

## **Failure at Sea: Wolf Pack Operations in the North Atlantic, 10 February-22 March 1944**

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Despite the turning point in the Atlantic campaign in May 1943, the great strategic objective during the first months of 1944 for German U-boats still remained to try to cut the transatlantic supply lines between North America and Great Britain. If this could be done, German planners reasoned, the Allies would be incapable of mounting an invasion of northwestern Europe in the spring of 1944.<sup>1</sup> The U-boats in 1943 thus undertook large-scale attacks on convoys in the North Atlantic in an attempt to sever the Allies' maritime supply routes. In a series of convoy battles in which the submarines suffered heavy losses but sunk few Allied ships, the Germans were decisively defeated and the U-boats were forced to withdraw from the mid-Atlantic convoy routes.<sup>2</sup> This was a major defeat and ended any realistic chance the Germans had of cutting the transatlantic convoy routes.

The defeat of the U-boats in 1943 was due to Allied superiority in tactics, weapon systems, and above all in communications intelligence.<sup>3</sup> Not only were the locations of U-boats betrayed by communications intelligence but, by the beginning of 1944, the Allies had the resources in the form of both carrier-borne and land-based aircraft, as well as surface escorts, to operate with overpowering force against the Germans in any part of the North Atlantic.<sup>4</sup> Moreover, these surface escorts and aircraft were equipped with the latest and most sophisticated types of detection devices and weapons.<sup>5</sup> To make matters worse for the Germans, they did not at the time fully understand the reasons for the defeat of their U-boats in the mid-North Atlantic in 1943.<sup>6</sup> Nor at the beginning of 1944 did they know that an Allied invasion of northwestern Europe was imminent and that it would most likely occur in the spring of 1944.<sup>7</sup> Hence, they saw no real strategic alternative other than to continue the U-boat offensive against Allied convoys despite the losses they had sustained in the previous months.

Forced to abandon operations against convoys in the mid-Atlantic, the Germans decided in February 1944 to deploy U-boats against Allied convoys in the Western Approaches to Great Britain, to the west of Ireland, in a last attempt to cut Allied supply lines. The Western Approaches were chosen because Allied convoys bound for the North Channel between Ireland and Britain would be easier to intercept there than in mid-ocean. Moreover, the area was in the range of the German Air Force (GAF), which could provide support by flying reconnaissance missions. The deployment, though, was a

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desperate gamble. Grand Admiral Karl Doenitz, the commander-in-chief of the German Navy, knew that "the current-type of U-boats could no longer achieve any consequential results" because of their technological inferiority to Allied anti-submarine forces.<sup>8</sup>

Nevertheless, there were compelling reasons why U-boats in February 1944 still had to attack convoys. First, with the Allied invasion of northwest Europe imminent, the U-boats simply could not surrender the Battle of the Atlantic. If the U-boats conceded the North Atlantic convoy routes, the Allies could then redeploy all the men, ships, and aircraft used to fight them directly against Germany. There were also other considerations. Since the Germans still intended to introduce new high-performance U-boats, such as the Walter submarine, there were fears that if the crews remained ashore until these weapons were available their morale would suffer and the U-boat service as a whole would lose its knowledge and experience of the latest Allied anti-submarine techniques.<sup>9</sup> In addition, there was also the question of the Navy's relations with the GAF. Doenitz wanted U-boat crews to have experience in cooperating with aircraft so that when the new types of U-boats became available they could operate in conjunction. For months the Grand Admiral had been lobbying Goering and Hitler for GAF support for U-boat operations.<sup>10</sup> If Doenitz had simply declared that U-boats were unable to continue the Battle of the Atlantic, Goering in all probability would have used this as an excuse to end all air support for the Navy. This would have meant that when the new types of U-boats became operational there would have been no possibility for joint operations. On the basis of these calculations, Doenitz decided to deploy U-boats into the Western Approaches, despite knowing that there was little chance for success."

On 10 February 1944 the *Befehlshaber der Unterseeboote* [BdU] ordered twenty-eight U-boats of the *Igel-1* and *Igel-2* groups to take up positions west of Ireland in a great arc across the route taken by convoys proceeding to and from the North Channel.<sup>12</sup> At the same time, the U-boats were informed that "an operation against an American-England convoy is planned for about 16/2 with GAF recce [reconnaissance]."<sup>13</sup> It was the BdU's intention to employ GAF aircraft to locate a westbound Allied convoy and to "attempt to fight on the surface, under favorable weather conditions, and with a sufficient number of boats" a convoy action.<sup>14</sup> The Allies had knowledge of all this, for they had been reading the German coded command radio communications since December 1942.<sup>15</sup> The order to deploy the *Igel* U-boats was decoded by the Allies at 0455 on 12 February.

