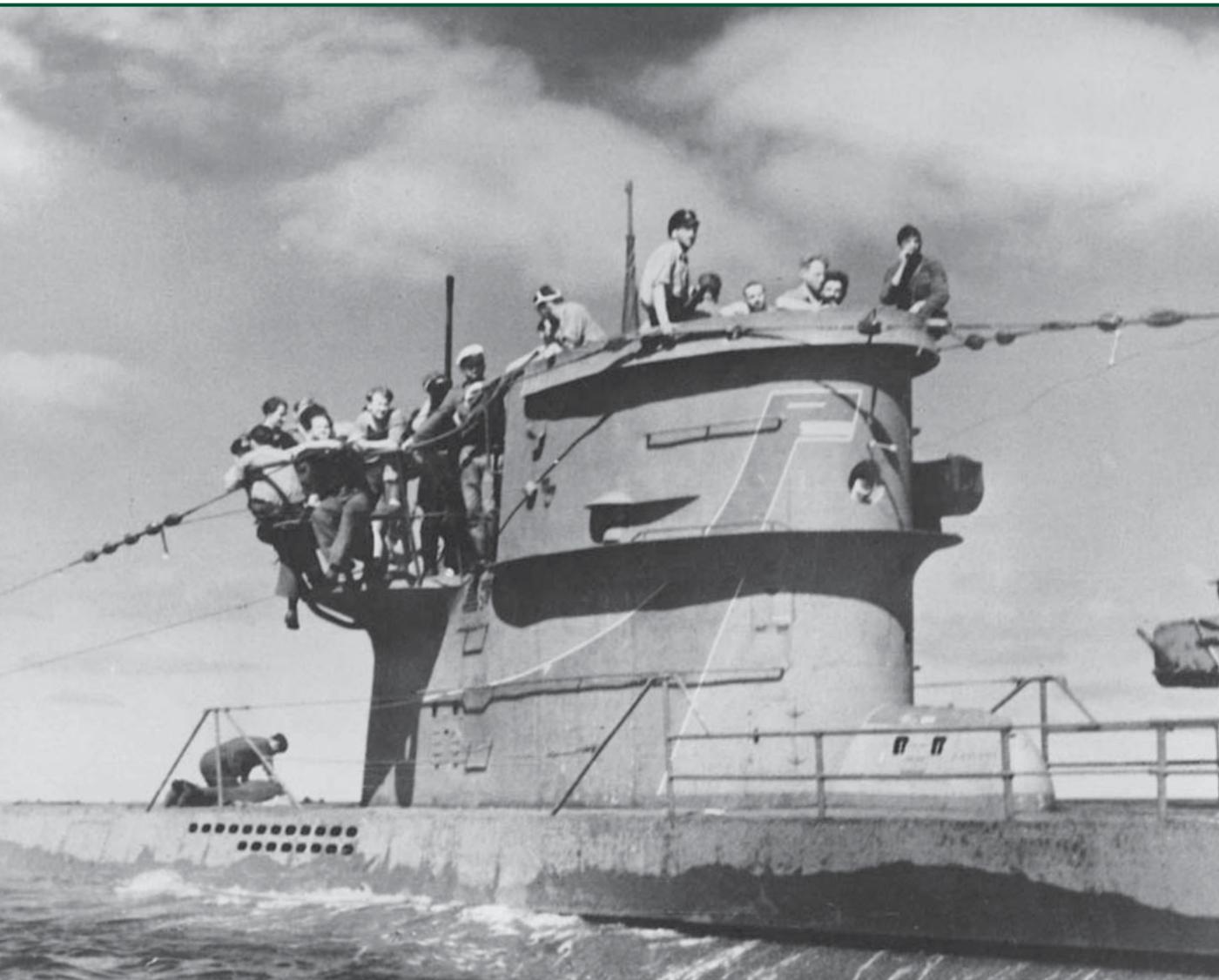


U-boat Tactics in World War II



GORDON WILLIAMSON

ILLUSTRATED BY IAN PALMER

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CONTENTS

INTRODUCTION	4
Basic chronology of the U-boat war in the Atlantic	
CONVOY NIGHT SURFACE ATTACKS	5
The Kretschmer method, 1940–41 ▪ The official doctrine, 1943	
DECK-GUN ATTACKS	14
The theory: rules for interception of merchant ships ▪ The practice ▪ The official doctrine	
SOLO MISSIONS	21
U-47 at Scapa Flow ▪ The Mediterranean: U-81 and U-331 ▪ North American waters, 1942 ▪ Far Eastern waters, 1943–44	
‘WOLF-PACK’ ATTACKS	29
‘Free hunting’ ▪ Patrol/reporting lines ▪ Fast patrol lines ▪ The turn of the tide	
KRIEGSMARINE-LUFTWAFFE CO-OPERATION	37
The Fw 200C Condor ▪ Combined air-sea strikes	
ASSOCIATED EQUIPMENT	40
<i>Bachstelze</i> (‘Wagtail’) ▪ Midget submarines	
OFFENSIVE WEAPONS	43
Torpedoes ▪ Torpedo guidance systems ▪ Mines	
DEFENSIVE EQUIPMENT	49
Radar decoys ▪ Sonar decoys ▪ Protective coatings	
DEFENSIVE TACTICS	55
Against warships ▪ Against aircraft	
SELECT BIBLIOGRAPHY	63
INDEX	64

U-BOAT TACTICS IN WORLD WAR II

Grossadmiral Karl Dönitz, Commander Submarines and later C-in-C Navy, whose own younger son was lost in U-954 in May 1943. The care shown by Dönitz for his crews' welfare and the interest he took in the development of tactics stemmed from his extensive combat experience as a U-boat officer in World War I. (Deutsches U-Boot Museum)

INTRODUCTION

From the small, early Type II coastal submarines, through to the handful of advanced Type XXI and Type XXIII boats that got to sea in the final months, German U-boat design and production was forced into continual development and improvement to keep pace with wartime needs. Paramount among these was the challenge of having to face increasingly effective Allied anti-submarine warfare (ASW) efforts, and – like the submarines themselves – tactics for their effective employment needed continuous analysis and adjustment.

