

The Grey Wolves



Expansion

Manual & Documentation

A freeware expansion for

SILENT HUNTER
III

GWX V3.0 Gold

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INTRODUCTION

The Grey Wolves Expansion (GWX) is a FREEWARE ADD-ON to Ubisoft's *Silent Hunter III*. The GWX team created this expansion to immerse you in the role of a German submarine (*Unterseeboot* or "U-boat") commander during World War II by offering improved realism and environments, as we see them, without radically changing the way you play the game. Many of these modifications operate "in the background" to make it easier if you want to take the plunge from "good" *Silent Hunter III* to an "excellent" GWX experience without requiring you *be* a U-boat commander. The GWX team has modified over 5,000 game files to make dozens of corrections, sound, and graphics enhancements, and include new game concepts while resolving incompatibilities between individual modifications. You may very well play for years and not see everything we have changed.

Disclaimer

GWX is a not-for profit, non-commercial venture. Our goal is historical accuracy, so please let us know if you see something is missing, or requires correction or change. We have tried to give proper credit to sources wherever possible, so please let us know if you think we have infringed on your rights: we will be happy to correct it to your satisfaction. We have dedicated this modification package to the enhancement and enjoyment of World War II submarine simulations, **NOT** the promotion of **ANY** political or philosophical views.

License Agreement

"Silent Hunter" is a registered trademark and Ubisoft is a trademark of Ubisoft Entertainment, which neither approved nor endorsed GWX. The individual authors own the modifications, fixes, and alterations contained in this add-on. This compilation is freeware:

1. Do not distribute it in whole or in part on CD-ROM, disk, or other physical media for a fee without the permission of the individual authors
2. Do not include it in whole or in part within other modifications ("mods") without the express permission of the individual mod authors and artists.

Special Thanks

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The Archives of Ontario, Canada, <http://www.archives.gov.on.ca/>

The Battleship *G. Averof* Museum, www.bsaverof.com

Destroyer Escort Central, www.de220.com

The Hellenic Navy, www.hellenicnavy.gr

The H.M.S. *Hood* Association, www.hmshood.com

“The Battleship *Bismarck*,” www.kbismarck.com

Donald Smith, RAF Marine Craft Historian

The Rhiw Village website, www.rhiw.com

“U-boat Aces,” www.uboataces.com

www.uboat.net

The Vatcher family website, arthurjohn.vatcher-family.net

“Romanian Armed Forces in the Second World War,” www.worldwar2.ro

Finally, warm and special thanks to Neal Stevens and Subsim (<http://www.subsim.com>)

In Appreciation

To all who are and were veterans of that horrible war...both military and civilian...that paid its price. All gave some. Some gave all. We have not forgotten you.

In Memoriam

Matthew J. “Average Joe” Chandler
1958 – 2006

Ben
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Son of Marcel and Margrit

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1964 - 2008

Glossary

Acronyms

Term	Description	Notes, including “Translation to English”
I.WO	<i>Erster Wachoffizier</i> (“Eins-WO”)	“First Watch Officer”
II.WO	<i>Zweiter Wachoffizier</i> (“Zwei-WO”)	“Second Watch Officer”
AAF	Army Air Field (U.S. Army)	
ABSD	Advanced Base Sectional Dock (U.S. Navy)	
AG	<i>Aktiengesellschaft</i>	“Corporation limited by shares”
AI	Artificial Intelligence	
aka	also known as	
Anton	Gun turret “A” in German ships	
Ar	<i>Arado flugzeugwerke GmbH</i> (as in Ar 196)	“aircraft works”
AOB	Angle on the Bow	
APD	Destroyer converted into a troop transport (U.S. Navy)	
ARA	<i>Armada de la República Argentina</i>	“Fleet of the Argentine Republic”
A/S	<i>Aksjeselskap</i> (Norway)	“Stock-based company”
ASDIC	Anti-Submarine Detection [electron]-ics (ASDics)	
Ato	<i>Atmosphärisch getriebener torpedo</i>	“air-driven torpedo”
ASW	Anti-submarine warfare	
<i>B-dienst</i>	<i>Beobachtungsdienst</i>	“Observation Service” (Signals Intelligence)
BCE	Before Christian Era	
BdU	<i>Befehlshaber der Unterseeboote</i>	“Commander of the Submarines”
BEF	British Expeditionary Force (in France)	
Bf	<i>Bayrische Flugzeugwerke AG</i>	“Bavarian aircraft works”
BPF	British Pacific Fleet	
Bruno	Gun turret “B” on German ships	
BRT	<i>Bruttoregistertonnen</i>	Gross Register Tons
Caesar	Gun turret “C” on German ships	
CAM	Catapult-Armed Merchantman	
CANF	Command, Allied Naval Forces (South West Pacific Area)	
CE	Christian Era	
CFMC	Canadian Forces Military College	
CTD	Crash to Desktop	

Term	Description	Notes, including “Translation to English”
DAK	<i>Deutsches Afrika Korps</i>	“German Africa Corps”
DANFS	Dictionary of American Naval Fighting Ships	
DLH	<i>Deutsche Luft Hansa</i> aka <i>Lufthansa</i>	“German Air <i>Hansa</i> ” (ref. the Hanseatic League)
Do	Dornier <i>flugzeugwerke</i> GmbH (as in Do-18)	“aircraft works”
Dora	Gun turret “D” on German ships	
D/S	<i>Damp Skip</i> (Norway)	“Steam Ship”
DShK	<i>Degtyarova-Shpagina Krupnokaliberniy</i> (Дегтярёва-Шпагина Крупнокалиберный – ДШК)	“Degtyarov-Shpagin large caliber” (machine gun)
Eto	<i>Elektrischer torpedo</i>	“electric torpedo”
FAA	Fleet Air Arm (Royal Navy)	
FAT	<i>Federapparat Torpedo</i> or <i>Flächenabsuchender Torpedo</i>	“spring-operated torpedo” or “area-combing torpedo”
FCS	Fighter Catapult Ship	
FdU	<i>Führer der Unterseeboote</i>	“Leader of the Submarines”
FFAR	Forward-Firing Aircraft Rocket	
FFI	<i>Forces Françaises de l'Intérieur</i>	“French Forces of the Interior” (Resistance fighters)
FFL	<i>Forces Françaises Libres</i>	“Free French Forces”
Fa	Focke-Achgelis & Co. GmbH (as in Fa 223)	
Fi	Gerhard Fieseler <i>Werke</i> (as in Fi 103)	“factory”
Flak	<i>Fliegerabwehrkanone</i>	“antiaircraft cannon”
FM	<i>Flak Marine</i>	“Naval antiaircraft cannon”
FPS	Frames Per Second	
FuG	<i>Funkmessgerät</i>	“radar transmitter”
FuMB	<i>Funkmessbeobachtungsgerät</i>	“radar observation apparatus” (of enemy radar signals)
FuMG	<i>Funkmessgerät</i>	“radar transmitter”
FuMO	<i>Funkmessortungsgerät</i>	“radar location apparatus” (using active radar)
FW	Focke-Wulf <i>flugzeugbau</i> AG (as in Fw 200)	“aircraft construction”
GEMA	<i>Gesellschaft für Elektroakustische und Mechanische Apparate</i> m.b.H.	“Electro-acoustic and Mechanical Apparatus company”
GHG	<i>Gruppenhorchgerät</i>	“group listening apparatus” (hydrophones)
GHz	Gigahertz (billions of cycles per second)	
GM	General Motors, Incorporated	
GmbH	<i>Gesellschaft mit beschränkter Haftung</i>	“Limited Liability Company”
GMT	Greenwich Mean Time	
GNAT	German Navy Acoustic Torpedo (e.g., T V “ <i>Zaunkönig</i> ”)	
GR	General Reconnaissance	

Term	Description	Notes, including “Translation to English”
GRT	Gross Registered Tons	
GW	Friederich Krupp <i>Germaniawerft</i> AG (diesel engine & U-boat mfr.)	
GWX	Grey Wolves Expansion	
Hagenuk	<i>Hanseatische Apparatebau-Gesellschaft Neufeldt und Kuhnke GmbH</i>	
He	Heinkel <i>Flugzeugwerke</i> AG (as in He-111)	“aircraft works”
HIJMS	His Imperial Japanese Majesty’s Ship / Submarine	
HMAS	His Majesty’s Australian Ship	
HMCS	His Majesty’s Canadian Ship	
HMNS	His Majesty’s Netherlands Ship	
HMNZS	His Majesty’s New Zealand Ship	
HMS	His Majesty’s Ship / Submarine	
HMT	His Majesty’s Transport	
HNoMS	His Norwegian Majesty’s Ship	
HSL	High Speed Launch	
HVAR	High Velocity Aircraft Rocket	
IJN	Imperial Japanese Navy	
IvS	<i>Ingenieurskaantor voor Scheepsbouw</i>	“Engineers’ Office for Ship Construction”
Ju	Junkers <i>flugzeugwerke</i> AG (as in Ju-88)	“aircraft works”
JSGME	Jonesoft Generic Mod Enabler	
KDB	<i>Kristalldrehbasisgerät</i>	“Crystal rotating base apparatus” (hydrophones)
KFK	<i>Kriegsfischkutter</i>	Auxiliary fishing boat
KG	<i>Kampfgeschwader</i>	“Bomber wing”
KK	<i>Kabushiki Kaisha</i> (株式会社); Japanese abbreviation “(株)”	“business corporation”
KNM	<i>Kongelige Norske Marine</i>	Royal Norwegian Navy
Knot	Nautical miles per hour	
KTB	<i>Kriegstagebuch</i>	“War Diary”
LaGG	Lavochkin-Gorbunov-Gudkov (Лавочкин-Горбунов-Гудков)	
LCI	Landing Craft, Infantry	
LCI(D)	Landing Craft, Infantry (Demolitions Team) – (US Navy)	
LCI(G)	Landing Craft, Infantry (Gunship) – (US Navy)	
LCI(R)	Landing Craft, Infantry (Rocket-armed) – (US Navy)	
LCM	Landing Craft, Medium – (US Navy)	
LCVP	Landing Craft, Vehicle, Personnel – (US Navy)	
LORAN	Long Range Navigation (aka “Loomis Radio Navigation”)	

Term	Description	Notes, including “Translation to English”
LSD	Landing Ship, Dock – (US Navy)	
LST	Landing Ship, Tank – (US Navy)	
LSV	Landing Ship, Vehicle – (US Navy)	
LuT	<i>Lageunabhängiger Torpedo</i>	“bearing-independent torpedo”
MAC	Merchant Aircraft Carrier	
MAD	Magnetic Anomaly Detection	
MAN	<i>Maschinenfabrik</i> Augsburg-Nürnberg AG (diesel engine maker.)	“machine factory”
MAS	<i>Motoscafi Armati Silurante</i>	“armed torpedo motorboats”
MAS	<i>Motoscafi Armati Sommergibili</i>	“armed anti-submarine motorboats”
MCAS	Marine Corps Air Station (U.S. Marine Corps)	
Me	Messerschmitt AG (as in Me 109 aka Bf 109)	
MFP	<i>Marinefährrahm (-prähme)</i>	“naval flat-bottomed ferry (ferries)”
MG	<i>Maschinengewehr</i>	“machine gun”
MGB	Motor Gun Boat	
MHz	Megahertz (millions of cycles per second)	
MOS	Ministry of Supply (British, 1939 – 1946)	
MOT	Ministry of Transport (British, 1919 - 1941)	
MOWT	Ministry of War Transport (British, 1941-1945)	
M/S	Motor Ship	
MTB	Motor Torpedo Boat	
MV	Motor Vessel	
mWdGb	<i>mit der Wahrnehmung der Geschäfte beauftragt</i>	“entrusted with safeguarding interests” / “provisional”
NAS	Naval Air Station (U.S. Navy)	
NATO	North Atlantic Treaty Organization	
NB	<i>Nota Bene</i>	“Note carefully”
NDH	<i>Nezavisna Država Hrvatska</i>	“Independent State of Croatia”
NEI	Netherlands East Indies	
NV	<i>Naamloze Vennootschap</i>	“Public Limited Liability Corporation”
NVK	<i>Nachrichten-Versuchskommando der Kriegsmarine</i>	“Naval Communications Research Establishment”
ObdM	<i>Oberbefehlshaber der Marine</i>	“Commander-in-Chief of the Navy”
OHG	<i>Offene Handelsgesellschaft</i>	“general partnership”
OKB	<i>Opytnoe Konstruktorskoe Byuro</i> (Опытное конструкторское бюро)	“Experimental Design Bureau”
OKM	<i>Oberkommando der Kriegsmarine</i>	“Supreme Command of the Navy”
OKW	<i>Oberkommando der Wehrmacht</i>	“Supreme Command of the Armed Forces”

Term	Description	Notes, including “Translation to English”
ORP	<i>Okręt Rzeczypospolitej Polskiej</i>	“Polish Republic Ship”
PLM	Paris-Lyon-Marseille (Free French shipping line)	
POW	Prisoner of War	
PPI	Plan Position Indicator	
RAAF	Royal Australian Air Force	
RADAR	Radio Detection and Ranging; now more commonly “radar”	
RAF	Royal Air Force	
RAFVR	Royal Air Force Volunteer Regiment	
RAG	<i>Raketenabschußgestell</i>	“Rocket launching rack”
RCAF	Royal Canadian Air Force	
RCMG	Rifle-caliber machine gun	
RDF	Radio Direction Finding	
RHS	Royal Hellenic Ship (Greek)	
RLM	<i>Reichsluftfahrtministerium</i>	“Reich Aviation Ministry”
RMS	Royal Mail Ship	
RN	<i>Real Nave</i>	“Royal Ship”
RNZAF	Royal New Zealand Air Force	
R. Smg.	<i>Real Sommergebili</i>	“Royal Submarine”
RS	<i>Reaktivny Snaryad</i> (Реактивный Снаряд)	“rocket cannon shell”
RSI	<i>Repubblica Sociale Italiana</i>	“Italian Social Republic”
RWR	Radar Warning Receiver	
SA	<i>Sociedad Anónima</i>	Limited Liability Corporation
SAAF	South African Air Force	
SEAC	South East Asia Command	
SdKfz	<i>SonderKraftfahrzeug</i>	“special purpose vehicle”
SH3	<i>Silent Hunter III</i>	
SK	<i>Schiffskanone</i>	“ship’s cannon”
SM	Savoia-Marchetti (as in S.M. 79 Sparviero)	“sparrowhawk”
SMS	<i>Seiner Majestät Schiff</i>	“His Majesty’s Ship”
SONAR	Sound Navigation and Ranging; now more commonly “sonar”	
SS	Steam Ship	
SSR	Soviet Socialist Republic	
Stuka	<i>Sturzkampfflugzeug</i>	“dive bomber”
St.G.	<i>Stukageschwader</i>	“Dive bomber wing”

Term	Description	Notes, including “Translation to English”
SWPA	South West Pacific Area	
TC	Time Compression	
TDC	Torpedo Data Computer	
TG	Task Group (U.S. Navy)	
TGW	The Grey Wolves (Version 1.0 – 1.0a)	
UB	<i>Universalni Berezina</i> (Универсальный Березина)	“Berezin Universal”
UP	Unrotated Projectile (fin-stabilized rocket)	
USAAC	United States Army Air Corps (USAAF predecessor)	
USAAF	United States Army Air Force (USAF predecessor)	
USAF	United States Air Force	
USCG	United States Coast Guard	
USCGC	United States Coast Guard Cutter	
USLHS	United States Light House Service	
USMC	United States Marine Corps	
USN	United States Navy	
USS	United States Ship	
UZO	<i>Überwasserzieloptik</i>	“Above water target optic” (rangefinding binoculars)
VC	Victoria Cross	
VHF	Very High Frequency	
VIP	Very Important Person	
WLB	<i>Württembergische Landesbibliothek</i>	“Württemberg Regional Library”
<i>z.b.V.</i>	<i>zur besonderen Verwendung</i>	“to the special use”
<i>z. S.</i>	<i>zur See</i> (as in <i>Kapitän zur See</i> , “Naval Captain”)	
ZG	<i>Zerstörergeschwader</i>	“Heavy fighter wing”

German Rank Equivalents

This document uses the following German ranks, displayed here with their U.S. and British rank equivalents.¹

Table 1: German Navy (*Kriegsmarine*) approximate rank equivalents

German Navy rank	U.S. / British Naval Rank	French Naval Rank
<i>Großadmiral</i>	Fleet Admiral (FADM) / Admiral of the Fleet	<i>Amiral de la flotte de France</i>
<i>Generaladmiral</i>	Admiral (ADM)	<i>Amiral</i>
<i>Admiral</i>	Vice Admiral (VADM)	<i>Vice-amiral de escadre</i>
<i>Vizeadmiral</i>	Rear Admiral (upper half) (RADM)	<i>Contre-amiral</i>
<i>Konteradmiral</i>	Rear Admiral (lower half) (RDML) Commodore (Cdre) 1 st and 2 nd class	<i>Capitaine de vaisseau chef de division</i>
<i>Kapitän zur See (z. S.)</i>	Captain (CAPT)	<i>Capitaine de vaisseau</i>
<i>Fregattenkapitän</i>	Commander (CDR) / (Cdr)	<i>Capitaine de frégate</i>
<i>Korvettenkapitän</i>	Lieutenant Commander (LCDR) / (Lt Cdr)	<i>Capitaine de corvette</i>
<i>Kapitänleutnant</i>	Lieutenant (LT)	<i>Lieutenant de vaisseau</i>
<i>Oberleutnant zur See (z. S.)</i>	Lieutenant, Junior Grade (LTJG) / Sublieutenant	<i>Enseigne de vaisseau de 1^{re} classe</i>
<i>Leutnant zur See (z. S.)</i>	Ensign (ENS) / Commissioned Warrant Officer	<i>Enseigne de vaisseau de 2^{nde} classe</i>

Table 2: Approximate rank equivalents for the German Army (*Heer*), Air Force (*Luftwaffe*), and SS

<i>Heer/Luftwaffe</i>	<i>Schutzstaffel (SS)</i>	U.S. / British Army	Royal Air Force	French Army
<i>Generalfeldmarschall</i>	<i>Reichsführer-SS</i>	General of the Army / Field Marshal	Marshal of the RAF	<i>Maréchal de France</i>
<i>Generaloberst</i>	<i>Oberstgruppenführer</i>	General	Air Chief Marshal	<i>Général d'armée</i>
<i>General*</i>	<i>Obergruppenführer</i>	Lieutenant General	Air Marshal	<i>Général de corps d'armée</i>
<i>Generalleutnant</i>	<i>Gruppenführer</i>	Major General	Air Vice-Marshal	<i>Général de division</i>
<i>Generalmajor</i>	<i>Brigadeführer</i> <i>Oberführer</i>	Brigadier General Brigadier	Air Commodore	<i>Général de brigade</i>
<i>Oberst</i>	<i>Standartenführer</i>	Colonel	Group Captain	<i>Colonel</i>
<i>Oberstleutnant</i>	<i>Obersturmbannführer</i>	Lieutenant Colonel	Wing Commander	<i>Lieutenant-Colonel</i>
<i>Major</i>	<i>Sturmbannführer</i>	Major	Squadron Leader	<i>Commandant</i>
<i>Hauptmann</i>	<i>Hauptsturmführer</i>	Captain	Flight Lieutenant	<i>Capitaine</i>
<i>Oberleutnant</i>	<i>Obersturmführer</i>	Lieutenant	Flying Officer	<i>Lieutenant</i>
<i>Leutnant</i>	<i>Untersturmführer</i>	Second Lieutenant	Pilot Officer	<i>Sous-Lieutenant</i>

¹ "Comparative Military Ranks," http://en.wikipedia.org/wiki/Comparative_military_ranks_of_World_War_II

* This title is usually used with service type, e.g., *General der Infanterie*; - *der Kavallerie*; - *der Panzertruppen*; - *der Flieger*, etc.

Turret Designations

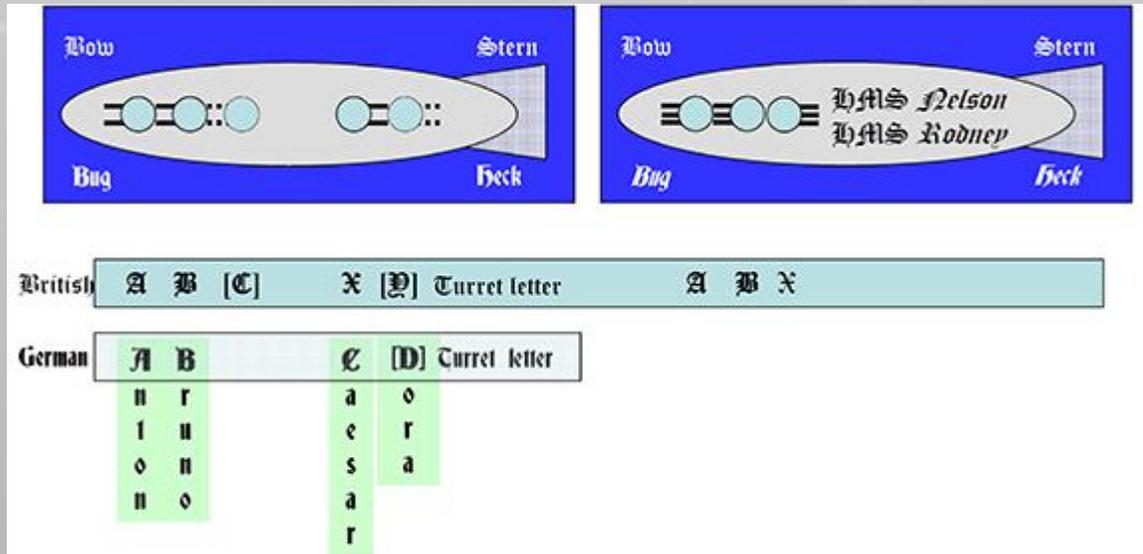


Figure 1: Letter identification codes for warship gun turrets

Who was who in the *Kriegsmarine*

Table 3: Historical *Oberbefehlshaber der Kriegsmarine* (ObdM)²

Rank	Name	Start Date	End Date
<i>Admiral</i>	Erich Raeder	June 1, 1935	April 20, 1936
<i>Generaladmiral</i>		April 20, 1936	April 1, 1939
<i>Großadmiral</i>		April 1, 1939	January 30, 1943
<i>Großadmiral</i>	Karl Dönitz	January 30, 1943	May 1, 1945
<i>Generaladmiral</i>	Hans-Georg Friedeburg	May 1, 1945	May 23, 1945

Table 4: Historical *Führer/Befehlshaber der Unterseeboote* (FdU/BdU)³

Rank	Name	Start Date	End Date
<i>Kapitän zur See</i>	Karl Dönitz *	January 1, 1936	January 28, 1939
<i>Kommodore</i>		January 28, 1939	October 1, 1939
<i>Konteradmiral</i> [†]		October 1, 1939	September 1, 1940
<i>Vizeadmiral</i>		September 1, 1940	March 14, 1942
<i>Admiral</i>		March 14, 1942	January 30, 1943
<i>Vizeadmiral</i> [‡]	Hans-Georg Friedeburg	January 30, 1943	April 1, 1943
<i>Admiral</i>		April 1, 1943	May 1, 1945
<i>Kapitän zur See</i> (mWdGb)	Kurt Dobratz	May 1, 1945	May 8, 1945

² “Axis Biographical Research,” <http://www.geocities.com/~orion47/>;

“Chronik des Seekrieges 1939-1945,” <http://www.wlb-stuttgart.de/seekrieg/km/uboote/bdu.htm>

³ “Axis Biographical Research,” <http://www.geocities.com/~orion47/>;

“Chronik des Seekrieges 1939-1945,” <http://www.wlb-stuttgart.de/seekrieg/km/uboote/bdu.htm>

* *Oberbefehlshaber der Kriegsmarine* from February 1, 1943; Head of State (*Reichspräsident*) from May 1 – May 23, 1945

[†] *Führer der Unterseeboote* until October 17, 1939, and *Befehlshaber der Unterseeboote* thereafter

[‡] Given the title “*Admiral der Unterseeboote*” thereafter

A Word from Kpt. Lehmann

About two years ago I found myself bored and strolling through a large bookstore... hungry for something new and completely different to shake up my routine. The rows and rows of books looked much like the rows and rows of books I had at home...

I found myself in the PC games section... trying to see through all the usual stuff... more of the same...

One box just barely caught my eye and I picked it up. Opening the display cover... I read how it promised a dynamic campaign. (I love dynamic campaigns.) However, instead of the usual flight sims that I tended to gravitate to... a U-boat adorned the cover.

I put down the copy of *Silent Hunter III* and went home.

Two or three nights later, I watched "The Shadow Divers" documentary on TV... and couldn't get that thing called "Silent Hunter III" out of my head... only it was a few more days until payday. I researched the game on the internet and found myself on the SH3 Ubisoft website, downloading video interviews with Jürgen Oesten and video bites.

The moment I found out that you could sail anywhere... I was hopelessy and instantly obsessed. Payday finally came and I made it in time to buy the final available copy.

After only a few days and seeing references to problems in-game that could be fixed... I was pointed to Subsim.com... where I was promptly promoted to "Bilge Rat" simply for arriving.

Pretty much immediately I was assisted by several people that come to mind... Average Joe, Pablo, Rulle34, Syxx_Killer, Nippelspanner, Sailor Steve, and Rubini... just to name a few.

I guess I asked too many questions, pestered too many people, and irritated at least one who basically told me to go and build my own mod if I didn't agree with what was available...

Not long after that I fell into a discussion with Marhkimov and we went to work on a little mod package he wanted to build to correct some atmospheric problems in-game... and this effort lead me to a deeper conversation with him addressing some ideas I had about presenting a larger mod package and not letting others tell us what to think, do, or not do.

Part of this conversation found me saying, "For crying out loud... the other mods have names that are so dull... Let's call it 'The Grey Wolves!' Doenitz referred to his men as his 'Grey Wolves.' Let us grab that title before someone else does! Let's not be afraid to think big too... George Lucas big!!!"

I had no idea of what I was getting into. We started out as puppies digging in the garden... and well... we think we found China! Between then and now... it has been one huge mountain of work, problems that seemed insurmountable... and has often meant dealing with some very dark days. One thing is most certain though. There is no way on EARTH that GW or GWX would see the light of day without the helping hands of many... and the tirelessness and stubbornness of the gentlemen on The Grey Wolves Dev team... especially those that worked until the end.

If you enjoy this mod... take a moment to review the names on the development team list found on this readme... and offer them a moment's salute. Those names represent HUNDREDS of hours spent to

basically re-write Silent-Hunter III not only for your enjoyment, but for the sake of history. Those names represent a journey of a thousand miles and real-world sacrifice. Go on to review the other credits as well... they represent many contributions both great and small... that made our work richer still.

To our fans who have offered their good wishes and kept the faith along the way... I salute you. Now that you have put your socks back on... we are going to blow them off again... and burn'em!

It is impossible for me to properly thank everyone who helped us along the way... but I can tell you this, our gratitude is undying.

Natasha, thanks for allowing me the space I needed to do this. I know you went without many times to let me see this thing through... not once but twice.

Finally, I dedicate the entirety of my personal efforts to my friend Kurt Cullum. Kurt was naval history enthusiast and former police officer who gave me true friendship and counsel that changed my entire life. Kurt demonstrated to me the true meaning of service to others every day that I knew him. He would have LOVED this stuff had he lived to see it. Rest in peace my friend. It was an honor to know you.



Known *Silent Hunter III* Issues and Workarounds

Silent Hunter III has limitations that result in the several known issues.

Crash to Desktop Errors

- Setting the crew configuration for “surface cruise mode” in the crew management window (F7) will cause a crash to desktop (CTD). This is a stock *Silent Hunter III* bug, for which there is no workaround other than to arrange the locations of your crewmembers manually and avoid the use of the crew configuration buttons.

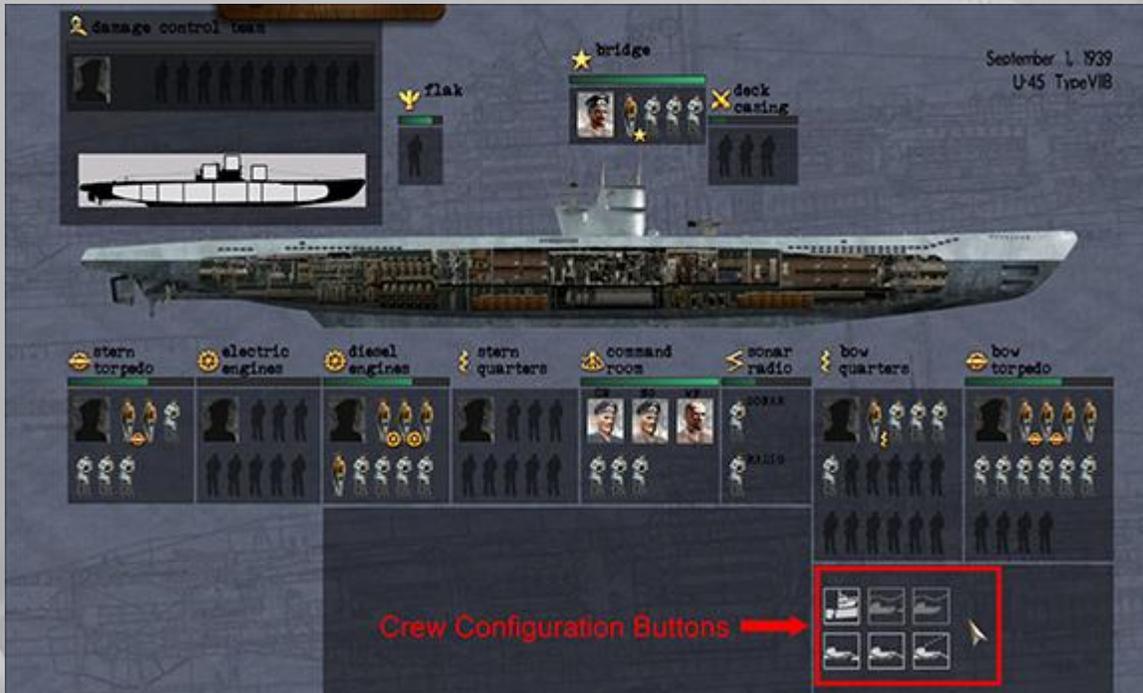


Figure 2: The GWX Team recommends not using the crew configuration buttons due to CTD risks

Game bugs

Renown Issues

The following are stock *Silent Hunter III* issues the GWX Team is unable to address

- If you upgrade your U-boat before the first patrol of a new career, you may not receive any renown for ships sunk during the first patrol, so you should not upgrade or change anything on your U-boat on your first patrol of a new career before leaving port. Some players report that using <ESC> to end your patrol when close to your base but not necessarily in the harbor itself can avoid this problem.
- If you upgrade your U-boat at the end of the current patrol you may not receive any credit for ships sunk during the patrol, so you should upgrade your U-boat only when you are ashore and about to leave for the next patrol
- Players do not receive any additional renown for returning to base under manual control.
- Players do not receive renown when they damage a ship if the ship later sinks due to storm damage.

Saved Games

- Restoring a game that you saved when your U-boat was submerged can lead to instability. This is a stock *Silent Hunter III* issue that GWX is unable to address, other than to recommend *most* strongly that you not save your game while your U-boat is submerged.
- Players who have just one career in stock *Silent Hunter III* will occasionally find their career has no saved games, even though you successfully saved your most recent game, and the save game files are present in their proper career folder. This is a stock *Silent Hunter III* behavior and seems to happen when you have deleted the career named after your “player name” and replaced it with a name of your own creation), so the GWX team suggests you create a “dummy” career (*e.g.*, for *Leutnant z. S. Fubar*) before starting your real career to ensure this does not happen.

If this does happen

1. Find the folder that holds your career, *e.g.*,

C:\Documents and Settings\Pablo\My Documents\SH3\data\cfg\Careers\Pablo

2. Append “x” to the filename so it is renamed, for example, “C:\...\Careers\Pablox”

3. Exit and restart *Silent Hunter III*, then verify if *Silent Hunter III* can now read the contents of the “new save game” save game: if so, you can rename the career back to its original name. If not, you will need to start a new career.

- Players will occasionally experience the “Crash Dive of Doom,” a known *Silent Hunter III* bug where your game is saved normally, but when you restart the game, your U-boat starts at the bottom of the ocean and sinks because it is far below crush depth. The workaround is to open the Campaign.LND, Campaign.SCR, and Campaign.RND files in "Notepad" or "Wordpad", change the “Windspeed=0.000000” to “Windspeed=4”, and then restart the same save game again.

- Players will sometimes find that *Silent Hunter III* improperly displays the following message when loading a saved game: “Cannot load after war is finished.” This is due to an intermittent error in stock *Silent Hunter III*. To correct this problem, go the folder

C:\Documents and Settings****\My Documents\SH3\data\cfg\Careers\'Careername,'

where “Careername” is the name of your saved career. Open the latest “careers.cfg” file, and replace “true” with “false” for each line:

Finished=true; <becomes Finished=false>
 WarOver=true; <becomes WarOver=false>

Gameplay

- There is a bug with the *Vorhaltrechner* (“deflection calculator,” also referred to as the Torpedo Data Computer, or TDC) in stock *Silent Hunter III*: the TDC does not always recognize when you have adjusted the speed of a steam-powered T I, T I FAT, or T I LUT I torpedo from “fast” or “medium” to “slow.” The workaround is to ***always*** left-mouse-click on the torpedo speed selector before leaving the TDC view if you have changed the speed of a torpedo, as this appears to ensure the TDC recognizes the correct torpedo speed settings. You don’t have to change the speed setting when using this procedure – just click on the “speed” button to ensure the TDC “accepts” the new speed setting



Figure 3: *Vorhaltrechner* (“deflection calculator”) screen highlighting the torpedo speed button

Graphical User Interface

- *Silent Hunter III* allows players to use radar on a small conning tower (*Turmumbau*, or *Turm 1*) even though the radar antenna's location in the 3D model assumes the use of a large conning tower (*Turm 2* or *Turm 3*). The radar will therefore float outside the *Turm 1* conning tower if you insist on installing a radar antenna on it.
- If you start a mission in GWX and you have a completely black sky in the daytime then there is a mismatch between the scene.dat file and the skycolors.dat file. The GWX Team has found this is often the result of not correctly install GWX. Roll back *SH3 Commander* if you are using it; if you use JSGME, use it to uninstall all installed mods, and then re-install GWX following the [GWX basic installation instructions](#).
- Players using NVidia GForce 8800-type video cards will see white artifacts or specks near the horizon. This is a stock *Silent Hunter III* issue with anti-aliasing in this video card; the GWX Team recommends using the [Shift][PageDown] key combination to disable anti-aliasing if this is an issue with your installation. You can reactivate anti-aliasing by the [Shift][PageUp] key combination.
- If you get a “Camera out of Sectors” error while in the external (**F12**) view, just switch to a different view (e.g., the control room, or **F2**) to reset the camera sectors and then return to the **F12** view.
- Stock *Silent Hunter III* has issues with the particle rendering features of NVIDIA® graphics cards that can result, for example, in slow screen update and fuzzy images when looking through the UZO. GWX is unable to fix this problem, so the GWX Team recommends you disable particle rendering by using [Ctrl]-P if you are using an NVIDIA graphics card and you are having these problems.

Aircraft and Flak

- “Elite” (CrewRating=4) aircraft will not drop bombs in stock *Silent Hunter III*. Set the aircraft to “Veteran” (CrewRating=3) and add more of them if you are writing a single- or multiplayer mission and need more effective airpower.
- If you send your flak gunners to their stations in port, they will shoot at *Luftwaffe* aircraft. Do not man the antiaircraft guns in port unless the Allies are bombing your base.
- U-boats with multiple antiaircraft guns require player intervention to use all of their guns against attacking aircraft due to an issue in stock *Silent Hunter III*. The GWX team recommends that you:
 2. Ensure all your antiaircraft guns are fully manned and given appropriate firing orders
 3. Use the [F4] key to move your view to the bridge
 4. [Toggle between flak positions](#) and the bridge using the sequence: F [F4] G [F4] T [F4]

50-kilometer Rules

- Restarting a game saved when your U-boat was within 50 km of any harbor will result in the ships in and near that harbor moving straight ahead and (likely as not) running aground and burning since *Silent Hunter III* does not save the paths plotted by friendly ships traveling near the harbor. These ships will regenerate at the start of your next patrol.
- If you restart a game saved when you were within 50 km of a ship you just sank, then that ship can occasionally be “resurrected” as it was before you sank it with the same ship type, course, speed, *etc.* *Silent Hunter III* will give you credit for the original sinking; however, you will gain no credit for sinking the “resurrected” version since the game remembers you have already sunk that ship.
- Scripted aircraft formations or convoys, such as those in [Operation Weserübung](#), will not spawn if you are within 50 km or so of the spawn point. If you want to hunt a specific, scripted convoy, you must hang back at least 50km and use your sensors to find it after it has spawned.
- To avoid starting a 7th Flotilla career with a Type IIA U-boat in 1945, you must change the Flotilla "up and back" prior to pressing the "Start" button.

Sound Issues

- You should hear the whistling from high winds only on the bridge; however, you can sometimes hear it at every crew station inside the U-boat, even when you are submerged. This is a known *Silent Hunter III* issue with some sound cards that you can usually alleviate by using the Windows Control Panel (Sounds and Audio Control panel) to reduce by one level the degree of hardware acceleration used by your sound card. Failing that, you can correct the problem at least temporarily by saving your game and then exiting and restarting *Silent Hunter III*.

Features

Long Load Times

GWX adds a great deal of material to stock *Silent Hunter III* that the game engine must load before you start playing a mission or a campaign. It is normal to wait seven to eight minutes as the game engine loads all of the information in GWX (as the “red bar” advances across the bottom of the screen) and you await the message, “Not so long ago...”

Please be patient: the game has not crashed on start-up until you see a warning pop-up message.

One way to alleviate the wait time is to load one of the [Black Sea-only](#) or [Indian Ocean-only](#) campaigns if you are planning to stay entirely within these operational areas during your patrol.

Graphics Issues

- Crewmembers do not wear foul weather gear when they start a mission or patrol on watch on the conning tower in precipitation or high winds. This is a stock *Silent Hunter III* “feature” that has no effect on crew fatigue for “exposed” crewmembers. Players can eliminate this purely cosmetic effect by using the crew roster display (**F7**) to shift crewmembers on watch into different locations, including swapping positions with crewmembers already on the conning tower.
- You can always see searchlights, lighthouse lights, and [Leigh lights](#) through “solid” objects. This is a stock *Silent Hunter III* issue that GWX is unable to fix.
- Playing the game after “visiting” the Museum can result in very low frame rates and other sluggish behavior consistent with oversubscribed system RAM. The GWX Team recommends you exit *Silent Hunter III* and restart the game if your system behaves this way when playing the game after viewing the Museum.
- GWX users may experience frame rate “stuttering” when your U-boat starts a patrol or loads a saved game in ports or other areas with many 3D objects: the game stutters when *Silent Hunter III* loads all those new objects into memory as they come into your field of view. The GWX team suggests you go to the external camera (if available) using the **F12** key, or to the bridge using the **F4** key, and then look in a complete circle around your U-boat. This will cause stuttering while your field of view rotates as the objects in the harbor load into memory, but it will reduce stuttering for the remainder of your time in port since all the local objects will have now been loaded into memory.

Repeated detection of the same ship or aircraft

The stock *Silent Hunter III* game engine will send a “ship sighted” or “aircraft sighted” message whenever your lookouts redetect a ship or aircraft after losing sight of it. This behavior happens frequently when your lookouts detect a ship or aircraft at the limit of their detection range but the object keeps coming into range and going out of range. The only way to resolve this behavior is to move your U-boat closer to the ship or aircraft, or further away from it; or to wait for the ship or aircraft to do the same.

Small Oddities

- The smoke generated by historical merchant ships varied widely depending upon the ship's age, the fuel it burned, and the crew's efficiency; warships usually produced little if any smoke except when making deliberate smoke screens. *Silent Hunter III* does not allow GWX to vary the amount of smoke a ship generates, or to vary the amount of smoke generated by different ships, so warships always make as much smoke as merchant ships.
- Stock *Silent Hunter III* does not restrict the *schnorchel* with regard to wave height, wind speed, or the U-boat's speed through the water: the only thing that matters is whether you are at the right depth. Historically, U-boats could use the *schnorchel* only in relatively calm seas and if the U-boat was traveling at a speed of six knots or less. Using the *schnorchel* in more severe conditions could cause the *schnorchel* to close off to prevent water from coming into the air intake, resulting in great crew discomfort as the diesels began using air inside the U-boat rather than from outside. The pressure of the water on the *schnorchel* if the U-boat went at high speed ($> \sim 6$ knots) could damage or destroy it. GWX does not change the *schnorchel* limitation of stock *Silent Hunter III*.
- *Silent Hunter III* treats objects on land as “environmental” objects; however, “environmental” objects are not valid targets and are not subject to attack. This precludes actual shore bombardment, so the GWX Team provides anchored merchant ships as targets for bombing raids and for scripted “sail-by” attacks on harbors in the campaign game.
- When using the deck gun with the rangefinder in zoom mode in stock *Silent Hunter III* the deck gun will occasionally fire a round several degrees in azimuth or elevation away from where the previous shell went even in calm seas with no wind. The only way to work around this is to get *really* close to the target so that these “wild” shots will still hit the target.
- Please remember that you will take your U-boat with you if you transfer between flotillas. This is important if, for example, you want to transfer from 30th Flotilla (patrolling the Black Sea with short-range Type II U-boats) to 10th Flotilla (patrolling the South Atlantic with long-range Type IX U-boats). Make sure you have enough renown to upgrade your U-boat at your new assignment!
- ASW ships will occasionally sink themselves with their own depth charges. This generally occurs when they are hunting a U-boat that is at periscope depth, and the depth charge explodes just after it hits the water due to random variability in the detonation depth. Real life U.S. depth charges had a minimum detonation depth setting of 50 feet⁴, and their tactical doctrine called for ASW ships to keep their speed up to avoid such calamities⁵, but the artificial “intelligence” of ASW ships in *Silent Hunter III* is not always that intelligent. The GWX Team has tried to reduce the possibility of this type of occurrence, but cannot rule it out.
- Ships torpedoed in shallow water may settle to the bottom without being “sunk” if the ship is still above water when the hull is resting on the bottom, and the ship has not been “destroyed” by losing hull integrity. The only way to sink a ship in this condition is to keep battering one section of the hull with torpedoes until it has lost all of its hit points. This is stock *Silent Hunter III* behavior, and is unchanged by GWX.

⁴ “United States of America: ASW Weapons,” http://www.navweaps.com/Weapons/WAMUS_ASW.htm

⁵ Department of Ordnance and Gunnery, U.S. Naval Academy, “Antisubmarine Warfare,” *Naval Ordnance and Gunnery, Vol. II: Fire Control*. Bureau of Naval Personnel 10789A: 1958.
<http://www.eugeneleeslover.com/FIRE-CONTROL-PAGE.html>

- Stock *Silent Hunter III* includes graphics and modeling information for the T VII *Steinbarsch* (“rock bass”) torpedo, but the torpedo is not available in the game. Germany produced at the very end of the war 100 of these wakeless, 45-knot, hydrogen peroxide-fueled torpedoes with LuT pattern following and a range of 8 km, but none went to sea before the end of hostilities.⁶ The *Silent Hunter III* game engine only reads one character in the applicable .cfg file when identifying torpedo types, so only 10 types of torpedoes (numbered 0 – 9) are allowed, BUT the T VII would be the 11th torpedo type. GWX does not replace any other torpedo types to enable the T VII.



⁶ John Campbell, *Naval Weapons of World War Two*. Conway Maritime Press: 1985.

GETTING STARTED

System Requirements

The Grey Wolves Expansion (GWX) team suggests your computer meet the *recommended* system configuration requirements for *Silent Hunter III*; use the *Silent Hunter III* Detection Tool to determine whether your system meets these requirements. We have found that running with less than the recommended configuration can result in choppiness and low frame rates (frames per second), and can occasionally result in freezing or locking up your game. GWX requires 3.3 gigabytes of free disk space.

Installing the Grey Wolves Expansion

Basic Installation

You must install The Grey Wolves Expansion (GWX) over a CLEAN, UNMODIFIED installation of *Silent Hunter III* patched to Version 1.4b since the installer will only install GWX into your *Silent Hunter III* installation folder. The following instructions may apply to you depending on how you have modified *Silent Hunter III*:

1. REMOVE any installed *SH3 Commander* files (if you use *SH3 Commander*) by pressing the "Rollback SH3" button from within *SH3 Commander*
2. You can use JSGME to activate other modifications after you install GWX, but not GWX itself
3. GWX is a full/general release that completely supersedes all previous versions of "The Grey Wolves" and GWX. See the section on '[Installing under "Windows Vista"](#)' if you are using that operating system.
 - a. Uninstall *Silent Hunter III* via the MS-Windows "Add/Remove programs" feature
 - b. Open Windows Explorer and:
 - i. ***delete*** the folder from where *Silent Hunter III* was just removed
 - ii. ***delete*** the "\\My Documents\\SH3" folder. GWX V2.0 is incompatible with non-GWX save games and is likely incompatible with games saved under previous GWX versions.
 - c. Reinstall *Silent Hunter III*
 - d. Install patch V1.4b if your version of *Silent Hunter III* was an earlier version, ensuring the patch version corresponds to your source media: Download, DVD, EMEA, or US).
 - e. Visit the GWX homepage (<http://www.thegreywolves.com>) and download all the primary files listed there. Send them all onto your desktop or onto a folder of your own choosing, but please ensure they are all loaded INTO THE SAME FOLDER.
 - f. Run GWX.exe and follow the installation prompts

Note: GWX will install versions of German flags and battleship *Bismarck* hull markings without swastikas if you have the European version of *Silent Hunter III*; other versions will have swastikas.

If you encounter problems during GWX installation, please post the details at the SubSim forum (<http://www.subsim.com/radioroom/index.php>), and include the contents of "GWXInstErr.log" if it exists on your Desktop.

Installing under Windows Vista

Perform the following steps if you are installing GWX in a Windows Vista® environment, assuming you have already executed Steps 1 and 2 in the [Basic Installation](#) procedure:

1. Uninstall *Silent Hunter III*
2. Delete the residual *Silent Hunter III* installation folder and all contents
3. Delete (or at least rename) your “MyDocuments\SH3” save game folder
4. Delete the “C:\Users\<Username>\AppData\Local\VirtualStore\Program Files\SilentHunterIII” folder and all its contents, if it exists.
5. Reinstall *Silent Hunter III*. The GWX Team recommends you install it ***outside*** of the “\Program Files” folder
6. Right-click the 1.4b patch “.exe” file and select “Run as administrator”
7. Install the patch
8. Verify you installed the patch correctly by running the game.
9. If the game fails to run, download and install the StarForce Vista update from the StarForce developers’ site: <http://www.star-force.com/support/sfdrvup.zip>.
10. You can now run optional tools like *SH3 Commander*, *JSGME*, *SH3Gen*, *etc.* provided you run them as an “Administrator” after you have installed them.

The GWX team recommends reading up on the Microsoft Vista “User Account Control” and “File Virtualization” features for greater familiarity with Windows Vista system security issues that may affect *Silent Hunter III*.

GWX Options

GWX includes several "optional modifications" that are ready to be enabled using JSGME. GWX installs the latest version of JSGME (v2.0.1) and its help file (JSGMEHelp.txt) to your *Silent Hunter III* folder as part of the installation procedure. Please consult this help file for details on using JSGME. The GWX installation procedure does not enable any of the optional modifications by default when it installs GWX; you can enable any or all of these optional modifications simply by running JSGME.exe.

Note: the GWX Team recommends installing or changing options before you begin play, or after you have saved the game with your U-boat in port and have exited *Silent Hunter III*.

16km Atmosphere

The radius of the 3D-rendered world in stock *Silent Hunter III* is 8 km: objects beyond this distance are invisible to the player although the game still tracks their movement and status. This option increases the radius of the 3D world to 16 km.

Note: this option significantly increases CPU loading; the GWX team suggests players use this option only if they have a system that exceeds the recommended specifications for *Silent Hunter III*.

Alternate Load Screen – Full Circle

This option enables the load screen art for the original *Grey Wolves* mod, the immediate predecessor of GWX, in place of the GWX load screen.



Figure 4: Load Screen with *The Grey Wolves* artwork



Figure 5: Load Screen with GWX artwork

Alternative Flotillas

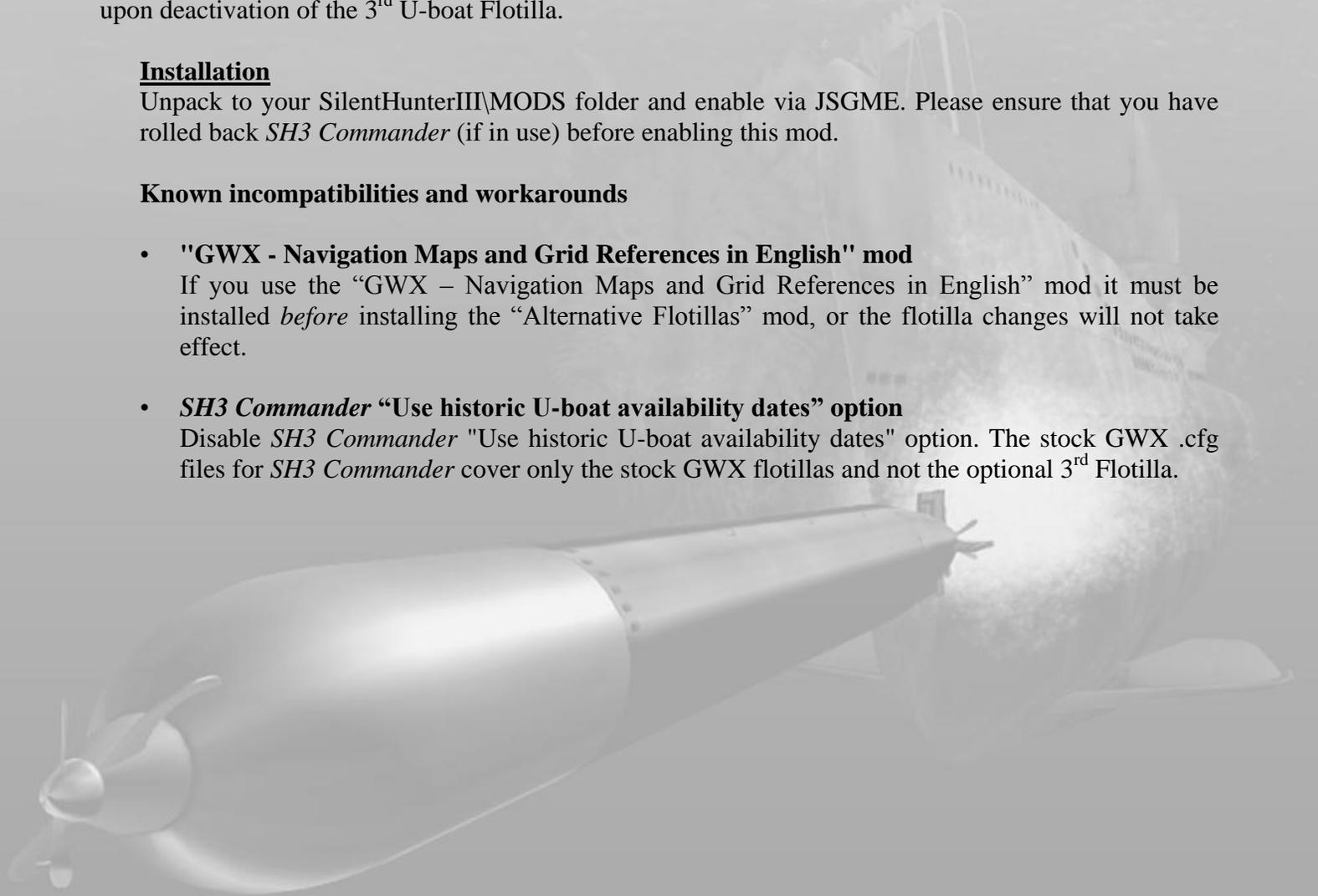
This mod replaces the [11th U-boat Flotilla](#) based in Norway with the [3rd U-boat Flotilla](#) based in La Rochelle, France from October 1941 until September 1944, when the 3rd Flotilla historically deactivated and its U-boats left La Rochelle for Norway. The 11th Flotilla becomes available in Bergen, Norway upon deactivation of the 3rd U-boat Flotilla.

Installation

Unpack to your SilentHunterIII\MODS folder and enable via JSGME. Please ensure that you have rolled back *SH3 Commander* (if in use) before enabling this mod.

Known incompatibilities and workarounds

- **"GWX - Navigation Maps and Grid References in English" mod**
If you use the "GWX – Navigation Maps and Grid References in English" mod it must be installed *before* installing the "Alternative Flotillas" mod, or the flotilla changes will not take effect.
- ***SH3 Commander* "Use historic U-boat availability dates" option**
Disable *SH3 Commander* "Use historic U-boat availability dates" option. The stock GWX .cfg files for *SH3 Commander* cover only the stock GWX flotillas and not the optional 3rd Flotilla.



“Captain America’s” Officer Icons

Stock *Silent Hunter III* uses a set of user-clickable icons on the main playing screen to facilitate rapid access to player commands related to the basic U-boat functions associated with the Chief Engineer, the Navigator, the Weapons Officer, the Hydrophone Operator, the Radio Operator, and the Watch Officer. Figure 6 highlights the location of these icons on the standard playing screen as displayed in GWX.

“Captain America” is a member of the *Silent Hunter III* modding community who created a set of officer icons; GWX offers these icons as an optional alternative to the GWX icons.