Meanwhile, on the same date the *Igel-1* and *Igel-2* U-boats were ordered to steam, at an economical speed, 150 miles to the westward; this would have made the centre of the U-boats' operational area at approximately 56° 51'N 23° 48'W.<sup>16</sup> But it was not until 14 February that a convoy was sighted. At 1807 on that date, a GAF aircraft sighted at 55° 21'N 10° 35'W a westbound convoy, which included two escort aircraft carriers, just west of the entrance to the North Channel.<sup>17</sup> The convoy was steering a course of 260 degrees and was assumed by the Germans to be ON-224 but was, in fact, OS-68/KMS-42.<sup>18</sup> The Germans at this time did not realize that besides OS-68/KMS-42 there were also two other Allied convoys — ONS-29 and HX-278 — in the vicinity. To intercept the convoy, the *Igel* groups were ordered to steam towards positions centering around 55°

33°N 24° 30'W and 48° 45'N 19° 45'W, some 600 miles southwest of Ireland.<sup>19</sup> The next day, GAF reconnaissance aircraft reported that the Allied convoy was steering a course of 230 degrees; the *Igel* groups were then directed to new positions to intercept the Allied ships.<sup>20</sup>

At 1229 on 16 February *U-546* reported it had been attacked by an Allied aircraft.<sup>21</sup> The U-boat was caught on the surface, steaming southeast, ahead of HX-278 and was attacked with depth charges by a Sunderland aircraft of the 201st RAF Squadron. *U-456* was damaged but managed to escape.<sup>22</sup> Several hours later, two Junker 290 aircraft overflew Convoys ONS-29 and OS-68/KMS-42; one of the German aircraft circled ONS-29 before being shot down by a fighter aircraft from HMS *Bitter*, an escort carrier with ON-68/KMS-42. The second Junker was destroyed by a Beaufighter of the 235th RAF Squadron, which was controlled during the action from HMS *Bitter*?<sup>23</sup> Just before they were shot down, one of the Junkers reported that it had sighted a convoy steering a course of 180 degrees with a speed of between six and 6.5 knots.<sup>24</sup> The BdU thought that this course was too southerly and that it must be "presumably deceptive."<sup>25</sup> At 2019, *U-984* reported that it had been attacked by a Leigh Light-equipped aircraft and several hours later *U-608* was over-run by an eastbound convoy.<sup>26</sup>

*U-oOS's* report apparently did not make an impression on the BdU, for it still believed there was only one westbound convoy in the area. During the daylight hours of 17 February two GAF aircraft were dispatched to the area where the westbound convoy was thought to be located. On the basis of reports from these aircraft, the BdU apparently concluded that the Allied ships were further to the east and south than they were in fact located.<sup>27</sup> At 1456 the *Igel* groups were directed to steam submerged on a course of 125 degrees.<sup>28</sup> An hour later these orders were amended: *Igel-1* was to continue to "sweep to the south" while several U-boats from *Igel-2* were to proceed on a course of 340 degrees.<sup>29</sup> It was intended that on the night of 17 February the suspected Allied convoy would be shadowed by GAF aircraft, which would direct the U-boats toward the Allied ships using radio beacons. In the event, nothing came of these intentions since the two aircraft sent to shadow the convoy had to return to base because of mechanical "defects."<sup>30</sup>

Because of the failure of the reconnaissance sorties, the BdU still did not comprehend the Allied order of battle. Convoys OS-68/KMS-42 and HX-278 had thus passed beyond the danger area and the BdU was now stalking ONS-29, which was being followed and overtaken by the much faster ON-244. Nevertheless, the BdU made preparations to intercept an Allied westbound convoy. The twenty-five U-boats of *Igel-1* and *Igel-2* were reformed into the *Hai* group and ordered to deploy by 1800 on 18 February into two patrol lines running roughly from 52°N 25°W to 49°N 23°W.<sup>31</sup> This movement was to be carried out submerged during the day and on the surface only after dark.<sup>32</sup> The plan was for GAF aircraft to intercept the convoy between 2045 and 2130 on the night of 18 February and to direct the U-boats to the Allied ships by transmitting radio beacons and dropping white magnesium flares. It was the intention of the BdU to "stage a convoy battle of the old sort." That is, the BdU wanted the U-boats to undertake a surface night mass assault on the convoy. Therefore, they were ordered not to submerge