Submarines were employed in a variety of roles, from coastal patrols, through individual opportunist actions by single unsupported U-boats – both in the Atlantic and in more distant waters – to co-ordinated ‘wolf-pack’ ambushes far out in the North Atlantic. Numerous tactics were developed, some more successful than others, in attempts to help submarine commanders achieve combat success, and the Oberkommando der Kriegsmarine (OKM – Navy High Command) went as far as producing a *U-Boat Commander's Handbook* to disseminate the practical lessons learned by the most successful captains.

We now know, of course – as they did not – that from around August 1941 the U-Boat Arm was hugely handicapped by the British cracking of the Kriegsmarine's ‘Enigma’-encrypted radio traffic between boats at sea and the Befehlshaber der Unterseeboote (Commander, Submarines – the headquarters staff of Adm Karl Dönitz). The Bletchley Park centre needed continual radio intercepts and up-dated decryptions to supply the consequent ‘Ultra’ intelligence, but this often allowed the Allies to route convoys to frustrate German interception, and even to deploy assets to lie in wait at designated rendezvous between far-ranging U-boats and their resupply ships. Nevertheless, on the occasions when the Allies



failed to intercept or decrypt message traffic, and the Germans applied the requisite tactics effectively, the U-boats were capable of inflicting devastating damage on Allied shipping, particularly in the vital North Atlantic sealanes upon which the war effort in the European theatre depended.

CONVOY NIGHT SURFACE ATTACKS

Such attacks were pioneered by the most successful of the 'ace' commanders, Korvettenkapitän Otto Kretschmer, who discovered early in the war that attacks on convoys were easier when made on the surface under the cover of darkness.