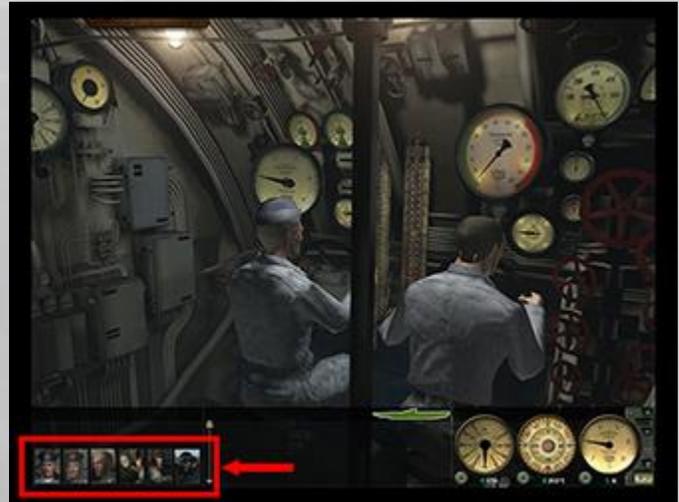


Figure 6: Officer Icons highlighted in red

The officer icons represent (in order from left to right) the Chief Engineer, Navigator, Weapons Officer, Hydrophone Operator, Radio Operator, and Watch Officer:



Figure 7: Stock *Silent Hunter III* officer icons



Figure 8: GWX Officer icons

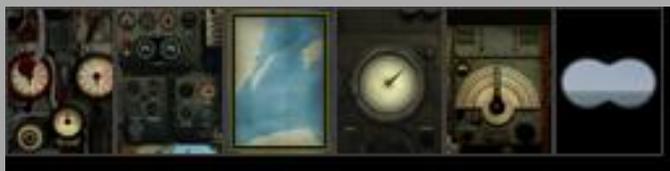


Figure 9: Captain America's officer icons

Enhanced Damage Effects

This option adds several effects intended to better simulate the effects on surface ships of hits by bombs, gunfire, and torpedoes, including:

- Oil slicks and trails
 - Large oil slicks and oil trails in the path of damaged ships, especially tankers
 - Oil slick color is now less violet-colored and closer to the real color of oil
- Fires and Explosions
 - Reduced some of the impact of fires on display FPS rate compared to stock *Silent Hunter III*
 - Corrected stock *Silent Hunter III* bugs with catastrophic aircraft explosions, small fires, and depth charge detonations
 - More splinters in explosions with splinters, and more explosions with splinters in general
 - Large secondary explosions
 - Improved fire and smoke effects
 - More below-water explosion effects and bubbles as ships sink
- Sound effects
 - All fires now have sound effects
 - You can hear fires in large damaged ships through hydrophones in some conditions
 - Added and adjusted new sound effects for explosions

Note: The new effects will not always appear, since the effect depends on where you hit the target ship.



Figure 10: Damaged tanker with trailing oil slick with the GWX Enhanced Damage Effects option

Fix Français pour GWX (French Fix for GWX)

I. Menu

1. *Petites corrections/reformulations apportées aux textes*
2. *Traduction faite du document [disponible dans le coin supérieur gauche du périscope (F3)] répertoriant les drapeaux de tous les pays, leur statut pendant la guerre suivant les années, etc...*
3. *[Le document secret](#) [toujours disponible dans le coin supérieur gauche, sur la table à carte (F5)] signalant aux capitaines de u-boot les emplacements des mines et des filets.*
4. *Vous verrez dorénavant la qualification «bonne» dans l'écran de mise à jour de l'équipement du sous-marin, «bonne» constituant une non-modification du u-boot. Cela est dû aux limitations du jeu : ce mot apparaît également lors de la demande de rapport météorologique («visibilité bonne»). Prenant en compte les limitations du jeu, nous avons tout de même décidé de conserver le rapport de visibilité lors de la demande de rapport météorologique en jeu, même si l'état de non-modification du sous-marin doit être qualifiée de «bonne»*

II. Air : Ajout de nouvelles unités

III. Campaign (Campagne)

Version française révisée de bout en bout, messages radio existants entièrement corrigés, reformulés pour certains, et liste des messages disponibles en versions anglaise et allemande intégralement traduite en français.

IV. Land (Terre)

Table 5: Liste des diminutifs utilisés pour les bases aériennes en «French Fix»

all	<i>allemande</i>	jap	<i>japonaise</i>
atl	<i>atlantique</i>	nz	<i>néo-zélandaise</i>
aust	<i>australienne</i>	ru	<i>russe</i>
br	<i>britannique</i>	ro	<i>roumaine</i>
bré	<i>brésilienne</i>	R.S.I.	<i>République Socialiste Italienne</i>
bu	<i>bulgare</i>	U.S.	<i>américaine</i>
can	<i>canadienne</i>		
ég	<i>égyptienne</i>	g	<i>grande</i>
fin	<i>finlandaise</i>	p	<i>petite</i>
it	<i>italienne</i>	tp	<i>très petite</i>

V. Submarine (*Sous-marins*):

1. Ajout de nouvelles unités
2. s.-m. : diminutif de sous-marin

VI. Sea (*Mer*)

1. Ajout de nouvelles unités
2. Pour une raison technique, les qualificatifs utilisés pour désigner la taille de certains bâtiments ont dû être retirés en jeu.

Nom réel de bâtiment	Nommé abrégé correspondant
<i>croiseur léger / lourd</i>	<i>Croiseur</i>
<i>ravitailleur de classe Dithmarschen</i>	<i>navire rav. Dithmarschen</i>
<i>navires de soutien logistique</i>	<i>navire de soutien</i>
<i>chalutier-dragueur de mines classe «Isles»</i>	<i>chalutier-dragueur Isles</i>
<i>navire de transport de troupes type Chatham</i>	<i>nav. de troupes Chatham</i>
<i>le paquebot transatlantique type Ceramic</i>	<i>paquebot type Ceramic</i>
<i>le cargo de type Empire</i>	<i>cargo type Empire</i>

3. Un «Sperrbrecher» (littéralement «briseur d'obstructions») est un bâtiment spécial destiné à balayer les mines en les faisant sauter.
4. c.-t. : diminutif de contre-torpilleur
p.-a. : diminutif de «porte-avions»
l.-t. : diminutif de «lance-torpilles»

VII. Single Missions (*Missions solo*)

Ajout de missions supplémentaires disponibles dans la version anglaise de l'expansion

Pour plus d'informations sur chacun des navires présents dans GWX, reportez-vous au «readme» (en anglais) disponible dans: 'C:\Program Files\Ubisoft\SilentHunterIII\documentation'.

De la part de tous les joueurs français : MERCI.

Effectué par Alex (<http://www.subsim.com/radioroom/member.php?u=228626>), pour la GWX team.

Translation:

I. Menu

1. Made small corrections
2. The [quick reference sheet](#) (“*schiffsflaggen*”) available on the periscope view (**F3**) that shows the flags of all the countries available in GWX is available in French.
3. The secret document that points out to the U-boat captain the location of nets and mines in harbors (available via **F5**)
4. From now, you will notice the word "unlimited" in the submarine update screen whenever you have not yet modified your U-boat. This is due to game limits, as GWX uses the same word that appears when you ask for an in-game weather report (e.g., “visibility unlimited”). After considering these game limits, we have left the visibility part of the weather report unchanged, even though it means the status of your non-modified U-boat is now “unlimited.”

II. Air: New units have been added

III. Campaign

French version completely redone, with French translation of the full list of radio messages in the English version

IV. Land: list of all abbreviations used for air bases

Table 6: List of all abbreviations used for air bases in the French Fix option

all	German	jap	Japanese
atl	Atlantic	nz	New Zealand
aust	Australian	ru	Russian
br	British	ro	Romanian
bré	Brazilian	R.S.I.	Italian Socialist Republic
bu	Bulgarian	U.S.	American
can	Canadian		
ég	Egyptian	g	Large
fin	Finnish	p	Small
it	Italian	tp	Very Small

V. Submarine

1. New units have been added
2. s.-m. : abbreviation for submarine

VI. Sea

1. New units have been added
2. Stock *Silent Hunter III* limits to 24 the number of characters that describe the name of a type of ship. This forced a number of abbreviated ship type names since the words used to qualify the size of ships could not be used:

Real name of ships	Abbreviated name
Light/Heavy cruiser	<i>Croiseur</i>
<i>Dithmarschen</i> -type supply ship	<i>navire rav. Dithmarschen</i>
Depot ship	<i>navire de soutien</i>
<i>Isles</i> -class minesweeper	<i>chalutier-dragueur Isles</i>
<i>Chatham</i> -type troop transport	<i>nav. de troupes Chatham</i>
<i>Ceramic</i> -type ocean liner	<i>paquebot type Ceramic</i>
<i>Empire</i> -type cargo ship	<i>cargo type Empire</i>

3. A [*Sperrbrecher*](#) (literally, “barrier breaker”) is a special ship used to clear minefields
4. c.-t. : abbreviation for “destroyer”
p.-a. : abbreviation for “aircraft carrier”
l.-t. : abbreviation for “torpedo-launching” qualifier (*e.g.*, *vedette l.-t.*, “motor torpedo boat”)

VII. Single Missions

“New” missions from the English version of the expansion added in the French version

For more information on all the new ships available in GWX, consult the GWX readme available in the “\documentation” folder

In the name of all French players: MERCI.

Done by “Alex” (<http://www.subsim.com/radioroom/member.php?u=228626>), for the GWX team

GWX Black Sea Campaign Files Only

The GWX Team has developed specific campaign files for the [30th Flotilla in the Black Sea](#) which reduce load times by leaving the rest of the world empty of ships, aircraft, *etc.*. If you install this mod, you will not see any ships or aircraft outside of the Black Sea when starting a mission or campaign.

IMPORTANT NOTE

Players must enable the “GWX Black Sea Campaign Files Only” option *before* starting a patrol from Constanza if the player intends to patrol the Black Sea, as this option includes a workaround that allows players to win renown by patrolling their assigned Black Sea patrol area. Players should disable this option before starting their next mission if they have transferred from the 30th Flotilla. The GWX team recommends using the JSGME tool - provided with GWX - for easy installation of this feature. Please read the JSGME documentation for instructions on enabling and disabling software modifications.

GWX Indian Ocean Campaign Files Only

The GWX Team has developed specific campaign files for the [10th Flotilla in the Far East](#) to reduce the load time, since the rest of the world outside the Indian Ocean and the Pacific is empty. If you install this mod, you will not see any ships or aircraft outside of the Far East when starting a mission or campaign.

IMPORTANT NOTE

Players must enable the “GWX Indian Ocean Campaign Files Only” option *before* starting a patrol from Penang, Jakarta, or any other Asian U-boat base if the player intends to end the patrol in Asian waters, as this option includes a workaround that allows players to win renown by patrolling their assigned Indian Ocean or Pacific Ocean patrol area. Players should disable this option just before starting a mission where they intend to travel to Europe. The GWX team recommends using the JSGME tool - provided with GWX - for easy installation of this feature. Please read the JSGME documentation for instructions on enabling and disabling software modifications.

GWX Merged Campaign

The GWX Merged Campaign contains all elements of the GWX campaign in all ocean areas. This has the advantage of allowing players to transit between the Atlantic and Indian Oceans with all the campaign elements in place for their entire voyage; the downside is this version takes longer to load than the default GWX campaigns that focus on the Atlantic and the Mediterranean, the Black Sea, or the Indian Ocean and Pacific. The GWX Team recommends using the merged campaign only if you are planning a transit in either direction between Europe and the Orient, or if you do not mind the load times.

IMPORTANT NOTE

Players must enable the “GWX Merged Campaign” option *before* starting a patrol from European waters to an Asian port such as Penang, Jakarta, or any other Asian U-boat base; or if the player intends to end the patrol in European waters after starting at an Asian base. The GWX team recommends using the JSGME tool - provided with GWX - for easy installation of this feature. Please read the JSGME documentation for instructions on enabling and disabling software modifications.

Integrated Orders

This option adds clickable icons to the screen so that the keyboard is no longer required, although all keyboard commands will still function normally. All icons are accessible through the crew activity icons on the lower left side of the screen. *Silent Hunter III* shows a tooltip describing an icon's function when you move your mouse pointer over an icon for an enabled command; if you do not see a tooltip, then the command is currently disabled, e.g., "Blow ballast" when your U-boat is on the surface. Note: illustrations in this section use the officer icons from the GWX "[Captain America's](#)" [Officer Icon](#) mod.

Chief Engineer Icons

The Chief Engineer icon provides access to five subordinate icons, as shown in Figure 11:

- [Propulsion](#)
- [Emergency orders](#)
- [Maneuvers](#)
- [Captain's menu](#)
- [Reports](#)

Each of these subordinate icons has their own set of subordinate icons available to it.



Figure 11: Icons accessible to the Chief Engineer

Propulsion Icons

The "Propulsion" icon provides access to six subordinate command icons, as seen in Figure 12:

- Put engines in standard mode
- Put engines in battery recharge mode
- Rig U-boat for silent running
- Secure U-boat from silent running
- Raise snorkel
- Lower snorkel

Figure 12 shows the propulsion icons of a U-boat with engines operating in normal mode, with the boat secured from silent running and with the *schnorchel* ("snorkel") in its lowered position. If the U-boat did not have a snorkel, then "raise snorkel" and "lower snorkel" icons would both be grey, and no tooltip would appear when moving the mouse over those two icons.



Figure 12: Subordinate icons for Propulsion

“Emergency orders” Icons

The “Emergency orders” icon provides access to seven subordinate command icons, as seen in Figure 13:

- Crash dive
- Blow ballast
- Knuckle (90°) turn to port
- Double knuckle (180°) turn to port
- Knuckle (90°) turn to starboard
- Double knuckle (180°) turn to starboard
- Release “Bold” decoys

Figure 13 shows the emergency orders icons of a surfaced U-boat that is equipped with decoys: the “Blow ballast” icon is grey, rather than white, and the game will not show a tooltip for this icon until the U-boat has submerged. A “knuckle” turn creates an eddy in the water that can return a false sonar echo and thereby confuse an ASW vessel.



Figure 13: Subordinate icons for Emergency orders

Maneuvers Icons

The “Maneuvers” icon provides access to nine subordinate command icons, as seen in Figure 14: Subordinate :

- Periscope depth
- Snorkel depth
- Surface
- Dive
- Maintain current depth
- Heading to view
- Rudder amidships
- Hard to port
- Hard to starboard

You should use the “Heading to view” command only when you are in the bridge view, or when you are looking through one of the periscopes, the UZO, or a deck gun range finder.



Figure 14: Subordinate icons for Maneuvers

Captain's menu

The “Captain’s menu” icon provides access to two subordinate command icons, as seen in Figure 15:

- Captain’s log
- Go to bed

“Go to bed” shifts your view to the Captain’s room opposite the radio room.



Figure 15: Subordinate icons for the Captain's menu

Reports

The reports icon displays the [engineer's report](#) on fuel level, battery level, compressed air level, and CO₂ levels.

Navigator icons

The Navigator icon provides access to four subordinate icons, as shown in Figure 16:

- [Plot course](#)
- [Pre-plotted courses](#)
- [Reports](#)
- [Return to plotted course](#)

Each of these subordinate icons has their own set of subordinate icons available to it.



Figure 16: Icons accessible to the Navigator

Plot course

The “plot course” icon shifts your view to the navigator’s map (**F5**) and activates the map’s “Plot course” icon.

Pre-plotted courses

The “Pre-plotted courses” icon provides access to three subordinate icons, as shown in Figure 17:

- Search Pattern
- Kiel Canal Inbound
- Kiel Canal Outbound

The Kiel Canal Inbound and Outbound icons will set up a course to navigate your U-boat through the Kiel Canal. The [Kiel Canal section](#) of this manual has a detailed description of how these icons function, and how to use them.



Figure 17: Subordinate icons for “Pre-plotted courses”

Reports

The “Reports” icon provides access to four subordinate icons, as shown in Figure 18:

- Maximum range at current speed
- Time to the last waypoint
- Range to the last waypoint
- Depth under keel



Figure 18: Subordinate icons for Navigator Reports

Return to plotted course

This icon sets the U-boat to follow the currently plotted course.

Weapons Officer Icons

The Weapons Officer icon provides access to five subordinate icons, as shown in Figure 19:

- [Torpedo attack](#)
- [Choose torpedo target](#)
- [View Attack Map](#)
- [Weapons management](#)
- [Raise/lower periscopes](#)



Figure 19: Icons accessible to the Weapons Officer

Torpedo attack

The Torpedo Attack icon provides access to five subordinate icons, as shown in Figure 20:

- Identify ship
- Enter targeting solution
- Open selected tube(s)
- Close selected tube(s)
- Launch torpedo

Note: enable the “Identify ship” and “Enter targeting solution” icons by locking onto a target, provided you selected the “manual data entry” realism option and not the “No weapons officer assistance” realism option. You must enter the torpedo aiming data into the *vorhaltrechner* by using the “Enter data” function on the data notepad (see Appendix C: Manual Targeting).



Figure 20: Subordinate icons for Torpedo attack

Choose torpedo target

The “Choose torpedo target” icon provides access to four subordinate icons to select a target for a torpedo attack, as shown in Figure 21:

- Nearest ship
- Nearest warship
- Nearest merchant ship
- Target recommended by Weapons Officer

The Weapons Officer will recommend a target only if you have not selected the “No weapons officer assistance” realism option.



Figure 21: Subordinate icons for “Choose torpedo target”

View attack map

Shift view to the Attack Map (F6).

Weapons management

Display the weapons management overlay (I), showing the remaining torpedoes by default.

Raise/lower periscopes

The “Raise/lower periscopes” icon provides access to four subordinate icons, as shown in Figure 22:

- Fully raise attack (ATK)-scope
- Fully lower ATK-scope
- Fully raise observation (OBS)-scope
- Fully lower OBS-scope



Figure 22: Subordinate icons for “Raise/lower periscopes”

Hydrophone Operator Icons

The Hydrophone Operator icon provides access to three subordinate icons, as shown in Figure 23:

- [Reports](#)
- [Hydrophone](#)
- [Sonar](#)



Figure 23: Icons accessible to the Hydrophone Operator

Reports

The Reports icon provides access to three subordinate icons, as shown in Figure 24:

- Repeat last report
- Report on nearest sound contact
- Report on nearest warship contact



Figure 24: Subordinate icons for Hydrophone reports

Hydrophone

The Hydrophone icon provides access to three subordinate icons, as shown in Figure 25:

- Normal sweep
- Follow nearest sound contact
- Follow nearest warship contact

Figure 25 shows the hydrophone icons of a U-boat when the hydrophones are operating in normal sweep mode.



Figure 25: Subordinate hydrophone icons

Sonar

The Sonar icon provides access to two subordinate icons, as shown in Figure 26:

- Estimate range to target
- Precise range to target

You must have selected a target using the hydrophone operator's notepad before the sonar will report the range to that target.



Figure 26: Subordinate Sonar icons

Radio Operator Icons

The Radio Operator icon provides access to four subordinate icons, as shown in Figure 27:

- [Report](#)
- [Radar](#)
- [Gramophone](#)
- [Radio message](#)



Figure 27: Icons accessible to the Radio Operator

Report

The Report icon provides access to three subordinate icons, as shown in Figure 28:

- Report contacts
- Send contact report
- Send patrol report

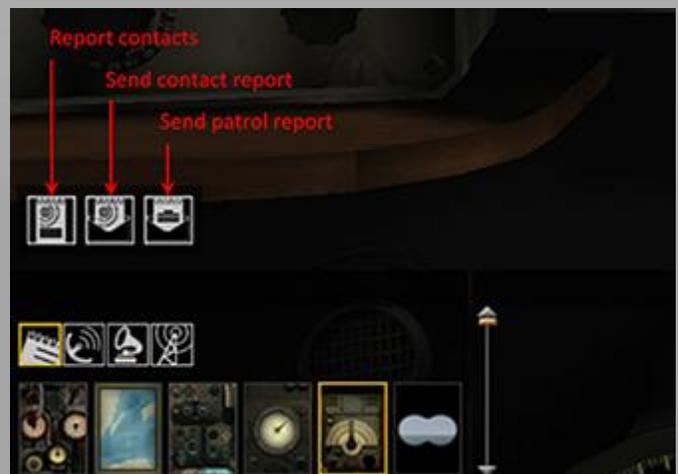


Figure 28: Subordinate Report icons

Radar

The Radar icon provides access to three subordinate icons, as shown in Figure 29:

- One sweep
- Continuous sweep
- Turn off

Figure 29 shows the radar icons of a U-boat when the radar is operating in continuous sweep mode.



Figure 29: Subordinate Radar icons

Gramophone

The Gramophone icon provides access to four subordinate icons, as shown in Figure 30:

- Play
- Previous track
- Stop
- Next track



Figure 30: Subordinate Gramophone icons

Radio message

This brings you to the Radio Messages view (M).

Watch Officer Icons

The Watch Officer icon provides access to eight subordinate icons, as shown in Figure X:

- [Choose deck gun target](#)
- [Crew on deck](#)
- [Weapons management](#)
- [Deck gun](#)
- [Flak gun](#)
- [Nearest visual contact](#)
- [Weather](#)
- [UZO & Binoculars](#)



Figure 31: Icons accessible to the Watch Officer

Choose deck gun target

The "Choose deck gun target" icon provides access to four subordinate icons, as shown in Figure 32:

- Nearest ship
- Nearest warship
- Nearest merchant ship
- Target recommended by Weapons Officer

The Weapons Officer will recommend a target to the Watch Officer, but only if you have not selected the "No weapons officer assistance" realism option.



Figure 32: Subordinate "Choose deck gun target" icons

Crew on deck

The “Crew on deck” icon provides access to four subordinate icons, as shown in Figure 33:

- Man the deck gun
- Man the flak gun(s)
- Man the deck gun and flak gun(s)
- Watch crew to the bridge



Figure 33: Subordinate "Crew on deck" icons

Weapons management

Display the weapons management overlay (I), showing the deck gun ammunition by default.

Deck gun

The “Deck gun” icon provides access to nine subordinate icons, as shown in Figure 34:

- Fire at will
- Hold fire
- Fire at short range
- Fire at medium range
- Fire at long range
- Aim for command deck
- Aim for weapons
- Aim for waterline
- Aim for hull

Figure 34 shows the deck gun icons of a U-boat whose deck gun is currently holding fire, but will fire at the hulls of targets at long range should you give the order to open fire.



Figure 34: Subordinate “Deck gun” icons

Flak gun

The “Flak gun” icon provides access to 10 subordinate icons, as shown in Figure 35:

- Fire at will
- Hold fire
- Fire at short range
- Fire at medium range
- Fire at long range
- Target fighters
- Target bombers
- Target any aircraft
- Engage incoming aircraft
- Engage any aircraft

Figure 35 shows the flak gun icons of a U-boat whose flak guns are currently holding fire, but will begin firing at long range at any fighter or bomber, whether it is currently incoming against the U-boat or not.



Figure 35: Subordinate "Flak gun" icons

Nearest visual contact

Report the bearing and range of the visible surface contact.

Weather

Report the current weather conditions. Note: GWX has the Watch Officer order up the weather report when the U-boat is on the surface, but stock *Silent Hunter III* hard codes the navigator to give it to you.

UZO & Binoculars

The “UZO & Binoculars” icon provides access to two subordinate icons, as shown in Figure 36:

- Use UZO
- Use Binoculars



Figure 36: Subordinate “UZO & Binoculars” icons

Lite Harbor Traffic

GWX introduces large numbers of new objects, including ship and air traffic, to the ports used as U-boat bases. This option reduces the number of objects in friendly ports to improve frame rates by reducing the number of ships and aircraft in at U-boat bases.. This option modifies the default campaign that focuses on the Atlantic and Mediterranean theaters.

Main Menu Screen Movie is replaced by a collage from *Das Boot*

GWX displays a collage of historical World War II newsreel footage on its main menu screen. This option replaces the historical movie footage with a collage of scenes from the movie *Das Boot*.

Mediterranean camouflage for German aircraft

All aircraft of the same type have the same markings in stock *Silent Hunter III*; however, aircraft in the Mediterranean used camouflage patterns to match the local environment. GWX includes Mediterranean camouflage patterns for the [He 111H](#) medium bomber, [Ju 87B “Stuka”](#) dive-bomber, [Ju 88A](#) medium bomber, and [Bf 109E](#) fighter-bomber.



Figure 37: He 111H in Mediterranean camouflage



Figure 38: Ju 87B “Stuka” in Mediterranean camouflage



Figure 39: Ju 88A in Mediterranean camouflage



Figure 40: Bf 109E in Mediterranean camouflage

Navigation Maps and Grid References in English

Navigation map locations in stock *Silent Hunter III* are in German, as are the default grid references for the new theaters (Black Sea and Asia) in GWX. This option displays the navigation map locations and new GWX theater grid references in English.

No Crew Medals Displayed while at Sea

Stock *Silent Hunter III* displays U-boat crewmembers at sea in uniform and with their medals and badges of rank; however, historical U-boat crews adopted all manner of non-uniform dress while at sea (checked shirts were quite popular) and did not wear their medals except in port. This option allows the crew to follow the practice of historical U-boat crews and not wear medals while at sea.

Open Hatch Mod for Type VII, IX, and XXI U-boats

Stock *Silent Hunter III* leaves closed the watertight hatch between the control room (“*zentrale*”) and the area with the Captain’s quarters, the radio room, and the hydrophone room. This option leaves that hatch open in all Type VII (VIIB, VIIC, VIIC/41, and VIIC/42), Type IX (IXB, IXC, IXC/40, and IXD2), and Type XXI U-boats, so that you can see through the open watertight door into the next compartment. The door will always be open while you have this mod activated, even in situations where the crew would have closed it in real life.

You can use the [Shift]+F2 key combination to “walk” through the open hatch between the two areas and observe the activities of the crewmen at their posts. “Solid” objects do not restrict the free camera in the control room, so you will not see anything if you move the camera through the walls to “outside” these two areas, and you will get a “camera out of sectors” error if you move too far. You can relieve the “camera out of sectors” error by selecting a different view, such as the periscope view (F3).



Figure 41: Open door to radio room seen from *Zentrale*



Figure 42: View from the Captain's quarters

Type VIIC/41 3D model

The Type VIIC/41 U-boat in stock *Silent Hunter III* had the correct capabilities and attributes, but used the same 3D model as the Type VIIC. The historical Type VIIC/41 differed only slightly in appearance from the Type VIIC, *e.g.*, the addition of lifeboat canisters and the shape of the bow, but it could dive much deeper due to the higher-grade steel used in the construction of its pressure hull. Stock *Silent Hunter III* limits to the number of 3D models available for use by player-controlled U-boats, so this option allows players to replace the default Type VIIC 3D model with a Type VIIC/41 3D model. You can install this option at any time, consistent with the overall guidance on installing new GWX options, **after you have saved the game with your U-boat in port and have exited *Silent Hunter III*.**

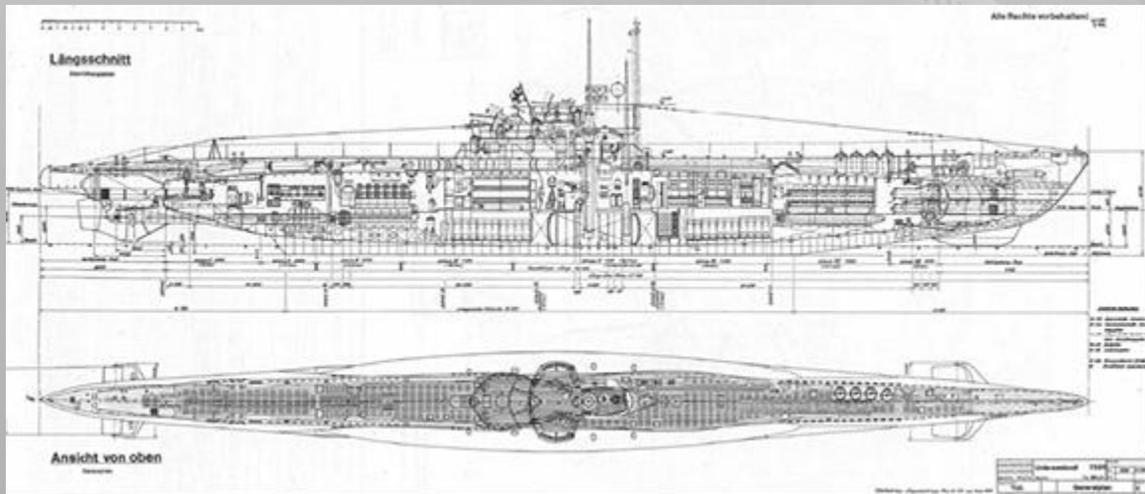


Figure 43: Blueprint of the Type VIIC/41 U-boat⁷

⁷ Drawing from “CobaLT’s Playable VIIC/41 mod”

Uninstalling the Grey Wolves Expansion

If you wish to uninstall GWX, then simply uninstall *Silent Hunter III*, delete all the folders in your installation directory (e.g., C:\Program Files\Ubisoft\SilentHunterIII), and delete the "SH3" folder in the "My Documents" folder.

Compatibility with other Modifications

The GWX team has tested GWX installed on a clean installation of stock *Silent Hunter III*, Rev. 1.4b. The GWX team cannot assure the compatibility of GWX with any other modification due to the time required to modify files contributed to GWX and to perform adequate compatibility testing – which would take us away from the time needed to add (and test) more GWX improvements.

GWX and *SH3 Commander*

The GWX Team recommends using the latest *SH3 Commander*, a Jonesoft freeware product that allows players to edit many of the parameters and settings for a player's career in *Silent Hunter III*, for the best *Silent Hunter III* experience. *SH3 Commander* is available at <http://www.users.on.net/~jscones/software>

Important Notice to users of *SH3 Commander*

The GWX Team has made available updated files to ensure compatibility between GWX and *SH3 Commander*. Please note that:

- you *MUST* install these files if you *ARE* using GWX and *SH3 Commander*
- you must *NOT* install these files if you are *NOT* using GWX and *SH3 Commander*

Take the following steps to configure *SH3 Commander* for GWX:

- Ensure you are running *SH3 Commander* R2.6 or greater, as prior releases are not supported.
- Download from the GWX site (<http://www.thegreywolves.com>) and extract the contents into your *SH3 Commander* folder. Refer to the readme.txt in the zip file for more detailed information.

The GWX team suggests you set the following *SH3 Commander* options to get the most enjoyment while running with GWX:

- Select "Use historic U-boat availability dates" when playing a career in the 30th/33rd flotilla
- Select "Set number of days spent in base" to 55 when playing a career in the Far East
- *Do not* use the "Grey Wolves 24 hour" fatigue model
- *Do not* use the "Combined Ship Pack" add-on

NEW GAME BEHAVIORS

Your New U-boat

U-boat Starting Locations

Stock *Silent Hunter III* U-boats always start their missions at dockside at a U-boat base. GWX modifies some U-boat flotillas so that you will start your patrol inside a U-boat pen.

Steering and Handling

This feature causes your U-boat to react to its environment more naturally than in stock *Silent Hunter III*. These reactions include:

- Heavy seas will impede forward motion and increase the rate of fuel expenditure; for example, your speed will decrease if your U-boat buries its nose in an Atlantic roller.
- Your U-boat will show greater pitch and roll motion on the surface. This may occasionally lead to contacts by your hydrophone operator if the hydrophones drop far enough below the surface and the contact is close enough.
- Acceleration takes more time; it will take longer to increase speed when starting at higher speeds
- Changing course will slow your U-boat down a bit more
- Buoyancy and fine-trimming your depth
 - The speed at which your U-boat is traveling can affect your depth.
 - A U-boat that is non-moving or operating at ≤ 2 knots will run about one meter or so above its commanded depth. The top of the conning tower may broach the surface if you were at or just above periscope depth. This could result in ships or aircraft spotting your U-boat if they are in range.
 - A U-boat operating at > 2 knots will be unaffected
 - GWX varies your U-boat's buoyancy after a close depth charge detonation. This may result in your U-boat being temporarily blown to the surface by a depth charge exploding underneath you, or being driven deeper by depth charge explosions just above you
 - Flooding will force your U-boat deeper to reflect the effect of flooding on your U-boats buoyancy and trim

Engine Upgrades

Principal Author: “Penelope Grey”

Historical Background

Superchargers were not an optional U-boat “engine upgrade” in the way stock *Silent Hunter III* portrays them, since U-boat diesel engines already had superchargers when shipyards installed the engines during construction. Almost all Type VIIB, VIIC, and VIIC/41 U-boat diesel engines, manufactured by Friedrich Krupp *Germaniawerft* AG (GW), had a built-in *Kapselgebläse* (“geared supercharger”);⁸ *Maschinenfabrik* Augsburg-Nürnberg (MAN) AG built the diesel engines used by Type IX U-boats, and installed a *Buchigebläse* (“exhaust-driven supercharger”).⁹ The Type VIIC/42, had it been built, was to have used the MAN *Buchigebläse*, but these engines were diverted to the Type XXI U-boat program when the Type VIIC/42 was cancelled.¹⁰



Figure 44: Krupp GW *Kapselgebläse* installed in U-570¹¹

Engine Upgrades in GWX

The premise of engine upgrades in stock *Silent Hunter III* was that installing a supercharger would make the U-Boat go faster at a small cost in fuel economy; however, U-boats were already running at their top historical speeds, so installing the upgrades allows player U-Boats go faster than in real life, as well as reducing the U-boat’s fuel economy. The baseline speeds of all U-boats already reflected the presence of diesel superchargers, so the GWX Team has eliminated any special advantages from engine upgrades rather than remove them from the game entirely. Superchargers will appear by default in those U-boats that had them historically, and at no cost to the player, but neither will U-boats go faster in the game than they did in real life. The Type VIIC/42 U-boat in GWX uses Krupp GW superchargers on the assumption that the *Kriegsmarine* construction office has diverted all MAN superchargers to the higher-priority Type XXI construction program, as happened historically.

⁸ David Westwood, *Anatomy of the Ship: The Type VII U-boat*. Naval Institute Press: 2003.

⁹ Eberhard Rössler, *The U-boat: The evolution and technical history of German submarines*. Cassell & Co.: 1981.

¹⁰ David Miller, *U-boats: The Illustrated History of the Raiders of the Deep*. Brassey's, Inc.: 2002.

¹¹ U.S. Navy photo, “Report on the German submarine of the U-570 class captured by the British in October 1941,”

<http://www.uboaarchive.net/U-570Photo28.htm>

Fuel Capacity

Background

The range of U-boats in stock *Silent Hunter III* is consistent with their historical ranges; however, GWX significantly increases the distances that U-boats can travel on a single load of fuel because distances between points of latitude and longitude in *Silent Hunter III*, e.g., the distances between major ports, are much larger than they are in real life. There are two reasons for the increased distance:

- The shortest distance between two points on a sphere is a Great Circle; however, courses plotted by players in *Silent Hunter III* are loxodromes, or lines of constant heading, that appear as straight lines on Mercator projections but which curve when the course is plotted on the surface of a three-dimensional sphere (see Figure 45). The difference between the Great Circle distance and the distance along a loxodrome increases as the loxodrome approaches the poles; for example, the distance from Brest, France to Boston, USA is over 10,000 km in *Silent Hunter III*, but is only about 6,000 km along the real life Great Circle route.

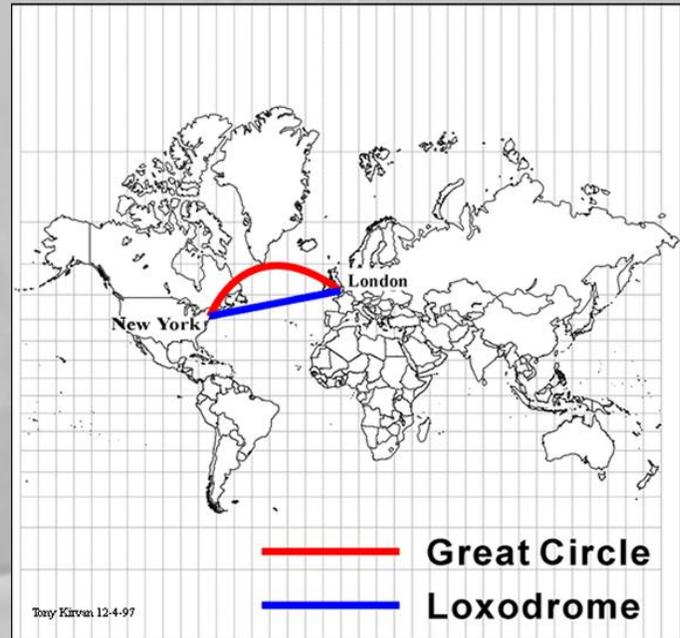


Figure 45: Distances using Great Circle vs Loxodrome¹²

- The number of kilometers per degree of latitude and longitude, as shown in Table 7, is larger in *Silent Hunter III* than it is in real life, even at the equator, resulting in even greater distances between points than would be expected if *Silent Hunter III* used Great Circle distances.

Table 7: Effect of latitude on the length of one degree of geodetic latitude and longitude¹³

Latitude	One degree of latitude (km)		One degree of longitude (km)	
	<i>Silent Hunter III</i>	Real World	<i>Silent Hunter III</i>	Real World
0°	120	110.57	120	111.32
10°	120	110.61	120	109.64
20°	120	110.70	120	104.65
30°	120	110.85	120	96.49
40°	120	111.04	120	85.39
50°	120	111.23	120	71.70
60°	120	111.41	120	55.80
70°	120	111.56	120	38.19
80°	120	111.66	120	19.39
90°	N/A	111.66	N/A	0.00

¹² Anthony P. Kirvan, “Unit 014 – Latitude and Longitude,” <http://www.ncgia.ucsb.edu/giscc/units/u014/u014.html>

¹³ “Real World” distances obtained from Anthony P. Kirvan, “Unit 014 – Latitude and Longitude,” <http://www.ncgia.ucsb.edu/giscc/units/u014/u014.html>

Fuel Capacity in GWX

The GWX Team estimated the ratio between distances traveled in *Silent Hunter III* and distances traveled in the real world at different latitudes by calculating the A-B distance in Figure 46 at 10° intervals for the range of latitudes from the equator to Spitsbergen (78°N), which was the range of latitudes in which U-boats operated historically. The team chose the A-B distance to address the fact that U-boats in *Silent Hunter III* may conduct missions that run primarily east-to-west, e.g., from France to the Caribbean, or from north-to-south, e.g., from France to the South Atlantic or to the Indian Ocean.

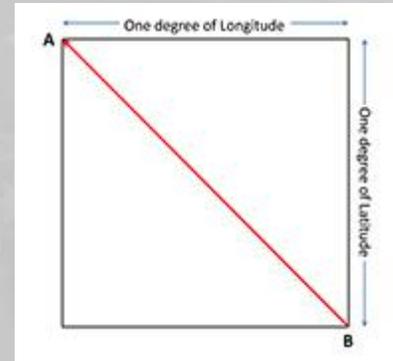


Figure 46: Distance distortion

Table 8: Distance ratios by latitude

Latitude	SH3:Real ratio
0°	1.08
10°	1.09
20°	1.11
30°	1.15
40°	1.21
50°	1.28
60°	1.36
70°	1.44
80°	1.49

The GWX Team reviewed the ratios in Table 8 and increased the range of Type II U-boats by 33%, and the ranges of Type VII, IX, and XXI U-boats by 25% to account for the larger world in *Silent Hunter III*. The increase is greater for the Type II U-boats, which operated primarily in the North Sea between 50°N and 60°N latitude. The ranges of the larger U-boats accounts for U-boats starting patrols at French bases between 50°N and 60°N latitude and traveling to North America, the South Atlantic, or the Indian Ocean. The averages do not work for every possible case, but resolves problems reported with U-boats running out of fuel during missions to historical patrol areas.

Table 9 shows U-boat ranges from stock *Silent Hunter III* and the approximate range in GWX, in kilometers, assuming a speed of 12 knots and a wind speed of 4 meters per second. The values from stock *Silent Hunter III* (SH3) agree with Rössler's figures.¹⁴ Players in GWX can increase this range considerably by operating at slower speeds, although this will increase the time needed to move to and from your patrol areas.

Table 9: U-boat ranges in GWX (in km)

U-boat Type	Stock SH3	GWX
IIA (uses IIB figures)	3333	4400
IID	6389	8500
VIIB	12038	15000
VIIC, VIIC/41, VIIC/42	12038	15000
IXB	16112	20100
IXC, IXC/40	20372	25500
IXD2	43892	55000
XXI	20650	25800

¹⁴ Rössler. *The U-boat: The evolution and technical history of German submarines*.

Gunnery

Historical Background

U-boats had significant advantages early in the war when stalking convoys in darkness and poor visibility: U-boats reported they could approach within half a mile of merchant ships without detection. The basic visual detection aid was the binocular: U-boat personnel carried hand-held binoculars, while ships had hand-held and mounted binoculars; the latter were more powerful, could see further (as they were higher than a U-boat's bridge), and were on a more stable platform than binoculars on U-boats.



Figure 47: Binoculars on USS *Saint Paul* (CA-73) c. 1953¹⁵

Ship's binoculars could include hand-held, wide-angle surveillance versions (7X magnification), mounted binoculars of 20X to 25X magnification, and the large range finders of a warship's fire control system. Warships used mounted binoculars to detect targets for shore bombardment, to inspect other ships or objects from a "safe" distance, and to more closely objects detected by hand-held binoculars. Surface and air search radars became available just prior to World War II; they were initially primitive, but could detect the exposed *schnorchel* and periscope of a submerged U-boat by the end of the war.

U-boats, warships smaller than destroyers, and merchant ships aimed and pointed their guns manually. Larger warships used optical range finders early in the war, and later used radar rangefinders with optical backup systems to feed data to ballistic computers that predicted the location of aerial and surface targets and controlled the aiming of the ship's guns. U.S. destroyers had fire control radar for their 5-inch guns starting in 1941; radar control was available for use with 40mm anti-aircraft cannon by 1943.

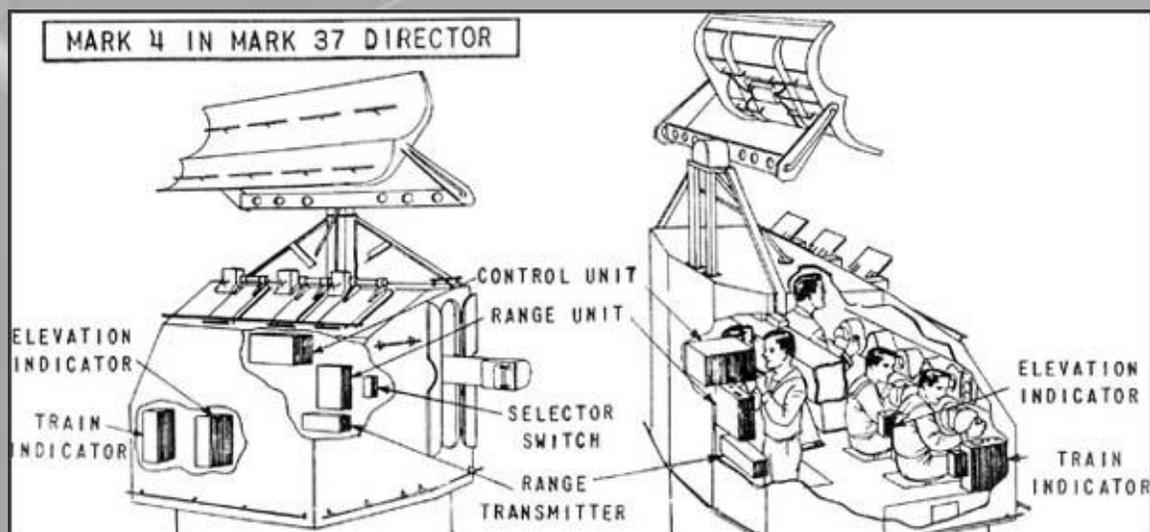


Figure 48: U.S. Mark 37 Fire Director (with Mark 4 radar) for controlling dual-purpose 5-inch guns¹⁶

¹⁵ U.S. Navy photo #80-G-428854, <http://www.defenselink.mil/multimedia/>

Aircraft could detect submarines on the surface or using their periscopes during daylight with relative ease with the submarine's wake, a long white streak through the water with a submarine at one end of it, leading the aircraft straight to the submarine. Submarines using their periscopes or the *schnorchel* in daylight were nearly as visible: the periscope left a wake, while the *schnorchel* spewed a plume of diesel smoke and soot that was visible for miles. In some circumstances, aircraft or blimps flying overhead could see the entire submarine in clear, shallow water, as shown in Figure 49.



Figure 49: USS *Chicago* (SSN-721) at periscope depth off Malaysia (2001)¹⁷

¹⁶ U.S. Naval Historical Center, <http://www.history.navy.mil/library/online/radar-2.htm>

¹⁷ Photo source: U.S. Navy photo, http://www.news.navy.mil/view_single.asp?id=673

Naval Gunnery in GWX

This feature has several components pertaining to AI-controlled weapons, including those on U-boats:

- AI-controlled weapons and lookouts no longer “lock on” to or detect their targets as in stock *Silent Hunter III*, and their capabilities are now affected by multiple factors, including:
 - The speed, size, and aspect angle of the target relative to the observer or weapon system
 - Range to target (shorter range means better likelihood of seeing and hitting a target)
 - Platform stability (hint: ships are more stable gun platforms than are U-boats)
 - Crew rating – higher quality crews have a better chance of seeing and hitting you
 - Illumination level (daylight; twilight; dark; *etc.*)
- AI-controlled weapons (*e.g.*, battleship main gun batteries) can now fire at any target within their real-life maximum range provided they have observed the target.
- AI-controlled weapons must observe their target before opening fire; factors that affect the ability to observe a target include sensor limitations, weather, and darkness; range to target; and the crew rating of the observing ship. Note GWX has eliminated the “vampire night vision” phenomenon observed in stock *Silent Hunter III*.

This is a *SIGNIFICANT* change for U-boats in action on the surface against ships or aircraft. The GWX Team strongly recommends you pay close attention to the number and type of weapons you may be facing during an engagement, since these new features apply to your own AI gunners as well as to AI gunners aboard ships. In general, you can expect the following effects:

- Gunnery from surface ships will be better than that of your AI U-boat gunners because surface ships generally have better range finding, fire control, and firing platform stability than U-boats.
- Convoys will fire star shells (“snowflakes”) as soon as they suspect your presence; once they spot you they will open fire with every gun they have, which will include one deck gun and two to four anti-aircraft guns per ship. The number of guns in even a small convoy can add up very quickly.
- Aircraft will be more difficult to spot at twilight, and small aircraft will be more difficult to spot than large aircraft.
- Your AI flak gunners still suffer from the stock *Silent Hunter III* restriction that they cannot fire at enemy surface ships, so to fire flak at an enemy surface ship you must man the gun yourself (which means you are not launching torpedoes, maneuvering your U-boat, *etc.*)
- Your attack periscope now has a maximum magnification of 10X rather than 6X. This allows your periscope to better simulate the actual capabilities of real-world 6X optics when performing such tasks as identifying the type of ship, examining the flag of a freighter to verify that a hostile country owns the ship, *etc.* This does not affect manual targeting.

References: “Naval Weapons of the World,” http://www.navweaps.com/Weapons/index_weapons.htm

U-boat gunnery in GWX

U-boat gunnery weapons in GWX have the following changes from stock *Silent Hunter III*:

- Destabilized gun sight views will rock up and down as the U-boat's pitches and rolls.
- Hits by deck guns cause about 50% less damage.
- Shell hits above a target's waterline will not cause significant damage. Aim below the waterline for the best gunfire results, as these cause the ship to flood.
- U-boats follow their historical practice of carrying only high explosive deck gun ammunition instead of the mix of ammunition types found in stock *Silent Hunter III*.¹⁸

Table 10 summarizes the efficiency of U-boat deck and antiaircraft guns in GWX. Note: the Cyclic Firing rates are unchanged from their values in stock *Silent Hunter III*, but are somewhat dependent on your displayed FPS (<CTRL>F8) toggles the FPS display in *Silent Hunter III*). The GWX Team adjusted the average firing rate to balance the relative lack of sophistication of aircraft AI as well as the ability of aircraft to sustain damage.

Table 10: Basic GWX U-boat gunnery information (obtained at 30-35 FPS)

Type	Name	Clip Size (rounds)	Reload rate (secs)	Cyclic firing rate (rounds/minute) ¹⁹		Average firing rate (rounds/minute) ²⁰	
				Historical	GWX	Historical	GWX
Deck Guns	10.5cm SK C/32 ²¹	1	6	N/A	N/A	15	12
	8.8cm SK C/35 ²²	1	5	N/A	N/A	15	10
Heavy Flak	3.7cm Flak M42 <i>zwilling</i> ²³	5 x2	1-2	500	200	360	140
	3.7cm Flak M42 ²⁴	5	1-2	250	200	180	135
	3.7cm SK C/30U ²⁵	1	2	N/A	N/A	30	30
	2cm Flakvierling 38	40 x4	30	1900	540	880	270
Light Flak	2cm Flak C/38 <i>zwilling</i> XXI	40 x2	8	960	540	440	320
	2cm Flak C/38 <i>zwilling</i>	40 x2	8	960	540	440	320
	2cm Flak C/38 ²⁶	40	4	480	540	220	300
	2cm Flak C/30 <i>zwilling</i>	20 x2	8	560	220	240	140
	2cm Flak C/30 ²⁷	20	4	280	220	120	140

¹⁸ "German 8.8cm/45 (3.46") SK C/35," http://www.navweaps.com/Weapons/WNGER_88mm-45_skc35.htm

¹⁹ "Cyclic rate" is the rate at which an automatic weapon will fire until it expends the ammunition in its clip, belt, or drum. Your rate may vary depending upon your current display FPS. It is "N/A" for manually loaded weapons.

²⁰ "Average rate" is the rate of fire after taking into account reloading time. Your rate may vary depending upon the effectiveness of your gun crews and your current display FPS

²¹ "German 10.5cm/45 (4.1") SK C/32," http://www.navweaps.com/Weapons/WNGER_41-45_skc32.htm

²² "German 8.8cm/45 (3.46") SK C/35," http://www.navweaps.com/Weapons/WNGER_88mm-45_skc35.htm

²³ "German 3.7cm/69 (1.5") M42," http://www.navweaps.com/Weapons/WNGER_37mm-69_mk42.htm

²⁴ "German 3.7cm/69 (1.5") M42," http://www.navweaps.com/Weapons/WNGER_37mm-69_mk42.htm

²⁵ "German 3.7cm/L83 (1.5") SK C/30U," http://www.navweaps.com/Weapons/WNGER_37mm-83_skc30.htm

²⁶ "Germah 2cm/65 (0.79") /C30 AA MG," http://www.navweaps.com/Weapons/WNGER_20mm-65_c30.htm

²⁷ "Germah 2cm/65 (0.79") /C38 AA MG," http://www.navweaps.com/Weapons/WNGER_20mm-65_c30.htm

NB: The deck gun is not automatically loaded with ammunition. Stock *Silent Hunter III* has hardcoded the deck gun crew to load armor piercing (AP) ammunition; however, GWX has eliminated all armor-piercing and star shell ammunition since U-boats did not carry these ammunition types historically. You (the player) therefore must tell the deck gun crew what kind to use since there is no AP ammunition. You have two options to load the deck gun.

1. Order the watch officer to operate the gun, and then use the watch officer icon to order the deck gun to open fire.
2. Left click on the “High Explosive Shell” whenever you are in the deck gun view, as shown in Figure 50, and your gun will be loaded at all times for the rest of your mission or patrol unless you run out of ammunition.



Figure 50: Left-click on "High Explosive shells" to load the deck gun

Type VIIC/4 (“*U-flak*”) conning tower (“*Turm*”)

Historical Background

U-boats began the war with a *turm* (“conning tower”) that was barely large enough for an officer and a few enlisted personnel to stand as they watched for signs of the enemy. Type Type II U-boat conning tower was so small there was not even enough room for an anti-aircraft gun, but the early Type VII and Type IX U-boats each had a small platform built into the rear of the conning tower that could support a single or double 2cm flak cannon.

The effectiveness of ASW aircraft prompted the Germans to begin enlarging the conning tower structure to allow the installation of increased anti-aircraft armament: first adding a small separate platform, known as the *wintergarten* (“winter garden”) to carry an additional anti-aircraft gun, and then merging and enlarging the *wintergarten* to carry more and larger *flak* batteries as the war progressed. The VIIC/4 *turm* allowed a Type VIIC U-boat to carry two 2cm *Flakvierling* and one 3.7cm *flak*, and was used on specialized *U-flak* as *flak* traps for Allied ASW aircraft, and to shield other U-boats from ASW aircraft attack.



Figure 51: *U-441* in its *U-flak* configuration with VIIC/4 *Turm*²⁸

The *U-flak* proved disappointing: the extra-large anti-aircraft battery meant the U-boat had to carry 20 extra men and several tons of ammunition in order to operate them, which left little room for food, torpedoes, and sleeping space. This in turn limited these boats to employment in the Bay of Biscay, where Allied aircrews soon learned to coordinate their attacks, coming in from different directions in order to split the boat’s fire.

The VIIC/4 (“*U-flak*”) conning tower in GWX

The VIIC/4 (“*U-flak*”) conning tower is available to players in GWX starting in June 1943. It is the same flak tower used by the [AI-controlled U-flak](#). Unlike the real-life *U-flak*, GWX does not penalize the player by limiting your torpedo loadout, and the *Silent Hunter III* game engine does not account for the men required to convey ammunition from the storage areas to the guns, and to load ammunition into the guns. Players can place any combination of three heavy flak guns (3.7cm or 2cm *Flakvierling* 38) on the VIIC/4 *Turm*.

²⁸ Photo source: “*Silent Hunter Addict*,” <http://silent-hunter-addict.com>

Crew Fatigue

GWX models crew fatigue to give results similar to the historical U-boat “watch,” or “duty shift” cycle within the constraints of the *Silent Hunter III* fatigue model. The fatigue model is intuitive, but the default parameter settings for crew fatigue in stock *Silent Hunter III* resulted in crewmembers tiring and falling to minimum efficiency within about 80 minutes after going on duty in fully rested condition. This required a great deal of player intervention to move crewmembers from duty stations to their rest areas and back again every two hours, which could become somewhat tedious over the course of a patrol lasting several months and seemed to bear only small resemblance to the normal lives of U-boat crewmembers.

A routine day in the life of a watch-keeping U-boat crewmember – that is, everyone except the commander and the cook - consisted of three types of activity, subject to interruptions by all-hands activities such as being at action stations:

- “On watch,” which meant being at their duty station manning equipment, monitoring the engines, keeping a sharp lookout for aircraft and other ships, *etc.*
- “Commander’s Time,” also known in the military as “free time,” was time in which crew members could relieve the duty lookouts or tend to such matters as eating, personal hygiene, recreation, general maintenance within the U-boat, learning new skills, *etc.*, subject to the commanding officer’s discretion and the needs of the boat.
- “Off duty,” wherein you tried to sleep given all the activity going on around you

The length of an historical U-boat crewmember’s watch ranged from four to eight hours depending on the duty watch position:

- The typical watch cycle for the bridge officer and lookouts was usually four hours on the bridge as lookouts; four hours performing maintenance and other duties; eight hours of Commander’s Time, and eight hours off duty.
- Radio operators and sound gear operators had four hours on duty and four hours off duty.
- Torpedo room crews, helmsmen, and officers generally had eight hours on duty, eight hours of Commander’s Time, and eight hours off duty.
- The engine room crew had six hours on duty and six hours off duty, which resulted in more on-duty hours in a high-stress environment in return for serving no duty as exposed bridge lookouts.²⁹

The GWX team believes we have found an approach that allows an intuitive approach to managing crew fatigue and stress while limiting the need to have the player intervene in the daily operation of the U-boat in line with real world U-boat operations. In this case, “fatigue” reflects the need for sleep and the degradation of human efficiency in a sleep-deprived state as well as “stress,” which is what the military called “battle fatigue” during World War II and what is known today as “combat stress reaction.” It is

“...what one U.S. Navy psychiatrist called, ‘a normal reaction by a normal person to an abnormal, horrific situation.’ The stress you feel helps you brace for danger. But you can sometimes witness an event so severe or experience a threat so prolonged that your body may continue to maintain that state of high alert long afterwards, when your body and mind need to rest.”³⁰

²⁹ Williamson, *Wolf Pack*, pp. 179-181

³⁰ USAF Office of Special Investigations, “Combat Stress,”

<http://www.osi.andrews.af.mil/library/deploymentstress/thedeployedspouse/dealingwithcombatandoperationalstress/>

GWX modifies the parameters that affect the rate at which crewmembers accumulate and relieve fatigue in terms of the environment in which the U-boat operates, and the environment within a U-boat in which you have assigned your crewmembers. Please be advised that these effects are cumulative.