when closing with the enemy and to be prepared to engage Allied aircraft. Further, if the operation were to be continued into the daylight hours of 19 February, the U-boats were to be prepared to beat off Allied aircraft with anti-aircraft guns.<sup>33</sup> The Allies knew from GAF overflights, "decrypts," and radio direction-finding fixes that ONS-29 and ON-244 were threatened. As a result, the shore-based air escort for both was strengthened and the 2nd, 7th, and 10th Escort Groups were dispatched to reinforce the escorts of the two convoys. During the night of 17 February ON-224 was routed further to the south and, at dawn on 18 February, it was some distance to the east of the *Hai* patrol lines. At this time the BdU did not know the exact locations of the Allied convoys and no reconnaissance flights were planned for the daylight hours, since the Germans were husbanding their aircraft to make a maximum effort during the night of 18/19 February.<sup>34</sup> The Germans and the Allies used communications intelligence and during the afternoon of 18 February, the BdU received a fix from a shore-based radio direction-finder on a radio guard ship which placed the Allied convoy at approximately 50° N 21° W, which indicated to the Germans an evasion to the south.<sup>35</sup> As a result of this information the BdU ordered the U-boats to steer, submerged, a course of 150 degrees for twenty miles and then at 2100 hours to surface and head due south at eleven knots.<sup>36</sup> At 1310 *U-264* sighted three escorts;<sup>37</sup> at 1430 the ships of the 10th Escort Group were conducting a search some twenty miles off the starboard bow of ONS-29 at 48°32'N 23° 36'W when a sonar contact was obtained by HMS *Sprey*. The contact was attacked and *U-406* was sunk.<sup>38</sup>

Subsequently the GAF during the night of 18/19 February dispatched ten reconnaissance flights to search for the convoy. The first aircraft, probably owing to navigational errors, did not sight any Allied ships.<sup>39</sup> By 2128 the BdU, in the absence of any reports from the aircraft, concluded by means of dead reckoning that the convoy was to the east of the U-boats and ordered the *Hai* group to steer in that direction at thirteen knots.<sup>40</sup> As the U-boats were steaming east on the surface at high speed, a Leigh-light B-24 Liberator from the 53rd RAF Squadron intercepted and attacked without results *U-603* and *U-386*.<sup>41</sup> At 0212 on 19 February *U-437* sighted starshells at a bearing of 345 degrees true.<sup>42</sup>

In the meantime a GAF aircraft at 0110 had sighted ONS-29 and ON-224, which were now so close together that they appeared to the Germans to be a single convoy.<sup>43</sup> The aircraft shadowed the Allied ships until 0210, sending radio signals to home in the U-boats. Even though four U-boats picked up the signals, the bearings were too acute for an accurate fix. But the BdU concluded that the Allied force was to the northwest of the U-boats and sixteen subs were ordered to chase in that direction.<sup>44</sup> In the next three hours several U-boats sighted Allied escorts and *U-146* fired a torpedo, which missed, at a corvette.<sup>45</sup> Still the U-boats failed to make contact with the main body of the convoy. At 0500 a second GAF aircraft sighted it and began sending radio signals. Five U-boats obtained bearings and the convoy's position was calculated. The *Hai* group was ordered "to go for it. Make use of the opportunities."<sup>46</sup> The BdU thought that "in theory 6-8 Boats could have reached the convoy before direct light." The reality was that there was not enough time remaining for the U-boats to mount an attack before daybreak.<sup>47</sup> At 0551 *U-*

386 reported being attacked by an Allied aircraft.<sup>48</sup> At 0625, to avoid the threat of further air attacks, the *Hai* group was ordered to submerge.<sup>49</sup>

During the night of 18 February, the Allied ships knew from intercepted German radio transmissions that there were a number of U-boats in the vicinity; however, there were no meaningful contacts.<sup>50</sup> At dawn on 19 February the 2nd Escort Group began to conduct a series of sweeps astern of ON-224 and at 1007 a sonar contact was obtained on *U-264*. After a protracted hunt the U-boat was forced to the surface and was sunk by gunfire from HMS *Starling* and HMS *Woodpecker*.<sup>51</sup> The 2nd Escort Group remained in the region hunting U-boats and at 2155 a radio signal was located by radio-direction finders at a range of fifteen miles. The British ships steamed towards the position of the suspected U-boat. Forty minutes later HMS *Woodpecker* was hit in the stern by an acoustic homing torpedo fired by *U-764*.<sup>52</sup> Meanwhile the 10th Escort Group, after being detached from ONS-29, which was now considered beyond the danger area, at 1426 encountered *U-386*. The U-boat was forced to the surface with depth charges and sunk with gunfire by HMS *Sprey*.<sup>53</sup>