With the boat trimmed low in the water, the small conning tower was very difficult for any lookout on a merchantman or warship to spot. A further benefit of attacking on the surface was that the U-boat, powered by its diesel engines, could move much faster and further than it could underwater when reliant on electrical power. (For instance, the Type VII boat had

a top surface speed and range of c.17 knots and 8,100 nautical miles, but the submerged figures were 7.3 knots, and only 69 miles before recharging the batteries.) Its surface speed would certainly be faster than that of the merchant convoys, and of some of the smaller escorts protecting them. Additionally, the escorts' 'Asdic' (sonar) equipment – for acoustic underwater location and ranging – could not detect a submarine running on the surface.

The U-boat would approach the convoy submerged, and, ideally, gain a position on its beam and slightly ahead. Having identified a gap in the escort screen, it would surface and 'sprint' through the perimeter screen and into the heart of the convoy formation. An ideal attack position was at right angles to the overlapping parallel columns of merchant ships, which would thus present the widest possible target area. The real prizes for the U-boats were the large oil tankers and munitions ships, which would be placed at the centre of the convoy to give them the greatest protection. This precaution was to some extent effective against attacks by submerged submarines – which would struggle to penetrate deeply into the convoy without being detected by the escorts' Asdic – but not against surface attack.

At an ideal distance of somewhere between 400m and 1,000m, torpedoes would be launched (the torpedo would not 'arm' until it had run about 300 metres). It was normal practice to launch a full salvo of torpedoes at several targets rather than selecting a single ship for attack, for the simple reason that once a torpedo had detonated and the convoy had become aware of the U-boat's presence further attacks became more difficult and dangerous.



Kapitänleutnant Kurt Diggins, commanding the Type VIIC boat U-458, is shown at the navigation or 'sky' periscope in the relatively spacious control room. This larger of the two periscopes was used predominantly for scanning the horizon and sky for enemy ships and aircraft, and also to take bearings. KL Diggins survived the sinking of his boat in August 1943, and outlived the war. (Deutsches U-Boot Museum)

The U-boat would generally launch its first torpedo, with the longest running time, against the furthest target: in theory this allowed the time to aim and fire at subsequent targets in a sequence that produced almost simultaneous strikes by all the torpedoes. (For instance, on 23/24 August 1940 KL Erich Topp's little Type IIC boat U-57 sank three freighters with a single fast salvo from its three bow tubes.)

Taking advantage of the confusion resulting from a successful attack, the U-boat would slip out of the convoy, still on the surface, while the escorts sped off to hunt what they probably thought was a submerged boat at a much greater distance. If the boat successfully evaded detection during its withdrawal, it would reload its torpedo tubes and prepare for further action. If it was detected by escorts, then – depending on the type of warship – it might try to put some distance between it and the pursuer while still motoring on the surface, building up forward momentum in order to shorten the time taken to crash-dive (normally at least 25–30 seconds). At the forefront of the commander's mind,

Basic chronology of U-boat war in Atlantic

1939 September: at outbreak of war, U-Bootwaffe has 57 boats, of which 23 are at sea in Western waters; but only 25 of total are Type VIIs, capable of Atlantic operations. From north German bases, they must either attempt to run the dangerous English Channel, or sail up the North Sea and round the north of Scotland before breaking out into Irish waters and the Atlantic. OKW considers the U-boat war as a secondary effort. **October:** U-47's penetration of Royal Navy's Scapa Flow fleet base demonstrates potential of independent submarine missions, bringing the Commander Submarines, Kapitän z S Karl Dönitz, promotion to flag rank. By end of year 106 Allied and neutral cargo ships have been sunk, 102 of them while sailing alone.