The Environment around the U-boat

- Being submerged reduces the rate at which the crew accumulates fatigue, since a U-boat is much less vulnerable to detection and attack beneath the surface.
- Being on the surface in rough seas increases the rate at which fatigue accumulates, especially for the bridge lookout watch. Crewmembers of a submerged U-boat in rough seas have a significantly lower rate of fatigue accumulation than those in a U-boat on the surface.
- Combat has a significant effect on fatigue. The heart rate and blood pressure of your crew is elevated during combat even when things are going well, and your crew may feel quite drained even after winning a battle.

Table 11: Relative fatigue accumulation factors due to the environment around the U-boat

	Action Stations		Routine Operations	
	Calm seas	Rough Seas	Calm Seas	Rough Seas
Surfaced	++	+++	+	++
Submerged	++	++	+	+

The Environment within the U-boat

Torpedo Rooms: Fatigue here is primarily due to the mental concentration and manual labor required to maintain and service torpedoes during quiet times, and the heavy manual labor of rapidly loading torpedoes into the tubes during combat. The fatigue rate also applies in some U-boats to shifting spare torpedoes from storage outside the pressure hull into the torpedo rooms, a task normally performed only in daylight and good weather conditions with no immediate danger of air attack. The torpedo rooms historically were the off-duty quarters for the lower-ranking enlisted seamen as well as a location where torpedo maintenance work was routinely performed; stock *Silent Hunter III* separates these functions and puts the off-duty functions into the “crew quarters” while maintaining the working functions in the “torpedo room.”



Figure 52: Shifting spare torpedoes while at sea in U-402³¹

³¹ Photo credit: “Photographs from the personal albums of Obermaat [Petty Officer] Walter Friebohn,” *U-boatarchive.net*, <http://www.uboatarchive.net/U-402PhotosFriebohnTwo.htm>

Crew Quarters: Ahhh, relaxation in the smell of damp, sweaty, air on moldy mattresses still warm from the body heat of the previous occupant, and the smell of Frenssen's feet – ah, among other things - in the bunk above, or eating with your mates on foldout furniture in the company of same. The crew recovers from fatigue here, but more slowly than in stock *Silent Hunter III*, though a medic in the compartment will increase the recovery rate. Being in the crew quarters will always reduce fatigue regardless of what else is happening in the U-boat's environment or inside the U-boat.



Figure 53: Eating and sleeping with torpedoes in *U-402*³²

Control room: The control room is the area with the least compartment-related fatigue, including the radio and hydrophone compartments; however, failure to maintain sufficient crew capacity here will result in slow or failed maneuvering orders, missed radio messages, missed hydrophone contacts, and failure to track hydrophone targets.



Figure 54: Erich Topp in the *Zentrale* ("Control room")³³

Conning Tower: this is one of the most exposed, dangerous, and important assignments on a U-boat. Most U-boats do not have or do not use radar, so the bridge crew must be watchful and alert at all times and in all weather conditions: failure to detect a target negates the purpose of sending the U-boat to sea; failure to detect a threat may soon result in the U-boat's destruction. This area includes crewmembers operating the deck gun and anti-aircraft guns, and completely exposes them to automatic weapons fire from ships and aircraft.



Figure 55: Bridge watch in rough weather on *U-402*³⁴

³² Photo credit: "Photographs from the personal albums of Obermaat [Petty Officer] Walter Friebohn," *U-boatarchive.net*, <http://www.uboatarchive.net/U-402PhotosFriebohnTwo.htm>

³³ Photo source: "Der U-boot Krieg im Atlantik," *Aces of the Deep* <http://www.aotd-flottille.de>

³⁴ Photo credit: "Photographs from the personal albums of Obermaat [Petty Officer] Walter Friebohn," *U-boatarchive.net*, <http://www.uboatarchive.net/U-402PhotosFriebohnTwo.htm>

Diesel engine and electric motor rooms: The diesel engine rooms were notorious for high temperatures and constant intense noise levels, with temperatures above 122°F (50°C) when operating in the tropics; many engine room personnel suffered hearing problems and sleeplessness due to prolonged hours here. In GWX, fatigue in the diesel engine compartment increases rapidly while the U-boat is on the surface, and more slowly when it is submerged; conversely, fatigue in the electric motor compartment increases slowly when the U-boat is on the surface and more quickly when it is submerged.



Figure 56: Diesel engine room of *U-166*³⁵

Damage control: This is the most fatiguing and emotionally stressful duty on the U-boat: these men hold in their hands the fate of their U-boat and their fellow crewmembers, and may have precious little time to save a damaged boat. This is functional assignment area in stock *Silent Hunter III* and not a specific physical location: crewmembers here have left their normal duty functions to perform specific damage control and repair tasks. The other crewmembers physically located in the damaged compartment are still there, but they are performing the duties associated with that compartment (like loading torpedoes or listening to the hydrophones) and not performing damage control tasks. There is no limit on the number of damage control “personnel” in a compartment, up to the number of slots in the crew and damage management screen (F7).



Figure 57: Repairs in progress on *U-402*³⁶

³⁵ Photo source: “*U-166*: A photographic record,” <http://www.pastfoundation.org/U166/U-166.htm>

³⁶ Photo credit: “Photographs from the personal albums of *Obermaat* [Petty Officer] Walter Friebohn,” *U-boatarchive.net*, <http://www.uboatarchive.net/U-402PhotosFriebohnTwo.htm>

Table 12: Relative fatigue accumulation factors within U-boat compartments

	Surfaced	Submerged
Torpedo rooms	0.045	0.045
Crew quarters	-0.0000003	-0.0000003
Sonar / Radio	0.01	0.01
Control room	0.01	0.01
Conning Tower	0.01	N/A
Diesel engine room	0.01	0.00075
Electric motor room	0.00075	0.01
Deck Gun	0.05	N/A
Flak	0.05	N/A
Damage control	0.02	0.02

Managing your crew

The GWX team has some suggestions for managing crew fatigue using the Real World Fatigue Model:

1. *Use spare compartments* - There will not always be enough room to reduce the fatigue of all off-duty crewmembers in the crew compartments. In this case, put the least fatigued crewmembers in an unused engine room where they will lose fatigue at a low rate: if you are submerged, put them in the diesel engine room; if you are on the surface, put them in the electric motor room.
2. *Crew Awards* - Awarding badges and medals (such as the *U-Boots-Kriegsabzeichen*, or U-boat War Badge) to your crew will decrease their maximum fatigue levels, which in turn reduces (but does not eliminate) the maximum amount of efficiency they can lose to fatigue.
3. *Time Compression* - The maximum time compression (TC) for 3D viewing controls the maximum TC at which fatigue can accumulate or decrease; there are no fatigue effects above that compression level. The GWX team suggests using *SH3 Commander* to use a different value for “When in 3D views” if you want to change the default value of 32x compression.

A few thoughts about fatigue and crew management in GWX

Some people have complained that crew management and fatigue in stock *Silent Hunter III* forces a player to micromanage this aspect of commanding a U-boat. The GWX team decided to try to keep the intuitive elements of crew management and fatigue while decreasing the need to conduct “shift change” operations from 16 times per day to only once per day. Our aim is to make the transition from stock *Silent Hunter III* to GWX as simple as possible while allowing that the “modding faithful” typically take “supermods” such as GWX and “season to taste” and will likely do so with fatigue as well.

Some modifications incorporate “long-term fatigue” or “psychological effects” that could severely affect crew performance at sea; however, the GWX team felt running out of torpedoes, fuel, or battle damage were sufficient reasons to terminate a war cruise to Asia without adding crew fatigue to the list.

Note: the pictures of *U-402* are from the collection of *Obermaat* (Petty Officer) Walter Friebolin during his three patrols under *Kapitänleutnant* Siegfried Freiherr* von Forstner. *Obermaat* Friebolin died on April 12, 1943 when *U-562* (*Kapitänleutnant* Hans Möglich) struck a mine near Lorient while leaving on its first patrol; there were 12 survivors. A Mk. XXIV “Fido” homing torpedo launched by Avenger aircraft from USS *Card* hit and sank *U-402* on October 14, 1943; there were no survivors.

* The German Republic abolished hereditary title of *Freiherr* (“Baron”) in 1919, and it became a “middle” name.

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Damage Model

Principal author: “vonHelsching”

Introduction

The *Silent Hunter III* damage model governs what happens when one object touches another object, *e.g.*, when a torpedo hits a ship. The damage model estimates the damage an object will inflict after taking into account the damage potential, the target’s ability to resist or absorb the damage, and the physical behavior of the objects after they meet. The parameters that govern damage potential include:

- The damage caused by different types of ordnance
- The type (or lack) of cargo in a compartment, *e.g.*, ammunition is more dangerous than lumber
- The sea state: ships can be damaged or sunk by extremely rough seas, such as in hurricanes
- The location of a hit (*i.e.*, what part of the object was struck)

The damage model divides every object into one or more compartments, each of which has a number of parameters that define the compartment’s resistance to damage. Damage resistance parameters include:

- Structural integrity (“hit points”)
- Armor (if any, and how much)
- The time to completely flood a compartment with water
- The probability of a critical hit occurring in the compartment, and the resultant damage
- Crush depth and the speed at which extreme depth will crush the object.

Physical response parameters include:

- Collision force (mass, velocity, and acceleration)
- Rebound levels (elasticity or inelasticity of collisions)

Lessons learned from The Grey Wolves V1.0 – 1.1a

Ships in GWX can sink in three ways:

1. from flooding inside a ship that exceeds a critical level (buoyancy becomes negative)
2. from a critical hit that causes the complete destruction of one or more compartments
3. losing too much overall structural integrity

The original Grey Wolves (TGW) shared the damage model developed for “Not Your Grandmother’s Mod” (NYGM), which focused on sinking ships through flooding effects, with a lesser emphasis on critical hits than in stock *Silent Hunter III* and very little ability to destroy a ship through structural damage. NYGM accomplished this by reducing the probability and effect of critical hits and by giving all merchant ships 2160 hit points compared to the normal range in stock *Silent Hunter III* of 250 to 300 hit points, effectively eliminating the possibility that a ship would sink through accumulated structural damage. This approach achieved its objectives but had some unintended side effects when used in TGW:

- The damage caused by one torpedo was limited to one compartment, so that hitting the same ship compartment with a second torpedo produced only a small amount of new overall damage (compared to a ship’s total structural integrity) and no additional flooding.

- It was nearly impossible to sink a merchant ship with the deck gun unless a player could consistently obtain hits at the water line. This was not generally an issue in TGW since the deck gun in TGW was highly accurate; however, the introduction of Real World Gunnery in GWX greatly increased the difficulty of hitting targets (such as a ship's waterline) with great accuracy.
- A number of players reported that sinking a ship could take many hours or days, even with multiple torpedo hits. Historical examples of such behavior certainly exist, but these seemed to be historical outliers compared to the number of occurrences reported in TGW.

Resisting damage

One torpedo would generally suffice historically to sink a small- to medium-sized ship; few required more than two torpedo hits. Merchant ships were (and are) supposed to carry as much cargo as possible at the lowest initial and operating cost; they are not supposed to withstand battle damage. Shipyards built them as rapidly as possible using low-cost materials, and the high cost of ship maintenance meant that older ships could be literal rust buckets provided they could still haul the goods. The shipyards used modular construction techniques to build Liberty- and Victory-class ships at a record pace, but the time pressures could result in poor fitting and welding between the modules that would comprise the ship.

GWX gives ships more hit points than in stock *Silent Hunter III* so that ships will sink due to flooding more often than due to a loss of structural integrity, but there are few enough hit points that a second torpedo hit on a merchant ship will likely sink it. Each ship also has certain weak spots that players can exploit to an extent, but variations in torpedo damage can allow a ship to survive a hit even on these vulnerable areas. The GWX team derived the number of hit points, weak spots, and damage resistance parameters for some stock warships and each aircraft, merchant ship type, and warship introduced by GWX on the assumption that ships of each type are of a similar size and age, and therefore have similar sinking and flooding characteristics. GWX divided the merchant ships into the following categories:

- small merchant ships
- medium merchant ships
- large merchant ships
- small tankers
- medium and large tankers
- passenger liners
- ammunition ships
- coastal vessels (including tugboats)
- fishing boats
- patrol craft

Torpedoes in GWX will cause varying amounts of damage depending on whether they were using an impact or a magnetic pistol, and the depth of the torpedo when it exploded. Most ships in GWX will sink within a reasonable amount of time when flooding exceeds a critical level, though the critical level will vary depending on the part of the ship that was hit.

The GWX team notes that tankers had highly diverse levels of damage resistance, and that the SH3 damage model reflects this variability. For example, tankers could carry anything from inert water, to thick crude or fuel oil, to 100-octane aviation gasoline; in addition, shipyards built (and still build) tankers to move large amounts of liquid, so a tanker will not necessarily sink if a torpedo merely puts a hole in its side while it is carrying water as ballast.

Featured effects of the GWX Damage Model

Players now have an incentive to use the deck gun to finish off an opponent that cannot shoot back, and to avoid a shoot-out of any kind. Ships will lose integrity to gunfire and can be sunk (eventually) by using the deck gun, but ships will flood only when shells (or torpedoes) hit them at or below the waterline. Hitting a ship's bridge can cause it to lose control of its navigation and steering; however, hitting a specific part of a moving target from a moving and tilting U-boat is now a difficult proposition.

Engaging in a gunnery duel with any warship larger than a small ASW corvette is now suicidal, since:

- Your deck gun is unlikely to damage the warship fast enough to sink it before it sinks you
- Your crew is completely exposed to gunfire from all the warship's guns and anti-aircraft cannon
- The deck gun will have a difficult time training about fast enough to track a fast-circling warship

If you must engage small patrol craft on the surface, the GWX team suggests you use your anti-aircraft cannon since it exposes fewer of your own crewmembers to loss from return fire: if you are lucky, you will suffer only damage and a few casualties, but not total destruction. If you must engage larger warships on the surface, well ... for you, *Herr Kaleun*, the war is over.



Figure 58: The war is over for *Obersteerman Helmut Klotsch* from *U-175*, sunk by *USCGC Spencer*³⁷

Rotating *Kristalldrehbasisgerät*(KDB) Hydrophone Receiver

Stock *Silent Hunter III* simulates the effects of the rotating *Kristalldrehbasisgerät* (“crystal rotating base apparatus”) hydrophone receivers but does not rotate the 3D model of the receiver. GWX adds rotation to the KDB on the forward hull so it rotates whenever the U-boat is submerged. The azimuth of the KDB matches the azimuth shown on the hydrophone control at the hydrophone/sonar control station.



Figure 59: KDB listening ahead in GWX



Figure 60: KDB listening to port

³⁷ Photo source: U.S. Coast Guard, <http://www.uscg.mil/history/webcutters/spencervsu175.asp>

Rotating Radar and Radio Direction Finding Antennas

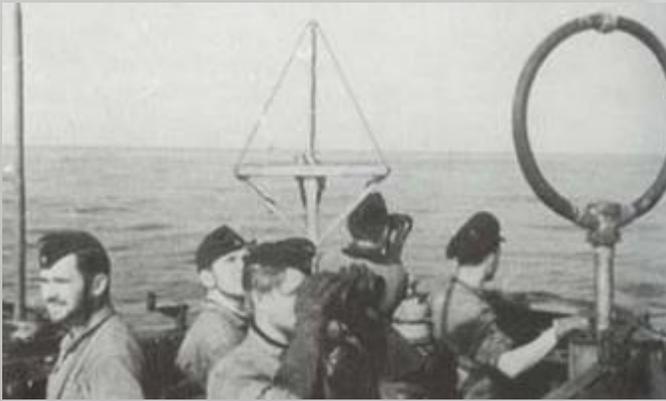


Figure 61: Biscay Cross and RDF antenna in action³⁸

Stock *Silent Hunter III* simulates the effects of U-boat radar rotation but does not rotate the 3D model of the radar antenna; similarly, some ship contacts represent the effects of using the radio direction finding (RDF) antenna to detect radio transmissions but the RDF does not deploy or rotate. GWX merely rotates the 3D model of the radar antenna on U-boats so equipped, and the RDF loop on all U-boats; the azimuth of the radar and RDF antennas matches the azimuth shown on the azimuth control wheel in the radio room.

Radar and Radio Direction Finding Antennas in GWX

The RDF antenna rotates 180° clockwise and then counter-clockwise. No player action is required to use the RDF antenna.

The radar antenna rotates automatically, but the *Silent Hunter III* game engine forces the antenna to retract in the position it was in whenever the U-boat dives. This can result in the antenna appearing to stick out of the sides of the U-boat's conning tower, a purely visual effect that does not affect the radar or the U-boat, but which some players may find irritating.

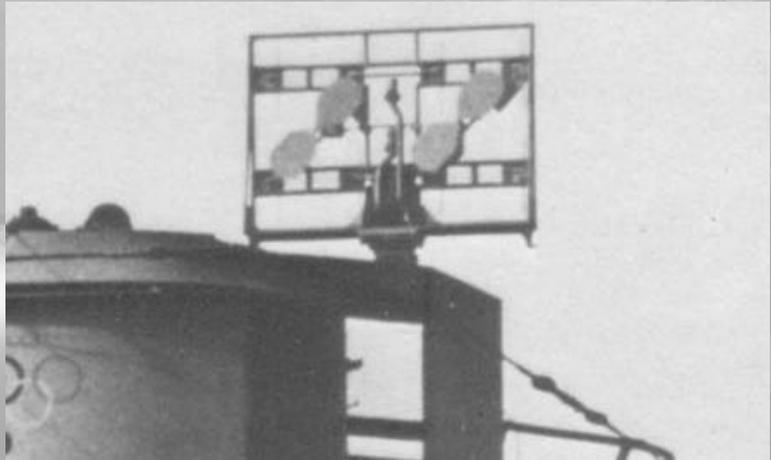


Figure 62: FuMO-30 radar with FuMB-5 Samoa RWR antenna³⁹

GWX adds a [Shift]-R command allowing players toggle the radar on and off. Turning the radar off also retracts the radar antenna, allowing players to retract the radar manually into its proper position before the U-boat dives as the antenna aligns with its storage location in the conning tower. See [Appendix A](#) for a more detailed discussion of the historical employment of radar on U-boats.



Figure 63: Rotating RDF and [FuMO-30](#) antennae next to a fixed-position [FuMB-2 "Biskayakreuz"](#) in GWX

³⁸ Photo source: Robert Langille, *Electronic Warfare Consulting Services*, <http://www.ewcs.ca/>

³⁹ Photo source: "Elektronischer radarwarner," http://www.wv2technik.de/dsub_vert.htm

Late War Sensors: *Schnorchel*-mounted Radar Warning Receiver Antennas

Principal authors: “Ref” and “vonHelsching,” with assistance by “Txema”

Note: the GWX team based the Type XXI U-boat *schnorchel*-mounted radar warning receiver (RWR) antenna feature on a concept within the fix by “Rowi58” for the FuMO-391 radar. Special thanks to “Jaxa” and “JScones” for additional historical research and references. See [Appendix A](#) for a discussion of radar warning receivers carried on U-boats

Introduction

The last year of the war was a desperate one for the U-boats: they had retreated to Denmark and Norway after the Allies overran their French bases in the summer of 1944, with the exception of a few *Monsoon* boats cut off in Indonesia. Access to the Atlantic was more restricted than it been in four years, except this time the Allies had advantages unheard-of in 1940: cryptography, radar, sonar, sonobuoys, magnetic anomaly detection (MAD) gear, and antisubmarine weapons such as the airdropped homing torpedo and the “hedgehog.” With only distant access to the Atlantic, the U-boats fought an “inshore campaign” close to the British Isles while Germany’s intelligence services and electronics industry fought a “Wizard War” with Allied scientists to preserve the U-boats from Allied technological advances and air supremacy long enough for the Type XXI *Elektroboote* (“electric boats”) to finish their training and join the fight. **Note: GWX does not model MAD gear, sonobuoys, or airdropped homing torpedoes.**

The GWX team found many interesting technological advances of the “Wizard War” implemented in historical U-boats in the last year of the war, but not found in stock *Silent Hunter III*. The details of these advances were elusive, but the team found enough information to implement one of these advances: the fitting of a RWR antenna atop the *schnorchel* of all U-boat types during the last few months of the war.



Figure 64: FuMB-29 *Bali* RWR antenna atop Type VIIC *schnorchel* in GWX - Trondheim, Jan 1945



Figure 65: FuMB-3 Bali atop *schnorchel*⁴⁰

There are few references to when Germany began installing *schnorchel* RWR antennas; the autumn of 1944 is given by V.E. Tarrant's *The Last Year of the Kriegsmarine May 1944 – May 1945*. The sources generally agreed the Germans mounted only one type of radar detection antenna atop their U-boat *schnorchel*: the FuMB-3 *Bali*, also known as *Häschen* (“rabbit”), an omnidirectional *runddipol* (“circular dipole”) antenna. The FuMB-3 was part of the FuMB-29 *Bali-Anlage* (“Bali layout”) in which the antenna could be used in conjunction with the following RWR sets to detect metric and centimetric radars:

- [FuMB-7 Naxos](#)
- [FuMB-8 Zypern I](#) (“Cyprus I”); this combination was called *Wellenanzeiger-G1* (“wave indicator”) or “*Wanze-G1*”
- [FuMB-9 Zypern II](#) (“Cyprus II”); this combination was called *Wellenanzeiger-G2* or “*Wanze-G2*”
- [FuMB-10 Borkum](#)
- [FuMB-37 Leros](#)

The Allies kept the Germans on the defensive by forcing them to react to Allied radar innovations, but the Germans continually replaced U-boat RWR sets with newer models as scientists from each side strove to give their own forces a decisive edge in the “Wizard War.” In the last few months of the war, many U-boats had sensors to cover all known Allied radar frequencies.

Implementation of Late War Sensors in GWX

GWX implements two new sensor antennas:

1. FuMB-3 *Bali*: All type VII and Type IX U-boats and their variants mount this antenna on their *schnorchel* starting in October 1944 as part of the FuMB-29 *Bali-Anlage*.
2. FuMB-37 *Leros*: All Type XXI U-boats mount this antenna atop their *schnorchel* starting in January 1945.

The FuMB *Leros* RWR set included use of the FuMB-3 *Bali* antenna but had superior range and detection capabilities; however, the FuMB-37 *Leros* RWR set is not included in stock *Silent Hunter III*. The GWX team therefore distinguishes between the operational specification and capabilities of the two systems by using the term “FuMB-37 *Leros*” to refer to the **antenna and associated receiver that provide superior detection range**, and not the complete RWR set that included the *Athos* RWR.

IMPORTANT NOTE

Selecting either of these RWR antennas while at the Radar Warning Upgrade screen may result in the destruction of all RWR equipment aboard your U-boat on your next mission. The new RWR *schnorchel* antennas will appear on the U-boat upgrade screen at the aforementioned dates, but ***do not select them.*** You must follow a special procedure to allow GWX to perform the upgrades automatically since the system of using renown points to purchase equipment does not work for devices that were not included in stock *Silent Hunter III*.

⁴⁰ Photo source: <http://www.ubootwaffe.pl/okrety/wyposazenie.htm>

Installing the FuMB-3 Bali and FuMB-37 Leros RWR antennas on your U-boat

- A. **FuMB-3 Bali:** You must perform the following steps after the upgrade screen shows it is available for installation on a Type VII U-boat, Type IX U-boat, or their variants (see Figure 66).



Figure 66: Upgrade screen highlighting the FuMB-3 Bali RWR antenna after it becomes available

Step 1: Exit the game while in base *before* a mission.

Step 2: Enable / install the GWX modification “*Late War Sensors Snorkel Antennas*” located in the “SH3/Mods” subfolder. The GWX team recommends using the JSGME tool - provided with GWX - for easy installation of this feature. Please read the JSGME documentation for instructions on enabling and disabling software modifications.

Step 3: Reload the game and continue your career from the same point you exited in Step 1 by selecting the last saved entry, “In base before mission”

- B. **FuMB-37 Leros:** GWX installs this automatically, so no player action is required.

The Effect of Late War Sensors Snorkel Antennas in GWX

The main RWR installed on the conning tower provides radar warning when the U-boat is on the surface; the *schnorchel*-mounted antennas will provide warning when the U-boat is submerged, is at *schnorchel* depth, and has deployed the *schnorchel*. The FuMB-3 Bali has a radar detection range of about 7.5 km and the FuMB-37 Leros on the Type XXI has a detection range of about 9.5km. These new sensors should provide just enough warning of an incoming aircraft that the player can lower the *schnorchel* and begin a deep dive coupled with evasive action. The player must be careful to ensure the sensor is not under water, but not so high above the surface that it can be detected by enemy radar.

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Wiper, Steve. *Kriegsmarine Type VII U-boats*. Classic Warships Publishing: 2004.

U-boat Upgrades

GWX modifies somewhat the equipment upgrades available from stock *Silent Hunter III*, as summarized in Figure 67.

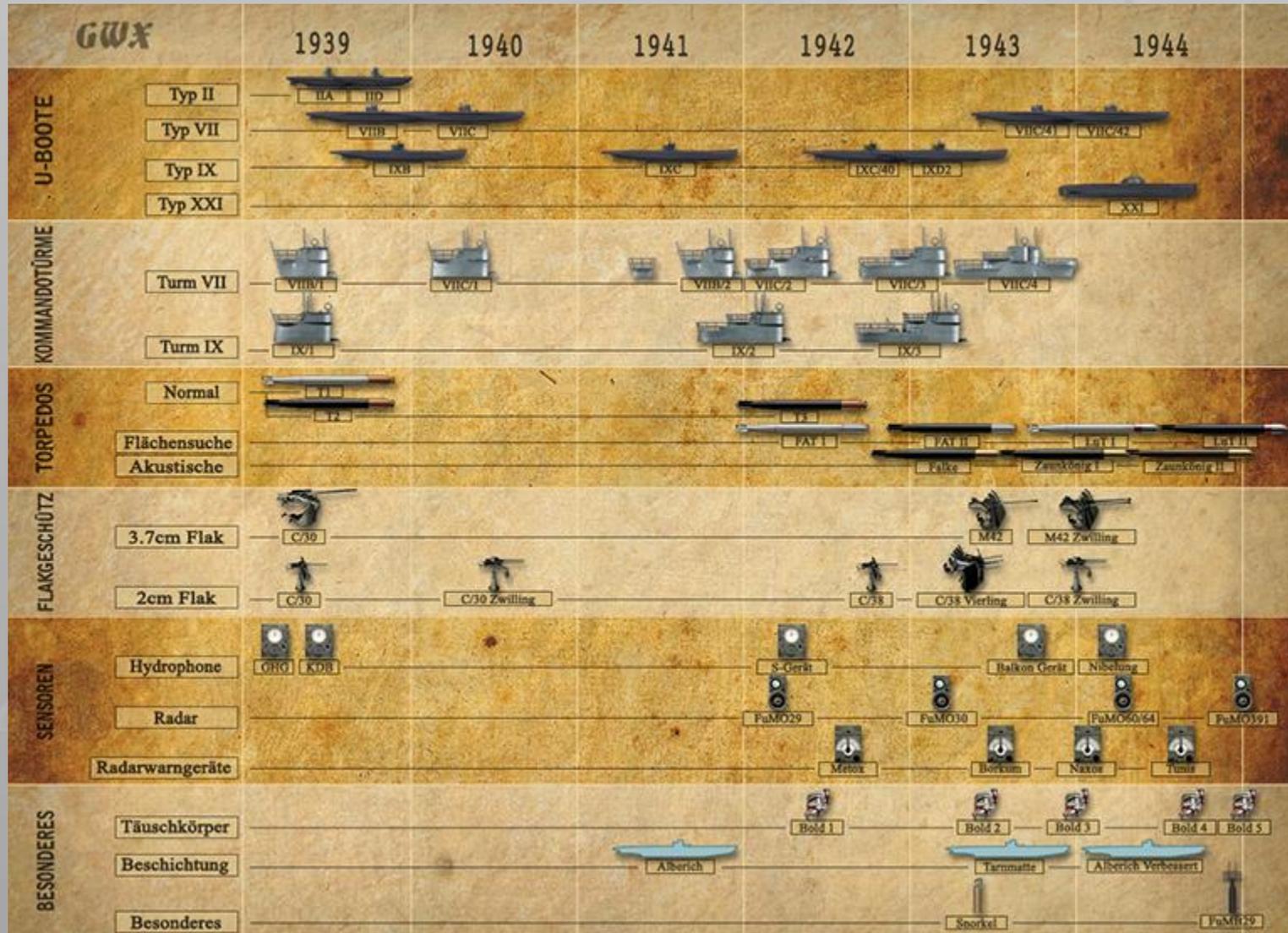


Figure 67: U-boat Upgrades in GWX

“Full Realism”

Definition

The GWX team believes “realism” is in the mind of the beholder. There are very few (if any) people playing *Silent Hunter III*, with or without modifications, that have personal experience in submarine warfare as it was practiced during World War II, let alone personal experience in a U-boat in combat. Realism is therefore whatever one can glean from interpreting other sources and representing them to the player within the limitations of the *Silent Hunter III* game engine. “Reality” for a U-boat commander meant they paid for their mistakes with their lives; not wishing to enforce this extreme sanction on the gaming community, we have tried to provide a game that is enjoyable to play while also being realistic enough to give a taste of the life of a U-boat commander.

Grey ship icons

GWX uses the grey ship icons to force you to identify with absolute certainty whether your target is hostile, neutral, or friendly – or take the consequences of incorrect identification. Use your **F1** help screen and the recognition manual to determine whether the ship you see represents a step on the road to medals and promotion; a stain of dishonor; or a court-martial.

Language

The GWX team suggests using German language audio, with English (or your native language) subtitle displays if you do not speak relatively fluent German. We find this gives the best immersive effect while still allowing you to understand what your crew is telling you.

Uniforms

U-boat crews were anything but “uniform” in their at-sea attire. In addition, U-boat crewmembers generally wore their medals ashore with their official uniforms but almost never on board – if only because it would be odd to see the Iron Cross second class pinned to a checkered shirt. GWX allows your crew to adhere to real-life behavior by giving players the option to have the medals and awards given to your crew to appear in their record books in base, but not while at sea.

Weather

Stock *Silent Hunter III* tends to produce weather patterns with long periods of one type of weather, *e.g.*, several weeks of calm, clear weather followed by several weeks of rain, strong winds, and mountainous seas. GWX incorporates a “Real Weather Fix” by “Stiebler” and “Sub Type Zero.” This increases the rate at which the weather changes, resulting in shorter and more frequent periods of stormy weather and clear weather over the course of a patrol. NB: *Silent Hunter IV* largely fixes this problem.

Hull Integrity Display

Stock *Silent Hunter III* displays a “hull integrity percentage” value showing the amount of damage your hull can sustain before your U-boat sinks. GWX does not display this value, so you will need to act more cautiously if you are damaged or you exceed your safe depth, since you cannot know for sure how much more damage you can sustain before sinking.

Covert Supply Ships and U-boat tankers

Historical Background

The Treaty of Versailles eliminated Imperial Germany's overseas empire, so Nazi Germany had no overseas bases and could not openly use neutral ports to support surface raiders or U-boat operations. German surface raiders such as *Admiral Graf Spee* could cruise three-quarters of the way around the world without refueling at 15 knots, but a realistic fuel budget reserved one-third of a ship's fuel for the voyage out; one third of its fuel for activities in its patrol area; and one third for the trip home.

German naval strategy called for heavily armed commerce raiders to strike British commerce in the South Atlantic and the Indian Oceans while *Hilfskreuzer* ("auxiliary cruisers") sailed the seas in disguise to sink unsuspecting Allied merchant ships traveling alone, but fuel limitations would have allowed *Admiral Graf Spee* to cruise barely as far as the South Atlantic. Tankers were the only ships that could carry enough fuel to refuel another ship, so Germany began acquiring them in the late 1930's and converting them into covert, mobile resupply bases. The *Kriegsmarine* had not perfected underway replenishment as the U.S. Navy had done, so all re-supply activities had to take place while the ships and/or U-boats involved were on the surface and stationary in relatively calm seas.

The Allies knew of the German covert supply ships from the prisoners of the *Admiral Graf Spee* rescued from her supply ship, *Altmark*, but were unable to pursue them until the British captured *U-110* (*Kapitänleutnant* Fritz-Julius Lemp) on May 9, 1941 and took her Enigma codes and machine without tipping off the Germans they had done so. The British then rolled up the Germans' North Atlantic resupply network, capturing six tankers, including the *Bismarck's* covert support tanker SS *Lothringen* and three other ships, in 20 days.⁴¹

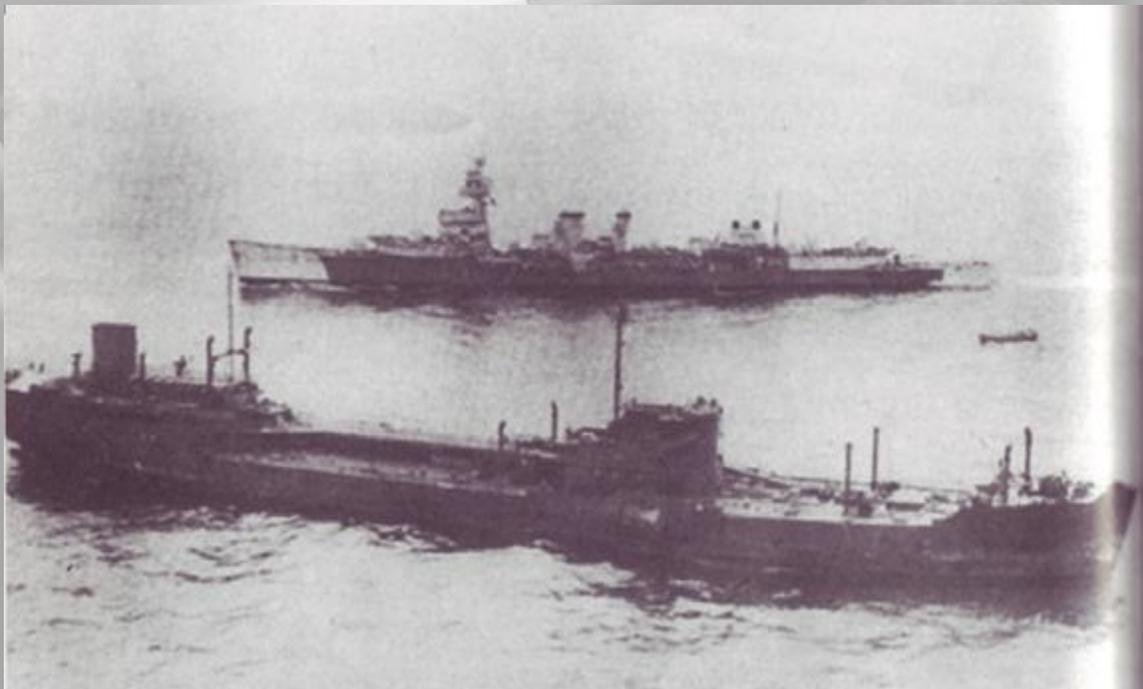


Figure 68: HMS *Dunedin* captures the German covert tanker SS *Lothringen* (June 15, 1941)⁴²

⁴¹ "German Surface Navy at War: 1939-1945," <http://www.naval-history.net/WW2CampaignsGermanWarships.htm>

⁴² "HMS *Dunedin*," <http://www.w2aircraft.net>

The British campaign against the covert *Kriegsmarine* covert network continued, and they sank or caused their own crews to scuttle the remaining South Atlantic tankers, and the commerce raider *Atlantis*, by the end of 1941:

- The light cruiser HMS *Kenya* sank the supply ship *Kota Pinang* on October 4 as it awaited a rendezvous with *U-129* (*Kapitänleutnant* Nikolaus Clausen); *U-129* arrived as *Kenya* shelled the supply ship, taking 119 survivors aboard after the cruiser had left and dropping them off at El Ferrol, Spain for later repatriation to Germany. *U-129* then had to return to France as the *Kota Pinang* survivors had consumed most of its food supplies during the side trip to Spain.⁴³
- The heavy cruiser HMS *Devonshire* sank the highly successful commerce raider *Atlantis* on November 22, 1941 as *Atlantis* refueled *U-126* (*Kapitänleutnant* Ernst Bauer) in the South Atlantic; *Devonshire* did not stop to assist survivors because its floatplane had spotted *U-126* as the cruiser approached. *Devonshire*'s attack caught Bauer taking a bath on *Atlantis*, and he was unable to return before *U-126* dove to safety. *Devonshire* prowled about outside of gunnery range for over an hour as it tried to verify whether the disguised *Atlantis* was a surface raider or not, but Bauer's IWO (*Oberleutnant z. S.* Kurt Neubert), temporarily in command of *U-126*, failed to attack and *Devonshire* finally opened fire and sank *Atlantis* after discerning her true nature. Bauer survived the sinking, and resumed command of *U-126* when it surfaced after *Devonshire* had left. *U-126* then towed *Atlantis*' lifeboats to a rendezvous with the covert supply ship MS *Python*, *U-A* (*Korvettenkapitän* Hans Eckermann), and *U-68* (*Kapitänleutnant* Karl-Friedrich Merten).⁴⁴



Figure 69: Covert supply ship MS *Python* resupplies *U-124* (November 1941)⁴⁵

⁴³ Clay Blair, *Hitler's U-boat War: The Hunters*

⁴⁴ "Hilfskreuzer Atlantis," <http://www.bismarck-class.dk/hilfskreuzer/atlantis.html>

⁴⁵ "U-124," HMS *Dunedin*, <http://www.hmsdunedin.co.uk/u-1241.htm>

- Python took *Atlantis*' survivors from *U-126* on November 24 and began resupply operations, but the heavy cruiser HMS *Dorsetshire* appeared on December 1 after *Ultra* intercepts guided it to *Python*'s location and the cruiser's floatplane reported the presence of a suspiciously stationary ship. The U-boats dived immediately while *Python* turned to flee in the hope the cruiser would come close enough for the U-boats to intercept: *U-A* dived normally, but *U-68* had not completed its dive preparations when it dove and the boat nearly sank before Merten regained control.

U-A launched five torpedoes at *Dorsetshire*, but all the torpedoes missed. *Dorsetshire* closed in and fired warning shots near *Python*, but *Python* could not hope to resist and scuttled, leaving in the water over four hundred survivors: *Dorsetshire* left the area to avoid any further U-boat attacks. BdU ordered *U-124* (*Kapitänleutnant* Johann Mohr) and *U-129* (*Kapitänleutnant* Nicolai Clausen) to assist; *U-124* arrived on December 4 after having torpedoed and sunk the light cruiser HMS *Dunedin*, which had also been searching for *Python*. *U-129* arrived on December 5, and the four U-boats began the long journey to St. Nazaire, France, with 50 additional men packed inside each U-boat and 50 men on deck (sitting in life rafts, in case the U-boats had to dive quickly). Four Italian submarines (*Luigi Torelli*, *Enrico Tazzoli*, *Giuseppe Finzi*, and *Pietro Calvi*) met the U-boats near the Cape Verde Islands. The eight submarines divided the survivors between them to allow the U-boats to submerge and returned to France, with the final boat arriving on December 29, 1941.⁴⁶

The tanker losses and the loss of *Bismarck* in late May 1941 marked the end of the months-long commerce raiding cruises by German capital ships, while the use of radar-equipped patrol aircraft made it almost impossible for the *hilfskreuzer* to slip out of France into the open ocean. The last *hilfskreuzer*, *Michel*, departed France in March 1942, but the U.S. submarine USS *Tarpon* torpedoed and sank her 60 miles off Yokohama, Japan on October 17, 1942; the Allies believed *Tarpon* had sunk an auxiliary cruiser but did not realize it was *Michel* until months later.

The Germans extended the “covert” tanker concept to submarine warfare in 1940 by starting construction of U-boat tankers that could supply primarily fuel but also food (including fresh bread) and a few torpedoes to U-boats in distant seas. U-tankers were somewhat successful, but by 1943, Allied cryptography, radar, and ASW hunter-killer groups had eliminated the unwatched places in the oceans that the supply ships and U-tankers needed to conduct resupply operations, and the Allies sank the last of the U-tankers by mid-1944.⁴⁷

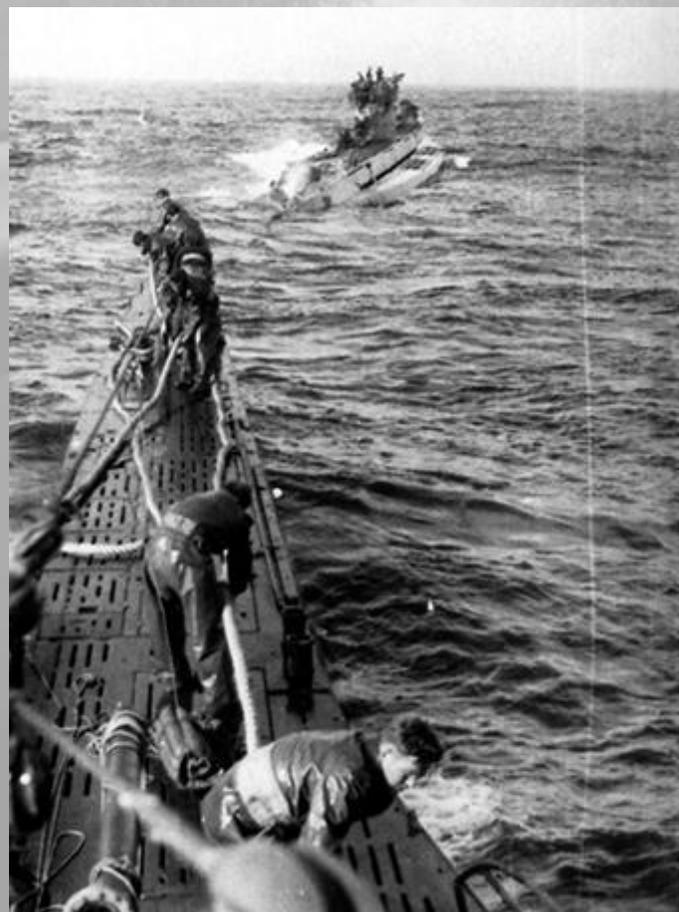


Figure 70: *U-459* (Type XIV) refuels a Type VII U-boat⁴⁸

⁴⁶ “*Hilfskreuzer Atlantis*,” <http://www.bismarck-class.dk/hilfskreuzer/atlantis.html>

⁴⁷ “The Milk Cows,” <http://www.uboat.net/types/milkcows.htm>

⁴⁸ Photo source: “Uncle Carl,” www.subsim.com

Covert supply ships and U-boat tankers in GWX

GWX implements covert supply ships and [Type XIV U-boat tankers](#) as German ports, with the name of the ship or the U-boat written in blue on the navigation map. There are two ways to “dock” with a supply ship or U-boat. The first way is to merely approach within 25 miles of the port and then exit the mission and dock at the named supply ship or U-tanker. *Silent Hunter III* allows anything but equipment upgrades when you are in port away from your home base, but historical U-tankers loaded only fuel, and supply ships carried only fuel and torpedoes, so if you want to be “historical” then you should limit your resupply operations to historically available items when you dock with U-tankers and supply ships.



Figure 71: Position of covert support ship *Max Albrecht* at El Ferrol, Spain (circled in red) in GWX



Figure 72: Position of the U-tanker *U-488* (in late 1943) on the navigation map (circled in red) in GWX

The second way to dock with a supply ship or U-tanker is to maneuver your U-boat until you are adjacent to the supply ship or U-boat tanker and then exit the patrol. This method is for use by die-hard fans. NB: the U-tanker is moving at 1 knot in a fixed pattern around its navigation map marker, so try listening with your hydrophones for a slow warship if the U-tanker is not where you expect to find it.



Figure 73: Covert resupply ship *Max Albrecht* in El Ferrol, Spain in GWX



Figure 74: AI-controlled Type XIV U-tanker on station in GWX (1943)

The availability dates for resupply ships and U-tankers are available via the “F1” key/“Resupply Info.”

RESUPPLY INFO		
Milk Cow Ships and dates (DD/MM/YYYY)		
Max Albrecht	05/01/1942 to 28/02/1944	El Ferrol
Bessel	01/03/1940 to 21/12/1941	Vigo
Thalia	01/02/1940 to 28/12/1941	Cadiz
Corrientes	05/01/1941 to 06/05/1943	Canarios Islands
Charlotte Schliemann	22/06/1943 to 11/02/1944	South East of Mauritius
Brake	05/09/1943 to 11/03/1944	East of Madagascar
Milk Cow Uboats and dates (DD/MM/YYYY)		
U459	10/09/1942 to 10/02/1943	(GG89) South Atlantic
U460	05/09/1942 to 04/04/1943	(EH53) North Atlantic
U461	10/04/1942 to 04/12/1942	(CC61) North West Atlantic
U461	05/02/1943 to 26/03/1943	(DF67) South West of Azores
U463	05/06/1942 to 30/06/1943	(BD35) North Atlantic
U488	05/06/1943 to 26/04/1944	(DF67) South West of Azores

Figure 75: In-game GWX display showing the availability of covert supply ships and U-tankers

In-game Commands

Navigation Commands

Speed Controls

English	
~	All Stop
1	Ahead Slow
2	Ahead 1/3
3	Ahead Standard
4	Ahead Full
5	Ahead Flank
6	Back Slow
7	Back Standard
8	Back Full
9	Back Emergency

Allures Moteurs

French	
Exp. 2	<i>Machines Stop</i>
1	<i>Avant très lente</i>
2	<i>Avant lente</i>
3	<i>Avant demie</i>
4	<i>Avant toute</i>
5	<i>Puissance Maximale Permise</i>
6	<i>Arrière lente</i>
7	<i>Arrière demie</i>
8	<i>Arrière toute</i>
9	<i>Arrière d'urgence</i>

Navigationskontrollen

German	
~	<i>Alle Maschinen stopp</i>
1	<i>Kleine Fahrt voraus</i>
2	<i>1/3 Fahrt voraus</i>
3	<i>Große Fahrt voraus</i>
4	<i>Volle Fahrt voraus</i>
5	<i>Äußerste Fahrt voraus</i>
6	<i>Kleine Fahrt zurück</i>
7	<i>Große Fahrt zurück</i>
8	<i>Volle Fahrt zurück</i>
9	<i>Äußerste Fahrt zurück</i>

Direction Controls

English	
[Hard to Port (left)
]	Hard to Starboard (right)
'	Rudder amidships
=	Heading to View
-	View to Heading

Barres de direction

French	
^	<i>À gauche toute</i>
\$	<i>À droite toute</i>
ù	<i>La barre à zéro</i>
=	<i>Cap à la vue</i>
)	<i>Observer vers la proue</i>

Ruder

German	
~	<i>Ruder hart Backbord (links)</i>
1	<i>Ruder hart Steuerbord (rechts)</i>
2	<i>Ruder mittschiffs</i>
'	<i>Kurs in Sichtrichtung</i>
ß	<i>Sicht in Richtung Kurs</i>

Depth Controls

English	
S	Surface
D	Dive
A	Maintain Depth
P	Periscope Depth
;	Snorkel Depth
C	Crash Dive
E	Emergency Surface
Z	Toggle Silent Running

Barres de Plongée

French	
S	Surface
D	<i>Plongée</i>
Q	<i>Maintenir Profondeur</i>
p	<i>Immersion Périscopique</i>
M	<i>Immersion schnorchel</i>
C	<i>Plongée d'urgence</i>
E	<i>Chasser rapide aux ballasts</i>
W	<i>Silence dans le bord / Situation patrouille</i>
CTL-D	<i>Sonder la profondeur sous la quille</i>

Tiefensteuerung

German	
S	<i>Auftauchen</i>
D	<i>Tauchen</i>
A	<i>Tiefe halten</i>
P	<i>Sehrohrtiefe</i>
O	<i>Schnorcheltiefe</i>
C	<i>Alarmtauchen</i>
E	<i>Not-Auftauchen</i>
Z	<i>Schleichfahrt ein/aus</i>

Time Compression

English	
Numpad -	Decrease
Numpad +	Increase
Backspace	Pause

Compression Temporelle

French	
PavNum -	<i>Diminuer</i>
PavNum +	<i>Augmenter</i>
PavNum *	<i>Normale</i>
Retour	<i>Pause</i>

Zeitcomprimierung

German	
Numpad -	<i>Verringern</i>
Numpad +	<i>Erhöhen</i>
Rücktaste	<i>Pause</i>

Station Controls

Station Controls

English	
F2	Command Room
F3	Attack Periscope
F4	Bridge
F5	Navigation Map
F6	TDC - Torpedo Data Computer
F7	Crew and Damage Management
F8	Mission Orders
F9	Radio Room
F10	Deck Gun
F11	Flak Gun
F12	Free Camera
R	Radio
H	Hydrophone
U	UZO
O	Observation Periscope
B	Binoculars
M	Radio Messages
K	Captain's Log
F	Main Flak Gun
T	Secondary Flak gun 1
G	Secondary Flak gun 2
I	Weapons Management

Controles des postes

French	
F2	<i>Salle des Commandes</i>
F3	<i>Périscopes d'Attaque</i>
F4	<i>Kiosque</i>
F5	<i>Table à cartes</i>
F6	<i>Table Traçante</i>
F7	<i>Tableau de Service</i>
F8	<i>Ordres de Mission</i>
F9	<i>Salle Radio</i>
F10	<i>Canon</i>
F11	<i>Flak</i>
F12	<i>Vue Extérieure Libre</i>
R	<i>Radio</i>
H	<i>Hydrophone</i>
U	<i>Uzo</i>
O	<i>Périscopes de veille</i>
B	<i>Jumelles</i>
,	<i>Messages Radio</i>
K	<i>Journal de Bord</i>
F	<i>Flak principale</i>
T	<i>Flak secondaire</i>
G	<i>Flak auxiliaire</i>
I	<i>Gestion de l'Armement</i>

Stationkontrollen

German	
F2	<i>Zentrale</i>
F3	<i>Angriffssehrohr</i>
F4	<i>Brücke</i>
F5	<i>Navigationskarte</i>
F6	<i>Torpedozielrechner</i>
F7	<i>Besatzung und Schäden verwalten</i>
F8	<i>Missionsbefehle</i>
F9	<i>Funkraum</i>
F10	<i>Deckgeschütz</i>
F11	<i>Flakgeschütz</i>
F12	<i>Freie Kamera</i>
R	<i>Funk</i>
H	<i>Hydrophon</i>
U	<i>UZO</i>
O	<i>Beobachtungssehrohr</i>
B	<i>Fernglas</i>
M	<i>Funksprüche</i>
K	<i>Logbuch</i>
F	<i>Haupt-Flakgeschütz</i>
T	<i>Sekundär-Flakgeschütz 1</i>
G	<i>Sekundär-Flakgeschütz 2</i>
I	<i>Waffenverwaltung</i>

Periscope and *Schnorche*/Control

Periscope / Snorkel control

English	
Ins	Up Observation Periscope
Del	Down Observation Periscope
Page Up	Up Attack Periscope
Page Down	Down Attack Periscope
X	Raise / Lower Schnorchel

Contrôle périscopeschnorchel

French	
Inser	<i>Hisser Périscopes de Veille</i>
Suppr	<i>Affaler Périscopes de Veille</i>
PageUp	<i>Hisser Périscopes d'Attaque</i>
PageDown	<i>Affaler Périscopes d'Attaque</i>
X	<i>Hisser / Affaler le Schnorchel</i>

Sehrohr und Schnorchelsteuerung

German	
Einf	<i>Beobachtungssehrohr ausfahren</i>
Entf	<i>Beobachtungssehrohr einfahren</i>
Bild Hoch	<i>Angriffssehrohr ausfahren</i>
Bild Runter	<i>Angriffssehrohr einfahren</i>
X	<i>Schnorchel einfahren / ausfahren</i>

Weapons Control

Torpedoes and Guns

English	
Ctrl+ Enter	Fire Torpedo
Space	Fire Deck Gun
Q	Open Selected Tube Door
W	Close Selected Tube Door
Y	Cycle Tube Selection
L	Lock View to Target
N	Recognition Manual

Mise en oeuvre de l'armement

French	
Ctrl+ Entrée	Mise à feu de la torpille sélectionnée
Espace	Faire Feu au canon
A	Ouvrir Tube Sélectionné
W	Fermer tube sélectionné
Y	Faire défiler les tubes
L	Verrouiller la vue sur la cible
N	Manuel d'identification
J	Larguer les leurres

Angriffskontrollen

German	
Eingabe-taste	Torpedo abfeuern
Leertaste	Deckgeschütz abfeuern
Q	Mündungsklappen des ausgewählten Rohrs öffnen
W	Mündungsklappen des ausgewählten Rohrs schließen
Y	Rohre durchschalten
L	Ziel aufschalten
N	Erkennungshandbuch

Miscellaneous Controls

Map Tools

English	
Del	Delete Object
Shift+Del	Delete all objects for selected tool
Ctrl+ Left Click	Insert Waypoint

Outils Carte

French	
Suppr	Effacer l'Objet
Shift+ Suppr	Effacer tout les Objets
Ctrl+ Click Gauche	Centrer la carte

Karten-Werkzeuge

German	
Entf	Objekt löschen
Shift+ Entf	Alle Objekte für das ausgewählte Werkzeug löschen
Strg+ Linkslick	Wegpunkt einfügen

Event Camera

English	
V	Maximize / Minimize Event Camera View
/	Close Event Camera

Camera Évènementielle

French	
V	Agrandir / Réduire la fenêtre d'évènement
!	Fermer fenêtre d'évènement

Ereigniskamera

German	
V	Ereigniskamera-Fenster maximieren / minimieren
/	Ereigniskamera-Fenster schließen

Radar Rotation

English	
Shift+R	On / Off

Rotation du Radar

French	
Shift+R	Commencer / Arrêter

Umdrehung des Radar

German	
Shift+R	Ausdrehen / Abdrehen

Free Camera Controls

English	
Arrow Up	Move Camera Ahead
Arrow Down	Move Camera Back
Arrow Left	Turn Camera Left
Arrow Right	Turn Camera Right
NumPad 7	Raise Camera
NumPad 1	Lower Camera
NumPad 9	Camera Look Up
NumPad 3	Camera Look Down
Shift+ Arrows	Fast Camera Movement
Ctrl+ Arrows	Slow Camera Movement
Shift+ F2	Control Room Free Camera

Contrôles vue Extérieures Libre

French	
Flèche Haute	<i>Caméra vers le Haut</i>
Flèche Bas	<i>Caméra vers le Bas</i>
Flèche Gauche	<i>Caméra à Gauche</i>
Flèche Droite	<i>Caméra à Droite</i>
PavNum 7	<i>Monter Caméra</i>
PavNum 1	<i>Descendre Caméra</i>
PavNum 9	<i>Caméra Libre Haut</i>
PavNum 3	<i>Caméra Libre Bas</i>
Shift+ Flèche	<i>Mouvement rapides de Caméra</i>
Ctrl+ Flèche	<i>Mouvement lent de Caméra</i>
Shift+ F2	<i>Angle de vue libre en salle des commandes</i>
;	<i>Navire repéré précédent</i>
:	<i>Navire repéré suivant</i>

Steuerung Freie Kamera

German	
Pfeiltaste Oben	<i>Kamera vorwärts bewegen</i>
Pfeiltaste Unten	<i>Kamera zurück bewegen</i>
Pfeiltaste Links	<i>Kamera nach links drehen</i>
Pfeiltaste Rechts	<i>Kamera nach rechts drehen</i>
Ziffernblock 7	<i>Kamera erhöhen</i>
Ziffernblock 1	<i>Kamera senken</i>
Ziffernblock 9	<i>Kamera hoch</i>
Ziffernblock 3	<i>Kamera runter</i>
Shift+ Pfeiltasten	<i>Schnelle Kamerabewegung</i>
Strg+ Pfeiltasten	<i>Langsame Kamerabewegung</i>
Shift+ F2	<i>Freie Kamera für Zentrale</i>

Other Controls

English	
Left Mouse Button	Select
Right Mouse Button	Return to Previous View
Mouse Wheel	Zoom
Escape	Options
Numpad Del	Hide / Show Interfaces
Ctrl+F8	Show current FPS
Ctrl+F11	Take Screenshot

Controles Divers

French	
Souris Click Gauche	<i>Sélectionner</i>
Souris Click Droite	<i>Retourner à la vue précédente</i>
Roulette Souris	<i>Zoomer</i>
Eschap	<i>Options</i>
PavNum Suppr	<i>Afficher / Dissimuler l'interface</i>
Ctrl+F8	<i>Afficher les FPS</i>
Ctrl+F11	<i>Faire une capture d'écran</i>
Ctrl+T	<i>TDC Auto/Manuel</i>

Anderenkontrollen

German	
Link Maustaste	<i>Auswahl</i>
Rechte Maustaste	<i>Zur vorherigen Ansicht</i>
Mausrad	<i>Zoom</i>
Esc	<i>Optionen</i>
Ziffernblock Entfein-ausblenden	<i>Interface</i>
Strg+F8	<i>Derzeitige Framerate zeigen</i>
Strg+F11	<i>Screenshot</i>

Graphical User Interface Changes

Weather Report

The Navigation Officer gives the Weather Report in stock *Silent Hunter III*; in GWX, the Watch Officer can also give you a weather report when your U-boat is on the surface, provided an officer is at the Navigation Officer station. *Silent Hunter III* requires a Navigation Officer be on duty when generating a weather report, so trying to have the Watch Officer give you a weather report when a Navigation Officer is not on duty will cause the Crew/Damage Management screen (F7) to lock up for a short period of time, after which it will return to normal.