At 1242 on 19 February, the *Hai* group was disbanded. Five U-boats were ordered to return to port and the remainder were informed that "further orders will follow."<sup>54</sup> The BdU concluded that the operations of the *Hai* group had "failed" owing to the inability of the GAF to locate the Allied convoy. According to the BdU, the failure of the GAF to fly reconnaissance missions on the night of 17 February resulted in the Germans not realizing that there was a "tendency" for the convoy to steer to the south. Moreover, the inability of the GAF to locate the convoy before 0200 on the night of 18 February resulted in the loss of six hours of darkness in which the U-boats could have attacked. When the Allied ships were finally located the radio beacon signals sent by GAF aircraft were inadequate to produce a proper fix on the convoys' position until it was too late for the U-boats to mount an attack. Nevertheless, the BdU still thought it possible for GAF aircraft to locate an Allied convoy and then to home in on a group of U-boats. "This type of operation," it was resolved at the BdU, "will have to be tried again and again."<sup>55</sup>

The remaining U-boats of the *Hai* group were ordered at 1218 on 20 February to steam to the westward "at most economical speed."<sup>56</sup> The Germans intended to attack an Allied convoy on 28 February between Britain and Gibraltar.<sup>57</sup> On 22 February, the BdU established the *Preussen* group consisting of U-boats just out from French bases and those from the former *Hai* group. Eighteen U-boats of the *Preussen* group were ordered to take up individual patrol areas scattered over a huge area between latitudes 53°N and 47°N and longitudes 30°W and 23°W, the centre of which was about 700 miles west-southwest of Ireland.<sup>58</sup>

The region of the North Atlantic in which the *Preussen* group were to be stationed was much-traveled by Allied convoys to and from Great Britain and was also heavily patrolled by Allied anti-submarine aircraft and hunter-killer escort groups, Allied warships that were to hunt down and sink U-boats. On the night of 25 February the 1st Escort Group, while conducting an anti-submarine sweep, discovered *U-91*, which was forced to the surface by depth charges and sunk by gunfire; her crew abandoned the vessel.<sup>59</sup>

That same day the BdU ordered the *Preussen* group to the southeast.<sup>60</sup> The BdU was attempting to intercept Convoy ON-225, which "according to a radio intelligence report" would be encountered on 27 February. But no convoy was sighted.<sup>61</sup>

The Allies knew from communications intelligence of the deployment of the *Preussen* group and had moved two escort groups into the area to hunt for the German vessels.<sup>62</sup> On 29 February the frigates of the 1st Escort Group obtained a sonar contact. The hunt for the U-boat, which was *U-358*, lasted for thirty-four hours into the early evening of the next day. At 1920 on 1 March HMS *Gould* was hit by an acoustic torpedo fired by *U-358*; as the frigate was sinking HMS *Affect*, sighting *U-358* attempting to escape on the surface, attacked and sank the U-boat with depth charges and gunfire.<sup>63</sup> To the south of this position, an American escort group was also hunting U-boats belonging to the *Preussen* group. At 2100 on 29 February, the destroyer escorts USS *Thomas* and *Bostwick* surprised *U-709* on the surface. The U-boat was hunted by the Americans until the early hours of 1 March when the German vessel was sunk by the *Thomas* in a depth charge attack. While the *Thomas* was sinking *U-709*, the *Bostwick* obtained a sonar contact on a second U-boat, *U-603*, which was immediately attacked with depth charges and also destroyed.<sup>64</sup> On 2 March *U-441* reported sighting starshells, and attacked without success an Allied escort vessel; three days later *U-741* was attacked, without receiving any damage, by an Allied aircraft.<sup>65</sup> The *Preussen* group was on 6 March ordered to move northward "at economical speed." On the basis of "radio intercept intelligence" the BdU had concluded that two Allied convoys had "followed the Great Circle instead of steering very southerly course as before" and intended to station fifteen U-boats in individual attacking positions to intercept any Allied convoys that might in future use this route.<sup>66</sup>

*U-575*, trying to join the *Preussen* group, at 2300 on 8 March sighted four Allied ships belonging to Convoy SL-150/MKS-41. The U-boat attempted to close on the surface, but was intercepted by the corvette HMS *Asphodel*. After submerging, *U-575* fired an acoustic homing torpedo from its stern torpedo tubes, sinking the British warship.<sup>67</sup> The U-boat was then attacked with depth charges and hunted for eighteen hours by other British escorts, but managed to escape.<sup>68</sup>