1940 Early in year British convoy system slowly takes shape, and torpedo failures hamper U-boat attacks. **July:** German capture of French Atlantic ports eliminates long approach voyages, greatly extending operational range and air support in Atlantic. **August:** new rules of engagement allow unrestricted blockade of Great Britain. During this 'Happy Time', c.833,740 tons of shipping are sunk in *June–August*, and in *September–November* c.784,400 tons. **November:** first (unsuccessful) British radar-assisted attack on a U-boat. Most small Type II boats withdrawn to Baltic for use by training flotillas; at end of year only 22 U-boats are at sea in Atlantic. During 1940, 54 new boats are commissioned and 26 lost; they sink c.492 cargo ships, totalling c.2.37 million tons.

1941 'Happy Time' ends in spring, as Allied ASW capabilities steadily improve; RAF aircraft equipped with ASV Mk II radar start to hunt boats on surface. **March:** US Lend-Lease Act brings Britain 50 old destroyers to increase escort strength; from *April*, British naval and air bases in Iceland, and later US bases in Greenland, slowly improve Atlantic cover, but still leave large 'air gap'. The USA effectively anticipates entry into the war by taking responsibility for convoy escorts west of Greenland, while U-boats are still forbidden to attack US ships (though some do). **May:** First improved Type 271 search radar fitted to RN warships. Boarding party from HMS *Bulldog* captures U-110 intact, complete with 'Enigma' machine and documents. **July:** first HFDF equipment installed on British warships, allowing

long-range location of U-boats on surface by tracking their radio signals; by *October* its use is widespread. **December:** Germany declares war on USA. RAF base in Iceland receives No.120 Sqn with first B-24 Liberator long-range bombers. During 1941, 202 U-boats are commissioned and 38 lost; U-boats claim c.445 ships sunk, totalling c.2.1 million tons.

1942 December 1941–July 1942: 'Second Happy Time'; U-boats sink c.3 million tons of shipping in Atlantic for loss of 14 boats, of which only six of 21 operating in Western Atlantic – in *February* alone they sink 69 ships in US/Canadian waters. **June:** first RAF night interception of U-boat on surface using 'Leigh Light' searchlight; Coastal Command now has two squadrons with B-24 and B-17, in addition to long-range Catalina and Sunderland flying boats. Increasing Allied ASW capability forces some U-boats south to Caribbean, and South Atlantic off Brazilian and African coasts, where they achieve many successes. **September–November,** c.510,000 tons of Allied Atlantic shipping sunk. By *October*, Dönitz has 212 boats, of which c.70 at sea at any one time – but so are growing numbers of new British AS frigates and, by end of year, seven new escort aircraft carriers. **November:** Allied assets, including new 'support groups' (see below) and escort carriers, distracted southwards to support Operation 'Torch' landings in French North Africa; c.743,320 tons of Allied shipping sunk – highest ever monthly total. During 1942, 238 U-boats are commissioned and 88 lost; they sink c.1,094 cargo ships totalling c.5.8 million tons.

1943 Heavy winter storms hamper both sides. **January:** First greatly improved ASV Mk III centimetric radar sets ordered for RAF Coastal Command. Hitler, incensed at failure of Kriegsmarine surface units to cut Arctic convoy route by which the Allies support the USSR, replaces Adm Raeder at head of the OKM with Adm Dönitz, but latter remains BdU. **January–March,** c.1.19 million tons of Allied shipping lost. **March:** last very bad month for Allies. 16–20 March: greatest convoy battle, when 44 U-boats are vectored to attack 'traffic jam' of convoys HX-229 and SC-122, total 91 ships; 19 boats actually make attacks and 13 of them achieve hits, sinking 22 ships totalling c.146,600 tons, for loss of one U-boat.