Figure 76: Weather Report available from the Watch Officer

Additional Charts, Handbooks, and Tools

NB: you cannot move the items discussed in this section if you pull them inside the **Controls Area**: if this happens, save your game and restart *Silent Hunter III* to return these items to their initial position.

Stopwatch repeater

All GWX views can repeat the stopwatch readout display shown in the periscope and UZO views. The repeater is in the same position in each view: left-click and drag its pull-down tab wherever you wish.



Figure 77: Location of stopwatch pull-down tab in Bridge view

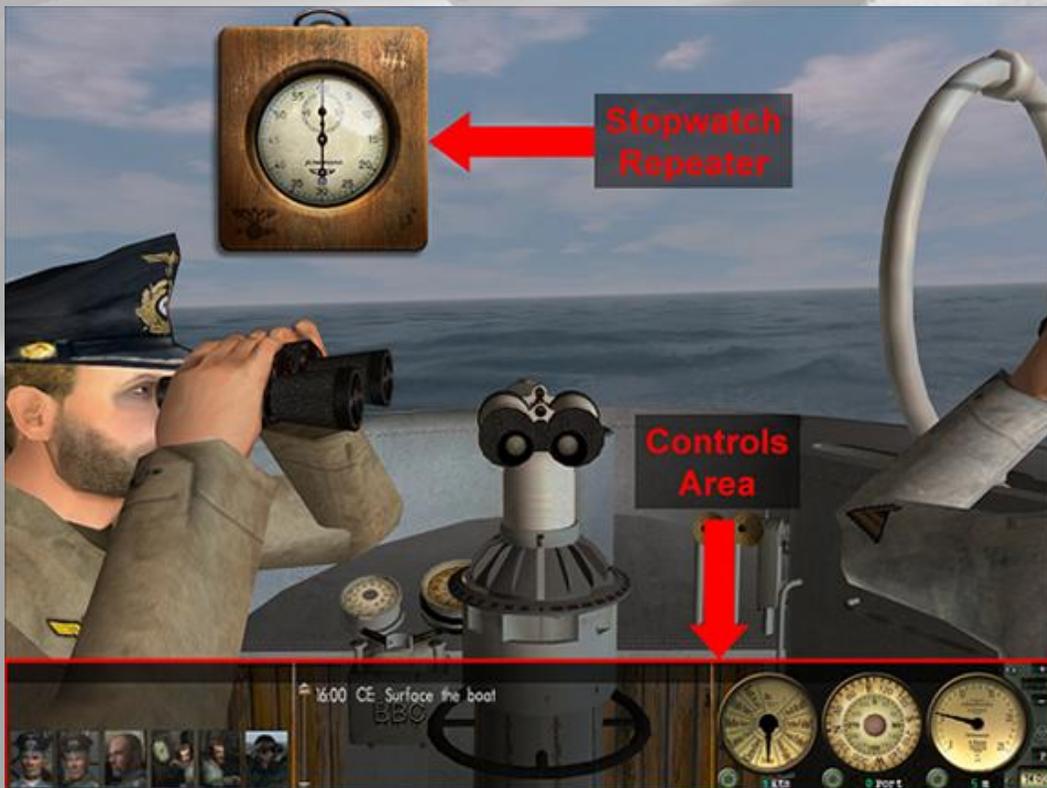


Figure 78: Stopwatch repeater display in the Bridge view

Engineer's Report

GWX modifies the engineer's gauges in the Engineer's report from their appearance in stock *Silent Hunter III*. Access this report by clicking on the Engineer's icon and then the report icon as in stock *Silent Hunter III*, as shown in Figure 79. From left to right, the gauges are for fuel level, battery power, compressed air, and the carbon dioxide (CO₂) level inside the boat.



Figure 79: Engineer's report gauges in GWX

GWX makes the Engineer's report available at any time via a slide-out gauge, as shown in Figure 80. Move the mouse cursor to the lower left edge of the screen at any time to activate the slide-out display of the Engineer's report.



Figure 80: Engineer's slide-out gauges in GWX

Enhanced Navigation Compass

GWX allows players to navigate their U-boat using a slide-out-activated, enhanced, high-precision navigation compass as well as the small navigation compass at the bottom right side of the screen in stock *Silent Hunter III*. Players can activate the compass any time by moving the mouse cursor to the navigation compass activation area shown in the figure below. Click any location on the navigation compass corresponding to the course you wish to set, and the new course will be marked on the outer compass wheel. The navigation compass will retract when you move the mouse cursor off the compass. The compass letters are:

- “N” = *Norden* = North
- “S” = *Süden* = South
- “O” = *Osten* = East
- “W” = *Westen* = West

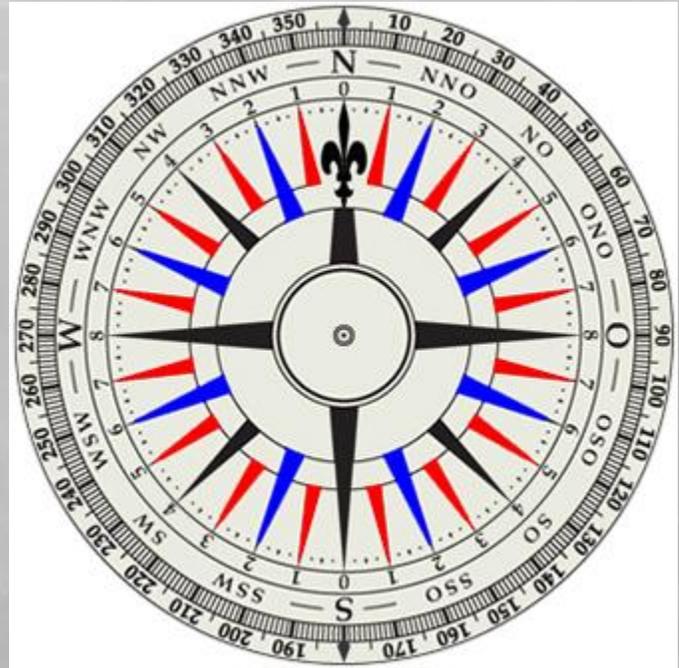


Figure 81: Detail of the navigation compass in GWX

A small red arrow on the compass display indicates the course commanded by the player.



Figure 82: Enhanced Navigation Compass in GWX

Nomograph

A nomograph is a device used to relate quantities in such a way that the value of an unknown quantity can be approximately determined given the values of the other related quantities. The GWX nomograph consists of three scales arranged in such a way that a straight line drawn between the values of known quantities on their respective scales will cross the third line at the value of the unknown quantity on the third line corresponding to the two known values.

Stock *Silent Hunter III* uses metric units (such as “kilometers”) to measure distance and imperial units (such as “knots”) to measure speed; however, it is difficult to mentally convert metric measurements to knots of speed, so the three values in the GWX nomograph are knots (nautical miles per hour), kilometers, and minutes. This allows players to calculate

1. a ship’s speed in knots based on the number of kilometers a ship has traveled in a certain period of time;
2. The number of kilometers a ship will travel in a specified number of minutes at a certain speed in knots;
3. The amount of time it will take a ship to travel a specified number of kilometers at a certain speed in knots.

In Figure 83, a player is tracking a ship that he observed to move 0.6 kilometers in 2 minutes, and has drawn a calculation line using the navigation map controls so that the line crosses the 0.6 mark on the “kilometers” line and the “2” mark on the “minutes” line. This means the ship is moving at a speed of 10 knots.

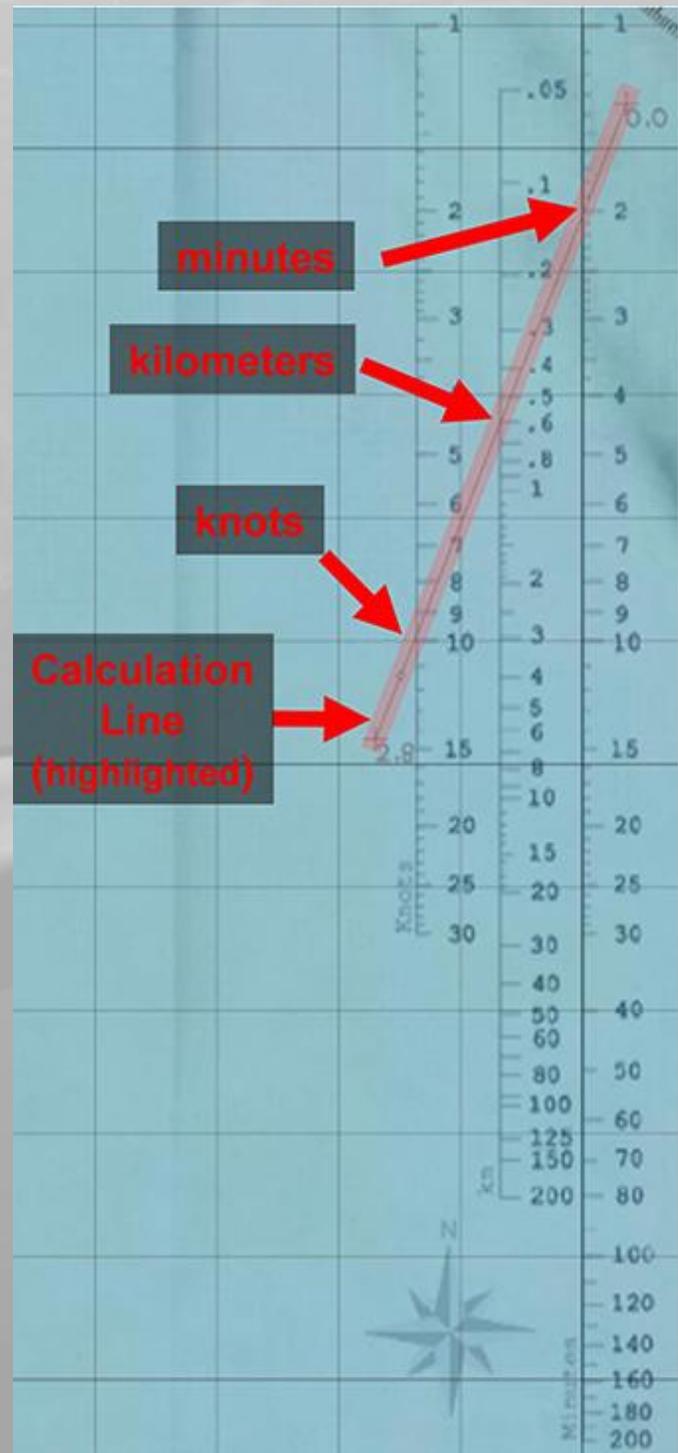


Figure 83: Nomograph showing a speed of 10 knots

Hint: The speed in knots = distance traveled (in kilometers) x 10 if you measure the distance a ship travels in 3 minutes, 15 seconds. For example, a ship that travels 0.6 kilometers in 3 minutes and 15 seconds has a speed of 6 knots.

U-boat Compass Rose on Small-Scale Navigation Maps

The U-boat's symbol on small-scale map displays in GWX is a compass rose grid that allows you to see immediately the relative bearing of map objects and sensor contact lines to your U-boat, where the bearing is relative to the bow of your U-boat. For example, Figure 84 shows three hydrophone contacts overlaid on the U-boat's compass rose where the U-boat is heading north.



Figure 84: U-boat compass rose with U-boat headed north

Charts for the Navigation Map

You can pull down the additional charts and the current stopwatch display in this view. The navigation map charts are at the same position in each view, as shown in Figure 85: left-click and drag the navigation chart pull-down tab to display the chart and move it wherever you wish. The charts are stacked atop one another (it is a small desk, after all) so you may have to move some charts to get to the chart in which you are interested.



Figure 85: Navigation map tools

In order from top to bottom, the charts are:

1. [Atlantic Operational Map](#)
2. [Mine and submarine nets at U-boat bases](#)
3. [Conversion table: nautical miles per hour \(knots\) to kilometers per hour](#)
4. [Conversion table: nautical miles per hour \(knots\) to meters per minute](#)

Atlantic Operational Map

GWX bases this map on the foldout map provided with stock *Silent Hunter III*, with the addition of new U-boat bases found in GWX.

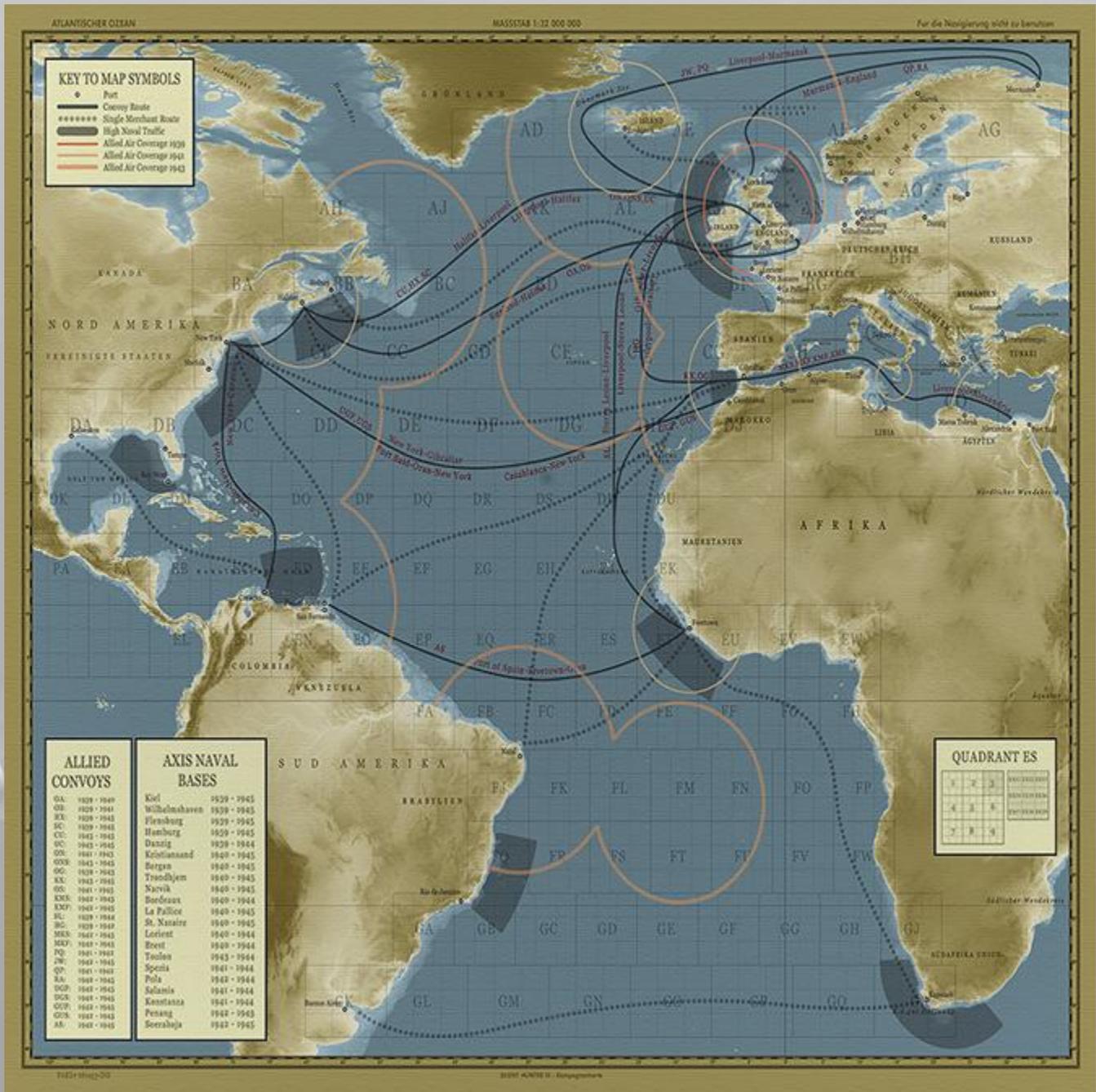


Figure 86: Map of Atlantic Convoy routes, map grids, and U-boat bases

Minefields and Submarine Nets at U-boat bases

This map is a quick in-game reference to the harbor defenses of each U-boat base. It is more precise in depicting their locations, but omits the shipwrecks included in the descriptions in the GWX manual.

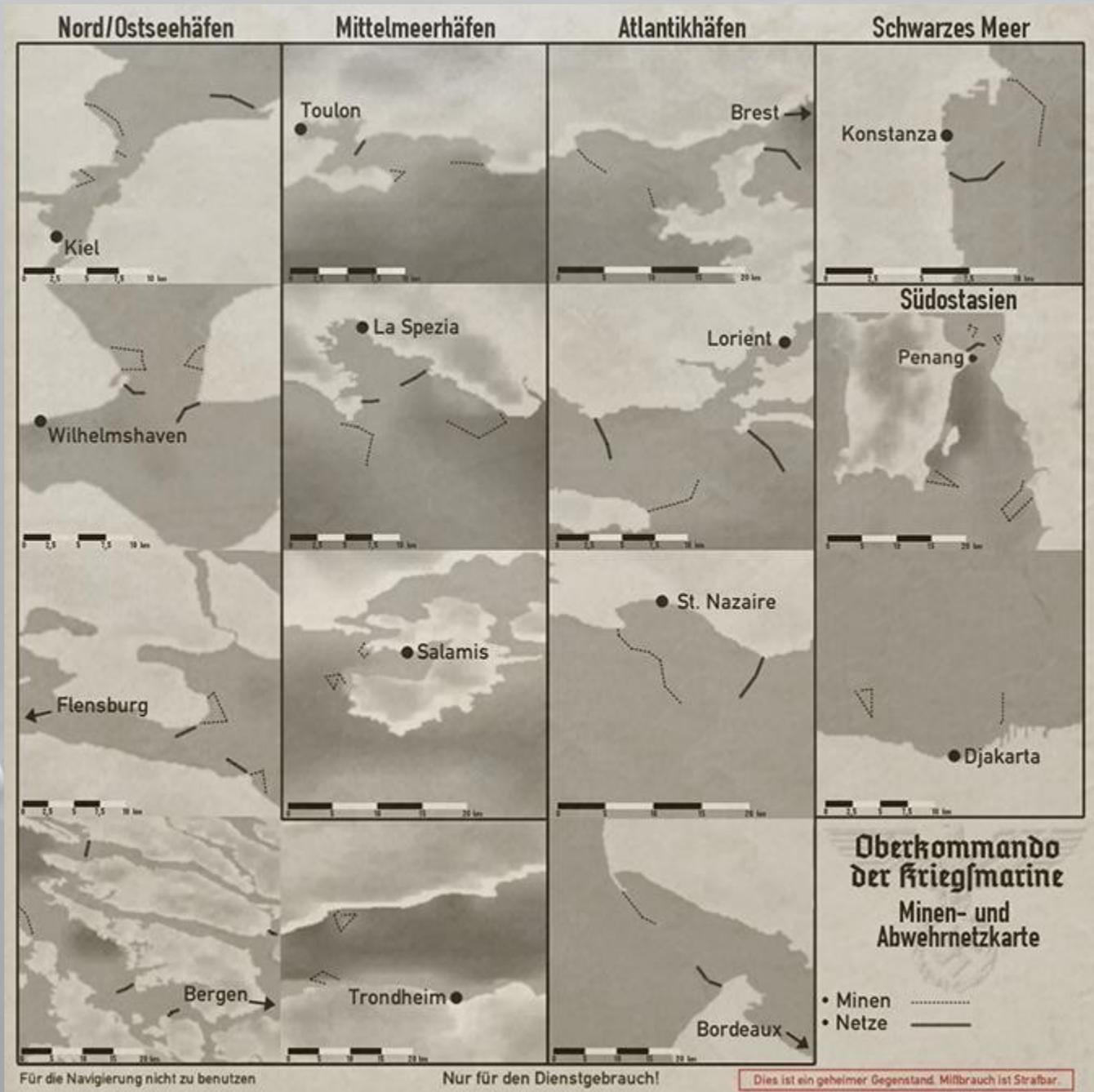


Figure 87: Minefields and antisubmarine nets at U-boat bases

Conversion tables: nautical miles per hour (knots) to kilometers per hour

Nr. 375299

Oberkommando der Kriegsmarine



Umrechnungstabelle: Knoten in Kilometer pro Stunde

Ziel ist: langsam
mittelschnell
schnell

geschätzte Fahrt:
2 bis 6 Knoten
7 bis 12 Knoten
ab 13 Knoten aufwärts

Gegnerfahrt in Knoten: x 1.0 Kilometer pro Stunde:

	1 Stunde.	2 Stunden.	4 Stunden.	6 Stunden.	8 Stunden.	10 Stunden.
2	3.70 km	7.41 km	14.82 km	22.22 km	29.63 km	37.04 km
3	5.56 km	11.11 km	22.22 km	33.34 km	44.45 km	55.46 km
4	7.41 km	14.82 km	29.63 km	44.45 km	59.26 km	74.08 km
5	9.26 km	18.52 km	37.04 km	55.56 km	74.08 km	92.60 km
6	11.11 km	22.22 km	44.45 km	66.67 km	88.90 km	111.12 km
7	12.96 km	25.93 km	51.86 km	77.78 km	103.71 km	129.64 km
8	14.82 km	29.63 km	59.26 km	88.90 km	118.53 km	148.16 km
9	16.67 km	33.34 km	66.67 km	100.01 km	133.34 km	166.68 km
10	18.52 km	37.04 km	74.08 km	111.12 km	148.16 km	185.20 km
11	20.37 km	40.74 km	81.49 km	122.23 km	162.98 km	203.72 km
12	22.22 km	44.45 km	88.90 km	133.34 km	177.79 km	222.24 km
13	24.08 km	48.15 km	96.30 km	144.46 km	192.61 km	240.76 km
14	25.93 km	51.86 km	103.71 km	155.57 km	207.42 km	259.28 km
15	27.78 km	55.56 km	111.12 km	166.68 km	222.24 km	277.80 km
16	29.63 km	59.26 km	118.53 km	177.79 km	237.06 km	296.32 km
17	31.48 km	62.97 km	125.94 km	188.90 km	251.87 km	314.84 km
18	33.34 km	66.67 km	133.34 km	200.02 km	266.69 km	333.36 km
19	35.19 km	70.38 km	140.75 km	211.13 km	281.50 km	351.88 km
20	37.04 km	74.08 km	148.16 km	222.24 km	296.32 km	370.40 km
21	38.89 km	77.78 km	155.57 km	233.35 km	311.14 km	388.92 km
22	40.74 km	81.49 km	162.98 km	244.46 km	325.95 km	407.44 km
23	42.60 km	85.19 km	170.38 km	255.58 km	340.77 km	425.96 km
24	44.45 km	88.90 km	177.79 km	266.69 km	355.58 km	444.48 km
25	46.30 km	92.60 km	185.20 km	277.80 km	370.40 km	463.00 km
26	48.15 km	96.30 km	192.61 km	288.91 km	385.22 km	481.52 km
27	50.00 km	100.01 km	200.02 km	300.02 km	400.03 km	500.04 km
28	51.86 km	103.71 km	207.42 km	311.14 km	414.85 km	518.56 km
29	53.71 km	107.42 km	214.83 km	322.25 km	429.66 km	537.08 km
30	55.56 km	111.12 km	222.24 km	333.36 km	444.48 km	555.60 km
31	57.41 km	114.82 km	229.69 km	344.47 km	459.30 km	574.12 km
32	59.26 km	118.53 km	237.06 km	355.58 km	474.11 km	592.64 km

Nur für den Dienstgebrauch!

Seite 1

Figure 88: Conversion table for knots to kilometers per hour

Conversion table: nautical miles per hour (knots) to meters per minute

Nr: 375300

Oberkommando der Kriegsmarine



Umrechnungstabelle: Knoten in Meter pro Minute

Ziel ist:
langsam
mittelschnell
schnell

geschätzte Fahrt:
2 bis 6 Knoten
7 bis 12 Knoten
ab 13 Knoten aufwärts



Gegnerfahrt in Knoten:	x 1.000 Meter pro Minute:					
	1 Min.	5 Min.	10 Min.	15 Min.	30 Min.	45 Min.
2	0.060 m	0.308 m	0.616 m	0.925 m	1.850 m	2.775 m
3	0.092 m	0.463 m	0.926 m	1.390 m	2.780 m	4.170 m
4	0.123 m	0.617 m	1.235 m	1.852 m	3.705 m	5.557 m
5	0.154 m	0.771 m	1.543 m	2.315 m	4.630 m	6.945 m
6	0.185 m	0.925 m	1.851 m	2.777 m	5.555 m	8.332 m
7	0.216 m	1.080 m	2.160 m	3.240 m	6.480 m	9.720 m
8	0.247 m	1.235 m	2.470 m	3.705 m	7.410 m	11.115 m
9	0.277 m	1.389 m	2.778 m	4.167 m	8.335 m	12.602 m
10	0.308 m	1.543 m	3.086 m	4.630 m	9.260 m	13.890 m
11	0.339 m	1.675 m	3.395 m	5.092 m	10.185 m	15.277 m
12	0.370 m	1.850 m	3.700 m	5.550 m	11.100 m	16.650 m
13	0.401 m	2.005 m	4.010 m	6.015 m	12.030 m	18.045 m
14	0.432 m	2.160 m	4.320 m	6.480 m	12.960 m	19.440 m
15	0.463 m	2.315 m	4.630 m	6.945 m	13.890 m	20.835 m
16	0.493 m	2.465 m	4.930 m	7.395 m	14.790 m	22.185 m
17	0.524 m	2.620 m	5.240 m	7.860 m	15.720 m	23.580 m
18	0.555 m	2.775 m	5.550 m	8.325 m	16.650 m	24.975 m
19	0.586 m	2.930 m	5.860 m	8.790 m	17.580 m	26.370 m
20	0.617 m	3.085 m	6.170 m	9.255 m	18.510 m	27.765 m
21	0.648 m	3.240 m	6.480 m	9.720 m	19.440 m	29.160 m
22	0.679 m	3.395 m	6.790 m	10.185 m	20.370 m	30.555 m
23	0.710 m	3.550 m	7.100 m	10.650 m	21.300 m	31.950 m
24	0.740 m	3.700 m	7.400 m	11.100 m	22.200 m	33.300 m
25	0.771 m	3.855 m	7.710 m	11.565 m	23.130 m	34.695 m
26	0.802 m	4.010 m	8.020 m	12.030 m	24.060 m	36.090 m
27	0.833 m	4.165 m	8.330 m	12.495 m	24.990 m	37.485 m
28	0.864 m	4.320 m	8.640 m	12.960 m	25.920 m	38.880 m
29	0.895 m	4.475 m	8.950 m	13.425 m	26.850 m	40.275 m
30	0.926 m	4.630 m	9.260 m	13.890 m	27.780 m	41.670 m
31	0.956 m	4.780 m	9.560 m	14.340 m	28.680 m	43.020 m
32	0.987 m	4.950 m	9.870 m	14.805 m	29.610 m	44.415 m

Nur für den Dienstgebrauch!

Seite 2

Figure 89: Conversion table for knots to meters per second

Attack Periscope, Observation Periscope, and UZO view

You can pull down the stopwatch receiver and a flag recognition quick reference sheet from the upper left-hand corner of the Attack Periscope, Observation Periscope, and UZO views, as shown in Figure 90.



Figure 90: Tools for Attack Periscope, Observation Periscope, and UZO views

Flag recognition ("Schiffsflaggen") quick reference sheet

Schiffsflaggen 1938 bis 1945			Schiffsflaggen 1938 bis 1945		
K/W	H/M		K/W	H/M	
		Albanien/Albania (AL)			Frankreich/France (AL)
		10/06/40-29/11/44 (AL)			03/09/39-25/06/40 (AL)
		30/11/44-07/05/45			23/10/44-14/08/45
		Amerika/America (AL)			Freis Frankreich/Free France (AL)
		11/12/41-14/08/45			01/07/40-22/10/44
		Argentinien/Argentina (AL)			Griechenland/Greece (AL)
		27/03/45-14/08/45			28/10/40-07/05/45
		Australien/Australia (AL)			Großbritannien/England (AL)
		03/09/39-14/08/45			03/09/39-14/08/45
		Belgien/Belgium (AL)			Honduras (AL)
		10/05/40-14/08/45			13/12/41-14/08/45
		Brasilien/Brazil (AL)			Indien/India (AL)
		22/08/42-07/05/45 (AL)			03/09/39-14/08/45
		06/06/45-14/08/45			Irland/Ireland (AL)
		Bulgarien/Bulgaria (AX)			Neutral
		02/03/41-08/09/44 (AL)			
		09/09/44-07/05/45			Italien/Italy (AX)
		Deutschland/Germany (AX)			10/06/40-08/09/43 (AL)
		01/09/39-09/05/45			09/09/43-14/08/45
		Dänemark/Denmark (AL)			Japan (AX)
		10/04/40-03/05/45			11/12/41-14/08/45
		Ägypten/Egypt (AL)			Kanada/Canada (AL)
		06/09/39-14/08/45			03/09/39-14/08/45
		Estland/Estonia (AL)			Kolumbien/Colombia (AL)
		Neutral			26/11/43-05/07/45
		Finnland/Finland (AX)			Kroatien/Croatia (AX)
		25/06/41-14/09/44 (AL)			10/04/41-14/05/45
		15/09/44-07/05/45			
		Lettland/Latvia (AL)			Russland/Russia (AL)
		Neutral			22/06/41-01/09/45
		Litauen/Lithuania (AL)			Schweden/Sweden (AL)
		Neutral			Neutral
		Mexiko/Mexico (AL)			Spanien/Spain (AL)
		22/05/42-14/08/45			Neutral
		Neuseeland/New Zealand (AL)			Südafrika/South Africa (AL)
		03/09/39-14/08/45			06/09/39-14/08/45
		Niederlande/Netherlands (AL)			Türkei/Turkey (AL)
		10/05/40-31/12/45			02/03/45-14/08/45
		Norwegen/Norway (AL)			Ungarn/Hungary (AX)
		09/04/40-14/08/45			20/11/40-19/01/45 (AL)
		Panama (AL)			20/01/45-07/05/45
		12/12/41-14/08/45			Uruguay (AL)
		Polen/Poland (AL)			15/02/42-14/08/45
		01/09/39-14/08/45			Venezuela (AL)
		Portugal (AL)			15/02/45-14/08/45
		Neutral			Jugoslawien/Yugoslavia (AL)
		Rotes Kreuz/Red Cross (AL)			07/04/41-17/04/41 (AL)
		Neutral			29/11/43-07/05/45
		R.S.I. (AX)			
		23/09/43-25/04/45			
		Rumänien/Romania (AL)			
		23/11/40-11/09/44 (AL)			
		12/09/44-14/08/45			

Legende/Legend

- K/W - Kriegsmarine / War Navy
- H/M - Handelsschiff / Merchant
- AX - Achse / Axis
- AL - Allierte / Allied

Figure 91: Flag recognition ("schiffsflaggen") quick reference sheet

Torpedo Graphics

GWX uses different colors to allow players to distinguish different types of torpedoes more easily: they are not the same colors used by real-life torpedoes.

Pre-patrol and In-game Torpedo Selection Screens

GWX uses these colors in pre-patrol and in-game torpedo selection screens. The basic color pattern is:

Torpedo body:

- White: Air-driven
- Green: Slow Electric
- Black: Electric

Torpedo warhead

- Bronze: Inertial guidance only
- Silver: FAT pattern
- Silver/Red: LuT pattern
- Gold: Acoustic homing



Available: January 1939
Propulsion: Air (14km@30kts; 8km@40kts; 5km@44kts)
Guidance: Straight run

Figure 92: T I torpedo

The T I was the standard pre-war issue *Kriegsmarine* torpedo for surface ships, and one of two types of torpedoes used by U-boats at the beginning of the war; the other being the T II torpedo. The T I was faster but left a visible trail of bubbles on the surface, so U-boats used it at night to hide the trail. U-boat crews called it the “Ato” or “A-torpedo” (*Atmosphärisch getriebener torpedo*, “air-driven torpedo”).



Available: February 1939
Propulsion: Electric (5km@30kts)
Guidance: Straight run

Figure 93: T II (G7e) torpedo

The T II was one of two types of torpedoes used by U-boats at the beginning of the war; the other was the T I torpedo. The T II was slower but did not leave bubble trail, so U-boats used it during the day when a ship might see the trail of a T I torpedo. U-boat crews called it the “Eto” or “E-torpedo” (*Elektrischer torpedo*, “electric torpedo”). The T II had several depth keeping and fusing problems: BdU fixed the guidance and impact firing pistol problems after [Operation Weserübung](#) in 1940, but gave up on the magnetic influence pistol and ordered U-boats to stop using it, though *Silent Hunter III* players can use them if they wish. The T II had to be serviced every few days and thus could not be stored outside the U-boat as T I torpedoes were, but *Silent Hunter III* does not enforce this historical limitation.



Available: June 1942 (prototype: May 1941)
Propulsion: Electric (5km @ 30kts)
Guidance: Inertial

Figure 94: T III (G7e) torpedo

The T III was an improved T II torpedo with a new magnetic influence fuse that fixed the problems with the T II magnetic influence fuses. This torpedo rendered the old T I torpedo obsolete, but had to be serviced every few days and thus could not be stored outside the submarine as the T I torpedoes were.



Available: October 1942 (prototype: May 1941)
 Propulsion: Air (14km@30kts; 8km@40kts; 5km@44kts)
 Guidance: Ladder pattern following

Figure 95: T I (G7a) FAT I torpedo

The T I-based *FederApparat Torpedo* (“spring-operated torpedo”), or FAT I torpedo added a spring-operated mechanism in the guidance system of an obsolescent T I torpedo to reverse the torpedo’s course across the columns of ships in a convoy until it either hit a ship or ran out of fuel. Used in nighttime attacks, it improved the odds of hitting a ship in a convoy by giving a torpedo multiple chances to hit one ship, or possibly a ship in one of several rows in the same column of ships. U-boat crews called it the “Atofat” or *Geleitzugtorpedo* (“convoy torpedo”).



Available: March 1943 (prototype: September 1942)
 Propulsion: Electric (5km@30kts)
 Guidance: Ladder pattern following

Figure 96: T III (G7e) FAT II torpedo

The T III-based FAT II torpedo added a spring-operated (“*Federapparat*”) mechanism in the guidance system of a T III torpedo to reverse the torpedo’s course across the columns of ships in a convoy until it either hit a ship or ran out of power. Used in daylight attacks, it improved the odds of hitting a ship in a convoy by giving a torpedo multiple chances to hit one ship, or possibly a ship in one of several rows in the same column of ships. U-boat crews called it the “Etofat” or *Geleitzugtorpedo* (“convoy torpedo”).

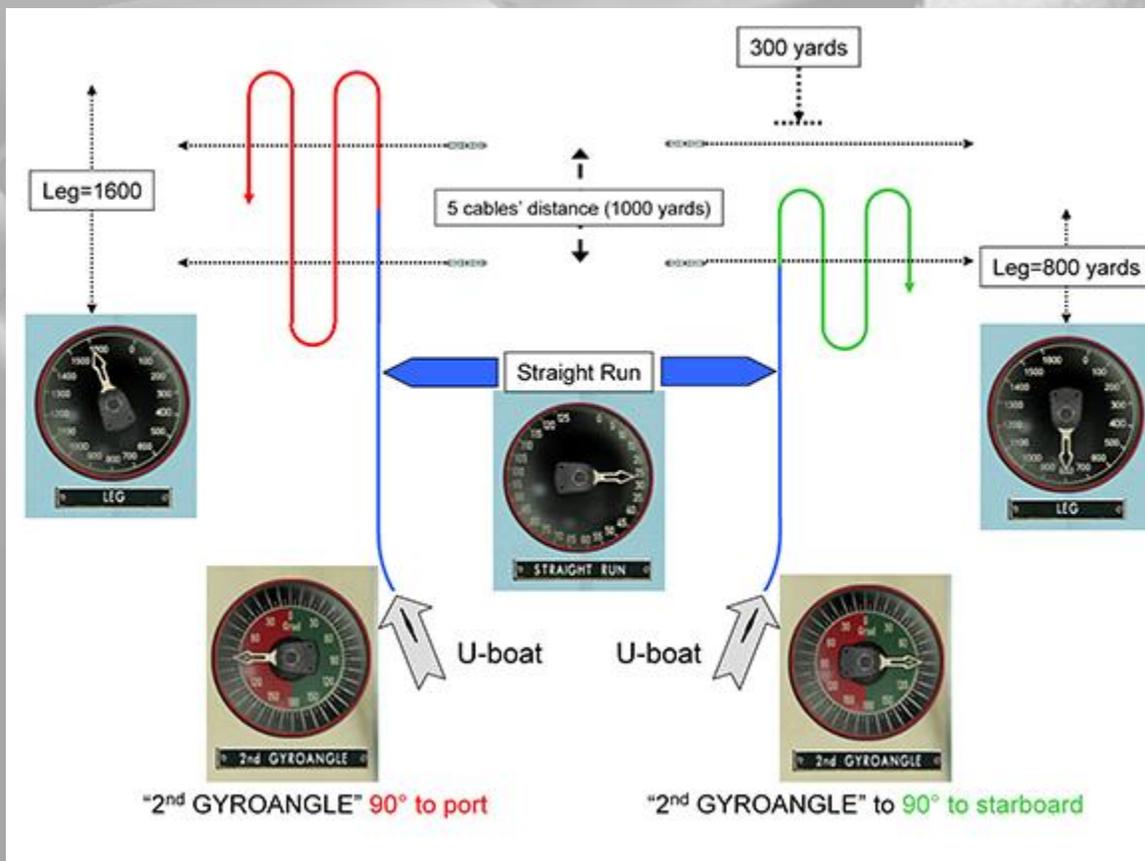


Figure 97: Limited FAT guidance options: length of run, leg direction 90° left/right, and length of leg



Available: July 1943 (prototype: November 1942)
Propulsion: Electric (7.5 km @ 20 kts)
Guidance: Passive acoustic homing

Figure 98: T IV (G7es) *Falke* ("Falcon") torpedo

The T IV *Falke* ("Falcon") was the world's first acoustic homing torpedo, preceding the operational deployment of the U.S. Mk. 24 "Fido" antisubmarine homing torpedo by a few months. The torpedo used simple acoustic sensors to home on the sound of a warship's propellers, but the torpedo was too slow to catch a warship moving at full speed and not sensitive enough to detect a ship traveling at very slow speeds. It had only a contact fuse and was in use only until the T V *Zaunkönig* torpedo replaced it.



Available: October 1943 (prototype: January 1943)
Propulsion: Electric (30 kts)
Guidance: Passive acoustic homing

Figure 99: T V (G7es) *Zaunkönig* ("Wren") torpedo

The T V *Zaunkönig* ("Wren") torpedo replaced the T IV *Falke* torpedo. It was as fast as the T III and had a magnetic influence fuse: U-boats used special procedures so the T V would not turn back on them. The Allies referred to the T V as the "German Navy Acoustic Torpedo" (GNAT), and developed decoys known to the British as "Foxyer," to the U.S. as "FXR," and to the Canadians as "CAT (Counter-Acoustic Torpedo)." Warships dragged these decoys through the water behind them, creating very loud cavitation noise as turbulent water in the ship's wake flowed through the holes in the Foxyer's side, luring the *Zaunkönig* away because the cavitation noise of the Foxyer was louder than the cavitation noise of a ship's propellers at moderate speed.⁴⁹ The Allies captured their first intact T V when they captured *U-505* in June 1944.

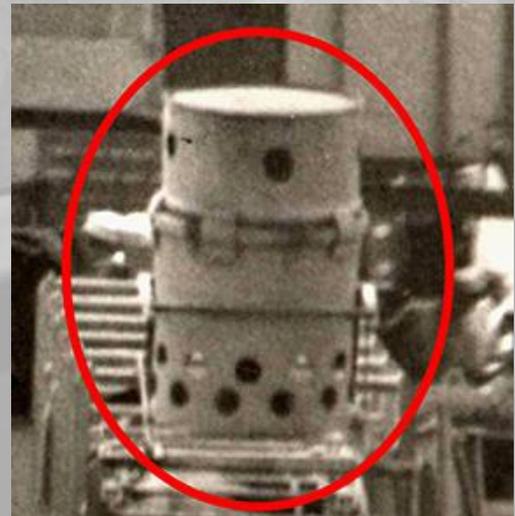


Figure 100: Foxyer on a depth charge rack⁵⁰



Available: July 1944
Propulsion: Electric (30 kts)
Guidance: Improved passive acoustic homing

Figure 101: T XI (G7es) *Zaunkönig II* ("Wren II") torpedo

The T XI *Zaunkönig II* improved upon the original *Zaunkönig* by being able to home in on the frequency of a ship's propellers amid the general cavitation noise of a Foxyer decoy. The Germans planned to deploy them on the Type XXI U-boats, but the torpedoes were not yet operational by the war's end. Stock *Silent Hunter III* allows players to use the *Zaunkönig II* well in advance of when it was actually projected to be ready for combat, and GWX has not changed this availability date.

⁴⁹ "Decoys and Obscurants," *Destroyer Escort Central*, <http://www.de220.com/Armament/Decoys/Decoys.htm>

⁵⁰ Photo source: *Destroyer Escort Central*, <http://www.de220.com/Armament/Decoys/Decoys.htm>



Available: March 1944
 Propulsion: Air (14km@30kts; 8km@40kts; 5km@44kts)
 Guidance: Advanced pattern following

Figure 102: T I (G7a) LuT I torpedo

The T I-based *LagenunabhängigerTorpedo* (“bearing-independent torpedo”), or LuT I torpedo added flexibility when launching an obsolescent T I torpedo with FAT guidance. A U-boat could launch a LuT on any bearing independent of the U-boat’s current course, rather than having to orient the torpedo tube (and by implication, the entire U-boat) in the general direction in which the torpedo was to be launched. The LuT allowed advanced FAT programming once launched.⁵¹



Available: September 1944
 Propulsion: Electric (30 kts)
 Guidance: Advanced pattern following

Figure 103: T III (G7e) LuT II torpedo

The T III-based LuT II torpedo added new flexibility when launching a T III torpedo with FAT guidance. A U-boat could launch a LuT on any bearing independent of the U-boat’s current course, rather than having to orient the torpedo tube (and by implication, the entire U-boat) in the general direction in which the torpedo was to be launched. The LuT allowed advanced FAT programming once launched.

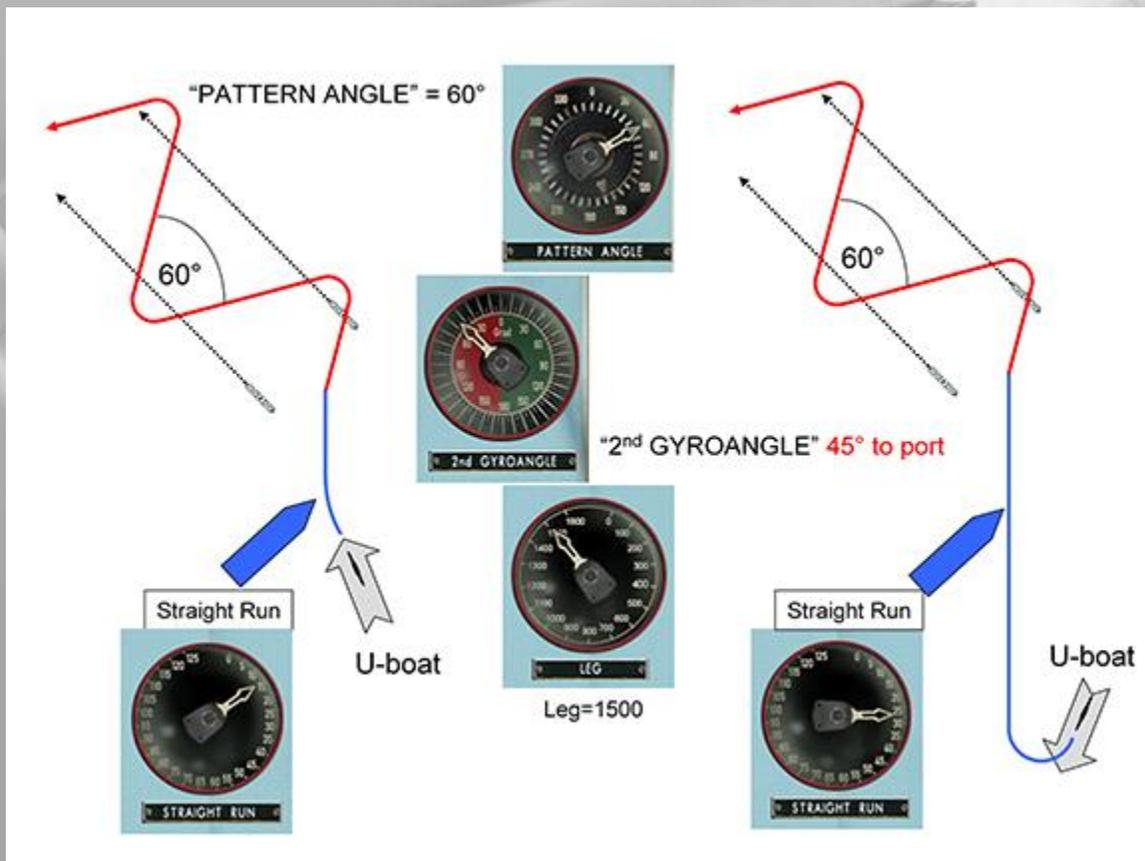


Figure 104: Examples of LuT programmability with small and large target bearing

⁵¹ “German torpedoes of World War II,” http://www.navweaps.com/Weapons/WTGER_WWII.htm

In-game 3D torpedo graphics

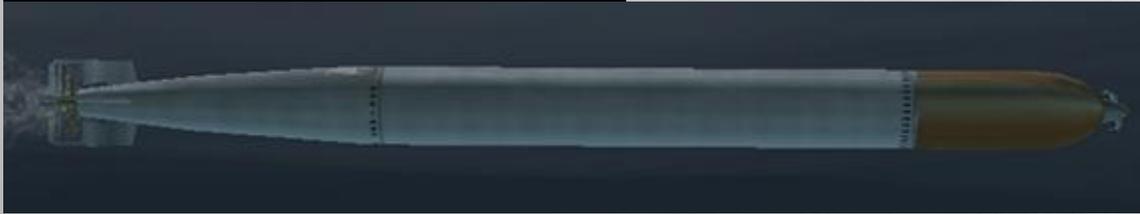
Stock *Silent Hunter III* limits to five the number of different in-game 3D torpedo marking sets and hard-codes their association to the in-game 3D markings, so some of the torpedoes seen in the “Pre-patrol and In-game Torpedo Selection Screens” will not look the same as their 3D counterparts in the game

T I (G7a) and T I (G7a) LuT I



T I (G7a)

T I (G7a) LuT I



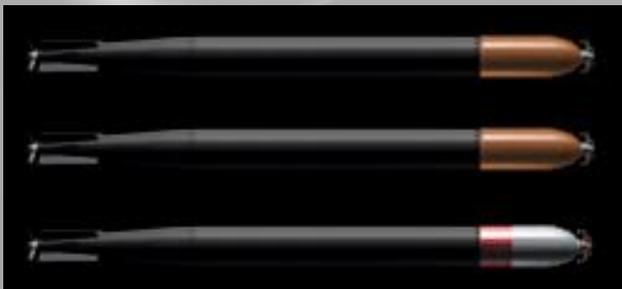
T I (G7a) FAT I



T I (G7a) FAT I



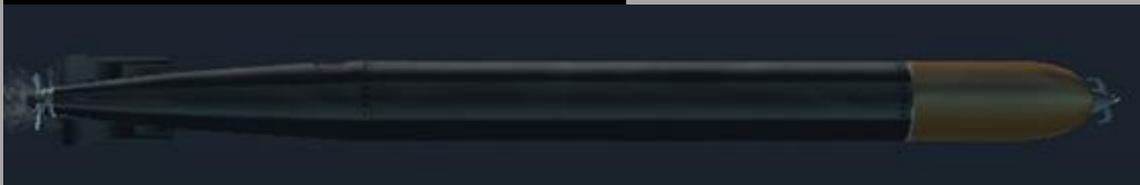
T II (G7e), T III (G7e), and T III (G7e) LUT II



T II (G7e)

T III (G7e)

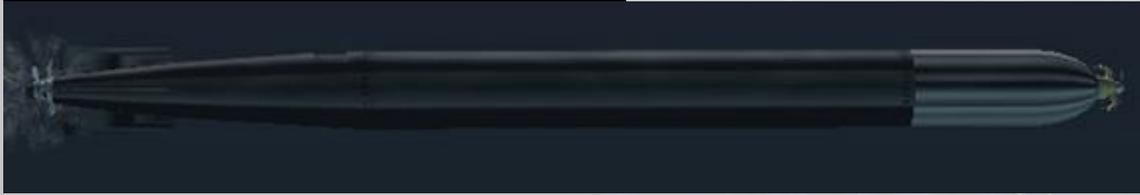
T III (G7e) LuT II



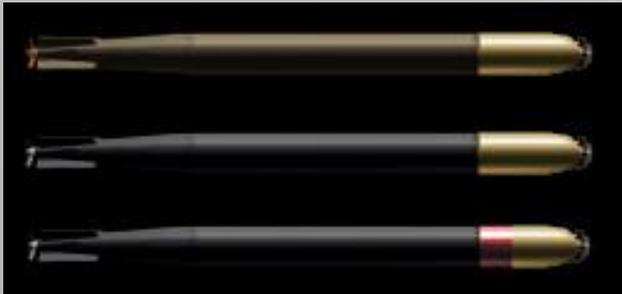
T III (G7e) FAT II



T III (G7e) FAT II



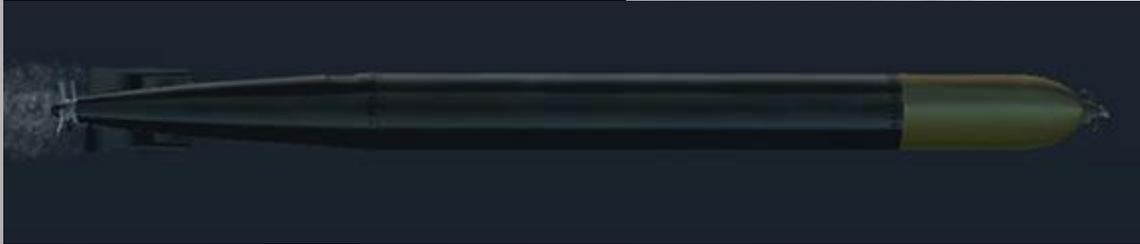
T IV “Falke” (G7es), T V “Zaunkönig” (G7es), and T XI “Zaunkönig II” (G7es)



T IV “Falke” (G7es)

T V “Zaunkönig” (G7es)

T XI “Zaunkönig II” (G7es)



Revisions to the Renown System

Stock *Silent Hunter III* allows players to earn “renown” by sinking ships and accomplishing basic mission goals like making it to your assigned patrol quadrant and remaining there for 24 hours, and deducts renown for sinking neutral or Axis ships; players use their accumulated renown to “purchase” new equipment, experienced crewmembers, and advanced torpedoes. This arrangement worked well with stock *Silent Hunter III*, but it has proven fragile in GWX.

Initial Renown Points

Stock *Silent Hunter III* granted renown points for completing training missions, with a maximum of 1500 points prior to starting your first patrol. GWX gives you 1500 renown points to start your career without having to take the training missions.