The next day, 10 March at 1423, *U-845* sighted Convoy SC-154 steering a course of 020 degrees. This information was immediately radioed to the BdU. Astern of SC-143 the Canadian destroyer HMCS *St. Laurent* obtained a high-frequency direction-finder bearing on *U-845's* radio transmission and in company with two other Canadian warships hunted and sank the U-boat.<sup>69</sup> A few hours later, a Sunderland flying boat of the 422nd RCAF Squadron, sweeping ahead of SC-154, sighted and attacked in the face of heavy anti-aircraft fire *U-625*. The damaged U-boat first submerged and then re-surfaced. The aircraft circled, exchanging gunfire with the enemy vessel. After an hour and a half the crew of *U-625* took to a number of rubber dinghies as the sub sank by the stern.<sup>70</sup> *U-741* and *U-256* were ordered to pick up the crew. After searching in vain for two days, *U-256* was attacked several times by Allied aircraft but was able to shoot down one RAF Wellington and to survive.<sup>71</sup> Several hours after the sinking of *U-625*, the northernmost U-boat of the *Preussen* group, *U-225*, sighted Convoy CU-16 and sank the destroyer

escort USS *Leopold* before escaping.<sup>72</sup> The next day, *U-225* was attacked by an RAF B-24 Liberator aircraft. Two Germans were wounded, but *U-225* again escaped.<sup>73</sup>

Knowing from communications intelligence the approximate location of the U-boats the Allies continued to send aircraft over the area patrolled by the *Preussen* group.<sup>74</sup> At 0147 on 13 March, a Wellington aircraft of the 172nd RAF Squadron obtained a radar contact with a U-boat at approximately 46° 13'N 27° 28'W. The target, which was *U-575*, was illuminated by a Leigh-light and attacked with depth charges. The British aircraft continued to track the sub with radar until about 0330, when the U-boat submerged. Before the Wellington left the area at 0445, markers were dropped and a B-17 Fortress aircraft from the 206th RAF Squadron was summoned to continue the hunt. This aircraft arrived at 0655 and at first light sighted *U-575* on the surface and attacked with depth charges, forcing the U-boat again to submerge. The B-17 circled, dropping markers and calling for reinforcements. The first Allied forces to arrive were TBF Avenger aircraft from the escort carrier USS *Bogue*. The American aircraft was quickly followed by another RAF B-17. As the Allied aircraft circled, the destroyer escort USS *Haverfield*, followed by the Canadian frigate HMCS *Prince Rupert*, which had been detached from Convoy ON-227, arrived. Sonar contact was quickly obtained and the two warships, later joined by the destroyer USS *Hobson*, repeatedly attacked *U-575* with hedgehogs and depth charges.<sup>75</sup> At 1934 *U-575* was blasted to the surface and sunk with gunfire. *U-575* had finally succumbed to superior Allied anti-submarine forces.<sup>76</sup>

Throughout most of March three British escort aircraft carriers — HMS *Vindex*, *Biter* and *Tracker* — were deployed west of Ireland to support convoys. On the night of 13 March aircraft from HMS *Vindex* attacked without success *U-262*. Later that night Swordfish aircraft from HMS *Vindex* located and attacked *U-653*. The U-boat was forced to dive before being attacked with depth charges and sunk by the sloops HMS *Starling* and HMS *Wild Goose*.<sup>77</sup> *U-311* on the morning of 17 March obtained a hydrophone bearing on a convoy and shadowed the Allied force, CU-17, until 1800 when the U-boat torpedoed and sank the tanker *Seakay*?<sup>78</sup> The American escort counter-attacked with depth charges, although *U-311* managed to escape.<sup>79</sup> At 2228 on 22 March the BdU ended the operation and the *Preussen* group was disbanded.<sup>80</sup>

The operations of the *Igel*, *Hai*, and *Preussen* groups represented a German defeat. Ten U-boats were lost while the Germans only sank four Allied warships and a tanker.<sup>81</sup> The U-boat's objective had been to prevent the Allies from sailing merchant ships across the Atlantic; in this they failed completely, for in thirty-one days of operations the only merchant ship sunk was the tanker *Seakay*. Why was their record so poor? There are several reasons. Through lack of intelligence about the movements of Allied convoys the Germans had great difficulty locating and intercepting Allied ships. It was hoped that this problem could be overcome with the assistance of land-based GAF reconnaissance aircraft, but the small number of aircraft available and the inability to coordinate their movements with those of the U-boats resulted in the total failure of the *Hai* group. The BdU wanted to stage another joint operation against an Allied convoy early in March, but the operation was not undertaken because of the small number of both

aircraft and U-boats available. At the end of the *Preussen* group operations, there were only twelve type-VII U-boats and nine Junker 290 and BV-22 long range reconnaissance aircraft available, a force that the BdU judged too small for anti-convoy work.<sup>82</sup> The lack of intelligence, shortage of reconnaissance aircraft and U-boats, and outdated technology hampered their chances. Even when the Germans did locate a convoy the U-boats were thwarted continually by Allied anti-submarine forces employing the latest technology. Further, the Allies knew from communications intelligence of the deployment of the U-boats, and the whole area where the *Igel*, *Hai*, and *Preussen* groups were operating was constantly searched by Allied ships and aircraft. The Germans, due to the overwhelming strength of the Allied anti-submarine forces and the heavy losses sustained in February and March, finally abandoned further attempts to contest seriously the movement of Allied convoys in the North Atlantic. Thus, the U-boats could no longer prevent or even retard the massing of Allied forces in Great Britain for the invasion of Europe in June 1944.

