>Oakville</u> & US aircraft	Caribbean Sea
U-176	May 15, 1943	Cuban SC-13 & US air 62	North of Havana
U-199	July 31, 1943	USN #74 & Brazilian air	23°54'S 42°05'W
U-996	August, 1944	USN Bombing Squad. 103 & 110 & Czech Squad 311	Off Helling
U-616	May 14, 1944	USS <u>Nields</u> , USS <u>Gleaves</u> , USS <u>Ellyson</u> , USS <u>Hillery</u> , USS <u>P. Jones</u> , USS <u>Mecomb</u> USS <u>Hambleton</u> , USS <u>Rodman</u> USS <u>Emmons</u> & British air	---
U-869	February 28, 1945	USS <u>Fowler</u> & French <u>d'Indiscret</u>	Mid-Atlantic
U-960	May 19, 1944	USS <u>Nibleck</u> , USS <u>Ludlow</u> & British air	Northwest Algiers
U-606	February 22, 1943	USS <u>Campbell</u> & Polish <u>Burza</u>	North Atlantic
U-593	December 13, 1943	USS <u>Wainwright</u> & British <u>Calpe</u>	North Constantine

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