Renown Points for Reaching Patrol Areas

The *Silent Hunter III* game engine does not award renown to players who reach and remain in their assigned patrol areas if those areas are outside the stock *Silent Hunter III* grid system. This meant that players in Black Sea or Indian / Pacific Ocean patrol areas received no renown for meeting those objectives although renown would have been awarded in the Atlantic Ocean or the Mediterranean Sea,

After long consideration, the GWX Team decided that GWX will award renown only for sinking enemy ships and shooting down enemy aircraft, with penalties for sinking friendly or neutral ships and shooting down friendly or neutral aircraft. This means GWX will no longer award renown for reaching and patrolling your patrol area in fairness to players in the Black Sea and Indian Ocean, since some areas received this award and some did not.

Renown Points for Returning to Base

Players are supposed to earn renown by returning to base, or at least within 20-30 kilometers of their base, rather than “teleporting” from mid-ocean via the <ESC> key menu; however, a bug in stock *Silent Hunter III* prevents players from receiving this renown award. GWX removes the renown awarded for returning to base since the bug prevented players from earning this renown in any case.

New Artwork

Principal authors: “Ichneumon,” “Boris,” and “Fubar”

GWX adds historically accurate ship paint schemes, based on photographs made during the war and other records. This adds considerable content over that available in stock *Silent Hunter III*, including many improvements and additions such as:

1. **NEW BASE TEXTURES:** “Fubar” provided new base textures for some of the warships. “Ichneumon” also created new textures drawing on pieces of “Fubar’s” work for consistency. These new base textures improved the look of some skins as well as providing more variety for the merchants. Some of the merchants now vary not only in paint scheme but also in texture and simulated 3D details.
2. **NEW PAINT SCHEMES:** GWX provides new schemes to ensure a variety of skins. “Boris” created some of these skins when he started this project and “Ichneumon” added many more.
3. **NEW WEATHERING EFFECTS:** The Skin Pack uses weathering effects by “Fubar” and some effects by “Ichneumon”
4. **NEW ALPHA CHANNELS.** All the skins in GWX have improved alpha channels. The alpha channel controls how shiny a surface is. This is important because a lot of the 3D look of the ships comes from a 2D image painted on the flat surfaces of a model. The new alpha channels help provide the illusion of 3D detail by keeping seams between hull plates, portholes, rivets, rust, and other details from shining as much as the flat surfaces. You can only see this effect when sunlight reflects off a surface but it adds a lot when done well.

All U-boats have skins developed by “Fubar” and adapted by the GWX Team. All Aircraft have skins developed by the modders identified in the Credits section

References:

Alan Raven, “The Development of Naval Camouflage,” http://www.shipcamouflage.com/1_1.htm -

Daniel H. Jones, “*Kriegsmarine* Camouflage 1939-45,”
<http://smmlonline.com/articles/kriegsmarinecamo/kriegsmarine.html>

New Weapons

Aircraft Rockets

Historical Background

The Soviet Union developed the 82mm (3.2-inch) Реактивный Снаряд (*Reaktivny Snaryad*, “Rocket cannon shell”) RS-82 in the mid-1930s. It was about two feet long and weighed about 15 pounds; the Soviets used it as an area bombardment weapon against infantry and unarmored targets since it was highly inaccurate and had little chance of hitting a specific (armored) target with its small blast-fragmentation warhead. The Soviets used them against the Japanese (1939), against Finland (1939-40), and against the Germans starting in 1941.⁵²



Figure 105: Three RS-82 rockets loaded on a Soviet LaGG-3 fighter (1941)⁵³

Britain developed in 1940-41 a 3-inch (76.2mm), four-foot-long fin-stabilized rocket under the cover name “Unrotated Projectile” (UP) to provide point defense capability against diving Ju-87 *Stukas*.⁵⁴ The UP never went into production because the Germans withdrew their *Stukas* after suffering heavy losses against RAF Spitfires and Hurricanes in the Battle of Britain, but the RAF credited a 64-rocket UP barrage with a 90% probability of having destroyed a German bomber during an operational test.⁵⁵

The UP testing showed that barrages of unguided rockets had no real advantage over antiaircraft guns; however, crushing Allied defeats in Africa and Greece in April 1941 showed British aircraft needed to become much more effective against German tanks. The British considered mounting antitank guns on aircraft; however, the recoil of a gun large enough to destroy a tank could also damage a fighter aircraft, so the British settled on rockets, which had no recoil and could deliver a large explosive charge, and which the Soviets had already demonstrated in action against German forces using the RS-82.⁵⁶

⁵² “RS-82 rocket,” http://en.wikipedia.org/wiki/RS-82_rocket

⁵³ “RS-82 rocket,” http://en.wikipedia.org/wiki/RS-82_rocket

⁵⁴ David Kendall, Kenneth Post, “The British 3-Inch Anti-Aircraft Rocket. Part One: Dive-Bombers,” *Notes and Records of the Royal Society of London (1938-1996)*, Volume 50, Issue 2, 01 Jul 1996, Pages 229 - 239, <http://www.journals.royalsoc.ac.uk/openurl.asp?genre=article&id=doi:10.1098/rsnr.1996.0025>

⁵⁵ D. Kendall, K. Post, “Reminiscences and discoveries: The British 3-inch anti-aircraft rocket. Part two: high-flying bombers,” *Notes and Records of the Royal Society*, Volume 51, Issue 1, 22 Jan 1997, Pages 133 – 140 <http://www.journals.royalsoc.ac.uk/openurl.asp?genre=article&id=doi:10.1098/rsnr.1997.0011>

⁵⁶ Emmanuel Gustin, “Rockets,” <http://uboat.net/allies/technical/rockets.htm>

The 3-inch (76.2mm) rocket

Historical Background



Figure 106: Loading 3-inch RP with 60-lb warheads⁶⁰

The British Rocket Projectile (RP)-3 combined the four-foot-long rocket body of the UP to either of two warhead types: a 5-inch (127mm) wide, 60-lb. blast-fragmentation warhead, or a 3-inch wide, 25-lb. solid steel armor-piercing warhead known as the RP-3 25.⁵⁷ The armor-piercing RP had a maximum velocity of ~1000 mph (~480 m/sec) and could penetrate 33mm of armor plate.⁵⁸ RAF Fighter Command found the RP-3 had less than a 4% hit rate against armored targets, but Coastal Command found this was not an issue when using rockets against large targets such as ships and submarines.⁵⁹

The thickest part of the pressure hull of a Type VIIC U-boat was 32mm around the conning tower,⁶¹ with less than 22mm everywhere else, so the RP-3 could penetrate a U-boat's pressure hull even after traveling a short distance underwater. The RP-3 was available starting in late 1942.⁶²

The California Institute of Technology (Caltech) developed a 3.5-inch diameter rocket to which was adapted an armor-piercing warhead to create the U.S. 3.5-inch Forward Firing Aircraft Rocket (FFAR). The 3.5-inch FFAR had a maximum velocity of ~800 mph (~360 m/sec) and was available starting in September 1943; its first submarine kill came when TBF Avengers from USS *Guadalcanal* used them against the Type IXC/40 *U-544* (*Kapitänleutnant Willy Mattke*) in January 1944.⁶³

The 3-inch (76.2mm) rocket in GWX

The 3-inch (76.2mm) rocket in GWX acts as a stand-in for Allied rockets with diameters of 3.0 to 3.5 inches. The *Silent Hunter III* game engine does not allow GWX to model underwater penetration of a U-boat's hull by rockets, nor does it model the effect on aircraft of increased drag caused by early "rail-type" rocket launchers as opposed to late-war "pin-type" rocket launchers.



Figure 107: RAAF Beaufighter Mk X fires a volley of 3-inch RP⁶⁴

⁵⁷ "Unguided Rockets," http://www.vectorsite.net/twbomb_06.html

⁵⁸ "Aircraft Rockets of World War II," http://www.tarrif.net/wwii/guides/a2g_rockets_2.htm

⁵⁹ "Hawker Typhoon," http://en.wikipedia.org/wiki/Hawker_Typhoon

⁶⁰ "RP-3," <http://en.wikipedia.org/wiki/RP-3>

⁶¹ Williamson, *Anatomy of the Ship: The Type VII U-boat*

⁶² Emmanuel Gustin, "Rockets," <http://uboat.net/allies/technical/rockets.htm>

⁶³ "Air-launched 3.5-inch rockets," <http://www.designation-systems.net/dusrm/app4/35in-rockets.html>

⁶⁴ Australian War Memorial # UK1906, <http://www.awm.gov.au>

The 5-inch (127mm) HVAR “Holy Moses” rocket

Historical Background

The U.S. 3.5-inch FFAR with its armor-piercing warhead proved effective against submarine hulls, but causing significant damage to surface ships and ground targets required a more explosives than would fit within its 3.5-inch diameter. The U.S. developed an interim blast-fragmentation warhead by adapting a 5-inch naval artillery shell to the front of the 3.5-inch FFAR to create the 5-inch FFAR. The U.S. Navy installed the FFAR on rocket-armed amphibious assault ships as well as aircraft, giving a single aircraft the one-time firepower of the broadside of a Navy destroyer, but the additional warhead weight slowed the rocket to ~485 mph (216 m/sec) and decreased its range significantly, so the U.S. Navy set Caltech to work developing a larger rocket.⁶⁵



Figure 108: 5-inch HVAR loaded on a TBF Avenger⁶⁷

The 5-inch (127mm) HVAR “Holy Moses” in GWX

U.S. aircraft use the 5-inch (127mm) HVAR “Holy Moses” in GWX. This weapon gives a fighter a single-shot broadside with the same firepower of a large destroyer, so the GWX Team recommends caution when engaging aircraft since they need only approach within 1-2 km to put serious holes in your U-boat, rather than having to actually approach close enough to drop bombs.

Caltech completed the development of a 5-inch diameter High Velocity Aircraft Rocket (HVAR) rocket in late 1943, with initial deployment in July 1944. It had a maximum velocity of ~950 mph (425 m/sec) with two warhead options: a 45 lb. blast-fragmentation warhead and a solid armor-piercing warhead that could penetrate 38 mm of armor. The initial test devastated a ground target, prompting an exclamation of “Holy Moses!” from one of the test personnel; thus, the rocket’s nickname. The USAAF and USN deployed this rocket widely during World War II, and continued to use it during the Korean War.⁶⁶



Figure 109: F4U-1D “Corsair” firing HVAR⁶⁸

⁶⁵ “World War II Airpower,” <http://www.ww2guide.com/bombs.shtml>

⁶⁶ “Aircraft Rockets of World War II,” http://www.tarrif.net/wwii/guides/a2g_rockets_2.htm

⁶⁷ U.S. Navy photo # NP36 002040, http://www.chinalakealumni.org/AC_date/1944.shtml

⁶⁸ U.S. Navy photo (U.S. Naval Air Warfare Center), <http://www.chinalakealumni.org/1945.htm>

Machine Guns

The 0.303-caliber (7.7mm) machine gun

Historical Background

Aircraft began using 0.303-caliber (7.7mm) machine guns during World War I; Allied aircraft primarily used the Vickers Mark I machine gun⁶⁹ and the Germans most commonly used the Spandau *maschinengewehr* (MG) MG08/15.⁷⁰ These machine guns used ammunition that was at least of the same caliber if not identical to rifle ammunition used by each nation's infantry to simplify the manufacture and mass production of ammunition, and are referred to as "rifle caliber machine guns" (RCMG) to differentiate them from heavy machine guns such as the 0.50-caliber (12.7mm) machine gun.

Air forces worldwide kept RCMG as their main fighter armament until the late 1930's, when they began adopting larger guns to counter all-metal aircraft as well as large multi-engine aircraft (such as the B-17) with few areas (*i.e.*, only engines and crew compartments) vulnerable to RCMG fire. British aircraft during World War II generally used the U.S. Browning 0.30-caliber (7.62mm) M2 machine gun adapted to use British 0.303-caliber ammunition.

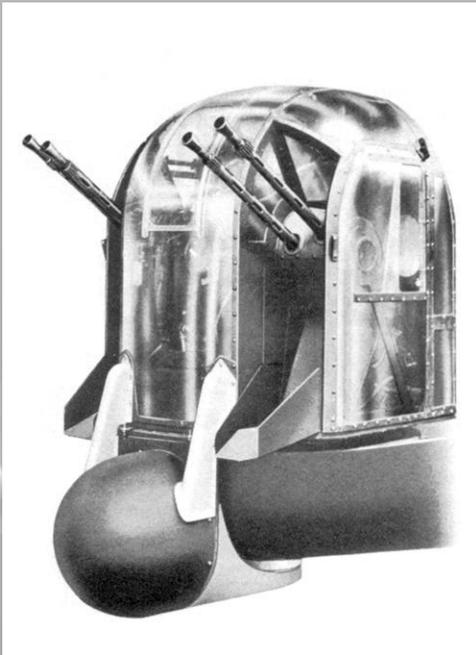


Figure 110: Radar-aimed 0.303 gun turret⁷²

Most countries (except the U.S.) began installing 20mm cannon on their fighters to combat bomber aircraft, with bomber aircraft (except those of the U.S.) generally using 0.303-caliber machine guns for self-defense; the U.S. adopted the 0.50-caliber machine gun for both fighters and bombers. Exploding 20mm cannon shells had several times the destructive power of a solid 0.50-caliber bullet, but the U.S. appears to have selected the 0.50-caliber machine gun as its primary air-to-air weapon since:

- 2) U.S. fighter aircraft had large airframes and powerful engines that could support carrying a large number of machine guns and their ammunition;
- 3) Most German fighters (except for jets) and all Japanese aircraft easily succumbed to 0.50-caliber gunfire; and
- 4) Selecting one type of machine gun for ground forces and aircraft simplified manufacturing and mass production.

The U.S. Navy switched to 20mm cannon for its post-war jet fighters, but the USAF did not abandon the 0.50-caliber machine gun as an air-to-air weapon until after the Korean War.⁷¹

The 0.303-caliber (7.7mm) machine gun in GWX

The 0.303-caliber (7.7mm) machine gun stands in for all machine guns of similar caliber in GWX and allows a distinction between light machine guns, heavy machine guns, and 20mm automatic cannon.

⁶⁹ "Vickers machine gun," http://en.wikipedia.org/wiki/Vickers_machine_gun

⁷⁰ "Maschinengewehr 08," http://en.wikipedia.org/wiki/Maschinengewehr_08

⁷¹ Emmanuel Gustin, "The WWII Fighter Gun Debate,"

<http://www.geocities.com/CapeCanaveral/Hangar/8217/fgun/fgun-in.html>

⁷² "Village Inn (codename)," [http://en.wikipedia.org/wiki/Village_Inn_\(codename\)](http://en.wikipedia.org/wiki/Village_Inn_(codename))

The 0.50-caliber (12.7mm) machine gun

Historical Background

The U.S. Browning 0.50-caliber (12.7mm) M2 machine gun (known in the U.S. armed forces as the “Ma Deuce” or “fifty-cal”) was the primary U.S. heavy machine gun of World War II; its direct descendants remain in use today. There were two aircraft versions: the “Browning Machine Gun, Aircraft, Cal. 0.50, M2, Fixed” for use in forward firing guns in the wings and fuselage, and the “Browning Machine Gun, Aircraft, Cal. 0.50, M2, Flexible” for use in gun turrets. It had a muzzle velocity of ~930 m/sec and an effective range of ~2,000 meters, with a cyclic rate of 550 rounds per minute.⁷³

The nearest German aircraft-mounted counterpart was the 13mm (0.51-caliber) Rheinmetall-Borsig MG 131, with a muzzle velocity of 730 m/sec, and a cyclic rate of ~900 rounds per minute.⁷⁴ Its nearest Soviet counterpart was the Универсальный Березина (*Universalni Berezina*, “Berezin Universal”) series of synchronized (UBS), wing-mounted (UBK), or turret-mounted (UBT) 12.7mm machine guns.⁷⁵



Figure 111: Loading four machine guns on a P-38E⁷⁷

U.S. fighters earned a reputation for heavy firepower by carrying from four to eight forward-firing 0.50-caliber machine guns, while U.S. heavy bombers such as the B-24 carried 10 to 12 single- or dual-mounted machine guns in defensive emplacements about the aircraft: heavy machine guns fired fewer rounds than light machine guns but did much more damage when they hit. The USAAF developed “strafer” medium bombers for the Pacific theater by adding four machine guns in side packs and/or replacing the bombardier with four to eight machine guns; one B-25 variant (B-25H) also added a 75mm cannon.⁷⁶

The 0.50-caliber (12.7mm) machine gun in GWX

The 0.50-caliber (12.7mm) machine gun stands in for all machine guns of similar caliber in GWX and allows a distinction between light machine guns, heavy machine guns, and 20mm automatic cannon.



Figure 112: B-25H with 12 forward-firing 0.50-caliber machine guns and a 75mm cannon⁷⁸

⁷³ “M2 Browning Machine Gun,” http://en.wikipedia.org/wiki/M2_Browning_Machine_Gun

⁷⁴ “MG 131 Machine Gun,” http://en.wikipedia.org/wiki/MG_131

⁷⁵ “Berezin UB,” http://en.wikipedia.org/wiki/Berezin_UB

⁷⁶ “The North American B-25 Mitchell,” <http://www.vectorsite.net/avb25.html#m5>

⁷⁷ Photo source: U.S. Air Force photo, <http://www.warbirds.be/web/content.php?article.170>

Leigh Lights

Historical Background

British introduced radar-equipped ASW aircraft in 1940, but these were unsuccessful in night operations because the radars then in use were ineffective at ranges of less than a mile; the air crew had to see the U-boat to attack it, which meant dropping flares until the U-boat was spotted, and then circling back to conduct an attack. This method gave the U-boat ample warning to dive to safety, and successful radar-guided night attacks on U-boats were rare events.

An RAF Coastal Command personnel officer, Wing Commander Humphry de Verde Leigh, conceived the idea of an aircraft searchlight and pursued it as a personal project. The initial version was a steerable 60-cm (~2-foot) diameter naval searchlight in a retractable “dustbin” that was lowered below the aircraft from the position formerly occupied by a ventral gun turret. The Leigh Light won a competition with another design, and entered service in April 1942 when it was equipped Coastal Command Wellington ASW aircraft in a “dustbin” extending beneath the fuselage just aft of the main wings. It eventually equipped many ASW aircraft, including Liberators and PBV Catalinas that carried Leigh Lights under the wing in a specially designed aerodynamic mounting.⁷⁹



Figure 113: Radar-equipped Wellington ASW aircraft with Leigh Light deployed⁸⁰

Leigh Lights proved highly effective in guiding aircraft to their target and in blinding and surprising U-boat crews. The first attack using the Leigh Light was in June 1942; on July 5, *U-502* (*Kapitänleutnant* Jürgen von Rosenstiel) became the first U-boat to be lost to a Leigh Light-equipped aircraft.⁸¹ U-boats began traveling by day on the surface starting in August 1942, rather than at night, to reduce the chance of a radar/Leigh Light equipped aircraft surprising them.

The Leigh Light in GWX

The Leigh Light appears on all Vickers Wellington, PBV Catalina, and Liberator maritime patrol bombers. Leigh Lights are in use from the beginning of the war rather than starting on their historical date due to hardcoded *Silent Hunter III* restrictions on changing aircraft equipage over the course of the war.

⁷⁸ Photo source: U.S. Air Force photo, <http://www.nationalmuseum.af.mil/>

⁷⁹ Emmanuel Gustin, “The Leigh Light,” http://www.uboa.net/allies/technical/leigh_light.htm

⁸⁰ Photo source: Emmanuel Gustin, “The Leigh Light,” http://www.uboa.net/allies/technical/leigh_light.htm

⁸¹ J. Rickard (1 June 2007), *Leigh Light*, http://www.historyofwar.org/articles/weapons_leigh_light.html

Minelaying Equipment

Historical Background

Several navies converted destroyers into light, fast minelayers to deploy minefields rapidly during minelaying raids into enemy waters, or to defend newly-seized port facilities. For example, the U.S. Navy converted 12 *Allen W. Sumner*-class destroyers into *Robert H. Smith*-class minelayers in 1944. Mines were rolled down a set of rails to the stern and deployed over the fantail. Minelayers did not carry mines unless the ship was carrying out a mine-laying operation.

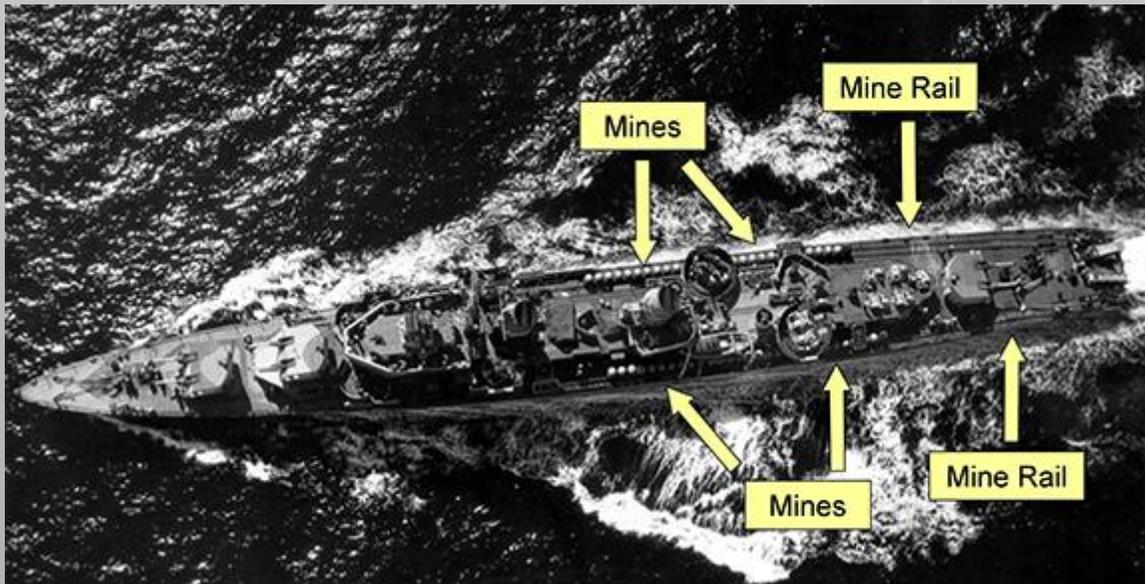


Figure 114: Destroyer minelayer USS *Robert H. Smith* (DM-35)⁸²

Minelayers in GWX

Players can create minelayers in GWX missions and the GWX campaign by assigning *Minen* (“mines”) as a destroyer’s loadout using the *Silent Hunter III Mission Editor*. Using the *Mission Editor* is the only way to create minefields or change their characteristics since the stock *Silent Hunter III* engine does not support the in-game deployment of mines the way it supports the launching of depth charges.



Figure 115: German Type 34 destroyer configured as a minelayer in GWX

⁸² Photo source: U. S. Navy photo, *Destroyer History*, <http://www.destroyerhistory.org/sumner-gearingclass/conversions.html>

New Nations, Flags, and Aircraft Markings

GWX adds a number of nations, each with its national flag, merchant flag, or a combination of merchant flag and naval flag (based on the “Nationality mod” by “Sergbutu”) with these general changes:

- All flags fit within the standard stock *Silent Hunter III* height-to-length ratio of 1:2, but any insignia or heraldry are still in their original height-to-length ratios
- Each flag has “wind ripple” patterns.

GWX has given stock *Silent Hunter III* aircraft historical aircraft markings (“roundels”) in these locations: upper and lower wing, left and right fuselage, and a “fin flash” on the vertical stabilizer. Note:

1. Historically, some aircraft did not have markings in every possible location (*e.g.*, Italy)
2. The GWX Team found some markings for single countries that varied by location or by aircraft type (*e.g.*, New Zealand). In these cases, the GWX team selected the roundels that we most often encountered in our research.



Figure 116: Dorsal view of Hurricane IIC markings



Figure 117: Ventral view of Hurricane IIC markings



Figure 118: Portside view of Hurricane IIC markings

Significant reference sources

Cochrane, John and Stuart Elliot. *Military Aircraft Insignia of the World*. Airlife Publishing. 1998

Flags of the World. <http://www.fotw.net>

“Wings Palette,” <http://wp.scn.ru/en>

Albania

The Kingdom of Albania (*Mbretnis Shqiptare*) was an occupied protectorate of neutral Italy at the start of World War II with limited local autonomy; Italy forced it to enter the war along with Italy on June 10, 1940. Albania was under German control from the time Italy surrendered on September 8, 1943 until November 29, 1944, when a Communist government took over and Albania then joined the Allies. Albania uses its merchant and naval flags from its time as an Italian protectorate; it has no aircraft in GWX, but GWX provides a the roundel and fin flash that it used starting in 1953 in the event players wish to assign aircraft to it in a user-developed mission.

Merchant⁸³



Naval⁸⁴



Roundel



Fin Flash⁸⁵



Argentina

The Argentine Republic (*República Argentina*) was initially neutral in World War II. It joined the Allies on March 27, 1945, but never took military action against Germany. Argentina uses its merchant flag, naval flag, aircraft roundel, and fin flash in GWX.

Merchant⁸⁶



Naval⁸⁷



Roundel⁸⁸



Fin Flash⁸⁹



⁸³ Flag source: Željko Heimer, FOTW Flags Of The World website at <http://www.fotw.net/flags/al~.html>

⁸⁴ Flag source: Jaime Ollé, FOTW Flags Of The World website at http://www.fotw.net/flags/al_i1939.html

⁸⁵ Roundel and flash: "World Air Forces: Albania," <http://www.aeroflight.co.uk/waf/albania/albaf-nat-markings.htm>

⁸⁶ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/ar.html#bwb>

⁸⁷ Flag source: Thanh-Tâm Lê, FOTW Flags of the World website at <http://www.fotw.net/flags/ar.html#bwb>

⁸⁸ Nicolas Rucks, FOTW Flags of the World website at <http://www.fotw.net/flags/ar%5Eaf.html#afr>

⁸⁹ Flash source: Thanh-Tâm Lê, FOTW Flags of the World website at <http://www.fotw.net/flags/ar.html#bwb>

Australia

The Commonwealth of Australia was initially neutral in World War II, declaring war on Germany on September 3, 1939 and Japan on December 8, 1941. Australia uses its merchant flag, naval flag, and 1942 Southwest Pacific Area (SWPA) aircraft roundel and fin flash in GWX.

Merchant⁹⁰



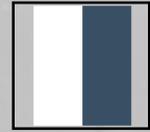
Naval⁹¹



Roundel



Fin Flash⁹²



Belgium

The Kingdom of Belgium (*Koninkrijk België* / *Royaume de Belgique* / *Königreich Belgien*) was initially neutral in World War II; Germany invaded on May 10, 1940 and Belgium surrendered on May 28. Germany occupied Belgium but the Belgian Congo remained under Allied control. Belgium uses its merchant and naval flags from 1936 and its aircraft roundel in GWX.

Merchant⁹³



Naval⁹⁴



Roundel⁹⁵



⁹⁰ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/au.html#red>

⁹¹ Flag source: Vincent Morley, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-nav.html>

⁹² Roundel and flash: "Wings Palette," <http://wp.scn.ru/en>

⁹³ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/be.html>

⁹⁴ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/be~1936.html#ser>

⁹⁵ Roundel: "World Air Forces: Belgium," <http://www.aeroflight.co.uk/waf/belgium/belgaf2.htm>

Brazil

The Federative Republic of Brazil (*República Federativa do Brasil*) was initially neutral in World War II. Brazil broke diplomatic relations with Germany after *U-432* (*Kapitänleutnant* Heinz-Otto Schulze), *U-155* (*Kapitänleutnant* Adolf Cornelius Piening), and *U-94* (*Oberleutnant z. S.* Otto Ites) together sank four Brazilian merchant ships (*Buarque*, *Olinda*, *Arabutan*, and *Caryu*) in February 1942. Brazil declared war on Germany on August 22, 1942 after *U-507* (*Kapitänleutnant* Harro Schacht) sank five Brazilian ships (*Baependy*, *Araraquara*, *Aníbal Benévolo*, *Itagiba*, and *Arará*) on August 15-17, 1942. Brazil uses its national flag of the years 1889 – 1960 and its pre-1944 aircraft roundel in GWX.

National⁹⁶



Roundel⁹⁷



Bulgaria

The Kingdom of Bulgaria (Царство България, *Tsarstvo Bulgariya*) was initially neutral in World War II. It joined the Axis on March 1, 1941 but did not attack the Soviet Union, which declared war on Bulgaria on September 4, 1944; the Communists took control of the regency on September 9, 1944 and declared war on Germany. Tsar Simeon II (Симеон Сакскобургготски, “Simeon of Saxe-Coburg and Gotha”), who was seven years old in 1944 and was exiled 1946, returned to Bulgaria in 1990 and was elected Prime Minister in 2001. Bulgaria uses its pre-1944 coup merchant and naval flag and its Axis roundel in GWX.

Merchant⁹⁸



Naval⁹⁹



Roundel¹⁰⁰



⁹⁶ Flag source: Joseph Macmillan, FOTW Flags of the World website at http://www.fotw.net/flags/br_dev.html

⁹⁷ Roundel: “World Air Forces: Brazil,” <http://www.aeroflight.co.uk/waf/americas/brazil/bra-airforce.htm>

⁹⁸ Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/bg_1878.html#mer

⁹⁹ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/bg~1908.html#nens>

¹⁰⁰ Roundel: “World Air Forces: Bulgaria,” <http://www.aeroflight.co.uk/waf/bulgaria/bulg-nat-markings.htm>

Canada

The Dominion of Canada was initially neutral in World War II, but joined the Allies on September 10, 1939. Canada uses the default merchant and naval flags from *Silent Hunter III* in GWX, but adds new aircraft roundels and a fin flash.



Colombia

The Republic of Colombia (*República Colombia*) was initially neutral, but joined the Allies on November 26, 1943. Colombia uses its merchant and naval flags, aircraft roundel, and fin flash in GWX.



Croatia

Germany and Italy created the Independent State of Croatia (*Nezavisna Država Hrvatska*) from the pre-war *Banovina Hrvatska* ("Province of Croatia") of Yugoslavia on April 10, 1941 during the German invasion of Yugoslavia; it surrendered to Yugoslav partisans on May 14, 1945. Croatia uses the merchant and naval flags that it used until 1943, and its 1941 aircraft roundel and fin flash in GWX.



¹⁰¹ Flag source: Martin Grieve, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-ensr.html#red>

¹⁰² Flag source: Vincent Morley, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-nav.html>

¹⁰³ Roundels: "Bones Aviation Page," http://www.homepages.mcb.net/bones/01UKAV/roundels/RAF_ROUNDELS.htm

¹⁰⁴ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/co~.html>

¹⁰⁵ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/co~navy.html>

¹⁰⁶ Roundel and flash: "Wings Palette," <http://wp.scn.ru/en>

¹⁰⁷ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/hr-41.html>

¹⁰⁸ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/hr-41.html>

¹⁰⁹ Roundel and flash: Ferenc Gy. Valoczy, FOTW Flags of the world website at <http://www.fotw.net/flags/hr-1941.html#fin>

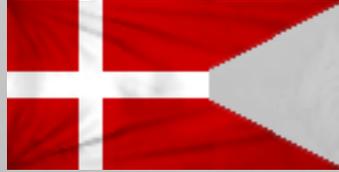
Denmark

The Kingdom of Denmark (*Kongeriget Danmark*) was neutral at first, but Germany conquered Denmark on April 9, 1940. Denmark uses its merchant and naval flags, aircraft roundel, and fin flash in GWX.

Merchant¹¹⁰



Naval¹¹¹



Roundel



Fin Flash¹¹²



Egypt

The Kingdom of Egypt (مصر مملوكة, *al-Mamlaka al-Misr*), was initially neutral but declared war on Germany on February 24, 1945, though a *de facto* British ally under the terms of Egypt's independence from Britain in 1922.¹¹³ Egypt uses its merchant flag, naval flag, roundel, and fin flash in GWX.

Merchant¹¹⁴



Naval¹¹⁵



Roundel



Fin Flash¹¹⁶



¹¹⁰ Flag source: Edward Mooney, Jr., FOTW Flags of the World website at <http://www.fotw.net/flags/dk.html>

¹¹¹ Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/dk_state.html

¹¹² Roundel and flash: "World Air Forces: Denmark," <http://www.aeroflight.co.uk/waf/denmk/denaf2.htm>

¹¹³ "Participants in World War II," http://en.wikipedia.org/wiki/Participants_in_World_War_II#Egypt

¹¹⁴ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/eg-kingd.html>

¹¹⁵ Flag source: Calvin Paige Herring, FOTW Flags of the World website at <http://www.fotw.net/flags/eg-kingd.html>

¹¹⁶ Roundel and flash: "Wings Palette," <http://wp.scn.ru/en/ww2/f/79/198/0/2>

Estonia

The Republic of Estonia (*Eesti Vabariik*) was initially neutral, but the Soviet Union formally annexed it on August 6, 1940, at which time it became the Estonian Soviet Socialist Republic (SSR). Germany captured Tallinn on July 28, 1941, and included the Estonian SSR in *Reichskommissariat Ostland*. The Soviet Union recaptured Tallinn on September 26, 1944 and reestablished the Estonian SSR, although the western democracies refused to acknowledge its legitimacy. Estonia uses its pre-war merchant flag, naval flag, wing marking, and fin flash in GWX.

Merchant¹¹⁷



Naval¹¹⁸



Wing



Fin flash¹¹⁹



Finland

The Republic of Finland (*Suomen tasavalta*) was initially neutral in World War II, fighting the Winter War against the Soviet Union before allying with Germany on June 25, 1941. It signed an armistice with the Soviet Union on September 3, 1944; German troops attempted an amphibious assault on Finnish-controlled islands in the Gulf of Finland on September 15 and Finland thereafter fought to expel all German troops from Finnish soil. Finland declared war on Germany on March 15, 1945 (retroactive to September 15, 1944) and forced the last German troops out of Finland in late April 1945.¹²⁰ Finland uses its merchant flag, war flag, and aircraft roundel in GWX. Note: Finland selected its roundel in 1918, long before the German Nazi party began its association with the swastika.

Merchant¹²¹



Naval¹²²



Roundel¹²³



¹¹⁷ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/ee.html>

¹¹⁸ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/ee~.html>

¹¹⁹ Roundel and flash: "World Air Forces: Estonia," <http://www.aeroflight.co.uk/waf/estonia/estaf2.htm>

¹²⁰ "Participants in World War II," http://en.wikipedia.org/wiki/Participants_in_World_War_II#Finland

¹²¹ Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/fi_1920.html

¹²² Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/fi_1920.html

¹²³ "Fighter markings of Germany's co-belligerents," <http://www.xs4all.nl/~rhorta/jgaxis.htm>

France

The French Republic (*République française*) was initially neutral, declaring war on Germany on September 3, 1939. France surrendered on June 25, 1940, and Vichy France (*L'État français* or *Le Régime de Vichy*) became neutral, using the French flag until October 23, 1944, when the Allies recognized the Provisional Government of France under General Charles de Gaulle. France uses the variant of its national flag for use at sea, its aircraft roundel, and fin flash in GWX.

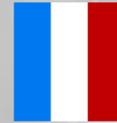
National flag used at sea¹²⁴



Roundel



Fin Flash¹²⁵



Free France

Free France (*France libre*) formed on July 1, 1940 from French military units and colonies that rejected Vichy France. It dissolved on October 23, 1944 when General Charles de Gaulle formed the Provisional Government. Free France uses its merchant and naval flag, roundels, and fin flash in GWX.

Merchant¹²⁶



Naval¹²⁷



Wing



Fuselage



Roundel¹²⁸



Germany

The Greater German Realm (*Großdeutsches Reich*) started the Second World War on September 1, 1939 by invading Poland, and surrendered on May 8, 1945. The swastika is now an illegal symbol (outside academia and education) in Germany and Austria. GWX uses historical German merchant and naval flags, its aircraft roundel, and fin flash only for historical accuracy.

Merchant¹²⁹



Naval¹³⁰



Roundel



Fin Flash¹³¹



¹²⁴ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/fr.html>

¹²⁵ Roundel and fin flash: "World Air Forces: France," <http://www.aeroflight.co.uk/waf/france/francaf2.htm>

¹²⁶ Flag source: Ivan Sache, FOTW Flags of the World website at http://www.fotw.net/flags/fr_freef.html

¹²⁷ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/fr~fnfl.html>

¹²⁸ "Free French Air Force," http://en.wikipedia.org/wiki/Free_French_Air_Force

¹²⁹ Flag source: Mark Sensen, FOTW Flags of the World website at <http://www.fotw.net/flags/de1935.html>

¹³⁰ Flag source: Olivier Vercammen, FOTW Flags of the World website at <http://www.fotw.net/flags/de1938~w.html>

¹³¹ Roundel and flash: "Wings Palette," <http://wp.scn.ru/en>

Great Britain

The United Kingdom of Great Britain and Northern Ireland was initially neutral in World War II, declaring war on Germany on September 3, 1939. Great Britain uses its merchant and naval flags, and its 1942 aircraft roundels and fin flash in GWX.



Greece

The Kingdom of Greece (Βασίλειον της Ελλάδος, *Vasilieon tis Ellados*) neutral until Italy invaded Greece on October 28, 1940. Italy did not make much progress, but Germany invaded on April 6, 1941 and defeated Greece on April 30, 1941. The Greek government-in-exile resisted Axis occupation until its restoration on October 18, 1944.¹³⁵ Greece uses its merchant flag, naval flag, and roundel in GWX.



Honduras

Honduras (*República de Honduras*) was initially neutral in World War II, but declared war on Germany and Italy on December 13, 1941 after Germany declared war on the United States. Honduras had no navy during World War II, so it uses its national flag, wing markings, roundel, and fin flash in GWX.



¹³² Flag source: Martin Grieve, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-ensr.html#red>

¹³³ Flag source: Vincent Morley, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-nav.html>

¹³⁴ Roundels: "Bones Aviation Page," http://www.homepages.mcb.net/bones/01UKAV/roundels/RAF_ROUNDELS.htm

¹³⁵ Katora, Maj Jeffrey, USMC, "The Greek Civil War," <http://www.globalsecurity.org/military/library/report/1985/KJC.htm>

¹³⁶ Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/gr_evna2.html

¹³⁷ Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/gr_evna2.html

¹³⁸ "Hellenic Air Force," http://en.wikipedia.org/wiki/Hellenic_Air_Force

¹³⁹ Flag source: Željko Heimer, FOW Flags of the World website at <http://www.fotw.net/flags/hn.html>

¹⁴⁰ Fin Flash: Željko Heimer, FOW Flags of the World website at <http://www.fotw.net/flags/hn.html>

Hungary

The Kingdom of Hungary (*Magyar Királyság*) was initially neutral, declaring war on the Soviet Union on June 27, 1941. Budapest fell to the Soviet Army on January 18, 1945, and Hungary declared war on Germany on January 20, 1945. Hungarian ships use the Hungarian merchant flag in GWX, as landlocked Hungary had no navy. Hungary uses the aircraft roundel and fin flash it used in 1942.

Merchant¹⁴¹



Roundel



Fin Flash¹⁴²



India

British India was neutral when Britain declared war against Germany on India's behalf on September 3, 1939; this led to unrest, though many Indians volunteered to serve. Indian ships used British flags during WWII; its flag from stock *Silent Hunter III* flag was used unofficially only after World War II.¹⁴³ India uses the British merchant and naval flags, and the 1943 SEAC aircraft roundel and fin flash in GWX.

Merchant¹⁴⁴



Naval¹⁴⁵



Roundel



Fin Flash¹⁴⁶



Ireland

Ireland (*Éire*) remained neutral for the entire war. Ireland uses its national flag and roundels in GWX.

National¹⁴⁷



Upper Wing



Lower Wing



Fuselage¹⁴⁸



¹⁴¹ Flag source: Željko Heimer, FOW Flags of the World website at http://www.fotw.net/flags/hu_h918.html

¹⁴² "Fighter markings of Germany's co-belligerents," <http://www.xs4all.nl/~rhorta/jgaxis.htm>

¹⁴³ "Indian Princely States," <http://www.fotw.net/flags/in-princ.html>

¹⁴⁴ Flag source: Martin Grieve, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-enshs.html>

¹⁴⁵ Flag source: Martin Grieve, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-enshs.html>

¹⁴⁶ Roundel and flash: Željko Heimer, FOW Flags of the World website at <http://www.crwflags.com/fotw/flags/in%5Eaf.html#43>

¹⁴⁷ Flag source: Vincent Morley, FOW Flags of the World website at <http://www.fotw.net/flags/ie.html>

¹⁴⁸ http://www.aircraftresourcecenter.com/ISL/Max_Decals/1.32/3201/MD3201.htm

Italian Social Republic

Germany established the Italian Socialist Republic (*Repubblica Sociale Italiana*, or RSI) on September 23, 1943 as a puppet government for German-occupied Italy. The RSI collapsed on April 25, 1945 but RSI units continued to fight alongside German units until May 2, 1945, when the remaining German troops in Italy surrendered. The RSI uses its merchant flag, naval flag, and aircraft roundel in GWX.

Merchant¹⁴⁹



Naval¹⁵⁰



Wing



Fuselage



Fin Flash¹⁵¹



Italy

The Kingdom of Italy (*Regno d'Italia*) was initially neutral in World War II, but declared war on Britain and France on June 10, 1940. Italy signed an armistice and surrendered to the Allied powers on September 8, 1943, and was in a *de facto* state of war with Germany until declaring war on October 18, 1943. GWX removes the coat-of-arms distortion in stock *Silent Hunter III*'s Italian merchant and naval flags, but uses its aircraft roundel (used from June 10, 1940 to September 8, 1943) without modification.

Merchant¹⁵²



Naval¹⁵³



Wing



Fin Flash¹⁵⁴



¹⁴⁹ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/it.html>

¹⁵⁰ Flag source: Mario Fabretto, FOTW Flags of the World website at <http://www.fotw.net/flags/it-isr.html>

¹⁵¹ Roundels and flash: "Wings Palette," <http://wp.scn.ru/en/ww2/b/314/123/0/3>

¹⁵² Flag source: Miles Li, FOTW Flags of the World website at <http://www.fotw.net/flags/it~king.html#nf>

¹⁵³ Flag source: Miles Li, FOTW Flags of the World website at <http://www.fotw.net/flags/it~king.html#nf>

¹⁵⁴ Roundel and fin flash: "Wings Palette," <http://wp.scn.ru/en>

Japan

The Empire of Japan (大日本帝國, *Dai Nippon Teikoku*) had been at war with China since July 1937; it signed the Tri-Partite Pact with Germany and Italy on September 27, 1940, but did not fight the Allies until its attacks on the Pacific territories of the U.S., Britain, and the Netherlands on December 7, 1941. Emperor Hirohito (裕仁), today known inside Japan as Emperor *Shōwa* (昭和天皇, *Shōwa Tennō*),¹⁵⁵ announced Japan's surrender on August 15, 1945, followed by an armistice and Japan's formal surrender ending World War II on September 2, 1945. Japan uses its merchant flag, naval flag, and roundel in GWX.

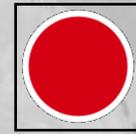
Merchant¹⁵⁶



Naval¹⁵⁷



Roundel¹⁵⁸



Latvia

The Republic of Latvia (*Latvijas Republika*) was initially neutral in World War II, but the Soviet Union formally annexed it on August 5, 1940, at which time it became the Latvian SSR. The Soviet Union took control of the Latvian merchant fleet, but eight Latvian merchant ships “defected” to the west and continued to use the Latvian merchant flag during the war.¹⁵⁹ Germany captured Riga on July 1, 1941, and declared the Latvian SSR part of *Reichkommissariat Ostland* on July 28, 1941. The Soviet Union re-occupied Riga on October 13, 1944 and reestablished the Latvian SSR, although the western democracies refused to acknowledge its legitimacy. Latvia uses its pre-annexation merchant flag, naval flag, and aircraft roundels in GWX. Note: Latvia selected its roundel in the early 1920s, before the German Nazi party began its association with the swastika.

Merchant¹⁶⁰



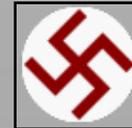
Naval¹⁶¹



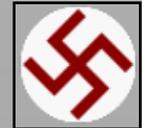
Upper Wing



Lower Wing



Fuselage¹⁶²



¹⁵⁵ “Hirohito,” <http://en.wikipedia.org/wiki/Hirohito> - “*Shōwa*” translates as “Enlightened Peace”

¹⁵⁶ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/jp.html>

¹⁵⁷ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/jp%5E.html#ensign>

¹⁵⁸ Roundel: “Wings Palette,” <http://wp.scn.ru/en>

¹⁵⁹ J. Micheal Lyon, “Latvia's exiled World War II navy becomes front-page news,” *AP Worldstream* March 27, 2003.

http://www.latvians.com/en/Mailer/envelope.php?2003_04_05.htm#news2

¹⁶⁰ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/lv.html>

¹⁶¹ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/lv-ensgn.html>

¹⁶² Roundels: “Latvia - Aircraft Marking,” <http://www.allstates-flag.com/fotw/flags/lv%5Eair.html>

Lithuania

The Republic of Lithuania (*Lietuvos Respublika*) was neutral, but the Soviet Union formally annexed it on August 3, 1940, and it became the Lithuanian SSR. Germany occupied the Lithuanian SSR on June 26, 1941, and made it part of *Reichkommissariat Ostland* on July 28, 1941. The Soviets returned on January 28, 1945 and reestablished the Lithuanian SSR, though western countries did not acknowledge it. Lithuania uses its pre-annexation merchant flag, naval flag, aircraft roundel, and fin flash in GWX.

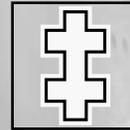
Merchant¹⁶³



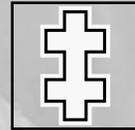
Naval¹⁶⁴



Wing



Fin Flash¹⁶⁵



Mexico

The United Mexican States (*Estados Unidos Mexicanos*) was initially neutral in World War II, declaring war on Germany on May 22, 1942, after *U-564* (*Kapitänleutnant* Reinhard Suhren) sank the 4,000-ton Mexican tanker *Potrero de Llano*.¹⁶⁶ Mexico uses its national flag and aircraft roundel in GWX.

National¹⁶⁷



Roundel¹⁶⁸



Netherlands

The Kingdom of the Netherlands (*Koninkrijk der Nederlanden*) was initially neutral in World War II. Germany invaded the Netherlands on May 10, 1940, which surrendered on May 14, but the government-in-exile continued its resistance until the German surrender in May 1945. The Netherlands uses its national flag and aircraft roundel in GWX.

National¹⁶⁹



Roundel¹⁷⁰



¹⁶³ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/lt~1920.html>

¹⁶⁴ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/lt~1920.html>

¹⁶⁵ Roundels: "Lithuania – Aircraft Marking," <http://www.luptravel.com/flag/flags/lt%5Eair.html>

¹⁶⁶ Blair, Clay: *Hitler's U-boat War: The Hunters (1939-1942)*

¹⁶⁷ Flag source: Juan M. G. Villascán, FOTW Flags of the World website at http://www.fotw.net/flags/mx_1934.html

¹⁶⁸ "Mexico," <http://www.aeroflight.co.uk/waf/americas/mexico/mex-airforce.htm>

¹⁶⁹ Flag source António Martins, FOTW Flags of the World website <http://www.fotw.net/flags/nl.html>

¹⁷⁰ Roundel source: Mark Sensel, FOTW Flags of the World website at <http://www.fotw.net/flags/nl%5Eround.html>

New Zealand

The Dominion of New Zealand (*Aotearoa*) was initially neutral in World War II, declaring war on Germany on September 3, 1939. New Zealand uses its merchant flag, naval flag, and the aircraft roundel that was in use starting in August 1943 in GWX.

Merchant¹⁷¹



Naval¹⁷²



Wing



Fuselage



Fin Flash¹⁷³



Norway

The Kingdom of Norway (*Kongeriket Norge*) was initially neutral in World War II; Germany invaded Norway on April 9, 1940. Norway surrendered on June 7, 1940 but the government-in-exile continued its resistance until the German surrender in May 1945. Norway uses its merchant flag, naval flag, and aircraft roundels in GWX.

Merchant¹⁷⁴



Naval¹⁷⁵



Wing



Fin Flash¹⁷⁶



Panama

The Republic of Panama (*República de Panamá*) was initially neutral, declaring war on Germany on December 12, 1941. Panama uses its national flag in GWX. It did not form an air force until after World War II, and then these aircraft were marked with only a fin flash, which GWX makes available for use.

National¹⁷⁷



Fin Flash¹⁷⁸



¹⁷¹ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/no.html>

¹⁷² Flag source: Jan Oskar Engene, FOTW Flags of the World website at <http://www.fotw.net/flags/no.html>

¹⁷³ Roundels and flash: "Wings Palette," <http://wp.scn.ru/en>

¹⁷⁴ Flag source: António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/no.html>

¹⁷⁵ Flag source: Jan Oskar Engene, FOTW Flags of the World website at <http://www.fotw.net/flags/no.html>

¹⁷⁶ Roundels and flash: "Wings Palette," <http://wp.scn.ru/en>

¹⁷⁷ Flag source: Ivan Sache, FOTW Flags of the World website at <http://www.fotw.net/flags/pa.html>

¹⁷⁸ "Panama," <http://www.allstates-flag.com/fotw/flags/pa.html>

Poland

World War II began when Germany attacked the Republic of Poland (*Rzeczpospolita Polska*) on September 1, 1939; the Soviet Union attacked Poland on September 17 and Warsaw fell on September 28, but while Poland was overrun it did not surrender: many in the armed forces went to Britain to carry on the fight. The Polish government-in-exile resisted Germany until May 1945 and the Soviet Union until 1990. Poland uses its pre-war merchant and naval flags, wing roundel, and fin flash in GWX.

Merchant¹⁷⁹



Naval¹⁸⁰



Wing



Fin Flash¹⁸¹



Portugal

The Portuguese Republic (*República Portuguesa*) remained neutral for the entire war, conducting extensive trade with both Germany and the Allies but allowing the British to base ASW aircraft in the Azores starting in October 1943 and the U.S. to base ASW aircraft there starting in October 1944.¹⁸² Portugal uses its national flag, aircraft roundel, and fin flash in GWX.

National¹⁸³



Roundel



Fin Flash¹⁸⁴



The International Committee of the Red Cross

The “Red Cross” is not a country, but represents the permanent neutral status (under the Hague Conventions) of all properly marked and illuminated hospital ships, and air ambulance aircraft of any nationality. The Red Cross has one flag and one roundel to represent these ships and aircraft in GWX.

Flag of the ICRC¹⁸⁵



Roundel



¹⁷⁹ Flag source: Adam Kromer, FOTW Flags of the World website at <http://www.fotw.net/flags/pl-xx.html#w27>

¹⁸⁰ Flag source: Adam Kromer, FOTW Flags of the World website at <http://www.fotw.net/flags/pl-xx.html#w27>

¹⁸¹ “Poland – Air Force flags,” <http://www.fotw.net/flags/pl-air.html#am>

¹⁸² “Records of the foreign service posts of the Department of State: Portugal,”

<http://www.archives.gov/research/holocaust/finding-aid/civilian/rg-84-portugal.html>

¹⁸³ Flag source: Vítor Luís and António Martins, FOTW Flags of the World website at <http://www.fotw.net/flags/pt.html>

¹⁸⁴ “Portuguese aircraft fuselage markings,” http://www.fotw.net/flags/pt_plane.html

¹⁸⁵ Flag source: “Red Cross,” <http://www.flags.net/ICRC.htm>

Romania

The Kingdom of Romania (*Regatul României*) was initially neutral in World War II, but joined the Axis powers on November 23, 1940. Soviet troops occupied Bucharest on August 31, 1944; Romania signed an armistice on September 12 and joined Soviet troops fighting against Germany. GWX corrects the Romanian flags used in stock *Silent Hunter III* while retaining the roundel and adding the fin flash.

Merchant¹⁸⁶



Naval¹⁸⁷



Roundel



Fin Flash¹⁸⁸



South Africa

The Union of South Africa (*Unie van Suid-Afrika*) was initially neutral, declaring war on Germany on September 6, 1939. South African naval forces flew the White Ensign and its merchant ships flew the Red Ensign with the coats of arms of the Cape, Natal, Transvaal, and Orange Free State provinces as its merchant flag. South Africa uses its historical flags and 1942 roundels and fin flash in GWX.

Merchant¹⁸⁹



Naval¹⁹⁰



Upper
Wing



Lower
Wing



Fuselage



Fin Flash¹⁹¹



¹⁸⁶ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/ro-roygv.html#warflag>

¹⁸⁷ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/ro-roygv.html#warflag>

¹⁸⁸ "Romania: Aircraft markings," <http://fotw.fivestarflags.com/ro%5Eair.html>

¹⁸⁹ Flag source: Mark Sensen & Blas Delgado Ortiz, FOTW Flags of the World website: http://www.fotw.net/flags/za_1910.html#red

¹⁹⁰ Flag source: Martin Grieve, FOTW Flags of the World website at <http://www.fotw.net/flags/gb-enshs.html>

¹⁹¹ "South Africa Air Force ensigns," <http://www.fotw.us/flags/za-airf.html>

Soviet Union

The Union of Soviet Socialist Republics (Союз Советских Социалистических Республик, *Soyuz Sovetskikh Sotsialisticheskikh Respublik*) aka “Soviet Union” was initially neutral in World War II, but helped Germany conquer Poland in September 1939.¹⁹² Germany attacked the Soviet Union on June 22, 1941. The USSR uses its merchant and naval flags and post-1942 aircraft roundel and fin flash in GWX.

Merchant¹⁹³



Naval¹⁹⁴



Roundel & Fin Flash¹⁹⁵



Spain

The Spanish State (*Estado Español*) remained neutral during WWII though it sympathized with Germany. Spain uses its merchant flag, naval flag, and aircraft roundel in GWX.

Merchant¹⁹⁶



Naval¹⁹⁷



Wing



Fuselage



Fin Flash¹⁹⁸



Sweden

The Kingdom of Sweden (*Konungariket Sverige*) remained neutral during World War II. Sweden uses its merchant flag, naval flag, and post-1940 aircraft roundel in GWX.