Typically, only a strictly limited number of crew members were permitted on the bridge – usually just the commander or watch officer, plus enough lookouts to ensure coverage of all quarters. Orders stressed that during a surface action the lookouts must not allow themselves to become distracted by events, but were to maintain their watch over their assigned sectors at all times. (Author's collection)

However, with return of assets from 'Torch' deployments at end of March, **Allied ASW forces then decisively seize initiative.** Many more escorts and small carriers become available, and mid-Atlantic 'air gap' is finally closed by these and by long-range aircraft from USA, Canada, Iceland and UK. Deployment of separate support groups, to reinforce convoy escorts at need, allows persistent hunting-down of located U-boats while escort groups sail on with convoy. Groups are directed by both ships and planes, the latter increasingly equipped with short-wave centimetric radar, whose high definition makes it dangerous for U-boats to run on surface at night. Forced to spend most of the time submerged, running on much slower electric motors, boats have greater difficulty intercepting convoys, and are vulnerable to improved ASW weapons and tactics. From 16 U-boats lost in *March* and 15 in *April*, in *May 1943* losses suddenly rise to 42 boats sunk (of c.112 at sea). 24 May, Adm Dönitz temporarily withdraws U-boats from North Atlantic.

September: Gruppe 'Leuthen' of 21 boats returns to convoy lanes, with radar-detectors, T5 acoustic torpedoes, *Aphrodite* and *Bolde* decoys; they destroy six freighters and (with the T5) four escorts, for loss of three boats. *September–October:* 21 boats of Gruppe 'Rossbach' lose six sunk and four badly damaged, for only two Allied ships sunk. *October:* 13-strong Gruppe 'Schliefen' sinks only one freighter out of 117, but loses six U-boats; Dönitz then suspends campaign once again. Many attacks are frustrated by aircraft; radar-detectors still do not pick up airborne centimetric pulses, and if they detect ships' radar it merely gives U-boats a chance to dive 'into the cellar', where they are at a disadvantage. Overall, results with acoustic torpedoes will fall well short of hopes. *September–November:* Allied monthly losses average only c.60,000 tons – less than 10 per cent of 1942 results – and during second half of year average survival expectancy for U-boats in Atlantic is calculated at 1.5 patrols. During 1943, 290 boats are commissioned but 245 lost; they sink 451 Allied cargo ships, totalling c.2.39 million tons – less than half the results for 1942.

Although the see-saw competition in technical developments continues until the end of the war – with Germany building a few very advanced submarines that would influence post-war designs, and many U-boats achieving individual successes – after May 1943 the U-Boat Arm is no longer a potentially war-winning weapon, and becomes a wasting asset. The Allied navies become ever stronger, better equipped and more tactically practised, and the strategic bombing campaign on Germany hampers the boat-building programme. Catastrophic personnel losses also mean that the boats that do get to sea are crewed by hastily trained men led by inexperienced officers. Germany never catches up with the Allies' lead in the ASW applications of radar; most of the older and more successful U-boat commanders are dead; and co-ordinated 'wolf packs' quickly become a thing of the past.

In *January–March 1944*, c.3,360 Allied cargo ships cross the Atlantic in 105 convoys; only three ships are sunk by U-boats, but 36 boats are lost. In *January–June* between 20 and 30 per cent of all U-boats on patrol are lost every month, and many others abort their missions due to heavy damage from aircraft attacks. The loss of the French Atlantic ports in *June–August 1944* essentially ends the U-boat war. During 1944 the 230 boats commissioned are exceeded by 264 lost, and surviving units are limited to bases in remote Norway or bomb-ravaged northern Germany. In 1944 they sink only 131 Allied ships, totalling c.702,000 tons. In *January–April 1945*, 92 boats are commissioned but 139 lost; on Germany's capitulation in early May there are still about 50 U-boats at sea, but most captains have long been preoccupied with mere survival.

More than 1,100 U-boats were commissioned between June 1935 and May 1945, of which some 920 sailed on war patrols; about 800 of these were sunk, in roughly equal proportions by Allied warships and aircraft. Nevertheless, although about three-quarters of the total fleet never even damaged a single Allied ship, the contribution of some 320 of the boats to Germany's war effort had been remarkable. They had sunk about 2,840 of the roughly 5,150 Allied and neutral merchantmen lost in all seas, totalling c.14.3 million tons (compared with some 800 ships sunk by German aircraft, and 540 by mines).