## NOTES

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1. Maurice Matloff, *Strategic Planning for Coalition Warfare, 1943-1944* (Washington, DC, 1959), 43-47.

2. David Syrett, *The Defeat of the German U-Boats: The Battle of the Atlantic* (Columbia, SC, 1994).

3. Histories of the Battle of the Atlantic from the point of view of communications intelligence can be divided into several groups. There are those, such as the American and British official histories by S.E. Morison and S.W. Roskill, respectively, which were written without knowledge of Allied code-breaking. This is also the case with Gunter Hessler, *The U-boat War in the Atlantic* (3 vols., London, 1989), which was published by the British Ministry of Defence and is the most authoritative German account in English of the Battle of the Atlantic. Another category comprises studies such as Dan van der Vat, *The Atlantic Campaign: World War II's Great Struggle at Sea* (New York, 1988); John Terraine, *The U-Boat Wars, 1916-1945* (New York, 1989); and Correlli Barnett, *Engage the*

*Enemy More Closely: The Royal Navy in the Second World War* (London, 1991). These are general surveys which only deal with communications intelligence in very general terms. A third category includes those books, such as Ralph Bennett, *Behind the Battle: Intelligence in the War with Germany, 1939-45* (London, 1994), 168-201, which attempt to assess the impact of communications intelligence on the Battle of the Atlantic. Indeed, there are few works which show in any depth the actual role of communications intelligence by utilizing materials such as decrypts. Two Canadian studies — W.A.B. Douglas, *The Creation of A National Air Force* (Toronto, 1986) 597-610, and Roger Sarty, "Ultra, Air Power, and the Second Battle of the St. Lawrence, 1944," in Timothy J. Runyan and Jan M. Copes (eds.), *To Die Gallantly: The Battle of the Atlantic* (Boulder, CO, 1994), 186-209 - are among the few to show effectively how the Royal Canadian Air Force in the Northwest Atlantic during the last years of WW II used communications intelligence to hunt U-boats. Syrett, *Defeat*, shows the role of communications intelligence in defeating the U-boats in the mid-North Atlantic convoy battles during 1943.

4. On carrier aircraft, see William T. Y'Blood, *Hunter-Killer: US Escort Carriers in the Battle of the Atlantic* (Annapolis, 1983); on land-based aircraft, see Alfred Price, *Aircraft versus Submarine* (Annapolis, 1973); on escorts, see Peter



Elliott, *Allied Escort Ships of World War II* (Annapolis, 1977).

5. For an account of detection devices, see Norman Friedman, *Naval Radar* (Annapolis, 1981); Willem Hackmann, *Seek & Strike: Sonar, Anti-Submarine Warfare and the Royal Navy* (London, 1984); and Kathlene B. Williams, *HUFF DUFF: High-Frequency Direction Finding and the Battle of the Atlantic* (Unpublished PhD thesis, City University of New York, 1993). On weapons, see Norman Friedman, *US Naval Weapons: Every Gun, Missile, Mine, and Torpedo used by the US Navy from 1883 to the Present Day* (Annapolis, 1985), 100-140.

6. Syrett, *Defeat*, 260-261.

7. Gordon A. Harrison, *Cross-Channel Attack* (Washington, DC, 1951), 128.

8. Hesslier, *U-Boat War*, III, 42.

9. Karl Doenitz, *Memoirs: Ten Years and Twenty Days* (New York, 1959), 406-407.

10. *Fuehrer Conferences on Naval Affairs, 1939-1945* (Annapolis, 1990), 373-374.

11. Hesslier, *U-boat Wars*, III, 42.

12. *U-707, U-283, U-546, U-380, U-549, U-714, U-271, U-441, U-545, U-212, U-406, U-764, U-734, U-984, U-256, U-963, U-146, U-424, U-454, U-91, U-608, U-238, U-386, U-281, U-571, U-231, U-560 and U-856*. Due to poor communications the *Befehlshaber der Unterseeboote* (BdU) did not realize that *U-271, U-545, U-734, U-424, U-238, U-386, U-571, and U-231* had been lost.