Merchant¹⁹⁹



Naval²⁰⁰



Roundel²⁰¹



¹⁹² Stock *Silent Hunter III* incorrectly refers to the Soviet Union as “Russia,” which was the name of one of the Soviet Socialist Republics that is today politically separate from the other former Soviet republics (e.g., Belarus)

¹⁹³ Flag source: Antonio Martins, FOTW Flags of the World website <http://www.fotw.net/flags/su.html>

¹⁹⁴ Flag source: Yosef Obskura and Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/su~1935.html>

¹⁹⁵ Roundels and flash: “Wings Palette,” <http://wp.scn.ru/en>

¹⁹⁶ Flag source: Jorge Candeias, FOTW Flags of the World website at http://www.fotw.net/flags/es_var.html

¹⁹⁷ Flag source: Luis Miguel Arias, FOTW Flags of the World website at <http://www.fotw.net/flags/es1938.html>

¹⁹⁸ Roundels and flash: “Wings Palette,” <http://wp.scn.ru/en>

¹⁹⁹ Flag source: Edwar Mooney, Jr., FOTW Flags of the World website at <http://www.fotw.net/flags/se.html>

²⁰⁰ Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/se-mil.html>

²⁰¹ “Flygvapnet (Air Force),” <http://www.allstates-flag.com/fotw/flags/se%5Eaf.html#roundel>

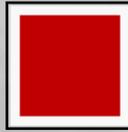
Turkey

The Republic of Turkey (*Türkiye Cumhuriyeti*) was initially neutral in World War II, declaring war on Germany on February 25, 1945. Turkey uses its national flag and World War II-era aircraft roundel in GWX.

National²⁰²



Wing



Fin Flash²⁰³



United States

The United States of America was initially neutral in World War II, but fought an undeclared naval war against Germany from October 1941 through early December 1941, and declared war against Japan on December 8, 1941 following the Japanese attack on Pearl Harbor, Hawaii (*Hawai'i*). Germany declared war on the United States on December 10, 1941, The United States uses its national flag and the aircraft roundel in use from June 1942 through June 1943 in GWX.

National²⁰⁴



Roundel²⁰⁵



Uruguay

The Eastern Republic of Uruguay (*República Oriental del Uruguay*) was initially neutral in World War II, declaring war on Germany on February 15, 1945. Uruguay uses its national flag, aircraft roundel, and fin flash in GWX.

National²⁰⁶



Wing



Fin Flash²⁰⁷



²⁰² Flag source: Željko Heimer, FOTW Flags of the World website at <http://www.fotw.net/flags/tr.html>

²⁰³ "Turkey: Air Force markings," <http://www.fotw.net/flags/tr%5Eairf.html>

²⁰⁴ Flag source: Mark Sensen, FOTW Flags of the World website at <http://www.fotw.net/flags/us-1912.html>

²⁰⁵ "U.S. Naval Aircraft marking," U.S. Naval Historical Center, <http://www.history.navy.mil/faqs/faq2-1.htm>

²⁰⁶ Flag source: Francisco Gregoric and Željko Heimer, FOTW Flags of the World website at

<http://www.fotw.net/flags/uy.html>

²⁰⁷ "Uruguayan Air Force flags," <http://www.fotw.net/flags/uy%5Eaf.html#roun>

Venezuela

The Republic of Venezuela (*República de Venezuela*) was initially neutral in World War II, declaring war on Germany on February 16, 1945. Venezuela uses its merchant flag, naval flag, aircraft roundel, and fin flash in GWX.

Merchant²⁰⁸



Naval²⁰⁹



Roundel



Fin Flash²¹⁰



Yugoslavia

The Kingdom of Yugoslavia (Краљевина Југославија, *Kraljevina Jugoslavija*) was initially neutral in World War II. Yugoslavia signed the Tri-Partite Pact on March 25, 1941, but an anti-Nazi *coup d'état* by the Yugoslav military on the night of March 26-27 overthrew the government of the Regent, Prince Paul, forced him into exile and replaced him with his nephew, King Peter II, and repudiated Yugoslavia's signature of the Pact. Germany invaded on April 6, 1941 and rapidly overran Yugoslavia, which capitulated on April 17, 1941. Communist Partisans founded Democratic Federal Yugoslavia on November 29, 1943, but did not gain control of the country until the Germans evacuated in the last days of the war. Yugoslavia uses the royal Yugoslavian merchant flag, naval flag, and aircraft roundel for all Yugoslav government and Yugoslav partisan insignia in GWX.

Merchant²¹¹



Naval²¹²



Roundel



Fin Flash²¹³



²⁰⁸ Flag source: Pascal Gross, FOTW Flags of the World website at <http://www.fotw.net/flags/ve.html>

²⁰⁹ Flag source: Pascal Gross, FOTW Flags of the World website at <http://www.fotw.net/flags/ve.html>

²¹⁰ Roundel and flash: "Venezuela: aircraft marking," <http://www.fotw.net/flags/ve%5Eround.html#rou>

²¹¹ Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/yu_shs.html

²¹² Flag source: Željko Heimer, FOTW Flags of the World website at http://www.fotw.net/flags/yu_shs~e.html

²¹³ Roundels and flash: "Wings Palette," <http://wp.scn.ru/en>

Terrain and Environmental Modifications

Summary Table

Table 13: Summary of Terrain and Environmental Modifications

Terrain Modifications	Heligoland Scapa Flow Kiel Canal Suez Canal Panama Canal	
Environmental Modifications	Barrage Balloons Block ships / Shipwrecks Buoys Bridges Dolphins Lighthouses Maunsell Forts Mölnort U-boat Memorial Piers Shore-based anti-aircraft guns Whales	

Terrain Modifications

Heligoland (*Helgoland*)

Historical Background

Heligoland (German: *Helgoland*) is a small archipelago about 41 nautical miles (75 kilometers) north-northwest of Wilhelmshaven, consisting of the main island, Helgoland, and Düne (“Dune”), a small island to the east. The island is noteworthy for a plateau of red sedimentary rock that forms striking red cliffs rising 50 meters above the North Sea. Denmark controlled Helgoland from 1714 until 1807 when Britain invaded and took control; Germany gained control from Britain in 1890 in exchange for relinquishing its claims to Zanzibar in East Africa, and turned it into a heavily fortified outpost and naval base to guard the approaches to the ports of Bremen, Hamburg, and Wilhelmshaven. The Battle of Heligoland Bight just west of the islands on August 28, 1914 was the first naval battle of World War I.

Germany fortified the islands heavily during World War II against an invasion, but the Allies bombed the islands rather than invading: a raid on October 15, 1944 destroyed many of the buildings, but a 1000-plane raid on April 18, 1945 left nothing standing (the population hid in caves beneath the cliffs). The *Kriegsmarine* evacuated the islands after the second raid; Britain occupied them after the war, using them for bombing practice until 1952, when it returned the island to Germany. Germany cleared unexploded ordnance, re-landscaped the island, and rebuilt basic infrastructure that now allows people to live there.²¹⁴



Figure 119: Heligoland (*Helgoland*) Archipelago (c. 2006)²¹⁵

²¹⁴ “Heligoland,” <http://en.wikipedia.org/wiki/Heligoland>

²¹⁵ Map developed using Google Earth®



Figure 120: Aerial view of Heligoland (*Helgoland*) and Düne from the west (c. 2005)²¹⁶

Heligoland (*Helgoland*) in GWX

Heligoland in GWX aligns more closely with the islands geological features within the constraints of the *Silent Hunter III*, and has a port, a town, and other historically based features.



Figure 121: Heligoland (*Helgoland*) seen from the north in stock *Silent Hunter III*

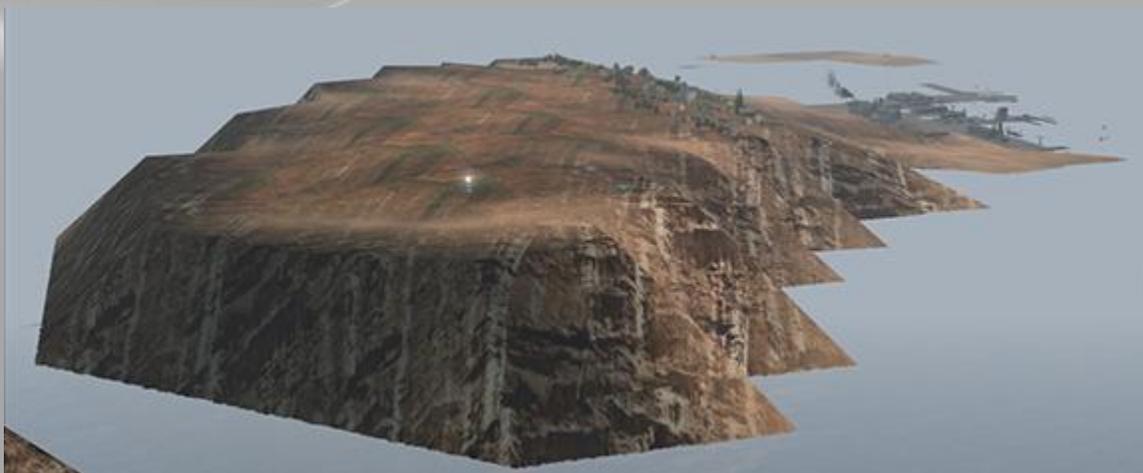


Figure 122: Heligoland (*Helgoland*) seen from the north in GWX

²¹⁶ Photo source: "Heligoland," <http://en.wikipedia.org/wiki/Heligoland>

Scapa Flow

Historical Background

Scapa Flow in the Orkney Islands is one of the largest protected anchorages in the British Isles. It was the British Home Fleet's anchorage during World War I, and the Germans scuttled their High Seas Fleet there in May 1919 rather than turn them over to foreign control. The Home Fleet returned to Scapa Flow in September 1939 at the start of World War II, defending it with a combination of minefields, antisubmarine nets, and a number of [blockships](#) - ships deliberately sunk in some of the narrow entrances to block ships or U-boats from traveling through them. However, the defenses were far from complete early in the war.



Figure 123: Scapa Flow²¹⁷

Germany lost two U-boats trying to attack Scapa Flow during the World War I, but BdU had reviewed reconnaissance photographs, thought it was possible to succeed, and offered the task to *Kapitänleutnant* Günther Prien. Prien penetrated Scapa Flow in *U-47* and sank the World War I-era battleship *HMS Royal Oak* at anchor on October 14, 1939; the fleet had sortied in response to an unrelated feint by *Gneisenau*, but *Royal Oak* was too slow so the fleet left her behind.²¹⁸ The Royal Navy dispersed after the attack, but returned in March 1940 after improving the defenses.²¹⁹ The British also began building concrete causeways called “Churchill Barriers” across the eastern entrances, but did not finish them until late in the war. The barriers exist to this day and connect the main island with Lamb Holm, Glimps Holm, and South Ronaldsey.²²⁰

Scapa Flow in GWX

GWX corrects several stock *Silent Hunter III* inaccuracies in the terrain near Scapa Flow: the eastern sounds are again physically accessible to U-boats, but the Scapa Flow defenses are much stronger.



Figure 124: Scapa Flow in GWX

²¹⁷ Image source: <http://www.firstworldwar.com/photos/maps.htm>

²¹⁸ “HMS Royal Oak (1914),” [http://en.wikipedia.org/wiki/HMS_Royal_Oak_\(1914\)](http://en.wikipedia.org/wiki/HMS_Royal_Oak_(1914))

²¹⁹ “Scapa Flow,” http://www.u47.org/english/u47_sca.asp?page=5

²²⁰ Peter Rowlands, “HMS Royal Oak,” <http://www.hmsroyaloak.co.uk/>

The Kiel Canal

Historical Background

Imperial Germany built the Kiel Canal, known then as the *Kaiser-Wilhelm-Kanal* and today as the *Nord-Ostsee-Kanal* (“North and Baltic Sea Canal”), so its naval forces could travel between the North Sea and the Baltic Sea without exposure to naval attacks or minefields, as well as to reduce their travel distance by about 250 nautical miles.²²¹ Germany began building the canal between Brunsbüttel on the North Sea coast and Kiel-Holtenau on the Baltic coast in June 1887, and completed the canal in June 1895. Germany began deepening and widening the canal in 1907 to allow the passage of its new dreadnought battleships, and completed this effort in June 1914 - just prior to the start of World War I.²²²

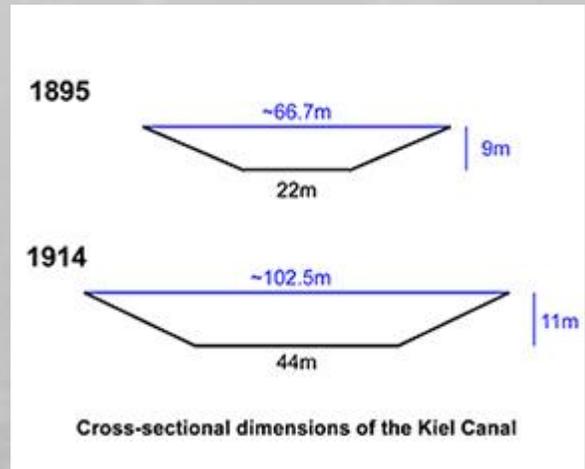


Figure 125: Kiel Canal cross-section over time²²³

The Versailles Treaty allowed Germany to administer the Kiel Canal after World War I provided it allowed Canal passage to any ship of any country not at war with Germany, and the Allies reestablished the Versailles conditions at the end of World War II. Germany completed another widening of the canal in 1965-66, and today the Kiel Canal is the most heavily traveled artificial waterway in the world²²⁴



Figure 126: The Type IXC U-boat *U-166* transits the Kiel Canal in May 1941²²⁵

²²¹ “Nord-Ostsee-Kanal,” <http://www.kiel-canal.org/english.htm>

²²² “Kiel Canal,” http://en.wikipedia.org/wiki/Kiel_Canal

²²³ Derived from information at “Der Nord-Ostsee-Kanal,” <http://www.kanalkiosk.de/nok.html>

²²⁴ “The Kiel Canal,” <http://civil-engineering.science-tips.org/transportation-engineering/dock-and-harbour-engineering/the-kiel-canal.html>

²²⁵ “U-166, a photographic record,” <http://www.pastfoundation.org/U166/U-166.htm>

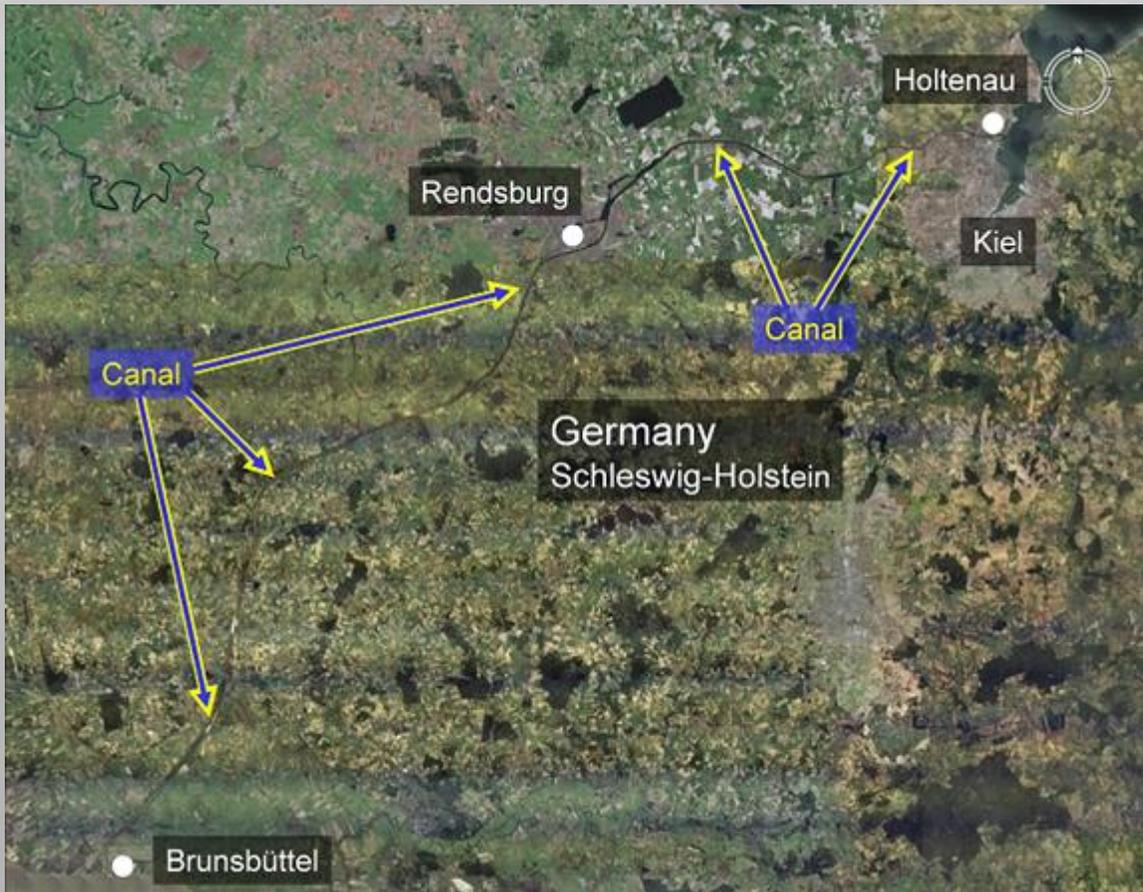


Figure 127: The Kiel Canal (*Nord-Ostsee-Kanal*) - modern day²²⁶

The Kiel Canal in GWX

The Kiel Canal is available for U-boats to travel between the North Sea and the Baltic Sea. The canal is several times wider in GWX than the real-life canal due to stock *Silent Hunter III* limitations, but this has allowed the GWX Team to give players the option to “use a canal pilot” (automatically plot a course through the canal) rather than manually steer the entire way, if desired. GWX also ignores the real-life canal locks at Holtenau and Brunsbüttel due to *Silent Hunter III* limitations.



Figure 128: The Kiel Canal in GWX - note the “Kiel Canal Inbound Point” in the southwest corner.

²²⁶ Map developed using Google Earth ®

To “use a canal pilot” if you are starting a mission at Kiel:

1. Dock your U-boat in its starting dock location or plot a course to that exact location.
2. Select the Navigator, then the “Kiel Canal OUT” Search Pattern, and follow the selected course.



Figure 129: Select search pattern "Kiel Canal OUT" to go from Kiel to the Kiel Canal Inbound Point

To “use a canal pilot” if you are returning from a mission or otherwise going to Kiel:

1. Move your U-boat to the “Kiel Canal Inbound Point” or plot a course to its exact location.
2. Select the Navigator, then the “Kiel Canal IN” Search Pattern, and follow the selected course



Figure 130: Select search pattern “Kiel Canal IN” to go to Kiel from the Kiel Canal Inbound Point

The Suez Canal

Historical Background

The Ottoman governor of Egypt, Sa'īd Pasha*, in 1856 granted to the *Compagnie Universelle du Canal Maritime de Suez* (“Suez Canal Company”) under Ferdinand-Marie, *Vicomte de Lesseps* the right to build the *Qanā al-Suways* (القناة السويسية, “Suez Canal”). The completion of the 101-mile, 8-meter deep canal (deepened to 10 meters in 1909) from *Būr Sa'īd* (Port Said) to *‘as-Suways* (Suez) in 1869 cut the travel time between Europe to Asia in half. This was an immediate boon to international trade, made the canal an invaluable link to Britain’s empire in Asia, and prompted Britain to become more involved in Egypt’s affairs to ensure no other European power gained control of the canal.²²⁷

Egypt under *Khedive* (“viceroy”) Isma'il Pasha gained virtual independence from the Ottoman Empire in 1873, but British and French concerns with Egypt’s finances led them to replace Isma'il with a *khedive* of their own choosing and to take control of Egypt’s treasury, customs, railways, post offices, and ports to protect their access to the canal and their investments in Egypt. This led to a backlash among the Egyptian population and the rise of a popular nationalist movement that gained control of the Egyptian government in 1881; this in turn led Britain to invade and occupy Egypt in 1882. Britain made Egypt a protectorate in 1914 and granted limited independence in 1922, but its forces remained to defend the canal under the Anglo-Egyptian Treaty of 1936.²²⁸



Figure 131: Suez Canal (2001)²²⁹

The Italian declaration of war on June 10, 1940 effectively closed the Suez Canal route to routine convoy traffic between Britain to Asia. Italian air superiority in the central Mediterranean Sea made even heavily defended convoys a highly risky undertaking, but Britain was able to prevent the Axis from crossing into the Near East to threaten British oil supplies by sending supplies and reinforcements around the Cape of Good Hope and through the canal to its forces in northern Egypt.

Axis air raids against the canal began in January 1941, initially attacking ships and harbor installations but then settling on the use of aerial magnetic mines. The British responded with heavy anti-aircraft defenses around port facilities, and by using Egyptian spotters and nets spread across the canal to detect and localize for mine-clearing forces any mines dropped in the canal. The raids continued until late 1941, when Operation *Crusader* pushed the Axis far into Libya; the canal’s anti-aircraft defenses were so strong by the time the Axis resumed their advance in 1942 so they did not resume the air raids.²³⁰

* An Ottoman political rank equivalent to “Lord” in the United Kingdom

²²⁷ “Suez Canal,” http://en.wikipedia.org/wiki/Suez_Canal

²²⁸ “The Egypt War of 1882,” UK National Archives, <http://www.nationalarchives.gov.uk/battles/egypt/>

²²⁹ NASA photo: <http://en.wikipedia.org/wiki/Image:SuezCanal-EO.JPG>

²³⁰ Steven Morewood, “Protecting the Jugular Vein of Empire: The Suez Canal and British Defence Strategy, 1919—1941,” *War and Society*, Vol. 10, No. 1, May 1992.



Figure 132: HMS *Howe* transits the Suez Canal *en route* to the Indian Ocean (1944)²³¹

The defeat of the *Panzarmee Afrika* at *Al-Alamayn* (العلمين, “El Alamein”), and the *Torch* landings in Morocco and Algeria in November 1942 removed the threat of direct attack by land or air against the canal. The Allies established air superiority over the central Mediterranean at the end of the African campaign in May 1943, and resumed regular convoy traffic to India by way of the Canal. This restored the canal’s strategic benefits to the Allies as they began to build up in 1944 for offensive operations in Burma, and to redeploy naval forces from Europe to the Pacific to fight against Japan.

The Suez Canal in GWX

The Suez Canal in GWX is under Allied control and is one of the most heavily guarded areas of the British Empire; however, there are no locks on the Suez Canal (so to speak), so it is possible that a U-boat could penetrate the defenses and attack shipping transiting the canal itself or collected near the canal entry points...theoretically. Expect the Allies to spot and attack you if you surface in the canal, and that your batteries will not allow you to transit the entire canal submerged.



Figure 133: The Suez Canal in GWX

²³¹ Photo source: “World War II in Color,” http://www.ww2incolor.com/gallery/British/HMS_Howe_in_Suez_Canal_1944

The Panama Canal

Historical Background

Spain first studied the idea of a shortcut across the middle of the Western Hemisphere in the early 16th century, but the technologies to dig the canal, the financial resources to pay for it, and the medical science to protect workers from endemic diseases such as malaria and yellow fever were not available until the early 20th century. Ferdinand de Lesseps, leading the French *Compagnie Nouvelle du Canal de Panama*, lost over 20,000 workers (mostly to tropical disease) in the 1880s in a failed attempt to build a canal across Panama following his successful completion of the Suez Canal in 1869.

The United States government acquired the concession to dig the Panama Canal (*Canal de Panamá*) from the French in 1903 for \$40 million under the Hay-Bunau Varilla Treaty. The U.S. won the right to dig a canal, lease a 10-mile wide strip of land around the canal in perpetuity (later known as the “Panama Canal Zone”), and agreed to make payments to the government of the newly independent nation of Panama. The United States completed the construction of the Panama Canal in August 1914 at a cost of over 5,000 lives to disease and landslides.

The Panama Canal is 48 miles long, can accept ships up to 1,000 feet long and 110 feet wide, and halves the distance ships must travel between the east and west coast of the U.S. compared to the distance around South America. The U.S. Navy specified the Canal’s width to ensure it could transfer its battle fleets rapidly between the Atlantic and the Pacific Oceans, and required every U.S. naval vessel built until nearly the end of World War II to fit within the width of the locks of the Panama Canal.



Figure 134: The Gatún Locks at the Atlantic entrance to the Panama Canal (2002)²³²

²³² Photo source: “Lighthouses of the Panama Canal,” <http://www.unc.edu/~rowlett/lighthouse/PanamaCanal/index.htm>. Photo copyright [Autoridad del Canal de Panamá](#); used by permission.

The U.S. established strong coastal and air defenses to ensure an enemy attack could not cripple the Canal. Shore batteries included 12-inch mortars, 16-inch rifles, and 14-inch rifles on “disappearing” gun mounts that raised the guns to firing position and then lowered them to reload behind a massive concrete and earthen barrier. The defenses also included large numbers of anti-aircraft guns; several airfields; and submarine nets and minefields to prevent an enemy submarine from damaging or destroying the outer lock gates and thereby closing the Canal.



Figure 135: One of ten 14-inch naval guns defending the Panama Canal²³³

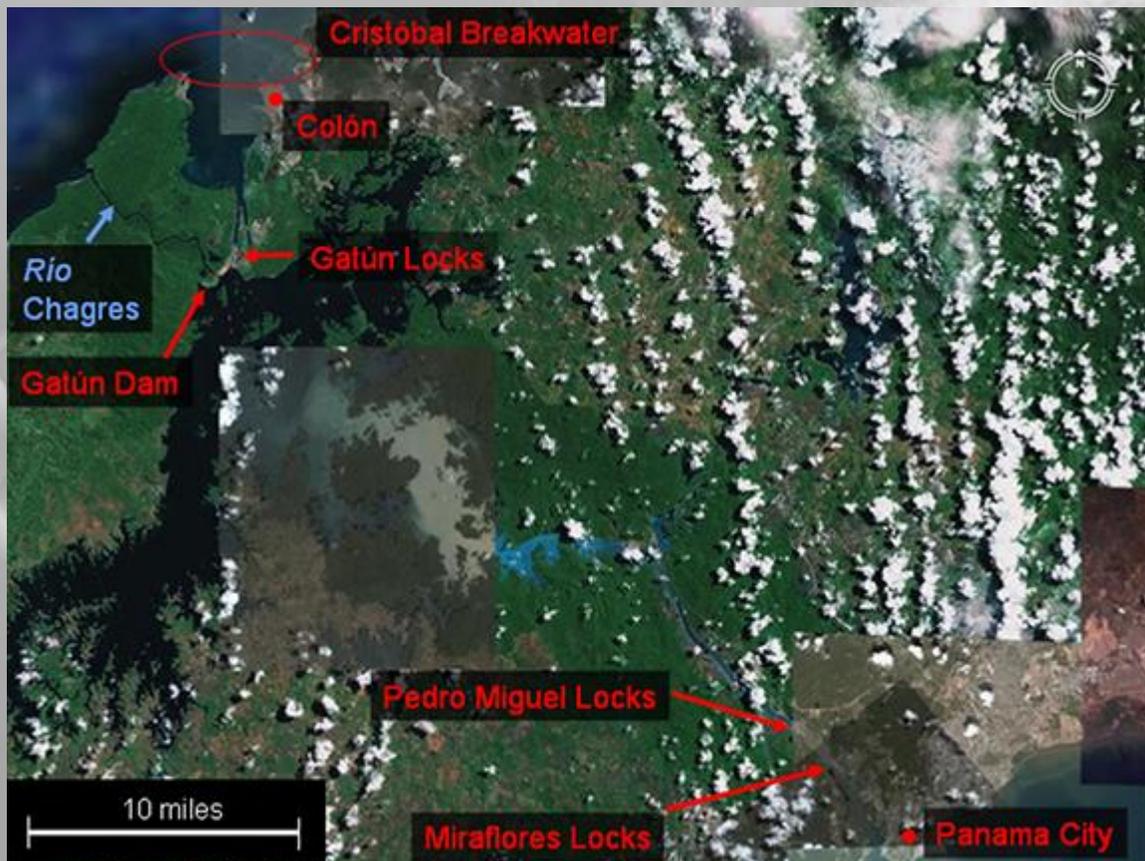


Figure 136: Panama Canal from space, with the Caribbean Sea to the upper left of the picture²³⁴

²³³ Photo source: David Rogers, “Defense of the Panama Canal,”

<http://web.umn.edu/~rogersda/umrcourses/ge342/Military%20Geo%20Presentations/Bill%20Louie/Panama%20Canal/Panama.ppt>

²³⁴ Map developed using Google Earth ®

The Panama Canal in GWX

GWX allows German submarines to transit the Panama Canal without penalty until mid-October 1941 when the undeclared naval war between Germany and the United States and the U.S. closed the canal to U-boat traffic. The port of Colón acts as a routing point for ships and convoys traveling between the Panama Canal and the Atlantic Ocean, but please note GWX simulates the Gatún Dam with a permanent submarine net across the Chagres River



Figure 137: The Panama Canal in GWX

Environmental Modifications

Barrage Balloons

Historical Background

Barrage balloons are bags of lighter-than-air gas anchored to the ground by a steel cable. Britain invented the concept during World War I, and deployed over 2,000 balloons to defend London and other ports against low-altitude attacks during the World War II Blitz. The Allies later in the war deployed balloons from troop transports and amphibious assault ships to help defend beachheads against enemy air attack. Barrage balloons accounted for over 60 German aircraft during the Battle of Britain and over 230 [Fi 103 V-1](#) (*Vergeltungswaffe*, or “vengeance weapon”) “buzz bombs” in 1944-45.²³⁵



Figure 138: U.S. Army barrage balloon²³⁶

The Barrage Balloon in GWX

Barrage Balloons in GWX are attached to ships or other objects.



Figure 139: Barrage balloons in GWX

²³⁵ Maj Franklin J. Hillson, USAF, “Barrage Balloons for low-level air defense,” *Airpower Journal*, Summer 1989, Vol. III, No. 2, <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj89/hillson.html>

²³⁶ U.S. Army photo; “Air Artists,” <http://www.airartists.co.uk>

Block Ships / Shipwrecks

Shipwrecks are the remains of a wrecked or sunken ship. These wrecks can result from storms and errors in judgment and can result from hostile or deliberate action in wartime. Their wartime use included the sacrifice of older ships as blockships in shallow water to force enemy naval forces to choose a different path or to risk a collision with the blockship, such as the intentional sinking of the remains of the German battleship *Gneisenau* at Gotenhafen (Gdynia, Poland) in early 1945. The Allies also used them as components in artificial breakwaters such as the “Mulberry” artificial harbors during Operation *Neptune* in Normandy, France to help shield the waters inside the artificial harbor from rough seas outside.



Figure 140: SS America as transport USS West Point²³⁷



Figure 141: SS American Star (ex-SS America) (1999)²³⁸

Shipwrecks in GWX

Shipwrecks in GWX are scattered about various port facilities by the fortunes of weather and war, and as deliberate obstacles (“blockships”) to prevent or restrict the passage of enemy naval forces through narrow, shallow channels. They can be found exposed in shallow water or acting as invisible barriers just below the surface; they pose a formidable barrier to U-boat operations in either case.



Figure 142: Shipwrecks outside St. Nazaire, France in GWX

²³⁷ Photo source: “West Point,” http://www.history.navy.mil/danfs/w6/west_point-ii.htm

²³⁸ Photo source: <http://en.wikipedia.org/wiki/Shipwreck>

Buoys

Buoys are floating pilotage aids tethered to some non-moving object or the sea floor itself that act as “sea marks” (compare to “landmarks”) to identify and draw attention to maritime navigation channels, hazards to navigation, administrative areas, and anything else of interest to the safe pilotage of boats, ships, and seaplanes in coastal or shallow waters. Buoys are fitted with lights, reflectors, bells, horns, reflectors, *etc.*, for use at night and in reduced visibility conditions to help ensure they are not ignored or overlooked.

Navigation channels in and out of ports are generally marked with red and green buoys, with the red buoys on the port side when entering a harbor (although in some countries it means you are leaving the harbor). Different shapes and numbering schemes help mariners to determine quickly their direction of travel in a port’s navigation channels.

Navigation hazards may include rocks and shoals, water intake/outflow pipes, shipwrecks, anti-submarine nets, *etc.*²³⁹



Figure 143: Buoy near San Diego (2004)²⁴⁰

Buoys in GWX

Buoys in GWX mark navigation channels in and out of Axis-controlled harbors in accordance with the European standards of the World War II era. If you see red buoys to port and green buoys to starboard it means you are entering a port; if you see red buoys on starboard side and green on the port side it means you are leaving port. A yellow buoy warns of a hazard to navigation. These buoys may be equipped with bells or other noise-making devices to help ensure you pay attention to them.



Figure 144: Red Buoy

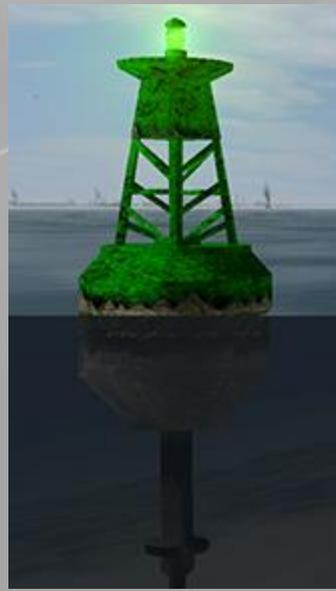


Figure 145: Green buoy



Figure 146: Yellow danger buoy in GWX

²³⁹ “Sea Mark,” http://en.wikipedia.org/wiki/Sea_mark

²⁴⁰ Photo source: “Buoy,” <http://en.wikipedia.org/wiki/Buoy>

Bridges

Numerous bridges spanned the Kiel Canal during World War II. Most of these were small *drehbrücke* (“swing bridges”), but three of them were immense *hochbrücke* (“high bridges”): the railway and roadway bridge at Levensau, completed in 1894; the railway bridge at Rendsburg, completed in 1913; and the railway bridge at Hochdonn, completed in 1920.²⁴¹



Figure 147: Light cruiser *Nürnberg* in the Kiel Canal passing under the Levensau High Bridge (1935)²⁴²



Figure 148: Railway High Bridge at Rendsburg with post-World War II suspended transporter (2005)²⁴³

²⁴¹ “Der Nord-Ostsee-Kanal,” <http://www.kanalkiosk.de/nok.html>

²⁴² U.S. Naval Historical Center #NH 90081, <http://www.history.navy.mil>

²⁴³ Photo credit: Malte Hubner, “Rendsburg,” <http://de.wikipedia.org/wiki/Rendsburg>



Figure 149: Railway High Bridge at Hochdonn (2006)²⁴⁴

Bridges in GWX

GWX adopted the Hochdonn High Bridge over the Kiel Canal as the model for all three high bridges spanning the Canal.



Figure 150: U-boat approaching a Hochdonn-class High Bridge in GWX

²⁴⁴ Photo source: Dirk Ingo Franke, "Hochdonn," <http://de.wikipedia.org/wiki/Hochdonn>

Dolphins (*Tursiops truncatus*)

Bottlenose dolphins (*Tursiops truncatus*) live throughout the temperate oceans of the world, including the waters off the United Kingdom, Denmark, and southern Norway. Dolphins are social, living in pods of up to a dozen individuals, and sailors have marked them as omens of good fortune for years.²⁴⁵



Figure 151: Bottlenose dolphin surfing the wake of a small boat in the Banana River, Florida²⁴⁶

Dolphins in GWX

Small pods of dolphins are located in some ports at or just beneath the surface of the water, as well as in the open sea. You can detect them visually or via your hydrophones. Your sonar operator will identify them as an “unknown contact” but you will hear dolphin vocalizations if you listen to the hydrophones personally.



Figure 152: Bottlenose dolphin dives after skimming the surface of Brest Harbor, France in GWX

²⁴⁵ “Dolphin,” <http://en.wikipedia.org/wiki/Dolphin>

²⁴⁶ Photo source: NASA, <http://mediaarchive.ksc.nasa.gov/detail.cfm?mediaid=21807>

Harbor Cranes

Historical Background

Dockyard workers use harbor cranes to move large, heavy items such as warship gun turrets or engine turbines, heavy cargo pallets, *etc.* “*Langer Heinrich*” was a *schwimmkran* (“floating crane”) that could lift 250 tons, and be floated and moved about the anchorage or to different ports on its own barge. It assisted in the construction at Wilhelmshaven of the battleships *Tirpitz* and *Scharnhorst*; *panzerschiffe* *Admiral Scheer* and *Admiral Graf Spee*; and the light cruisers *Köln*, *Königsberg*, and *Leipzig*.²⁴⁷

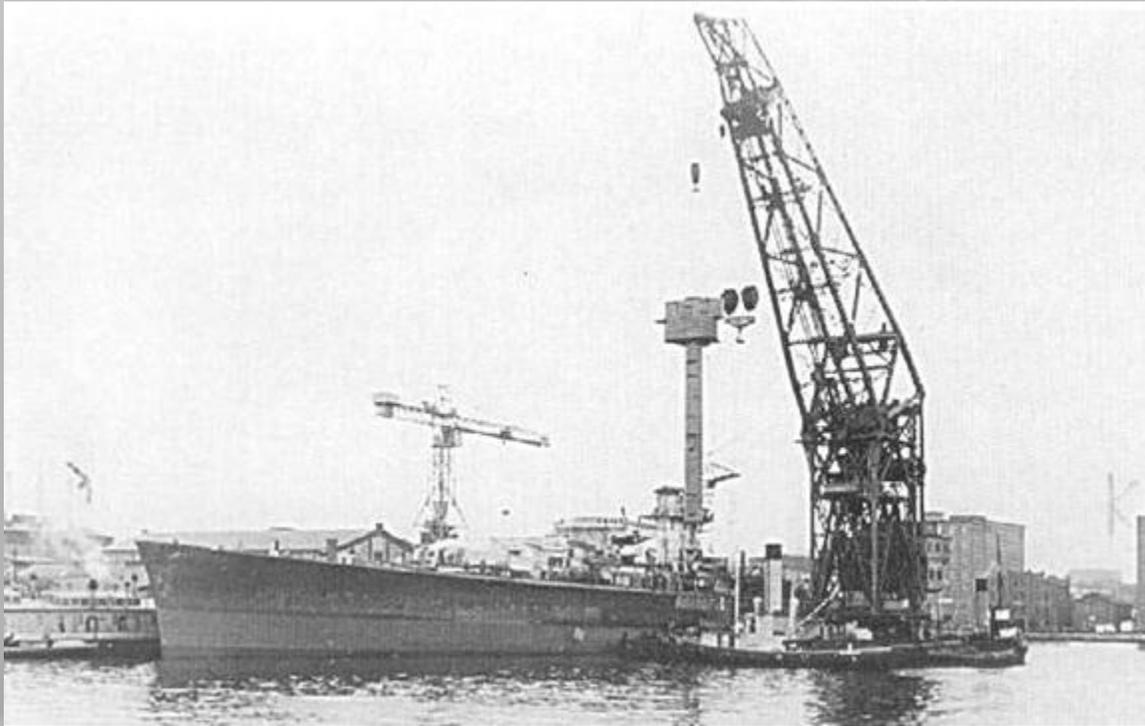


Figure 153: “*Langer Heinrich*” lifts a new conning tower into *Admiral Scheer* during its 1940 refit²⁴⁸

Harbor cranes in GWX

Harbor cranes in GWX will move randomly back and forth as if they were carrying out shipbuilding or ship repair operations.



Figure 154: Initial GWX crane positions (Kiel harbor)



Figure 155: Crane positions a few minutes later

²⁴⁷ “*Schwimmkran Langer Heinrich*,” http://www.bismarck-class.dk/langer_heinrich/index.htm

²⁴⁸ Photo source: “*Schwimmkran Langer Heinrich*,” http://www.bismarck-class.dk/langer_heinrich/index.htm

Laboe Naval Memorial

Germany began building the Laboe Naval Memorial (*Das Marine-Ehrenmal Laboe*) on the south side of Kiel fjord in 1927 to honor the 34,836²⁴⁹ Imperial German Navy personnel lost during World War I. The 85-meter tower was reminiscent to many observers of the stem of a Viking longship when Germany dedicated it in 1936. Germany added honors for over 130,000²⁵⁰ *Kriegsmarine* sailors lost during World War II, and in 1954 rededicated the memorial to the sailors of all nations lost during the two world wars.²⁵¹

The German Navy (*Bundesmarine*) put the Type VIIC/41 U-boat *U-995* on public display at the memorial in 1972. The Allies had given *U-995* to Norway as war reparation in 1947, and it served in the Norwegian Navy as *KNM Kaura* from 1952 until 1962; Norway returned it to Germany as a goodwill gesture in 1965, and it is now the only surviving Type VIIC U-boat.²⁵²



Figure 156: *Marine-Ehrenmal Laboe* tower²⁵³

The Laboe Naval Memorial in GWX

The Laboe Naval Memorial in GWX is located in its historical, current location.



Figure 157: The *Marine-Ehrenmal Laboe* in GWX

²⁴⁹ "World War I casualties," http://en.wikipedia.org/wiki/World_War_I_casualties

²⁵⁰ "Statistics and Numbers," <http://www.feldgrau.com/stats.html>

²⁵¹ "*Marine-Ehrenmal Laboe*," http://de.wikipedia.org/wiki/Marine-Ehrenmal_Laboe

²⁵² "*U 995* in Laboe," <http://www.juergenthuro.de/html/u-995.html>

²⁵³ "Laboe," <http://de.wikipedia.org/wiki/Laboe>

Lighthouses

Lighthouses were the first major navigation aids; their construction and upkeep were the hallmarks of seafaring nations long before the Ptolemys built the Lighthouse of Alexandria on the island of Pharos in 280 BCE. The Lighthouse was one of Herodotus' "Seven Wonders of the World," and used reflected sunlight as its daytime light source and an oil and/or wood bonfire at night for over 1,500 years; today, it is the etymological root for the word "lighthouse" in many European languages (*e.g.*, Spanish: "el faro") and the study of lighthouses ("pharology").²⁵⁴

The oldest surviving European lighthouse is the Roman-built *Torre de Hércules* ("Tower of Hercules") at A Coruña (Spanish: "La Coruña") in the autonomous Spanish province of Galicia: it has been in operation since the 2nd Century CE.²⁵⁵

Lighthouses during World War II generally used an electric light focused by a Fresnel lens for 24-hour illumination, as well as foghorns to alert ships to the presence of land during periods of poor visibility.



Figure 158: Sapelo Island Light, Georgia, USA²⁵⁶

The Lighthouses in GWX

Stock *Silent Hunter III* featured lighthouses at port facilities; GWX uses freestanding lighthouses to expand the presence of lighthouses to be more representative of their historical distribution.



Figure 159: Lighthouse at Kiel, Germany in GWX

²⁵⁴ "Lighthouse," <http://en.wikipedia.org/wiki/Lighthouse>

²⁵⁵ "Tower of Hercules," http://en.wikipedia.org/wiki/Tower_of_Hercules

²⁵⁶ Photo [source](#): Al Sandrik, "A re-evaluation of the Georgia and Northeast Florida Hurricane of October 2, 1898, using historical sources," <http://www.srh.noaa.gov/jax/research/hurricanes/history/1898/>

Maunsell Forts

Historical Background

British civil engineer Guy Maunsell designed two types of coastal fortification for Britain during World War II. The Royal Navy deployed “Sea forts” from late 1941 through July 1942 to help defend against bombers flying up the Thames and S-boats infiltrating the Thames estuary, and to track aircraft as they dropped magnetic mines. Each of four sea forts was “armored” with one foot of reinforced concrete, and was equipped with radar, a searchlight, and two 3.7-inch (94mm) and two 40mm anti-aircraft guns.

The British Army built its own “Army forts” to provide better seaward anti-aircraft defenses for London and Liverpool. Each fort had seven armored towers linked by walkways: one administrative tower, one searchlight tower, and four gun towers. There were three forts in the Mersey estuary outside Liverpool during 1942, and three in the Thames estuary by June 1943. An army fort had four 3.7-inch (94mm) heavy anti-aircraft guns and one 40mm Bofors anti-aircraft gun, and by 1944 had fire-control radars and predictor fire control systems. The British government credited Maunsell army and navy forts with destroying 22 German aircraft, 30 [Fi 103 V-1](#) flying bombs, and 1 S-boat during the war.²⁵⁷



Figure 160: The Royal Navy’s “Knock John” sea fort²⁵⁸



Figure 161: British Army fort in the Thames estuary²⁵⁹

The Maunsell Forts in GWX

The Maunsell forts in GWX are located in their historical positions and weapons/sensor configurations.

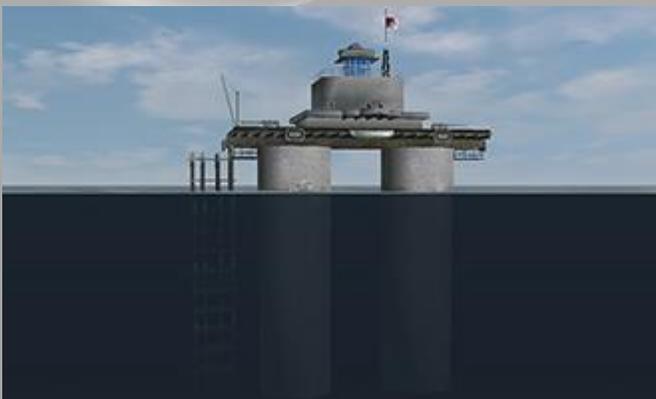


Figure 162: The "Knock John" sea fort in GWX



Figure 163: The Nore Army fort in GWX

²⁵⁷ “The Maunsell Sea Forts,” <http://www.whitstablescene.co.uk/forts.htm>

²⁵⁸ Photo source: “Naval Forts,” http://www.users.zetnet.co.uk/mongsoft/fort_today_page_all.htm

²⁵⁹ Photo source: Imperial War Museum IWM 34537, <http://www.iwm.org.uk/>

The Möltenort U-boat Memorial

Germany erected the Möltenort U-boat Memorial (*Das U-boot-Ehrenmal Möltenort*) in 1930 to honor the 5,132 U-boat crewmembers lost during World War I; it grew after World War II to honor the 30,003 U-boat crewmembers lost during and after World War II.²⁶⁰



Figure 164: Modern photograph of the Möltenort U-boat Memorial²⁶¹



Figure 165: Close-up view of the Möltenort U-boat Memorial in GWX

²⁶⁰ “Möltenort U-boat Memorial Foundation, <http://www.ubootehrenmal.de/en/>

²⁶¹ Photo source: <http://www.navyphotos.co.uk/>

Piers

A pier is a raised walkway over water that allows the transfer of passengers and cargo between a boat or ship and the shore without having to run the boat on shore or requiring passengers to get their feet wet. The piles upon which piers are built attract marine life and fish, and so piers are often popular with recreational and subsistence anglers. Piers can range in size and complexity from a simply lightweight wooden structure to major structures extended over a mile out to sea.²⁶²

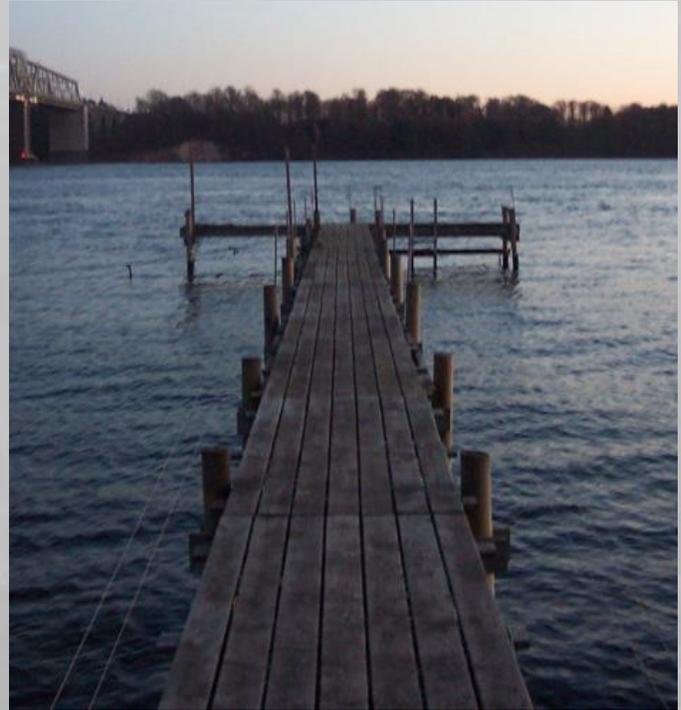


Figure 166: Small boat pier in Lillæbelt, Denmark²⁶³

Piers in GWX

The pier in GWX provides variety and atmosphere in coastal areas.



Figure 167: Fishin' on the dock o' the bay in GWX

²⁶² "Pier," <http://en.wikipedia.org/wiki/Pier>

²⁶³ Photo source: [Ævar Arnfjörð Bjarmason](http://en.wikipedia.org/wiki/Pier), "Pier," <http://en.wikipedia.org/wiki/Pier>

Shore-based anti-aircraft guns

Historical Background

U-boat bases were among the most heavily defended facilities in the Third Reich, with an integrated air defense system of early warning radar, fighter aircraft, bomb-proof shelters for key U-boat facilities, and large numbers of anti-aircraft guns.²⁶⁴ For example, the defenses of Lorient in late 1943 included nearly 120 heavy flak guns (15 x 12.8cm, 95 x 10.5cm, 4 x 8.8cm, and 4 x 7.5cm) with several medium (3.7cm) and light (2cm) flak batteries.²⁶⁵

Light and medium *flak* protected against low altitude raiders but was useless against high-altitude bombers. The Germans even built light *flak* emplacements atop the U-boat pens to ensure an aircraft making a torpedo attack against the open entrance of a U-boat pen would face a withering head-on barrage. *Flak* ships, barrage balloons, smoke screens, and camouflage were also used to shield U-boat bases against these attacks.²⁶⁶

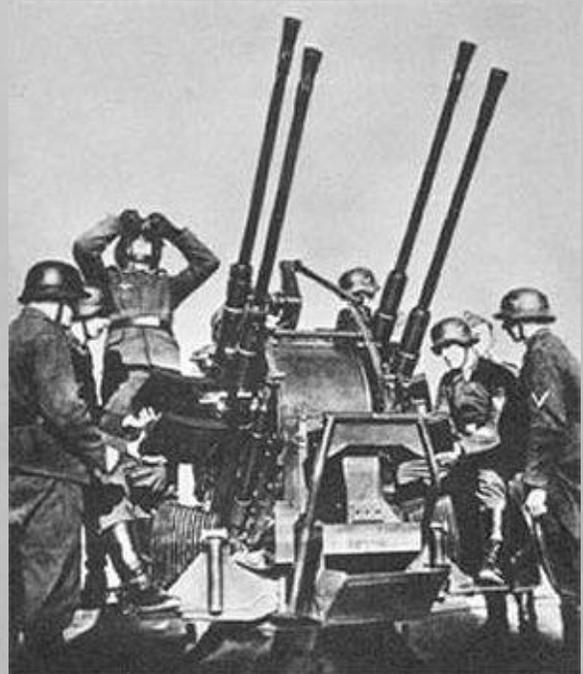


Figure 168: *Luftwaffe 2cm Flakvierling 38*²⁶⁷

Shore-based anti-aircraft guns in GWX

The GWX team fixed a bug in stock *Silent Hunter III* that disabled the external camera upon the detection of a land unit (such as an anti-aircraft gun); this fix allows the employment of many shore-based units. Note: a 20mm *Flakvierling* had a crew of eight (mostly ammunition carriers and loaders) to maintain a high sustained rate of fire; U-boats had lower firing rates since they could not provide ammunition quickly enough to the guns, and this is reflected in the time required to reload these guns.



Figure 169: 2cm flak and searchlight emplacement on Bordeaux U-boat bunker in GWX

²⁶⁴ Gordon Williamson, *Wolf Pack*, p. 86-105

²⁶⁵ "AA defenses of Lorient," <http://bunkersite.com/locations/france/lorient/flak-start.html>

²⁶⁶ Gordon Williamson, *Wolf Pack*, pp. 107

²⁶⁷ Photo source: "Flakvierling," http://en.wikipedia.org/wiki/Flakvierling#2_cm_Flakvierling_38

Whales (*Megaptera novaeangliae*)

Humpback whales (*Megaptera novaeangliae*) live in all the oceans of the world, but do not go near shore except when their migrations happen to bring them close to land. Adult whales are 16 to 17 meters long and displace about 40,000 kilograms (~45 tons).²⁶⁸ Hunting reduced the Humpback whale population to about ten percent of its estimated pre-hunting population of 100,000 to 200,000 individuals by 1966, when the International Whaling Commission banned the hunting of Humpback whales; current (2007) estimates put the worldwide population at about 30,000 members.²⁶⁹



Figure 170: Humpback whales off Hawaii²⁷⁰

Whales in GWX

Whales in GWX are in ocean areas at or just beneath the surface of the water. You can detect them visually or via your hydrophones. Your sonar operator will identify them as an “unknown contact” but you will hear whale song if you personally listen to the hydrophones.



Figure 171: Humpback whale in GWX

²⁶⁸ “Humpback whale,” <http://www.mmc.gov/species/humpbackwhale.html>

²⁶⁹ “Humpback whale,” http://en.wikipedia.org/wiki/Humpback_Whale

²⁷⁰ Photo credit: Dr. Louis M. Herman, <http://www.photolib.noaa.gov>

NEW CAMPAIGN ITEMS

Campaign Start

The stock *Silent Hunter III* campaign began on September 1, 1939. Historically, U-boats began moving to their wartime patrol areas starting around August 15, 1939, so GWX has advanced the start of the campaign to August 1, 1939 to allow players to reach their historical patrol areas before the war begins.

U-boat Base Defenses

Minefields, anti-submarine nets, and hazards to navigation (shipwrecks and/or blockships) now enhance the defenses of U-boat bases. There are two ways to ensure you do not hit one of your own mines:

- A surface ship such as a [sperrbrecher](#), [flottenbegleiter](#), [vorpostenboot](#), or [armed tugboat](#) will escort U-boats into and out of port. Follow in the escort's wake to travel safely through the port defenses. The Germans did this historically to ensure friendly ships, aircraft, and shore batteries did not mistake a U-boat for an enemy submarine, and to sweep the U-boats' path clear of mines.
- The player may end the mission and dock automatically whenever the U-boat is within 25 miles of its base.

NB: The locations of minefields and anti-submarine nets defending a base will change when a base falls to the enemy. For example, French bases may have three defense configurations throughout the war: the original defenses, the defenses under German occupation, and the defenses after Liberation.

Bergen, Norway



Figure 172: Base defenses and navigation hazards at Bergen, Norway (April 1940 – May 1945)

Bordeaux, France



Figure 173: Port defenses and navigation hazards at Bordeaux, France (July 1940 – August 1944)

Brest, France



Figure 174: Base defenses and navigation hazards at Brest, France (July 1940 – September 1944)

Constanza, Romania



Figure 175: Base defenses and navigation hazards at Constanza, Romania (October 1942 – August 1944)

Flensburg, Germany



Figure 176: Base defenses and navigation hazards at Flensburg, Germany (1939 - 1945)

Jakarta, Netherlands East Indies



Figure 177: Base defenses and navigation hazards at Jakarta, NEI (November 1944 - May 1945)

Kiel, Germany

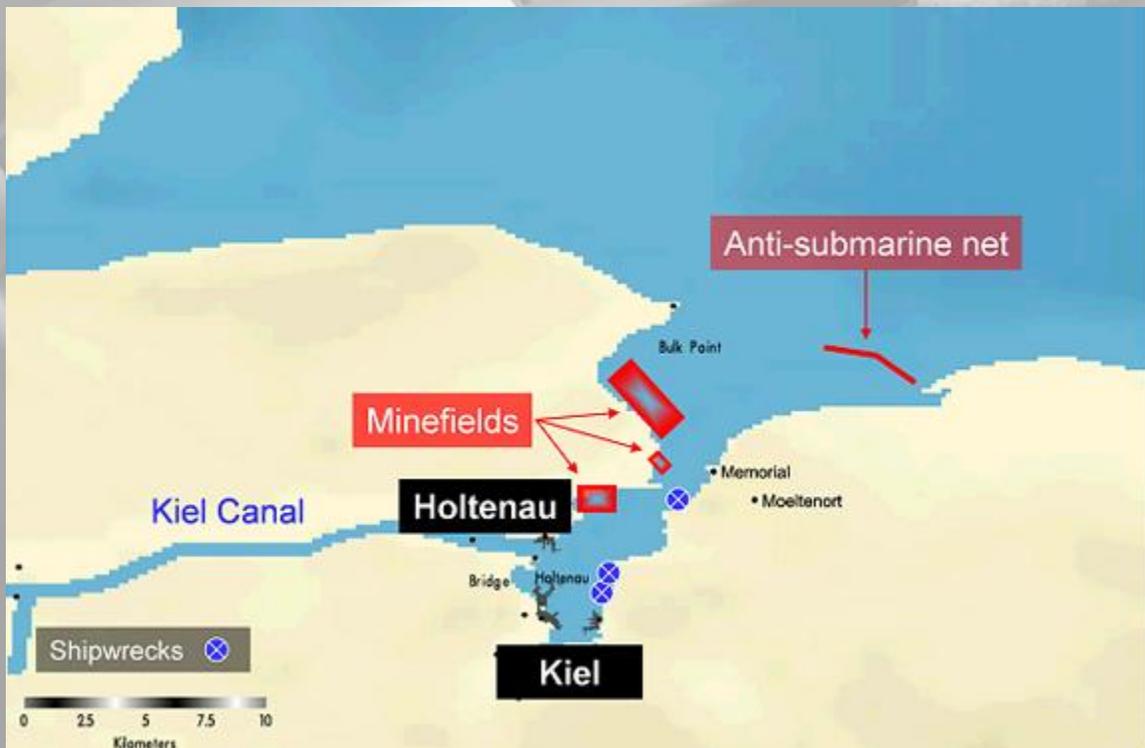


Figure 178: Base defenses and navigation hazards at Kiel, Germany (1939 - 1945)

La Spezia, Italy



Figure 179: Base defenses and navigation hazards at La Spezia, Italy (September 1941 – April 1945)

Lorient, France

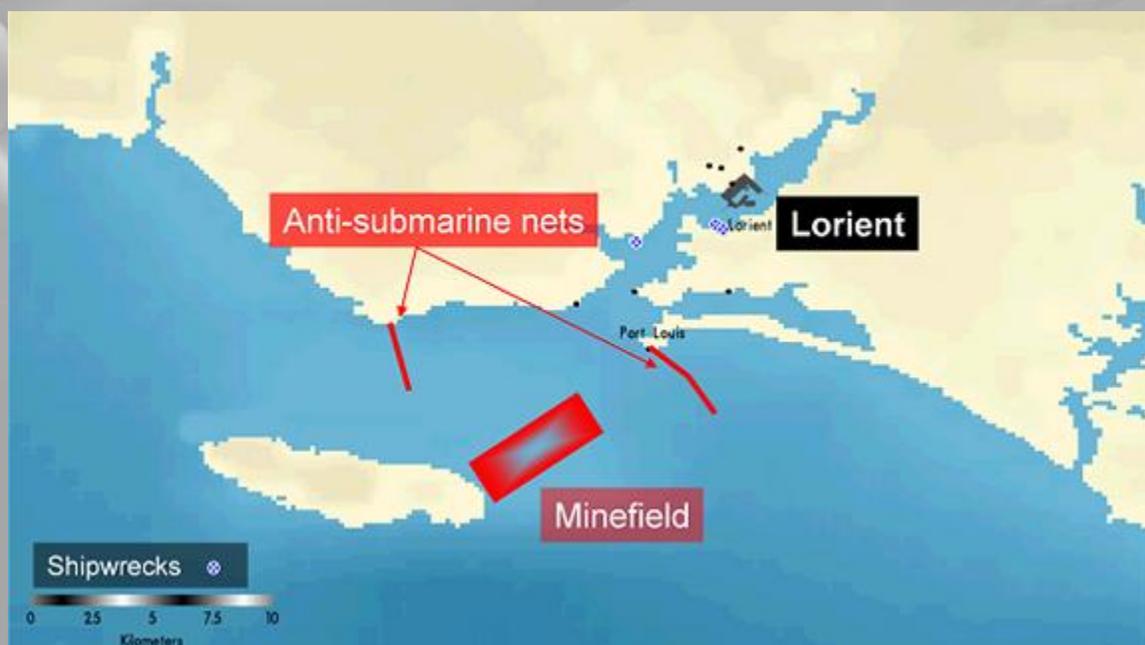


Figure 180: Base defenses and navigation hazards at Lorient, France (July 1940 – May 1945)

Penang, Malaya



Figure 181: Base defenses and navigation hazards at Penang, Malaya (September 1943 - November 1944)

Salamis, Greece

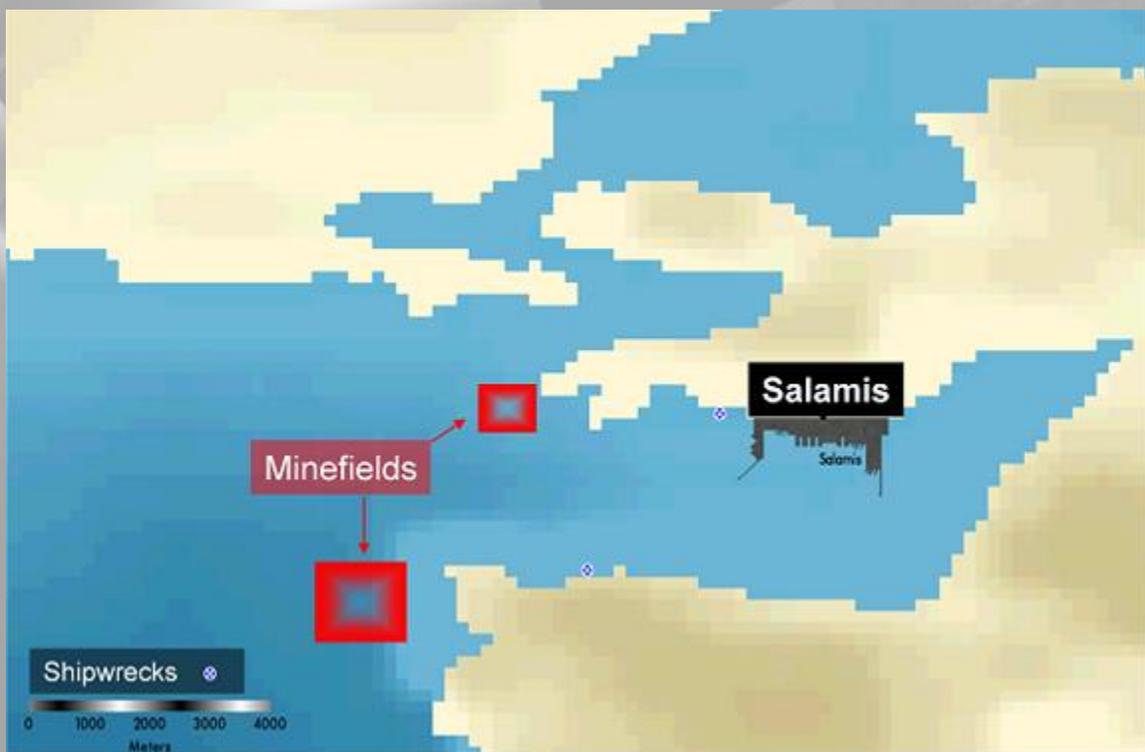


Figure 182: Base defenses and navigation hazards at Salamis, Greece (April 1941 – October 1944)

St. Nazaire, France



Figure 183: Base defenses and navigation hazards at St. Nazaire, France (July 1940 - May 1945)

Toulon, France

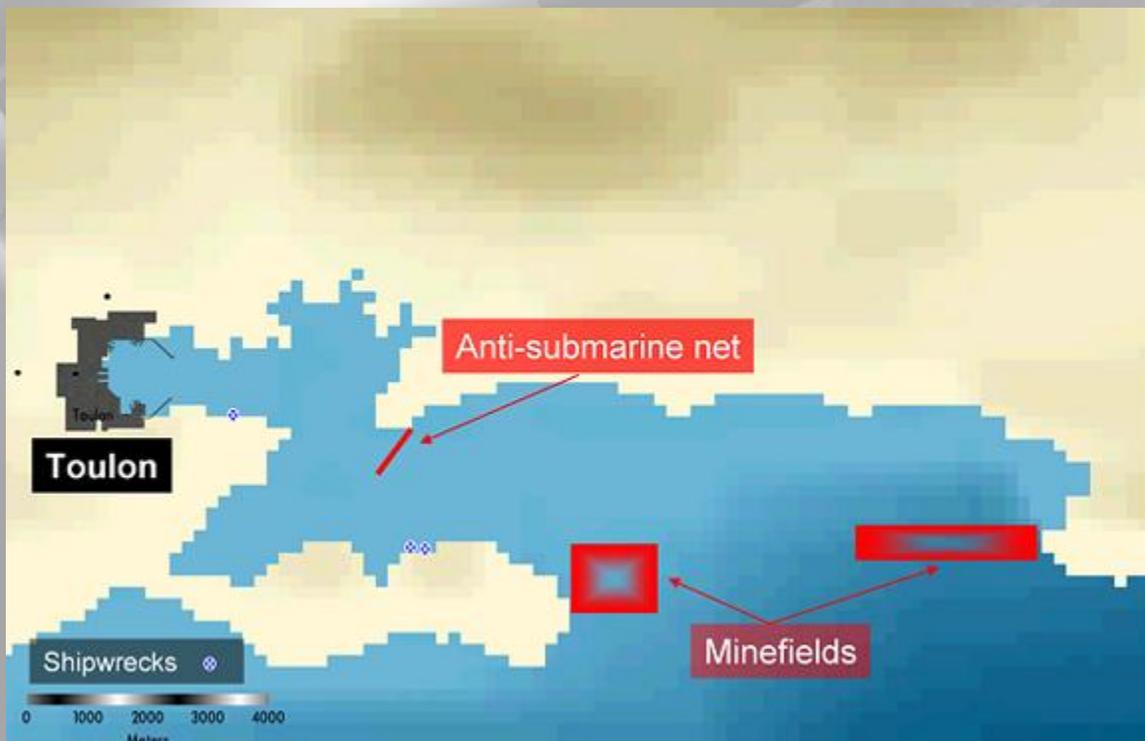


Figure 184: Base defenses and navigation hazards at Toulon, France (September 1942 - August 1944)

Trondheim, Norway



Figure 185: Base defenses and navigation hazards at Trondheim, Norway (May 1941 - May 1945)

Wilhelmshaven, Germany



Figure 186: Base defenses and navigation hazards at Wilhelmshaven, Germany (1939-1945)

Expanded U-boat Flotilla Operations

Stock *Silent Hunter III* allows players to join a historical U-boat flotilla during their migration from Germany to Occupied France, the Mediterranean, and the Pacific, and the final retreat to Germany and Norway as the Allies close in. GWX adds several historical flotillas and theaters of operation:

- The 10th Flotilla in the Indian Ocean
- The 13th Flotilla in Norway
- The 23rd Flotilla in Greece
- The 30th Flotilla in the Black Sea

GWX also augments the operational activity of two flotillas in areas where they operated historically:

- Patrols by the 11th Flotilla around Britain
- Patrols by the 12th Flotilla in the South Atlantic

Table 14: GWX U-boat Flotillas, locations, and default U-boat types for new careers by date

Flotilla	Dates	Location	Available U-boats	Month in which default type is available						
				1939	1940	1941	1942	1943	1944	1945
1	9/39 – 5/41 6/41 – 8/44	Kiel Brest	IIA, IID, VIIB, VIIC, VIIC/41, VIIC/42	Aug IIA	Sep IID	Mar VIIC	Apr VIIC	Apr VIIC	Jan VIIC	-
2	9/39 – 8/40 9/40 – 8/44	Wilhelmshaven Lorient	VIIB, VIIC, VIIC/41, VIIC/42, IXB, IXC, IXC/40, IXD2	Aug VIIB	Dec IXB	Apr IXB	Apr IXC	Jan IXC	Jan IXC	-
7 / 13	8/39 9/39 – 8/40 9/40 – 7/44 8/44 – 5/45	Königsberg Kiel St. Nazaire Trondheim	VIIB, VIIC, VIIC/41, VIIC/42	Aug VIIB	Oct VIIB	Apr VIIC	Apr VIIC	Apr VIIC	Sep VIIC	Jan VIIC/41
10	2/42 – 8/43 9/43 – 10/44 11/44 – 5/45	Lorient Penang Jakarta	IXB, IXC, IXC/40, IXD2	-	-	-	Feb IXC	Jul IXD2	Jan IXD2	Jan IXD2
11	6/42 – 5/45	Bergen	VIIB, VIIC, VIIC/41, VIIC/42, IXB, IXC, IXC/40, IXD2, XXI	-	-	-	Jun VIIC	Jan VIIC	Jan VIIC	Jan VIIC/41
12	1/43 – 8/44	Bordeaux	IXB, IXC, IXC/40, IXD2	-	-	-	-	Jan IXD2	Jan IXD2	-
23 / 29	10/41 – 4/42 5/42 – 8/43 9/43 – 8/44	Salamis La Spezia Toulon	VIIB, VIIC, VIIC/41, VIIC/42	-	-	Oct VIIB	Jun VIIB	Mar VIIC	Jan VIIC	-
30 / 33	10/42 – 7/44 8/44 – 5/45	Constanza Flensburg	IIA, IID, VIIB, VIIC, VIIC/41, VIIC/42, IXB, IXC, IXC/40, IXD2	-	-	-	Oct IID	Sep IID	Oct VIIC/41	Jan VIIC/41

Table 15: Summary of GWX U-boat types, availability, and flotilla availability

Type	Availability date ²⁷¹	Available to these flotillas?							
		1	2	7/13	10	11	12	23/29	30/33
IIA	Jul-39	Y							Y
IID	Oct-39	Y							Y
VIIB	Jul-39	Y	Y	Y		Y		Y	Y
VIIC	Apr-40	Y	Y	Y		Y		Y	Y
VIIC/41	Oct-43	Y	Y	Y		Y		Y	Y
VIIC/42	Jan-44	Y	Y	Y		Y		Y	Y
IXB	Dec-39		Y		Y		Y		Y
IXC	Jul-41		Y		Y		Y		Y
IXC/40	Oct-42		Y		Y		Y		Y
IXD2	Jan-43		Y		Y		Y		Y
XXI	Apr-44					Y			

²⁷¹ Germany cancelled the Type VIIC/42 U-boat in favor of the Type XXI, which began deploying just too late to fight in the war. GWX retains the Type VIIC/42, the Type XXI, and their availability dates from stock *Silent Hunter III*.

Brief Histories of U-boat Flotillas modified by GWX

Weddigen (1st) U-boat Flotilla

The “Weddigen” *Unterseebootsflotille* (“submarine flotilla”) formed in Kiel, Germany on September 27, 1935, commanded by *Fregattenkapitän* Karl Dönitz, and named after World War I U-boat commander *Kapitänleutnant* Otto Weddigen.²⁷² Britain stopped its North Sea armored cruiser patrols after Weddigen, commanding *U-9*, sank the armored cruisers HMS *Cressy*, *Aboukir*, and *Hogue* on September 20, 1914, and the armored cruiser HMS *Hawke* on October 14. He received the Iron Cross 1st and 2nd class for the first action, and received the Prussian *Orden Pour le Mérite* (the “Blue Max”) from Kaiser Wilhelm II personally.²⁷³ Weddigen died on March 18, 1915 when the battleship HMS *Dreadnought* rammed his new U-boat, *U-29* – the only ship sunk by *Dreadnought* during the war.²⁷⁴



Figure 187: *Kapitänleutnant* Otto Weddigen²⁷⁵

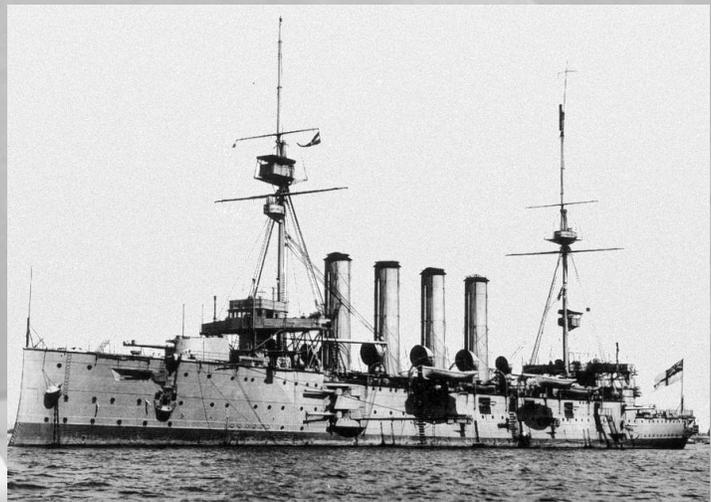


Figure 188: *Cressy*-class armored cruiser HMS *Cressy*²⁷⁶

The “Weddigen” flotilla started the war operating Type IIA, IIB, and IID U-boats in the North Sea, but lost its name in January 1940 when the *Kriegsmarine* renamed all of the named U-boat flotillas to numbered flotillas: “Weddigen” became *I. Unterseebootsflotille* (“1st Submarine Flotilla”). The 1st Flotilla transferred to Brest, France in June 1941 and transitioned to Type VII U-boats for Atlantic operations. The 1st Flotilla continued operations until Allied armies broke out of Normandy in August 1944; the 1st Flotilla’s last commander, *Korvettenkapitän* Werner Winter, disbanded the flotilla in September 1944 and surrendered to the Allies in Brest while the surviving U-boats escaped to Norway.²⁷⁷



Figure 189: 1st Flotilla Emblem²⁷⁸

²⁷² “1st Flotilla,” <http://www.uboot.net/flotillas/1flo.htm>

²⁷³ “*Kapitänleutnant* Otto Weddigen,”

<http://www.marine.de/01DB070000000001/CurrentBaseLink/W26FH9XF678INFODE>

²⁷⁴ Massie, Robert K. *Castles of Steel: Britain, Germany, and the winning of the Great War at Sea*. Random House. 2003.

²⁷⁵ Photo source: “*Kapitänleutnant* Otto Weddigen,”

<http://www.marine.de/01DB070000000001/CurrentBaseLink/W26FH9XF678INFODE>

²⁷⁶ Photo source: “*Cressy*-Klasse,” <http://de.wikipedia.org/wiki/Cressy-Klasse>

²⁷⁷ “1st Flotilla,” <http://www.uboot.net/flotillas/1flo.htm>

²⁷⁸ Emblem courtesy of “Evil Jester ‘76”

Saltzwedel (2nd) U-boat Flotilla

The “Saltzwedel” *U-flotille* formed in Kiel, Germany on September 27, 1935, commanded by *Fregattenkapitän* Werner Scheer, and named after World War I U-boat commander *Oberleutnant z. S.* Reinhold Saltzwedel.²⁷⁹ Saltzwedel commanded six different U-boats during the war and sank 111 ships totaling over 170,000 tons, including a successful duel with the Q-ship HMS *Dunraven* on August 8, 1917 when he commanded *UC-71*; *Dunraven* was heavily damaged and sank several days later.²⁸⁰ He received the *Orden Pour le Mérite* on August 20, 1917, and died on December 2, 1917 when his U-boat struck a mine in the English Channel.²⁸¹



Figure 190: Reinhold Saltzwedel²⁸²



Figure 191: HMS *Dunraven* damaged (later to sink) by *UC-71*²⁸³

The “Saltzwedel” flotilla formed on September 1, 1936, and started the war operating Type IA (not modeled in *Silent Hunter III*), Type VII, and Type IX U-boats, but lost its name in January 1940 when the *Kriegsmarine* renamed all of the named U-boat flotillas to numbered flotillas: “Saltzwedel” became 2. *Unterseebootsflotille* (“2nd Submarine Flotilla”). The 2nd Flotilla transferred to Lorient, France from July 1940 through June 1941, and conducted operations from Lorient until Allied armies broke out of Normandy in August 1944. The 2nd Flotilla’s last commander, *Fregattenkapitän* Ernst Kals, disbanded the flotilla in August 1944; the surviving boats escaped to Norway, but the Allies bypassed Lorient which held out until the German surrender in May 1945.²⁸⁴



Figure 192: 2nd Flotilla emblem²⁸⁵

²⁷⁹ “2nd Flotilla,” <http://www.uboot.net/flotillas/2flo.htm>

²⁸⁰ “HMS *Dunraven*,” http://en.wikipedia.org/wiki/HMS_Dunraven

²⁸¹ “Reinhold Saltzwedel,” <http://uboot.net/wwi/men/index.html?officer=283>

²⁸² “*Der Deibel holt sie alle...*,” http://www.taucher.net/redaktion/28/Der_Deibel_holt_sie_alle..._9.html

²⁸³ Photo source: U.S. Naval Historical Center #NH 61071

²⁸⁴ “2nd Flotilla,” <http://www.uboot.net/flotillas/2flo.htm>

²⁸⁵ Emblem courtesy of “Evil Jester ‘76”

Lohs (3rd) U-boat flotilla

The “Lohs” *U-flotille* formed in Kiel, Germany on October 4, 1937, commanded by *Kapitänleutnant* Heinz Eckermann, and named after World War I U-boat commander *Oberleutnant* z. S. Johannes Lohs. Lohs commanded *UC-75* and *UB-57* during World War I, sinking 76 ships totaling 148,677 tons, including the minesweeping sloop *HMS Lavender*,²⁸⁶ and received the *Orden Pour le Mérite* on April 24, 1918.²⁸⁷ He died while returning from a patrol in *UB-57*: he reported he had sunk 15,000 tons of shipping, but *UB-57* never returned. Lohs’ body and those of several *UB-57* crewmembers washed up on the Dutch coast on August 22, 1918. The consensus among historians is that *UB-57* sank with all hands after hitting a mine near Zeebrugge, Belgium just after sending its final radio transmission.²⁸⁸



Figure 193: Johannes Lohs²⁸⁹



Figure 194: UB-57²⁹⁰

The “Lohs” Flotilla formed on October 7, 1937, and entered the war operating Type IIB U-boats, but disbanded and transferred its U-boats to 1st U-flotille in January 1940. The flotilla reformed as 3. *Unterseebootsflotille* (“3rd Submarine Flotilla”) in March 1941 at Kiel under the command of *Korvettenkapitän* Hans Rudolf Rösing and transferred to La Pallice / La Rochelle in August 1941 with Type VII U-boats, and conducted operations until Allied armies broke out of Normandy in August 1944. The flotilla’s U-boats left for Norway in August and were absorbed into 13^h Flotilla at Bergen, but its last commander, *Fregattenkapitän* Richard Zapp, remained in *Festung* La Rochelle commanding Naval Infantry Regiment “Zapp” until the fortress surrendered at the end of the war May 7, 1945.²⁹¹

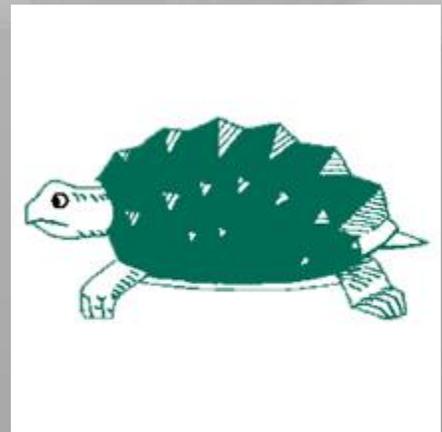


Figure 195: 3rd Flotilla emblem²⁹²

Note: This flotilla is only available when using the optional [Alternative Flotillas mod](#).

²⁸⁶ “3rd Flotilla,” <http://www.uboot.net/flotillas/3flo.htm>

²⁸⁷ “Navy *Pour le Mérite* winners,” <http://www.pourlemerite.org/wwi/navy/navy.html>

²⁸⁸ “Johannes Lohs,” <http://uboot.net/wwi/men/index.html?officer=182>

²⁸⁹ Photo source: “*Berbisdorfer Straße*,” http://www.einsiedel.info/html/berbisdorfer_strasse.html

²⁹⁰ Photo source: “Johann Lohs: The Channel Hunter,” http://www.gue.com/Exploration/Wreck/q3_2c.htm

²⁹¹ “2nd Flotilla,” <http://www.uboot.net/flotillas/2flo.htm>

²⁹² Emblem courtesy of “Evil Jester ‘76”

Wegener (7th) U-boat Flotilla

The “Wegener” *U-flotille* formed in Kiel, Germany on June 25, 1938, commanded by *Korvettenkapitän* Werner Sobe, and named after World War I U-boat commander *Kapitänleutnant* Bernd Wegener.²⁹³ Wegener commanded *U-27* during World War I, sinking 29 ships (including the British submarine *E-3*) for a tonnage score of over 29,000 tons. Wegener died on August 19, 1915 in the infamous *Baralong* incident: *U-27* was on the surface and preparing to sink a British merchant ship, *SS Nicosian*, that it had found carrying military contraband. The Q-ship *HMS Baralong*, under the command of Lt. Godfrey Herbert, RN, approached under the flag of the then-neutral United States and asked permission to rescue the crew of *Nicosian* from their lifeboats. Wegener agreed, and *Baralong* approached to within 600 yards when it dropped its pretense and opened fire. *U-27* sank within minutes leaving a dozen or so survivors swimming in the water.

Lt. Herbert ordered his crew to shoot Wegener and the other survivors in the water, and hunted down and killing four unarmed *U-27* crewmen who managed to swim to the *Nicosian*. Britain embargoed news of the incident, but it became public when American passengers from *Nicosian* informed U.S. newspapers. Germany demanded Britain try the crew of *Baralong* for murder, but the British declined; the Royal Marine corporal who shot Wegener explained later that, in his view, all Germans were “vermin.”²⁹⁴

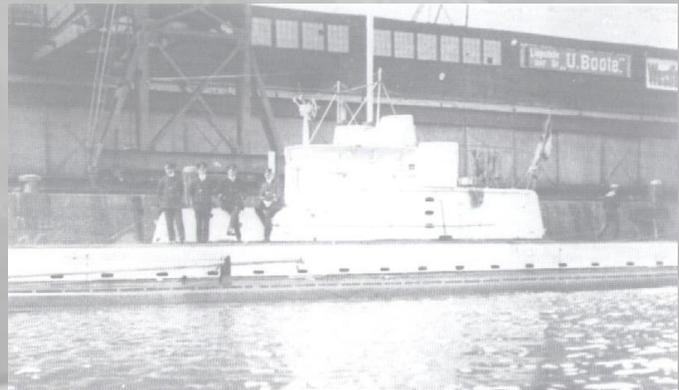


Figure 196: World War I U-boat *U-27*²⁹⁵



Figure 197: 7th Flotilla emblem²⁹⁷

The “Wegener” Flotilla formed on June 25, 1938 and started the war operating Type VIIB U-boats, becoming 7. *Unterseebootsflotille* (“7th Submarine Flotilla”) in January 1940 when the *Kriegsmarine* renamed all its named U-boat flotillas to numbered flotillas. The 7th Flotilla began transferring to St. Nazaire, France in September 1940, adopted the emblem of *Kapitänleutnant* Günther Prien’s *U-47* (“*Der Stier von Scapa Flow*”) after his death, and conducted operations there until Allied armies broke out of Normandy in August 1944. All but one boat of 7th Flotilla, *U-255*, left for Norway in August and September 1944. The last commander of the 7th Flotilla, *Korvettenkapitän* Adolf Piening, escaped St. Nazaire in *U-255* on May 7, 1945 and surrendered at sea on May 12.²⁹⁶

²⁹³ “7th Flotilla,” <http://uboat.net/flotillas/7flo.htm>

²⁹⁴ Massie, *Castles of Steel*.

²⁹⁵ Photo source: “Wolfstage,” http://www.taucher.net/redaktion/22/Wolfstage_7.html

²⁹⁶ “7th Flotilla,” <http://www.uboat.net/flotillas/7flo.htm>

²⁹⁷ Emblem courtesy of “Evil Jester ‘76”

10th U-boat Flotilla

BdU founded the 10th Flotilla at Lorient, France on January 15, 1942 under the command of *Kapitänleutnant* Günter Kuhnke. It used only long-range Type IXC, IXC/40, XB, and XIV U-boats, initially off the east coast of the United States, and then primarily in the Caribbean and the South Atlantic after August 1942. The flotilla disbanded on August 27, 1944 with the approach of Allied troops, and now-*Korvettenkapitän* Kuhnke commanded the flotilla's last U-boat, *U-853*, during its escape and arrived safely in Flensburg on October 14, 1944, whereupon he took command of the [33rd U-boat flotilla](#).²⁹⁸

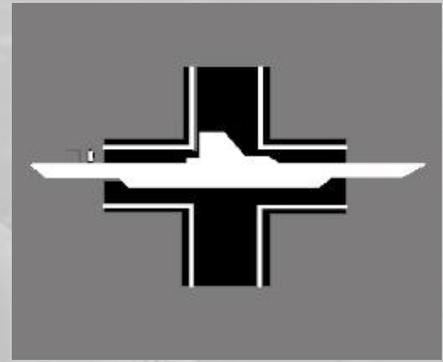


Figure 198: 10th Flotilla emblem²⁹⁹

11th U-boat Flotilla

BdU founded the 11th Flotilla at Bergen, Norway on May 15, 1942 under the command of *Korvettenkapitän* Hans Cohausz. It used primarily Type VIIC and VIIC/41 U-boats to attack Allied convoys traveling to and from the Soviet Union, and conducted the campaign against British inshore waters in late 1944 and early 1945. It was the first flotilla to receive the new Type XXI and XXIII U-boats in the last few months of the war. The Type XXIII U-boats had some success, but the Type XXI U-boats had barely started their first operational patrols when the flotilla disbanded at the end of the war.³⁰⁰



Figure 199: 11th Flotilla emblem³⁰¹

12th U-boat Flotilla

BdU founded the 12th Flotilla at Bordeaux, France on October 15, 1942 under the command of *Korvettenkapitän* Klaus Scholtz. It used primarily Type VIIF torpedo resupply boats, Type XB minelayers, Type IXD long-range boats, and Type XIV resupply boats in the South Atlantic and the Indian Ocean. The flotilla disbanded in August 1944 as Allied troops approached Bordeaux, but U.S. forces captured now-*Fregattenkapitän* Scholtz and 200 shore personnel on September 11 as they were walking back to Germany.³⁰²



Figure 200: 12th Flotilla emblem³⁰³

²⁹⁸ "10th Flotilla," <http://www.uboat.net/flotillas/10flo.htm>

²⁹⁹ Emblem courtesy of "Evil Jester '76"

³⁰⁰ "11th Flotilla," <http://www.uboat.net/flotillas/11flo.htm>

³⁰¹ Emblem courtesy of "Evil Jester '76"

³⁰² "12th Flotilla," <http://www.uboat.net/flotillas/12flo.htm>

³⁰³ Emblem courtesy of "EvilJester '76"

29th U-boat Flotilla

BdU founded the 29th Flotilla at La Spezia, Italy in December 1941 under the command of *Korvettenkapitän* Franz Becker. It used Type VIIB and VIIC U-boats against convoys and warships in the Mediterranean Sea, and absorbed the U-boats from the 23rd Flotilla in Salamis, Greece when that unit disbanded in May 1942. The 29th Flotilla's last commander, *Korvettenkapitän* Günther Jahn, disbanded the flotilla in September 1944 when the last of its operational U-boats was lost and its two remaining U-boats in Greece scuttled at Salamis.³⁰⁴

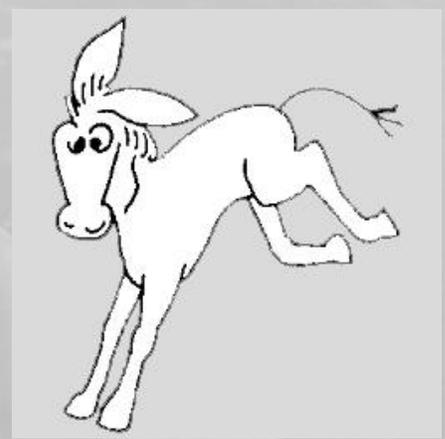


Figure 201: 29th Flotilla emblem³⁰⁵

33rd U-boat Flotilla

BdU founded the 33rd Flotilla in Flensburg, Germany in September 1944 under *Korvettenkapitän* Georg Schewe as an administrative unit to handle Type IX U-boats escaping from France as well as those few U-boats remaining in the Far East. It disbanded in May 1945 at the end of the war while under the command of *Korvettenkapitän* Günther Kuhnke.³⁰⁶

The 33rd Flotilla had no flotilla emblem.

³⁰⁴ "29th Flotilla," <http://www.uboat.net/flotillas/29flo.htm>

³⁰⁵ Emblem courtesy of "Evil Jester '76"

³⁰⁶ "33rd Flotilla," <http://www.uboat.net/flotillas/33flo.htm>

The 10th Flotilla in the Far East

Historical Background³⁰⁷

There is some indication the Japanese asked for German U-boat operations in the Indian Ocean, and German records indicate bilateral discussions on establishing a German U-boat base in Malaya as early as August 1942. These ideas for U-boat deployments in the Far East appear to have initially gone nowhere due to resistance from the BdU, *Admiral* Karl Dönitz, who saw them (and Mediterranean operations) as an unwelcome diversion from the crucial Atlantic campaign against Britain.

In late February 1943 Dönitz, by then a *Großadmiral* and *Oberbefehlshaber der Marine* (ObdM - "Commander-in-Chief of the Navy"), changed his mind and proposed using submarines as transports between Germany and Japan, and to establish Far Eastern bases to provision them there. The new BdU, *Vizeadmiral* Hans-Georg Friedeburg, selected Penang in Japanese-occupied Malaya as the main base, with a second base at Kobe, Japan and small repair bases at Singapore, Jakarta (aka Batavia), and Surabaya. The Japanese would be able to supply the U-boats with fuel, and to provide a safe haven for covert resupply tankers, but the U-boats themselves would have to bring everything else, including their own torpedoes.



Figure 202: U-boat bases in Southeast Asia³⁰⁸

Several factors appear to have changed Dönitz's thinking. One was the need for a strategic courier service between Germany and Japan. Prior to the German invasion of the USSR in June 1941, Germany and Japan had used the USSR as a conduit for the shipment of strategic raw materials and the exchange of information on weapons designs and prototypes, but after this route closed the only means of exchanging these types of materials and information was by sea. The Axis initially used surface blockade-runners for the exchange of material and information, but Allied sea and air patrols had effectively closed these routes down by the end of 1942.

A second reason for Dönitz's new thinking was the desire to extend U-boat operations to the South Atlantic and the Cape of Good Hope to evade ever more effective Allied antisubmarine warfare (ASW) efforts in the North Atlantic. When heavy U-boat casualties forced Dönitz to withdraw the U-boats from the North Atlantic in May 1943, it seemed only logical to extend operations into the Indian Ocean, where the Germans believed Allied ASW capabilities were not as good as in the North Atlantic.

The first of the Axis Far East submarine deployments consisted of a series of six Italian submarines, codenamed *Aquila*, that left France in May and June of 1943: each was capable of carrying a few passengers and 150 tons of special strategic cargo between Japan and the European Axis. Three *Aquila* boats completed the journey,^{*} but the Japanese impounded them upon their arrival, as it appeared Italy would soon surrender, and the Germans took them into their service (with "U-IT" designations) in Asia after the Italian surrender in September 1943. Operation *Merkator* constituted a second "wave" of two German-crewed (formerly Italian) submarines was to depart Europe for Asia after the Italian surrender,

³⁰⁷ Derived from <http://www.uboaaces.com/articles-fareast-boats1.shtml>

³⁰⁸ Map created using Google Earth®

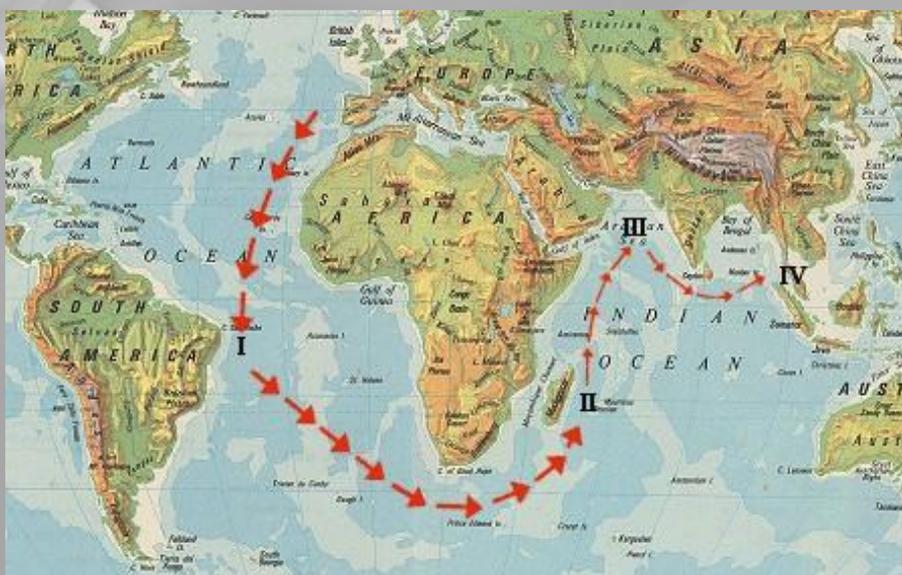
* Allied aircraft probably sank *Barbarigo* off the Azores; the *Enrico Tazolli* was lost to unknown causes, and the *Ammiraglio Cagni* surrendered in Durban, South Africa after the Italian armistice.

but the Germans found one of them was unseaworthy and scuttled it at Bordeaux, and the British sank the other one *en route*. The U-IT boats were unable to return to Europe after the Allies detected and destroyed the German covert tankers *Brake* and *Charlotte Schliemann* in early 1944, so they spent the rest of the war in Asian waters. One of the three U-IT boats was lost before Germany's surrender in May 1945, so the Japanese took the two surviving U-IT boats into their service as I-503 and I-504: they were the only submarines to fly the flags of each of the Axis powers during World War II.

The first German submarine in the Far East was *U-178*, a long-range Type IXD2 U-boat under *Korvettenkapitän* Wilhelm Dommès. *U-178* departed France on March 28, 1943 for service in the Indian Ocean, but BdU diverted her to Malaya to set up a U-boat base at Penang instead of returning to France. *U-178* arrived in Penang in August 1943 after refueling from a covert tanker in the Indian Ocean, whereupon Dommès became the base commander at Penang.

Gruppe Monsun ("Monsoon Group") was the first wave of German U-boats dispatched to the Far East. *Gruppe Monsun* consisted of 11 long-range U-boats: four Type IXCs, five Type IXC/40s, and two Type IXD2s drawn from at least three U-boat flotillas (10th, 12th, and 33rd), which were to patrol the Arabian Sea while *en route* to Asia as well as carrying special strategic cargo for delivery to Japan. These boats departed France in mid-1943 and were to arrive in their patrol areas in the Arabian Sea in mid-September (just after the end of the wet monsoon, hence the name of the group). The difficulties these U-boats encountered on their journey illustrate the complications and hazards of a Far East deployment.

The *Gruppe Monsun* deployment plan (see Figure 203) included two mid-ocean replenishments. A Type XIV U-boat *milchkuh* ("Milk cow," or U-tanker), *U-462* (*Oberleutnant z. S.* Bruno Vowe), was to provide the first replenishment at a location east of St. Paul's Rock, in the South Atlantic off the Brazilian coast. The group was then to proceed around the Cape of Good Hope and rendezvous with the covert tanker *Brake* in the Indian Ocean off Madagascar. The group would conduct offensive operations in the Arabian Sea and finally proceed to the new U-boat base at Penang to offload their cargo, replenish stores, and begin using Penang as a permanent base of operations against Allied shipping in the Indian Ocean. The Allies, however, had other ideas.



- I - 1st refueling point using Type XIV *U-462*
- II - 2nd refueling point using a covert tanker
- III - Offensive operations
- IV - Sail to Penang for rebasing in the Far East

Figure 203: The track of *Gruppe Monsun* to the Far East³⁰⁹

³⁰⁹ Map credit: <http://www.uboataces.com/articles-fareast-boats4.shtml> © uboataces. Used by permission.

The Allies sank both Type IXD2 boats on the way to the “I” rendezvous: a British [Liberator](#) depth charged and sank *U-200*, and a USN [TBF Avenger](#) based on *USS Card* sank *U-847* with a Mk 24 “Fido” homing torpedo. The Allies also sank three Type IXC *Gruppe Monsun* boats on their way to the South Atlantic: *U-506* (sunk by bombs from a [USAAF B-24](#)), *U-509* (sunk by a “Fido” homing torpedo from a USN Avenger aircraft based on *USS Santee*), and *U-514* (sunk by rockets from a British Liberator).³¹⁰

An air attack damaged *U-462*, the *milchkuh* originally assigned to refuel the group at the “I” rendezvous point, and the British sank it while it was returning to port. The replacement *milchkuh*, *U-487*, was also lost (sunk by USN Avenger and [Wildcat](#) aircraft based on *USS Core*) before it could refuel the group. BdU then ordered two other U-boats to sacrifice their fuel to allow the *Gruppe Monsun* boats to continue, but one of these, *U-160*, was lost before it could help (sunk by a “Fido” homing torpedo from a USN Avenger based on *USS Santee*). In desperation, BdU ordered *Kapitänleutnant* Hans-Rutger Tillessenthe, commander of *U-516*, the remaining Type IXC U-boat in *Gruppe Monsun*, to sacrifice his fuel to the group and return to France, leaving only the five Type IXC/40 U-boats to finish the mission.

The remaining *Gruppe Monsun* boats, *U-168* (*Kapitänleutnant* Helmuth Pich), *U-183* (*Korvettenkapitän* Heinrich Schäfer), *U-188* (*Kapitänleutnant* Siegfried Lüdden), *U-532* (*Fregattenkapitän* Ottoheinrich Junker), and *U-533* (*Kapitänleutnant* Helmut Hennig) went on to the “II” rendezvous and refueled from the covert tanker *Brake* without incident. Upon refueling, *Gruppe Monsun* headed for the Arabian Sea where they sank six ships for 33,843 tons and damaged two for 15,822 tons, losing *U-533* in the Gulf of Aden to a British Blenheim.³¹¹ The four surviving boats arrived in Penang in late October and early November 1943. The Germans eventually deployed 41 U-boats to the Far East to undertake operations against shipping and transport missions, but only six of all the boats sent to Asia returned to Germany.

The 10th Flotilla in GWX

The 10th Flotilla is a stock *Silent Hunter III* flotilla; in GWX, the 10th Flotilla operates as in stock *Silent Hunter III* through December 1942.

- BdU will start ordering you to patrol map grids in the South Atlantic starting in January 1943, and you will start receiving radio messages advising of a pending transfer to Penang.³¹²
- On September 1, 1943, GWX will redesignate your home base as Penang and you will travel there just as the *Gruppe Monsun* boats did, so ensure you are in command of a Type IXD2 U-boat by this time if you want to make it to your new base without refuelling.



Figure 204: 10th Flotilla emblem³¹³

- If you start a 10th Flotilla career on or after January 1, 1944, you will take command of a Type IXD2 boat that is already in Penang and transfer to Jakarta on November 1, 1944. The flotilla moved to Jakarta because the Allies laid aerial minefields near Penang to interdict the U-boats based there.
- If you start a 10th Flotilla career on or after November 1, 1944, your Type IXD2 boat will start in Jakarta, which will be your base until the end of the war.³¹⁴

³¹⁰ Sources: <http://uboat.net/boats/u200.htm>, <http://uboat.net/boats/u506.htm>, <http://uboat.net/boats/u509.htm>, <http://uboat.net/boats/u514.htm>, and <http://uboat.net/boats/u847.htm>

³¹¹ Source: <http://uboat.net/boats/u533.htm>

³¹² GWX has added Penang as a U-boat base in Japanese-occupied Malaya.

³¹³ Emblem courtesy of “Evil Jester ‘76”

³¹⁴ GWX has added Jakarta as a U-boat base in Japanese-occupied Indonesia.

The 10th Flotilla uses an area-based zone system for operations in the Indian Ocean and Pacific, as listed in Table 16, rather than the grid-based zone system used in the Arctic and the Atlantic.

Table 16: Indian Ocean grid references

German description	Patrol grid reference	English description ³¹⁵	Patrol grid reference
Andamanensee	ANDAMAN	Andaman Sea	ANDAMAN
Arabisches Meer	ARABMEER	Arabian Sea	ARABIAN
Arafurasee	ARAFURA	Arafura Sea	ARAFURA
Bandasee	BANDASEE	Banda Sea	BANDASEA
Celebessee	CELEBES	Celebes Sea	CELEBES
Ceylon	CEYLON	Ceylon	CEYLON
Golf von Bengalen	BENGALEN	Bay of Bengal	BENGAL
Golf von Siam	GOLFSIAM	Gulf of Siam	GULFSIAM
Indischer Ozean	INDOZN	Indian Ocean	INDIAN
Javasee	JAVASEE	Java Sea	JAVASEA
Korallenmeer	KORALSEE	Coral Sea	CORALSEA
Makassarstrasse	MAKASSAR	Makassar Strait	MAKASSAR
Malabarküste	MALABAR	Malabar Coast	MALABAR
Malidiven	MALIDIVN	Maldives	MALDIVES
Mosambik-Kanal	MOSAMBIK	Mozambique Channel	MOSAMBIK
Ostafrika	O.AFRIKA	East Africa	E.AFRICA
Strasse von Malakka	MALAKKA	Strait of Malacca	MALACCA
Südafrika	S.AFRIKA	South Africa	S.AFRICA
Südaustralien	S.AUST	South Australia	S.AUST
Südchinesisches Meer	S.CHINA	South China Sea	S.CHINA
Südindischer Ozean	S.INDOZN	South Indian Ocean	S.INDIAN
Tasmanische See	TASMAN	Tasman Sea	TASMAN
Timorsee	TIMORSEE	Timor Sea	TIMORSEA
Westaustralien	W.AUST	West Australia	W.AUST
Westindischer Ozean	W.INDOZN	West Indian Ocean	W.INDIAN

IMPORTANT NOTE

You must enable the “GWX Indian Ocean Campaign Files Only” option *before* starting a patrol from Penang or any other Asian U-boat base if you plan to end the patrol in Asian waters. Players should disable this option just before starting a mission where they intend to travel to Europe. The GWX team recommends using the JSGME tool - provided with GWX - for easy installation of this feature. Please read the JSGME documentation for instructions on enabling and disabling software modifications.

- The GWX Team suggests players who desire increased realism use *SH3 Commander* to set their “days spent in base” between patrols to *at least* 55 days to reflect the lack of dry dock facilities, maintenance crews, and other logistical support available at U-boat bases in Germany and Occupied Europe, based on the actual experience of U-boats in Asia. This includes things like boat cleaning (3 days); urgent maintenance (20 days); docking in Singapore drydock (3 days, but this could be longer as Japanese ships had priority); cleaning and maintenance of U-boat's outer plating (14 days); and replenishing fuel, provisions, ammunition, *etc.* (14 days).

³¹⁵ Use the optional “Navigation Maps and Grid References in English” mod included with GWX to use the English language description and patrol grid references.

Map of the Indian Ocean and Pacific Patrol Zones



Figure 205: Indian Ocean patrol zones

Augmented 11th Flotilla patrols around the British Isles

Historical Background

BdU founded the 11th Flotilla in Bergen, Norway on May 15, 1942 under the command of *Fregattenkapitän* Hans Cohausz to provide administrative support for the U-boats defending Norway and contesting the passage of the Arctic convoys; in September 1944, BdU reorganized the flotilla to accommodate U-boats fleeing bases overrun by the Allies in France. The threat of Allied air attack forced the Norway-based U-boats to operate under water almost continuously using a combination of *Schnorchel* and battery power, which reduced the maximum operating range of the Type IX boats to the shores of Canada and that of the Type VII boats to the area around Iceland. This gave the U-boats little choice but to operate more frequently around the coasts of the British Isles.

The 11th Flotilla in GWX

The 11th Flotilla is a stock *Silent Hunter III* flotilla. This flotilla does not often assign its U-boats to operate near the coasts of the British Isles as it did historically after the Allies overran the U-boat bases in France. GWX corrects this oversight so the campaign will much more frequently assign players in this flotilla a patrol grid near the British Isles starting in September 1944.

Note: The GWX team recommends that players in the 11th Flotilla after September 1944 use only variants of the Type VIIC or Type XXI U-boat and ensure their U-boat is equipped with a *schnorchel*.



Figure 206: 11th Flotilla emblem³¹⁶

Augmented 12th Flotilla patrols in the South Atlantic

Historical Background

BdU founded the 12th Flotilla in Bordeaux, France on October 15, 1942 under the command of *Korvettenkapitän* Klaus Scholz, where it received its first U-boat on January 9, 1943. BdU assigned most of the long-range U-boats to this flotilla, which operated primarily in the South Atlantic and Indian Oceans. The 12th Flotilla disbanded and sent its surviving U-boats to Flensburg in August 1944; the Allies captured Scholz and his remaining shore-based personnel as they were trying to return to Germany through France.³¹⁷



Figure 207: 12th Flotilla emblem³¹⁸

The 12th Flotilla in GWX

The 12th Flotilla is a stock *Silent Hunter III* flotilla that rarely assigns its long-range U-boats to the South Atlantic or Indian Oceans as it did historically. GWX modifies the 12th Flotilla's grid assignments so players in this flotilla will spend more time off the coasts of South America and South West Africa.

³¹⁶ Emblem courtesy of "Evil Jester '76"

³¹⁷ "12 Flotilla," <http://uboat.net/flotillas/12flo.htm>

³¹⁸ Emblem courtesy of "Evil Jester '76"

The 13th Flotilla in Norway

Historical Background

BdU founded the 13th Flotilla at Trondheim, Norway in June 1943 under *Korvettenkapitän* Rolf Rüggeberg.³¹⁹ It used Type VIIC and VIIC/41 U-boats against convoys going to and from the Soviet Union and in September 1944 began incorporating boats from the disbanded France-based flotillas then starting to arrive in Norway. The 13th Flotilla disbanded when Germany surrendered in May 1945.³²⁰

The 13th Flotilla in GWX

GWX adds the 13th Flotilla to the game.

- You may transfer to the 13th Flotilla starting on August 1, 1944; careers started in the 7th Flotilla will automatically transfer to the 13th Flotilla on this date.
- You can start a new career in the 13th Flotilla at any time on or after September 1, 1944. Most of the patrols assigned after this time will be in and around the British Isles.



Figure 208: 13th Flotilla emblem³²¹

The 23rd Flotilla in Greece

Historical Background

BdU founded the 23rd Flotilla at Salamis, Greece on September 11, 1941 under *Kapitänleutnant* Fritz Frauenheim.³²² This flotilla never had more than eight U-boats and was absorbed into the 29th Flotilla at La Spezia, Italy in May 1942.³²³

The 23rd Flotilla in GWX

GWX adds the 23rd Flotilla to the game, where it becomes available on October 1, 1941.

- You can start at, or transfer to, the 23rd Flotilla from this date until May 1, 1942, when GWX will automatically transfer all 23rd Flotilla U-boats to the 29th Flotilla at La Spezia, Italy.
- The campaign will assign players with U-boats assigned to this flotilla to Mediterranean patrol zones only, with emphasis on the Eastern Mediterranean.

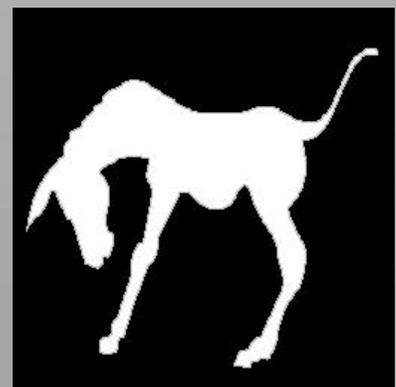


Figure 209: 23rd Flotilla emblem³²⁴

³¹⁹ GWX has added Trondheim as a U-boat base in Occupied Norway.

³²⁰ “13th Flotilla,” <http://uboat.net/flotillas/13flo.htm>

³²¹ Emblem courtesy of “Evil Jester ‘76”

³²² GWX has added a U-boat base in Salamis in Occupied Greece.

³²³ “23rd Flotilla,” <http://uboat.net/flotillas/23flo.htm>

³²⁴ Emblem courtesy of “Evil Jester ‘76”

The 30th Flotilla in the Black Sea

Historical Background

The German Naval General Staff decided in the spring of 1942 to deploy naval forces to the Black Sea to help counter Soviet naval capabilities; as a result, three Type IIB U-boats (*U-9*, *U-19*, and *U-24*) arrived in Kiel from Gotenhafen on April 18, 1942. The Germans stripped these U-boats of their accumulators, electric engines, diesels, and conning towers and transported them via rail to Linz, Austria, and then by barge to Galati, Romania, where they were reassembled and made ready for duty on the Black Sea by October 1942. *Kapitänleutnant* Helmut Rosenbaum, who as commander of *U-73* had sunk the aircraft carrier HMS *Eagle* in August 1942, led the 30th Flotilla as it formed from these submarines.

Three more Type IIB U-boats (*U-18*, *U-20*, and *U-23*) arrived in May and June 1943. From 1942 through 1944 the Germans transferred six U-boats, 31 steamships (including an ice-breaker), 23 minesweepers, 50 amphibious landing barges, 26 torpedo boats, 84 patrol boats, 113 transport vessels, 42 tankers, 30 tug boats and 18 high-speed motorboats to the Black Sea.

The summer of 1944 marked the end of the 30th Flotilla. Rosenbaum was killed in an air accident on May 10; on August 20 a Soviet air raid on Constanza sank *U-9* and damaged *U-18* and *U-24*, which had to be abandoned when Romania surrendered to the Allies three days later. The surviving U-boats operated from Bulgaria until it joined the Allies on September 9. With no dockyard facilities and no way out of the Black Sea, the remaining U-boats scuttled near the Turkish Coast (41°16'N 31°26'E) on September 10, 1944. Turkey then interned the crews for the duration of the war.