13. Great Britain, Public Record Office (PRO), DEFE 3/727, intercepted 1453/10/3/44, decoded 0455/12/3/44.

14. Naval Historical Center, Washington, DC, "BdU War Diary," 11 February 1944.

15. PRO, ADM 223/21, "U/Boat Situation, Week ending 14 February 1944;" F.H. Hinsley, *et ai*,

*British Intelligence in the Second World War* (3 vols., London, 1987-1988), II, 548-549.

16. PRO, DEFE 3/727, intercepted 1454/12/3/44, decoded 0130/14/2/44.

17. United States, National Archives, Record Group (RG) 457, SRMN-034, COMINCH, "Rough Notes on Daily U-boat Positions and Activities, 1943-1945," 598-599. Hereafter this archive, record group and document will be cited as SRMN-034.

18. Convoy designations: ON: Fast Great Britain to North America convoy; OS/KMS: Combined Great Britain to Mediterranean and West Africa convoy; HX: Fast Halifax to Great Britain convoy; SC: Slow New York to Great Britain convoy; and CU: Tanker convoy en route to Great Britain.

19. SRMN-034, 0599.

20. PRO, DEFE 3/727, intercepted 2046/15/2/44, decoded 1348/17/2/44.

21. PRO, DEFE 3/727, intercepted 1229/16/2/44, decoded 1207/17/2/44.

22. PRO, AIR 27/1179, 16 February 1944.

23. PRO, ADM217/143, "Report of Proceedings, B VI Escort Group."

24. PRO, DEFE 3/727, intercepted 1833/16/2/44, decoded 1109/17/2/44.

25. "BdU War Diary," 16 February 1944.

26. The Leighs were equipped with powerful searchlights. PRO, DEFE 3/727, intercepted 2019/16/2/44, decoded 1005/17/2/44; intercepted 0403/17/2/44, decoded 1143/17/2/44.

27. "BdU War Diary." 17 February 1944.

28. PRO, DEFE 3/727, intercepted 1456/17/2/44, decoded 0159/19/2/44.

29. PRO, DEFE 3/727, intercepted 1556/17/2/44, decoded 0108/19/2/44.

30. "BdU War Diary," 17 February 1944.
31. *U-441, U-212, U-283, U-549, U-704, U-380, U-406, U-456, U-764, U-734, U-146, U-424, U-608, U-91, U-603, U-1062, U-437, U-264, U-271, U-963, U-608, U-571, U-650, U-851* and *U-231*.
32. PRO, DEFE 3/727, intercepted 1850/17/2/44, decoded 0215/19/2/44.
33. PRO, DEFE 3/727, intercepted 0045/18/3/44, decoded 0544/19/2/44.
34. PRO, AIR 41/48, 460.
35. "BdU War Diary," 18 February 1944.
36. PRO, DEFE 3/727, intercepted 1311/18/2/44, decoded 0415/19/2/44; intercepted 1940/18/2/44, decoded 0407/19/2/44.
37. PRO, DEFE 3/727, intercepted 1915/18/2/44, decoded 0405/19/2/44.
38. PRO, ADM 217/143, "Report of Proceedings, B VI Escort Group."
39. *U-boat War*, III, 44.
40. PRO, DEFE 3/727, intercepted 2128/18/2/44, decoded 0412/19/2/44.
41. PRO, DEFE 3/727, intercepted 2245/18/2/44, decoded 0310/19/2/44; intercepted 0021/19/2/44, decoded 0312/19/2/44.
42. PRO, DEFE 3/727, intercepted 0126/19/2/44, decoded 0403/19/2/44.
43. PRO, AIR 41/48, 461.
44. "BdU War Diary," 18 February 1944.
45. PRO, DEFE 3/727, intercepted 0256/19/2/44, decoded 0710/19/2/44; intercepted 0405/19/2/44, decoded 0613/19/2/44; intercepted 0422/19/2/44, decoded 1153/19/2/44.
46. PRO, DEFE 3/727, intercepted 0512/19/2/44, decoded 0845/19/2/44.
47. "BdU War Diary," 18 February 1944.
48. PRO, DEFE 3/727, intercepted 0551/19/2/44, decoded 0752/19/2/44.
49. PRO, DEFE 3/727, intercepted 0625/19/2/44, decoded 0853/19/2/44.
50. PRO, ADM 199/70, C. I. Group, "Report of Proceedings, ON-224."
51. S.W. Roskill, *The War at Sea* (4 vols., London, 1954-1961), III, part I, 48. *U-264* was the first U-boat equipped with a schnorkel to be sunk by the Allies. PRO, ADM 223/21, "U-Boat Situation, Week ending 21st February 1944."
52. PRO, DEFE 3/727, intercepted 2230/20/2/44, decoded 1652/20/2/44. The British warship was badly damaged and later, while being towed to Britain, she capsized and sank southwest of the Scilly Isles. PRO, AIR 41/48, 461.
53. PRO, ADM 127/143, "Report of Proceedings, B VI Escort Group."
54. The five detached were *U-406, U-1062, U-650, U-231* and *U-851*. PRO, DEFE 3/727, intercepted 1242/19/2/44, decoded 2100/21/2/44.
55. "BdU War Diary," 18 February 1944.
56. PRO, DEFE 3/727, intercepted 1218/20/2/44, decoded 1544/21/2/44.
57. "BdU War Diary," 20 February 1944.
58. The fifteen were: *U-441, U-704, U-963, U-281, U-212, U-91, U-146, U-608, U-264, U-256, U-603, U-764, U-437, U-448, U-262, U-358, U-962* and *U-380*. PRO, DEFE 3/727, intercepted 1238/22/2/44, decoded 1228/23/2/44.
59. Roskill, *The War at Sea*, III, part 1, 256-257.

60. PRO, DEFE 3/727, intercepted 1652/25/2/44, decoded 2310/26/2/44.
61. "BdU War Diary," 25, 28 and 29 February 1944.
62. SRMN-034, 0620.
63. Roskill, *The War at Sea*, III, part I, 457.
64. Naval Historical Center, "Report of Anti-Submarine Operations Task Group 21.16, 31 March 1944." See also Y'Blood, *Hunter-Killer*, 144-145.
65. PRO, DEFE 3/727, intercepted 0709/2/3/44, decoded 1928/23/44; intercepted 2153/3/3/44, decoded 1830/6/3/44.
66. *U-262, U-358, Kaiser, U-962, U-672, U-437, U-608, U-603, U-741, U-267, U-146, U-625, U-963, U-91 and U-256*. The BdU did not know that *U-91, U-358, and U-603* had been sunk. "BdU War Diary," 6 March 1944. PRO, DEFE 3/727, intercepted 1120/6/3/44, decoded 1108/7/3/44; intercepted 1232/8/3/44, decoded 2200/8/3/44.
67. PRO, ADM 199/318, "Summary of Sinking of HMS *Asphodel*, Statement of Survivors;" DEFE 3/727, intercepted 0350/10/3/44, decoded 0729/10/3/44.
68. PRO, ADM 199/318, Commander Escort Group B.4 to [C-in-C Western Approaches], 12 March 1944.
69. PRO, ADM 217/99, "Report of Attack on U-Boat" (By HMCS *Owen Sound*).
70. PRO, AIR 27/1830, 10 March 1944.
71. PRO, AIR 41/48, 463-464.
72. Naval Historical Center, Commander Task Group 21.5 to Commander-in-Chief US Fleet; "Report of Escort of Convoy: Task Group 21.5, 1-11 March 1944."
73. PRO, DEFE 3/728, intercepted 1654/10/3/44, decoded 1530/23/3/44.
74. SRMN-034, 643-653; PRO, DEFE 3/727, intercepted 0320/13/3/44, decoded 0645/13/3/44; DEFE 3/728, intercepted 0458/13/3/44, decoded 0904/13/3/44; intercepted 0531/13/3/44, decoded 0910/13/3/44; intercepted 0645/13/3/44, decoded 0958/13/3/44.
75. A mortar-like weapon which throws bombs forward from a vessel. A ship attacking with a hedgehog, unlike with depth charges, could maintain sonar contact throughout the attack.
76. PRO, ADM 217/213, "Report of Proceedings - HMCS *Prince Rupert*;" Naval Historical Center, Commander Task Group 21.11 to Commander-in-Chief, United States Fleet, 19 April 1944; Canada, Department of National Defence, Director-General History, Historical Records Officer to Senior Canadian Naval Officer (London), enclosing "Combined Operation, the Sinking of the *U-575* by HMCS *Prince Rupert*, US Ships *Haverfield* and *Hobson*, and British and American aircraft."
77. PRO, AIR 41/48, 464.
78. PRO, DEFE 3/728, intercepted 0651/17/3/44, decoded 0901/17/3/44.
79. PRO, 237/1, Commander Task Force 21.6 to Commander-in-Chief United States Fleet, 23 March 1944.
80. PRO, DEFE 3/728, intercepted 2228/22/3/44, decoded 1830/23/3/44.
81. The ten U-boats were *U-91, U-264, U-386, U-358, U-709, U-603, U-845, U-625, U-575* and *U-653*. Allied losses were HMS *Woodpecker*, HMS *Gould*, HMS *Asphodel*, USS *Leopold*, and the tanker *Seakay*.
82. "BdU War Diary," 22 March 1944.