Historical Note: The Germans modified three submarines of the 30th Flotilla (*U-9*, *U-19*, and *U-24*) to carry short-range artillery rockets in the summer of 1944. Soviet shore facilities were allegedly attacked using these weapons, but with unknown effect (if any).³²⁵ **Please note GWX does not model the capability for U-boats to launch artillery rockets.**

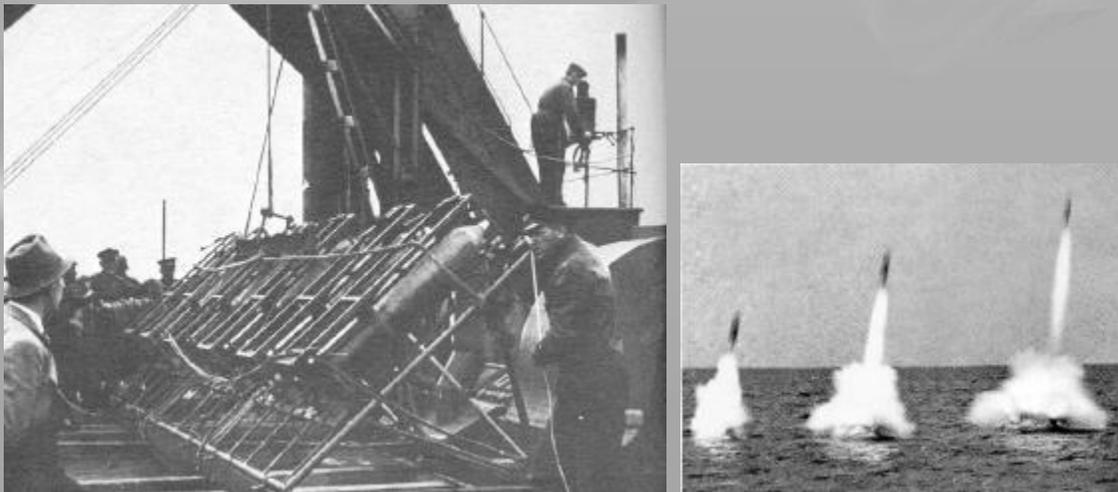


Figure 210: Loading rocket launchers; ripple launch from a submerged 30th Flotilla U-boat³²⁶

³²⁵ "The U-boat Rocket Program," <http://www.prinzeugen.com/V2.htm>

³²⁶ Photo credit: the Deutsches Museum Munich Special Collection

The 30th Flotilla in GWX

GWX adds the 30th Flotilla to the game. Your career in the 30th Flotilla begins on October 1, 1942, where you will take command of a Type IID U-boat at Constanza, Romania.³²⁷ You will automatically transfer to the 33rd Flotilla at Flensburg, Germany, on August 1, 1944 (an hour ahead of the posse, so to speak) where you can then select another U-boat flotilla.

The 30th Flotilla uses the Black Sea grid references shown in Table 13. Early on in the campaign you will spend most of your time undertaking aggressive patrols in the Soviet-occupied eastern side of the Black Sea and more defensive patrols in the western side as the Soviets advance westward during 1944.

A stock *Silent Hunter III* limitation will prevent you from earning renown for reaching your patrol area or for staying in your patrol area for 24 hours.

The 30th Flotilla did not have a specific flotilla emblem.

Table 17: Black Sea grid references

German		English ³²⁸	
Description	Patrol grid reference	Description	Patrol grid reference
Asowsches Meer	ASOW	Sea of Azov	AZOV
Schwarzes Meer – Ost	OST	Black Sea – East	EAST
Schwarzes Meer – West	WEST	Black Sea – West	WEST

IMPORTANT NOTE

Players must enable the “GWX Black Sea Campaign Files Only” option *before* starting a patrol from Constanza if the player intends to end the patrol in the Black Sea waters. Players should disable this option before starting their next mission if they have transferred voluntarily or automatically from the 30th Flotilla. The GWX team recommends using the JSGME tool - provided with GWX - for easy installation of this feature. Please read the JSGME documentation for instructions on enabling and disabling software modifications.

³²⁷ *Silent Hunter III* does not model the historical Type IIB U-boat. GWX uses the Type IID as a stand-in for the Type IIB, and adds the port of Constanza as a U-boat base.

³²⁸ Use the optional “Navigation Maps and Grid References in English” mod included with GWX to use the English language description and patrol grid references.

Map of the Black Sea Patrol Zones



Figure 211: XXX U-boat Flotilla patrol zones

Scripted Campaign Enhancements

The Mediterranean War³²⁹

The Mediterranean War in GWX

- Italian supply convoys run between Italy and all major ports in occupied North Africa in accordance with the flow of the historical North African and Italian campaigns, and take into account the Italian surrender on September 9, 1943. GWX generates these convoys randomly to include two to four troop and supply ships, and at least four escorts for each convoy.
- Italian hospital ships travel unescorted between Italy and North African ports. The hospital ships will travel in consonance with historical battles near those ports.
- Italian warships conduct random security patrols off the coast of Italy and into Allied Mediterranean shipping lanes. These patrols focus near the Strait of Messina and east-southeast of Malta. This will occasionally lead to random encounters between AI ships of both sides.
- Random AI-controlled U-boat patrols will occur throughout the Mediterranean. These U-boats will run only on the surface.
- Allied invasion convoys will move to their historical invasion areas:
 - Operation *Husky* (Sicily: July 1943)
 - Operation *Avalanche* (Salerno: September 1943)
 - Operation *Slapstick* (Taranto: September 1943)
 - Operation *Shingle* (Anzio: January 1944)
- Several historical convoys will resupply and replenish the defense of Malta and the British Eighth Army in North Africa. Be aware the Allies consider these convoys critical to winning the war in the Mediterranean and will guard them accordingly.
 - Gibraltar – Malta
 - Operation *Excess* (January 1941)
 - Operation *Substance* (July 1941)
 - Operation *Style* (August 1941)
 - Operation *Halberd* (September 1941)
 - Operation *Harpoon* (June 1942)
 - Operation *Pedestal* (August 1942)
 - Gibraltar - Alexandria
 - Operation *Tiger* (May 1941)
 - Alexandria – Malta
 - Operation *Vigorous* (June 1942)
 - Operation *Stoneage* (November 1942)
 - Operation *Portcullis* (December 1942)
- GWX has established the following regular Allied convoy routes:

³²⁹ Adapted from the original readme by Charlie901; invasion convoys and AI U-boats added by “Scirè” and “Rubini”

Table 18: Mediterranean convoy routes

Convoy ID	Start	(Midpoint) and Destination	Start Date	End Date
ET	North African ports	Gibraltar	11/1942	5/1945
TE	Gibraltar	North African Ports		
K	Casablanca	Brest	10/1939	6/1940
S	Brest	Casablanca		
KS	Oran / Casablanca	Brest / St. Nazaire	9/1939	6/1940
SK	Brest / St. Nazaire	Oran / Casablanca		
LE	Port Said / Alexandria	Famagusta / Haifa / Beirut	7/1941	5/1945
MW	Western Mediterranean	(Malta) Alexandria	7/1940 11/1942	1/1941 5/1945
NS	North Africa	Naples	10/1943	5/1945
SN	Naples	North Africa		
TJ	Tunisia	Sicily	7/1943	7/1943
TS	Tunisia	Termini	9/1943	9/1943
TX	Tripoli	Alexandria	7/1943	5/1945
XT	Alexandria	Tripoli		
GTX	Gibraltar	(Tripoli) Alexandria	5/1943	5/1945
XTG	Alexandria	(Tripoli) Gibraltar		

- Allied convoy traffic reacts to historical events:
 - Support of Allied troops in Greece following Operation *Lustre*, starting in March 1941
 - Assists the evacuation of Allied forces from Greece to Egypt in April 1941
 - Assists the evacuation of Allied forces from Crete to Egypt (Operation *Demon*) in May 1941
 - Uses small warships to resupply Tobruk from Alexandria during historical sieges by the *Deutsches Afrika Korps* (DAK), effective May 1941
 - Support of Allied troops in Sicily following Operation *Husky*, starting in July 1943
 - Support of Allied troops in Italy through Naples and Taranto following Operations *Avalanche* and *Slapstick*, starting in October 1943
 - Support of Allied troops in Greece following Operation *Manna*, starting in October 1944
- Random Allied warship patrols are added in the Eastern Mediterranean, and around Sicily and the coastal waters of southern Italy once the Allies control these areas

The Western Front

Operation *Weserübung*

Historical Background

Germany depended on Swedish iron ore shipments through Narvik in neutral Norway; German planners worried about how to ensure they continued while Allied planners planned to cut them off. The British First Sea Lord, Winston Churchill, advocated in November 1939 that the Royal Navy should lay minefields in Norwegian waters to block the shipments but Prime Minister Chamberlain and Foreign Secretary Lord Halifax overruled him due to concerns about the effect of this act of war on U.S. public opinion. The “Winter War” between the Soviet Union and Finland prompted the Allies to offer to intervene on Finland’s behalf: they would land at Narvik and travel to Finland (via the Swedish iron ore fields) as soon as winter ended. Norway and Sweden refused to cooperate, but the Allies aborted the planned mission only after Finland and the Soviet Union signed an armistice on March 15, 1940.³³⁰

Großadmiral Raeder suggested to Hitler in October 1939 an invasion of Norway to ensure a steady supply of iron ore and provide new U-boat bases and in December, Hitler ordered *Oberkommando der Wehrmacht* (OKW) to begin preliminary planning to invade Norway. Norway proved unable to defend its neutrality against either side: it ignored the German supply ship *Altmark* when it hid in Norwegian territorial waters in February 1940, and was unable to stop the British destroyer HMS *Cossack* from boarding *Altmark* (with drawn cutlasses, no less) to free about 300 Allied prisoners of the *Admiral Graf Spee*. The only question was whether it would be the Allies or the Germans that would strike first.³³¹



Figure 212: German supply ship *Altmark* after HMS *Cossack*’s boarding action³³²

³³⁰ “Western Europe: September 1939 – June 1940,” <http://www.naval-history.net/WW2CampaignsWFront1939.htm>;

“Operation *Weserübung*,” http://en.wikipedia.org/wiki/Operation_Weserubung

³³¹ “The *Altmark* Incident,” http://en.wikipedia.org/wiki/Altmark_Incident

³³² Photo source: “The *Altmark* Incident,” http://en.wikipedia.org/wiki/Altmark_Incident

Der Führer personally supervised OKW's operational planning for Operation *Weserübung* ("Weser Exercise"), which called for an invasion of Norway (*Weserübung Nord*) as *Großadmiral* Raeder had initially proposed, as well as an invasion of Denmark (*Weserübung Süd*) to ensure control of the entrance to the Baltic Sea. *Weserübung Nord* called for five infantry and one *gebirgsjäger* ("light mountain infantry") division under the command of *General der Infanterie* Nikolaus von Falkenhorst along with small *Luftwaffe fallschirmjäger* ("light parachute infantry") detachments to force a Norwegian surrender without fighting before the Allies could intervene by simultaneously occupying Norway's major population centers.³³³ German inter-service rivalry was so bad that *der Führer* himself had to assume command of *Weserübung* through the OKW operations staff since neither the *Kriegsmarine* nor the *Luftwaffe* would agree to allow an Army general to command their forces.³³⁴

The main *Kriegsmarine* effort for the invasion of Norway consisted of six main task forces, comprising almost the entire *Kriegsmarine*, under the command of *Generaladmiral* Alfred Saalwächter:

- *Gruppe 1* consisting of ten destroyers, three freighters, and two tankers under the command of *Kapitän z. S.* Friedrich Bonte would land 2,000 troops at Narvik, with distant cover from the battleships *Scharnhorst* and *Gneisenau* under the command of *Vizeadmiral* Günther Lütjens. *Korvettenkapitän* Viktor Schütze in *U-25* (Type IA); *Kapitänleutnant* Herbert Sohler in *U-46* (Type VIIB); and *Kapitänleutnant* Dietrich Knorr in *U-51* (Type VIIB) would provide direct support. The destroyers would act as fast troop transports and meet up with the freighters and tankers at Narvik
- *Gruppe 2* consisting of the heavy cruiser *Admiral Hipper*, four destroyers, three freighters, and two tankers under the command of *Kapitän z. S.* Helmuth Heye would land 1,700 troops at Trondheim, with two Type VIIA U-boats in direct support: *Kapitänleutnant* Fritz-Julius Lemp in *U-30* and *Kapitänleutnant* Wilhelm Rollman in *U-34*. As at Narvik, the destroyers would act as fast troop transports and met up with the freighters and tankers at Trondheim
- *Gruppe 3* consisting of the light cruisers *Köln* and *Königsberg*, the artillery training ship *Bremse*, two torpedo boats, five S-boats, the S-boat tender *Carl Peters*, three troop transports, and a tanker under *Konteradmiral* Hubert Schmudt would land 900 troops at Bergen. Five Type II U-boats provided direct support: *Oberleutnant z. S.* Wolfgang Lüth in *U-9*, *Kapitänleutnant* Gerhard Bigalk in *U-14*, *Kapitänleutnant* Otto Harms in *U-56*, *Kapitänleutnant* Georg Schewe in *U-60*, and *Kapitänleutnant* Hans-Bernard Michalowski in *U-62*
- *Gruppe 4* consisting of the light cruiser *Karlsruhe*, three torpedo boats, seven S-boats, the S-boat tender *Tsingtau*, and four troop transports under *Kapitän z. S.* Friedrich Rieve would support the sealift and airlift of 1,100 troops into Kristiansand. Two Type II U-boats from the *U-bootschulflotille* ("Submarine training flotilla") provided direct support: *Korvettenkapitän* Jürgen Deecke in *U-1* and *Kapitänleutnant* Hans-Peter Hinsch in *U-4*
- *Gruppe 5* consisting of the heavy cruisers *Blücher* and *Lützow*, light cruiser *Emden*, three torpedo boats, and seven *minenräumboote* ("minesweepers") or R-boats, five troop transports, and two tankers under *Konteradmiral* Oskar Kummetz would land 2,000 troops at Oslo
- *Gruppe 6* consisting of four *minensuchboote* ("minehunters"), or M-boats under *Korvettenkapitän* Kurt Thomas would land 150 troops at Egersund. Four Type II U-boats of the *U-bootschulflotille* provided direct support for this operation: *Kapitänleutnant* Helmut Rosenbaum in *U-2*, *Kapitänleutnant* Gerd Schreiber in *U-3*, *Kapitänleutnant* Heinz Lehmann-Willenbrock in *U-5*, and *Oberleutnant z. S.* Adalbert Schnee in *U-6*.³³⁵

³³³ Earl Ziemke, "The German Decision to Invade Norway and Denmark," in *Command Decisions*, Center of Military History, Department of the Army, http://www.army.mil/cmh-pg/books/70-7_0.htm

³³⁴ Richard D. Hooker, Jr., and Christopher Coglianesi, "Operation *Weserübung* and the Origins of Joint Warfare," *Joint Forces Quarterly* (Summer 1993) #1, http://www.dtic.mil/doctrine/jel/jfq_pubs/summer93.htm

³³⁵ "The Invasion of Norway (Operation *Weserübung*)," <http://www.feldgrau.com/norwegian.html> and Blair, *Hitler's U-boat War: The Hunters*, with detailed U-boat commander information from <http://www.uboat.net>

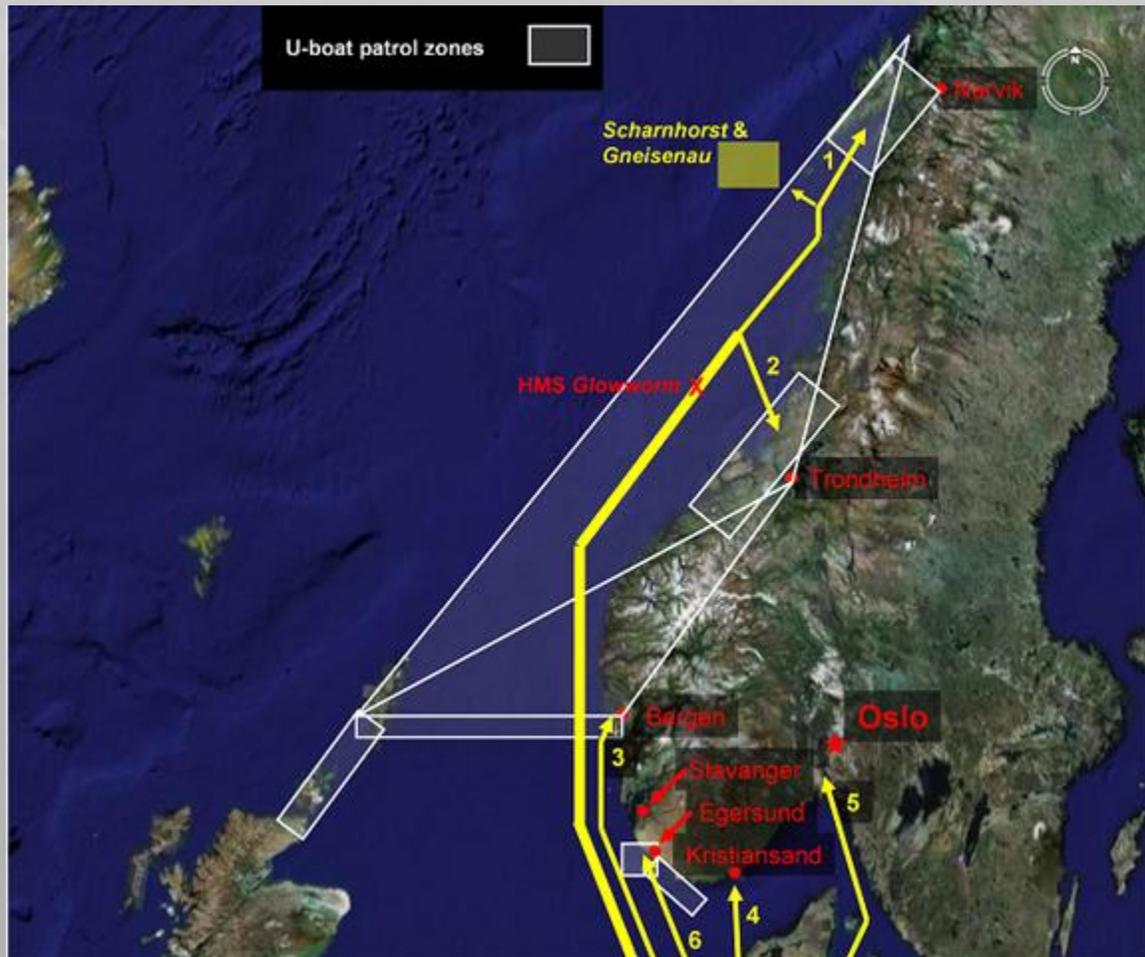


Figure 213: German approach to Norway during Operation *Weserübung* (Gruppen 1 - 6)³³⁶

The armistice between Finland and the Soviet Union ended Allied plans to use the support of Finland as cover for the occupation of the Swedish iron fields: troops had begun boarding for Narvik on March 12, only to disembark when it became clear an armistice was about to be signed. BdU had deployed 24 U-boats when the *Beobachtungsdienst* (“*B-dienst*”) detected British preparations for the abortive British landings in Norway: four of these U-boats (*U-21*, *U-22*, *U-31*, and *U-44*) were lost to enemy action. One month later, redeployments and the mobilization of the *U-bootschulflotille* put 32 of Germany’s 48 U-boats in position off Norway to support Operation *Weserübung*, with more U-boats preparing to replace those that had been on station the longest.

The Finno-Soviet armistice did not dampen the Allies’ interest in blocking Germany’s iron ore supply; instead, they planned Operation *Wilfred*, in which they would mine Norwegian territorial waters in the hope this threat to Germany’s iron ore supplies would provoke an immediate, overt German attack on Norway, to which the Allies come to Norway’s defense. The Allies’ planned response, code-named Operation *R4*, would send a force of six battalions of lightly equipped infantry to Norway: two battalions each to Bergen and Stavanger, and one battalion each to Trondheim and Narvik, with the equivalent of two to three infantry divisions to follow within a few weeks.³³⁷

³³⁶ Map developed using Google Earth®, based on “Order of Battle: Operation *Weserübung* (8 April – 8 June 1940),” http://www.navweaps.com/index_oob/OOB_WWII_Atlantic/OOB_WWII_Weserubung.htm

³³⁷ Earl Ziemke, “The German Decision to Invade Norway and Denmark”

The *Wilfred* force left Britain on April 5; the *Kriegsmarine* departed for Norway on April 6, and the British embarkation of the infantry for Operation *R4* began on April 7, while British mine-laying operations began on April 8. The British naval forces involved at this stage were:

- *Wilfred* Force, consisting of the battle cruiser HMS *Renown* (flagship) and its four escorting destroyers, and a mine laying force of four minelaying destroyers along with their own four escorting destroyers all under the command of Vice Admiral William Whitworth
- *R4* Force, consisting of the heavy cruisers HMS *Berwick*, *Devonshire*, and *York*; the light cruisers HMS *Arethusa*, *Aurora* (flagship), *Galatea*, *Glasgow*, and *Penelope*; and a transport under the command of Admiral Sir Edward Evans³³⁸

The British cancelled Operations *Wilfred* and *R4* on April 7 when they learned German capital ships were in the North Sea, and deployed the Home Fleet to engage the *Kriegsmarine*. The battleships HMS *Rodney* (flagship) and *Valiant*; the battle cruiser HMS *Repulse*; the heavy cruisers HMS *Berwick* and *Devonshire*; light cruiser HMS *Glasgow*; and 10 destroyers under the command of the Home Fleet commander-in-chief, Admiral Sir Charles Forbes, departed Scapa Flow that evening while the original *Wilfred* force remained at sea near Narvik, Norway.

On the morning of April 8 the British destroyer HMS *Glowworm*, which had been escorting HMS *Renown* but had fallen behind to rescue a man overboard, met *Gruppe 2* led by *Admiral Hipper* about 100 miles outside of Trondheim; *Glowworm* was outmatched but rammed *Admiral Hipper* before being sunk.* HMS *Renown* engaged the battleships *Scharnhorst* and *Gneisenau* early on April 9, knocking out *Gneisenau*'s fire control system but otherwise inflicting and receiving only minor damage. The German battleships evaded and headed north, returning to Wilhelmshaven on April 12.



Figure 214: The final moments of HMS *Glowworm* as seen from *Admiral Hipper*³³⁹

³³⁸ T. K. Derry. *The Campaign in Norway*. London: 1952, <http://www.ibiblio.org/hyperwar/UN/UK/UK-NWE-Norway/>

* LtCdr Gerard Roope, commanding HMS *Glowworm*, received a posthumous Victoria Cross after the commander of the *Admiral Hipper*, Kapitän z. S. Heye, wrote and sent a letter of commendation to the British Admiralty via the Red Cross

³³⁹ Photo source: *Post Scriptum Info Board*,

<http://www.nexusboard.net/showthread.php?siteid=6365&threadid=296932&showpage=lastpage>

The German invasion of Norway began as scheduled on April 9 and achieved its first day objectives except that the Norwegian royal family escaped from Oslo: the coastal defenses had delayed *Gruppe 5* by sinking *Blücher* and damaging *Lützow*, and forced the troops to disembark over 10 miles from Oslo. The Royal Family's capture had been critical to Germany's plans for a quick and relatively peaceful occupation of Norway, but they escaped to Britain aboard HMS *Cumberland* and became a rallying point for the Norwegian resistance and Norwegians caught outside the country by the German invasion.



Figure 215: The *Admiral Hipper*-class heavy cruiser *Blücher* rolls over in Oslofjord, April 1940³⁴⁰

The other major German naval losses were *Karlsruhe*, which scuttled after the submarine HMS *Truant* torpedoed it off Kristiansand on April 10 while it was returning to Germany, and *Königsberg*, damaged by Norwegian coastal batteries at Bergen and sunk on April 10 by British Fleet Air Arm (FAA) "Skua" dive-bombers flying at extreme range from the Orkneys. Finally, a torpedo from submarine HMS *Spearfish* crippled *Lützow* on April 11, blowing off her rudder and both her propellers, knocking her out of the war until June 1941, at which time an RAF Beaufort torpedoed her and she ended up not returning to action until May 1942, when she helped threaten Allied Arctic convoys.

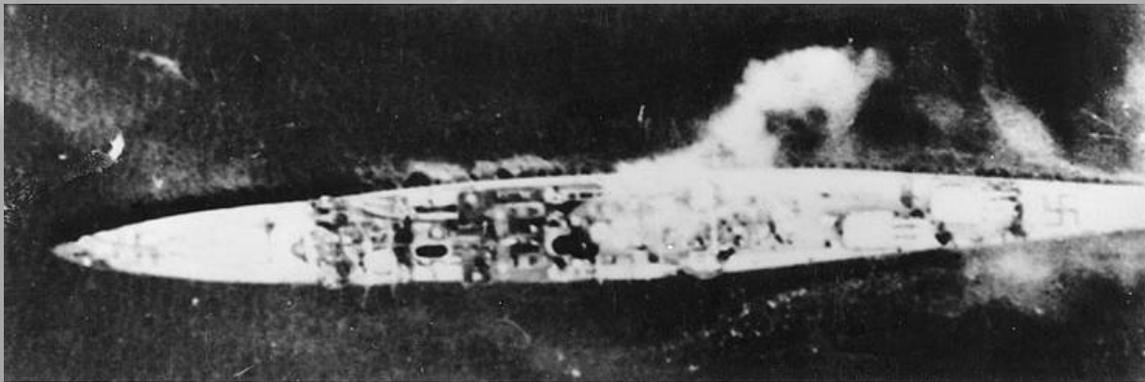


Figure 216: Light cruiser *Königsberg* under attack by FAA "Skua" dive-bombers at Bergen³⁴¹

The first U-boat action was the defense of Narvik on April 10. The U-boats in mist and snow flurries missed the approach of five British destroyers; these then surprised *Gruppe 1* in Narvik, sinking two destroyers, damaging four destroyers, and sinking six merchant ships in return for two British destroyers

³⁴⁰ Photo source: *Post Scriptum Info Board*,

<http://www.nexusboard.net/showthread.php?siteid=6365&threadid=296932&showpage=lastpage>

³⁴¹ U.S. Naval Historical Center, #NH 80979, <http://www.history.navy.mil>

sunk and one damaged; the German commander, *Kapitän z. S. Bonte* and the British commander, Captain Bernard Warburton-Lee, were both killed in action.* *U-25* launched two torpedoes at the surviving British destroyers as they withdrew through Vestfjord, but missed with both; *U-46* fired four torpedoes at close range, but two exploded prematurely and two missed.³⁴²

The British immediately blockaded Narvik trapping the eight remaining German destroyers; Hitler responded by ordering more U-boats to its defense. Of these, *Kapitänleutnant* Herbert Schultze in *U-48* (Type VIIB) met the Home Fleet on his way to Narvik as it searched for the *Scharnhorst* and *Gneisenau*: he fired spreads of three torpedoes each at two heavy cruisers, which resulted in two misses and four premature detonations. By April 12, *B-dienst* had learned the Allies were planning a landing at Harstad in Vågsfjord, so the U-boats divided to defend both Narvik and Harstad:

- *U-25*, *U-46*, *U-48*, *U-51*, and new arrival *Kapitänleutnant* Georg-Wilhelm Schulz in *U-64* (Type IXB) defending Narvik, though *U-64* was anchored and undergoing emergency repair off Bjerkvik
- New arrivals *Kapitänleutnant* Heinrich Leibe in *U-38* (Type IX), *Kapitänleutnant* Günther Prien in *U-47* (Type VIIB), *Kapitänleutnant* Kurt von Goßler in *U-49* (Type VIIB), and *Kapitänleutnant* Hans-Gerrit von Stockhausen in *U-65* (Type IXB) in Vågsfjord defending Harstad³⁴³

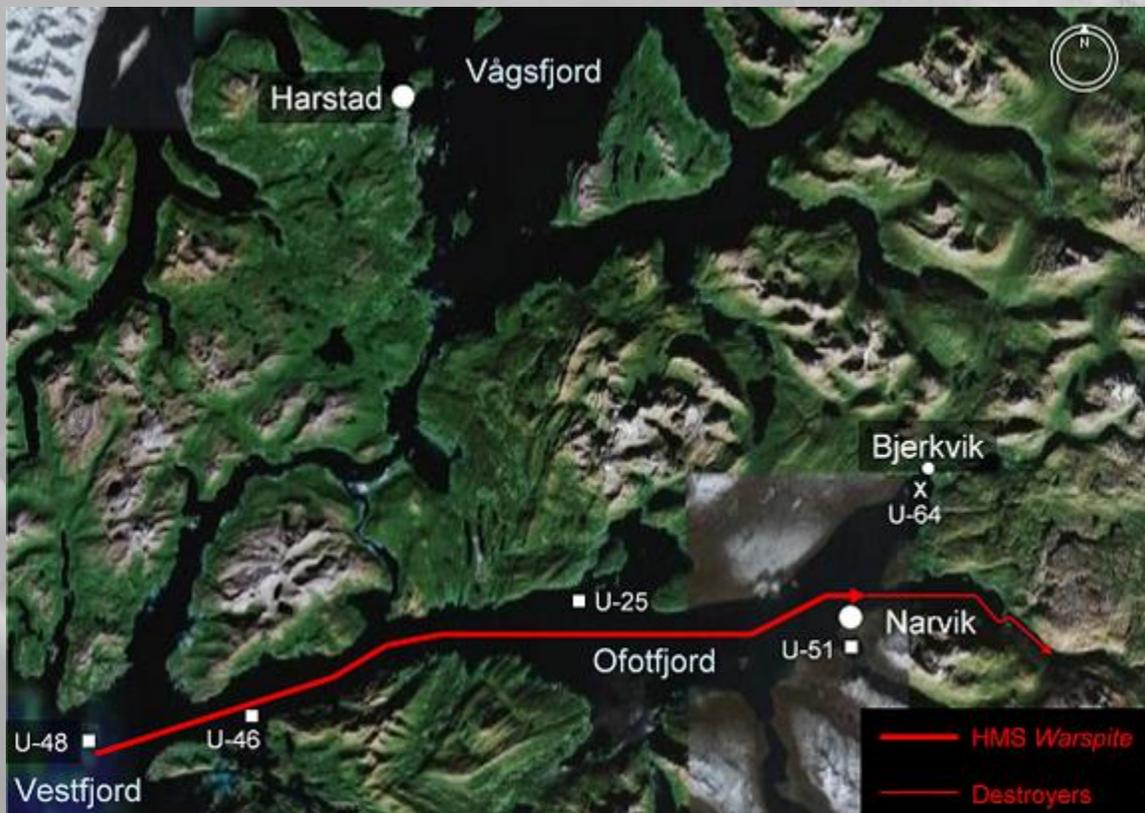


Figure 217: U-boat positions for the Second Naval Battle of Narvik, April 13 1940³⁴⁴

The British returned in force to Narvik on April 13 to finish off *Gruppe 1*, with the battleship HMS *Warspite*, nine destroyers, and Swordfish bombers from the aircraft carrier HMS *Furious* under the command of Vice Admiral Whitworth. The attack force detected *U-48* in the Vestfjord, but the destroyer HMS *Eskimo* used depth charges to force it to evade. At this point, a Swordfish bomber catapulted off

* Captain Warburton-Lee received a posthumous Victoria Cross for his actions during this engagement.

³⁴² “F.d.U./B.d.U.’s War Log, 1 – 15 April 1940,” <http://uboatarchive.net/BDUKTB30262.htm>

³⁴³ “Order of Battle: Second Battle of Narvik (13 April 1940),”

http://www.navweaps.com/index_oob/OOB_WWII_Atlantic/OOB_WWII_Narvik_Second.htm

³⁴⁴ Map developed using Google Earth®, based on Eric Grove, *Sea Battles in Close-up*

HMS *Warspite* to reconnoiter the fjords surprised *U-64* on the surface and sank her with two 100-lb. ASW bombs – all but eight of the crew survived. The attack force next encountered *U-46*, which was about to shoot at HMS *Warspite* when it ran aground. *U-25* missed with four torpedoes, and *U-51* did not engage. The attack force annihilated *Gruppe 1* over the next few hours: half of the *Kriegsmarine*'s entire destroyer strength was lost. *U-25* intercepted the attack force on its way out of Narvik, launching two torpedoes at HMS *Warspite* and two at one of its escorting destroyers, but again scored no hits.³⁴⁵

The U-boat defenders at Vågsfjord did no better when the Allied landing forces arrived on April 15. *U-38* launched two torpedoes each at the battleship HMS *Valiant* and the cruiser HMS *Southampton* with no hits, and *U-65* attacked a troop-carrying ocean liner without success. Norwegian civilians reported *U-49* on the surface of Vågsfjord to the British, who promptly sent two destroyers to her reported location, found her, and sank her. *Kapitänleutnant* Prien in *U-47* waited until the British landing force, consisting of several transports and two cruisers, had anchored and were transferring troops ashore: he fired eight torpedoes at the anchored ships without scoring a hit. The British landing force was thus spared heavy losses and moved south to drive the German *gebirgsjäger* (and the survivors of *Gruppe I*) out of Narvik and into a railroad tunnel, where they held out until they were relieved two months later.³⁴⁶



Figure 218: Area of action around Trondheim, Norway³⁴⁷

B-dienst warned the Allies would land troops in Namsosfjord and Romsdalsfjord on April 14-16, so BdU ordered *Kapitänleutnant* Max-Hermann Bauer in *U-50* (Type VIIB) and *U-30* to guard Namsosfjord, and *Kapitänleutnant* Otto Salman in *U-52* (Type VIIB) and *U-34* to guard Romsdalsfjord. The British destroyer HMS *Hero* found and sank *U-50 en route*, but the remaining three U-boats did little: their combined damage total was the torpedoing of an already-beached Norwegian minesweeper by *U-34*. BdU ordered *U-46* and *U-51* to redeploy from Narvik to Trondheim to assist in the defense, but none of their attacks on Allied warships produced any hits and the troops landed without incident.

The poor performance of U-boat torpedoes in Operation *Weserübung* prompted Dönitz to withdraw the U-boats on April 26. BdU concluded that 13 ocean-going U-boats and 22 Type II U-boats with functioning torpedoes would have sunk one battleship, seven cruisers, seven destroyers, and five troop transports instead of a meager three merchant ships and one submarine, HMS *Thistle*. Subsequent testing revealed endemic torpedo problems such as poorly designed impact pistols, overly sensitive magnetic pistols, and faulty depth keeping. The Germans fixed the impact pistol problems and partially mitigated the depth-keeping problems, but BdU gave up on the magnetic pistols and on May 23 ordered U-boats to stop using them until a new design (the T III) appeared in late 1942. Ironically, the same problems plagued U.S. submarines in the Pacific in 1941-1943 for much the same reason: inadequate pre-war test and evaluation.³⁴⁸ Dönitz wrote of the torpedo problem in the BdU war diary, “I do not believe that ever in the history of war men have been sent against the enemy with such a useless weapon.”³⁴⁹

³⁴⁵ Grove, *Sea Battles in Close-up Vol. 2*. and individual U-boat commander histories at <http://uboat.net>

³⁴⁶ Blair, *Hitler's U-boat War: The Hunters*

³⁴⁷ Map developed using Google Earth ®

³⁴⁸ Blair, *Hitler's U-boat War: The Hunters*

³⁴⁹ “FdU./BdU's War Log, 1 – 15 May 1940,” <http://uboatarchive.net/BDUKTB30264.htm>

The campaign in Norway went on without the U-boats, except for a few such as *Kapitänleutnant* Heinz Scheringer in *U-26* (Type IA) and *Korvettenkapitän* Hans-Günther Loeff in *U-122* (Type IXB) who helped to resupply the German troops in Trondheim. The Allies began evacuating their troops in early June when German successes in France refocused Allied attention on their own national survival. *B-dienst* detected British withdrawal preparations, so the *Scharnhorst* and *Gneisenau* sortied as part of Operation *Juno* to try to catch a troop convoy or two. They came upon and sank the aircraft carrier HMS *Glorious* and its two escorting destroyers, HMS *Acasta* and *Ardent*, but *Gneisenau* suffered a torpedo hit during the engagement so the battleships withdrew to Trondheim, which ended the role of German surface ships in Operation *Weserübung*.³⁵⁰



Figure 219: *Scharnhorst* fires at the British aircraft carrier *Glorious*, as seen from *Gneisenau*³⁵¹

The British committed a large number of ships to conveying troops and supplies to and from Norway, securing the landing areas, and protecting the evacuations. The British ships involved from April through June 1940 included:

- the battleships HMS *Resolution*, *Rodney*, *Valiant*, and *Warspite*
- the battle cruisers HMS *Renown* and *Repulse*
- the aircraft carriers HMS *Ark Royal*, *Furious*, and *Glorious*
- the heavy cruisers HMS *Berwick*, *Devonshire*, *Suffolk*, and *York*
- the light cruisers HMS *Arethusa*, *Aurora*, *Birmingham*, *Coventry*, *Curlew*, *Effingham*, *Enterprise*, *Galatea*, *Glasgow*, *Manchester*, *Penelope*, *Sheffield*, and *Southampton*
- the antiaircraft cruisers HMS *Cairo*, *Carlisle*, *Curacoa*, and *Calcutta*
- 21 destroyers
- 17 submarines³⁵²

Operation Weserübung in GWX

The German invasion forces will move out as scheduled, with British naval counterattacks and troop landings to occur within a few days. Expect heavy convoy activity between Britain and Norway to continue in support of the land campaign until early June.

³⁵⁰ T. K. Derry, *The Campaign in Norway*.

³⁵¹ U.S. Naval Historical Center #NH 83981, <http://www.history.navy.mil>

³⁵² "Norwegian Campaign Order of Battle," http://en.wikipedia.org/wiki/Operation_Weser%C3%BCbung_Order_of_Battle

Operation Dynamo

Historical Background³⁵³

Operation *Gelb* (“Yellow”) ended the “Phony War” on May 10, 1940 with an invasion of France, Belgium, the Netherlands, and Luxembourg. The Allies expected an attack through northern Belgium as in World War I, but Germany sent armored and motorized divisions through the Ardennes in southern Belgium, crossing the Meuse at Sedan on May 13. They reached the English Channel near Noyelles on May 20, cutting off the Allied armies in Belgium from France and threatening to cut off the British Expeditionary Force (BEF) from its supply bases at the English Channel ports of Boulogne and Calais.

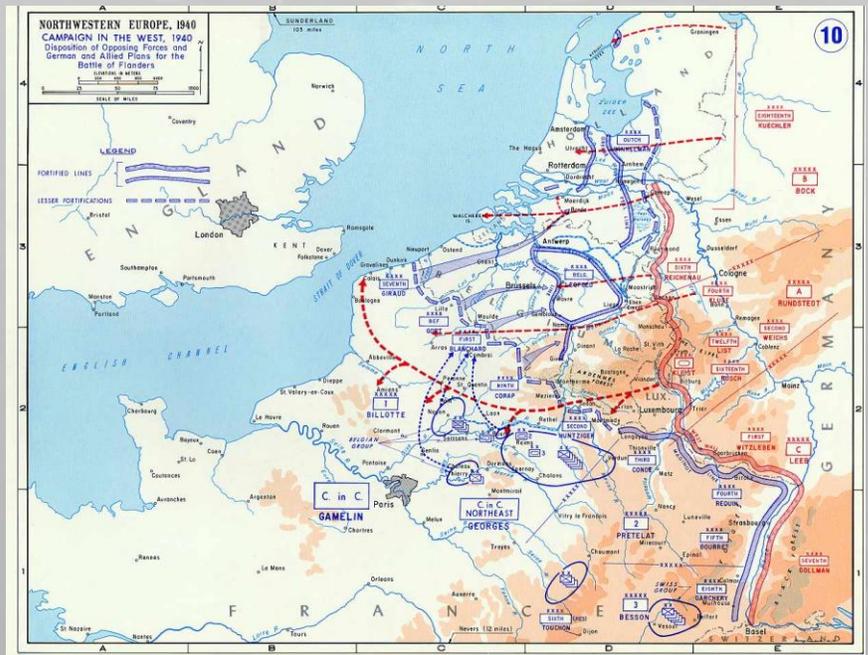


Figure 220: Operation *Gelb* and the end of the “Phony War”³⁵⁴

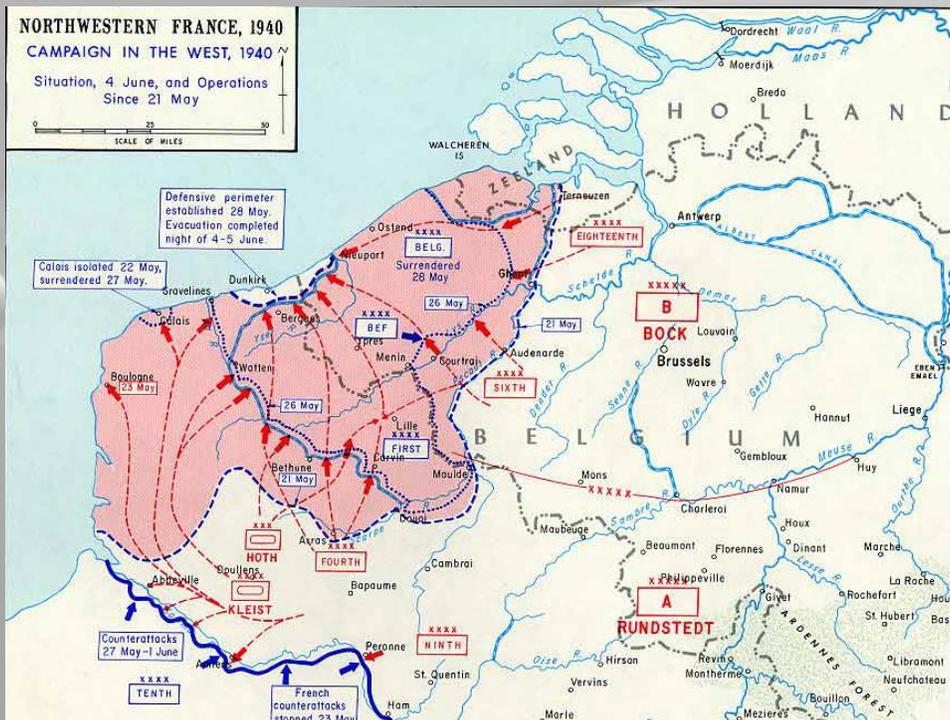


Figure 221: The Dunkirk pocket³⁵⁵

Following the repulse of Allied counterattacks at Arras on May 21 and 22, the BEF fell back on the Channel ports of Calais and Dunquerque (Dunkirk) while British Dover Command under Vice Admiral Bertram Ramsey began preparing for an evacuation, codenamed Operation *Dynamo*. Hitler halted the panzer divisions in their advance on Dunkirk on May 24, giving the Allies enough time to prepare a defense around Dunkirk while organizing the evacuation beginning on May 26.

³⁵³ “Operation Dynamo,” http://en.wikipedia.org/wiki/Operation_Dynamo

³⁵⁴ Map source: U.S. Military Academy, “Campaign in the West, 1940,” <http://www.dean.usma.edu/history/web03/atlas/ww2%20europe/ww2%20europe%20war%20index.htm>

³⁵⁵ Map source: U.S. Military Academy, “Campaign in the West: 21 May – 4 June, 1940,” <http://www.dean.usma.edu/history/web03/atlas/ww2%20europe/ww2%20europe%20pages/ww2%20europe%20map%2013.htm>

Over 338,000 troops were evacuated from May 26 through June 3, of which about 20% were brought off by the “Dunkirk Little Ships,” a flotilla of private merchant ships, fishing boats, pleasure craft, and anything else that could make the trip. Six British destroyers, three French destroyers, several merchant ships, and many small craft were lost to attacks by the *Luftwaffe*, E-boats, U-boats, and mines during the evacuation.³⁵⁶



Figure 222: Allied troops queue up while awaiting evacuation during Operation *Dynamo*³⁵⁷

Operation *Dynamo* in GWX

A large number of merchants, small vessels, and small combatants will move from British ports to Dunkirk over the week of May 26 through June 3. You can expect the RAF to provide cover for the evacuation force, but you can also expect assistance from the *Luftwaffe*.

³⁵⁶ “Operation *Dynamo*,” http://en.wikipedia.org/wiki/Operation_Dynamo

³⁵⁷ Photo source: U. S. National Archives

Operation Neptune

Historical Background³⁵⁸

Operation *Neptune* was the naval component of Operation *Overlord*, the Allied landing in Normandy on June 6, 1944 under the command of the Allied Naval Commander, Expeditionary Force, Admiral Sir Bertram Ramsay. The naval mission was to transport the invasion force to France, provide naval gunfire support, and prevent any disruption of the landings by the *Kriegsmarine*.

- The Eastern Task Force included three battleships (HMS *Nelson*, *Ramillies*, and *Warspite*), 13 cruisers, 84 destroyers, and 248 smaller combatants under Rear Admiral Sir Philip Vian, RN.
- The Western Task Force had three battleships (USS *Arkansas*, *Nevada*, and *Texas*), 10 cruisers, 51 destroyers, and 260 smaller combatants under Rear Admiral Alan Kirk, USN.
- The Royal Navy's Western Approaches Command patrolled the western reaches of the English Channel with five escort groups comprised of three escort carriers (HMS *Tracker*, *Pursuer*, and *Emperor*) and 55 escort vessels under the command of Admiral Sir Max Horton, RN.

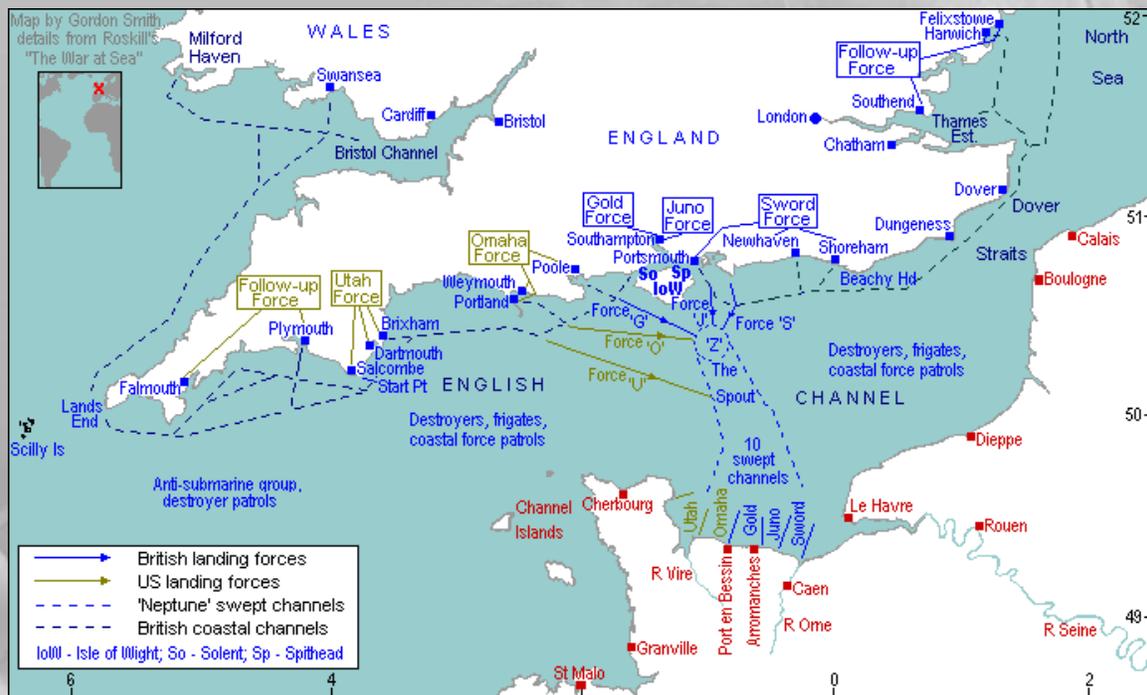


Figure 223: Area of action for Operation Neptune³⁵⁹

The *Kriegsmarine* attacks against the invasion armada achieved little: FFI partisans and *maquisards* sabotaged landline communications between BdU and the U-boat bases, which forced the *Kriegsmarine* to transmit all orders by radio. The resulting *Ultra* intercepts gave the Allied signals intelligence services the operational readiness date and orders of all France-based U-boats several days before they sailed, and allowed the Allies to route ASW vessels and aircraft patrols onto their planned approach routes to the *Neptune* invasion beaches. The German attacks in the shallow waters of the English Channel cost the *Kriegsmarine* 18 U-boats, fully two-thirds of those sent against the invasion force.³⁶⁰

³⁵⁸ "The Invasion of Normandy: Operation *Neptune*," <http://www.ibiblio.org/hyperwar/USN/rep/Normandy/ComNavEu/>;

"Operation *Neptune*," http://en.wikipedia.org/wiki/Operation_Neptune

"Operation *Overlord*," <http://www.naval-history.net/WW2CampaignsNormandy.htm>

"The Discovery of U767," <http://www.deepimage.co.uk/wrecks/uboats/767/u767-mainpage.htm>

³⁵⁹ Map source: <http://www.naval-history.net/WW2CampaignsNormandy.htm>

³⁶⁰ U.S. National Security Agency, "The U-boat fleet and the new *Schnorchel*," *The Battle of the Atlantic, Vol. I: Allied Communications Intelligence, December 1942 – May 1945*. SRH-009, <http://www.ibiblio.org/hyperwar/ETO/Ultra/SRH-009>

The U-boats had a few limited successes, but even those came at a high cost:

- *Oberleutnant z. S. Hanskurt von Bremen (U-764)* sank the frigate HMS *Blackwood*, and *Oberleutnant z. S. Walter Dankleff (U-767)* sank the frigate HMS *Mourne* with GNATs on June 15; two days later, a British hunter-killer group sank *U-767* after they detected and homed in on her radio transmissions.
- *Oberleutnant z. S. Erich Dobberstein (U-988)* sank two merchant ships and knocked the frigate HMS *Pink* out of the war with a GNAT on June 27; two days later, an RAF [Liberator](#) and the frigates HMS *Essington*, *Duckworth*, *Domett*, and *Cooke* depth charged and sank *U-988*.³⁶¹



Figure 224: Beached LSTs unloading at Omaha Beach, Normandy, June 1944³⁶²

Operation Neptune in GWX

Expect the Channel crossing to begin about June 5, with a large number of large surface combatants, ASW vessels and small combatants, amphibious assault ships, transports, and merchant ships in the historical invasion lanes. Expect also intense air patrols and destroyer sweeps to keep U-boats away from the transports and supply ships.

³⁶¹ “German U-boats at war, Part 5 of 6,” *Naval-History.net*, <http://www.naval-history.net/WW2CampaignsUboats5.htm>

³⁶² U.S. Naval Historical Center #26-G-2517, <http://www.history.navy.mil>

The North Atlantic Convoy Raids

Historical Background

Hitler appointed *Admiral* Erich Raeder as ObdM on June 1, 1935; the signing of the Anglo-German Naval Agreement on June 18, 1935 effectively canceled the Versailles Treaty limitations on German naval power and Germany's open naval rearmament followed.³⁶³ *Admiral* Raeder, promoted *Generaladmiral* in April 1936 and *Großadmiral* in April 1939, adopted an operationally flexible strategy to spread out the Royal Navy so Germany could establish local sea control at times and places of its choosing. The *Kriegsmarine* construction plan, known as "Plan Z," featured fast, long-ranged ships, with some to conduct a *guerre de course* ("war against commerce") in distant seas while others formed squadrons of fast battleships backed by aircraft carriers. The squadrons would stretch the Royal Navy through continuous, rapid, operational movement and then concentrate to deliver damaging blows.

Under Plan Z the *Kriegsmarine* would have 13 battleships and battle cruisers, four aircraft carriers, 15 *panzerschiffe*, 23 cruisers, and 22 large destroyers, each capable of commerce raiding or conducting a war of operational maneuver near Germany and Scandinavia. The *Kriegsmarine* began planning in 1937 to complete construction of these ships by 1948, relying on Hitler's assurances that war would not come before 1944 at the earliest. When the war began in 1939, Raeder could only adopt the *guerre de course* he had eschewed only two years earlier, using his battleships as commerce raiders under strict rules of engagement: sink enemy merchant ships and avoid combat with British capital ships.³⁶⁴

The German surface raiders had an uneven success record once the war began. The *panzerschiff Admiral Graf Spee*, under *Kapitän z. S.* Hans Langsdorff, sank nine British merchant ships in the South Atlantic and Indian Oceans before the British heavy cruiser HMS *Exeter* and light cruisers HMS *Ajax* and *Achilles* intercepted her on December 13, 1939. Langsdorff attacked the British squadron in the mistaken belief they were a light cruiser and two destroyers defending an important convoy. *Admiral Graf Spee* severely damaging *Exeter* but retreated to Montevideo, Uruguay when her own damage convinced Langsdorff his ship was no longer seaworthy to face the North Atlantic in winter. The British deceived Langsdorff into believing an overwhelming force, including the battle cruiser HMS *Renown* and the aircraft carrier HMS *Ark Royal*, awaited him outside Montevideo, so he scuttled his ship in the *Río de la Plata* ("River of Silver," known by the British as "the River Plate") rather than fight at what he believed to be impossible odds. Langsdorff committed suicide a few days later.

Commerce raiding missions through the end of 1940 met with mixed success. The heavy cruiser* *Admiral Scheer*, under *Kapitän z. S.* Theodor Krancke, conducted a successful cruise through the South Atlantic and the Indian Ocean from October 1940 to April 1941, and sank the armed merchant cruiser HMS *Jervis Bay* and 17 merchant ships. The heavy cruiser *Admiral Hipper*, under *Kapitän z. S.* Wilhelm Meisel, attacked troop convoy WS-5a, guarded by the British heavy cruiser HMS *Berwick* and the light cruisers HMS *Bonaventure* and HMS *Dunedin* on December 25, 1940; *Admiral Hipper* damaged HMS *Berwick* but was unable to penetrate the convoy screen, and sank only one merchant ship in a month at sea. <Note: GWX does not currently script the commerce raids of the *Admiral Hipper*.>

The *guerre de course* using heavy cruisers had not gone that well, but the next raid, Operation *Berlin*, would use the battleships *Scharnhorst* and *Gneisenau*. The first attempt at Operation *Berlin* in December 1940 ended when heavy seas damaged the *Gneisenau*. One month later, they were ready to try again.

³⁶³ The German navy was limited to 15,000 men, six *panzerschiffe* ("armored ships"), and could have no submarines.

³⁶⁴ Cdre Kenneth P. Hansen, CFMC, "Raeder vs. Wegener: Conflict in German Naval Strategy," Naval War College Review, Autumn 2005. Vol. 58, No. 4. <http://www.nwc.navy.mil/press/Review/2005/autumn/art5-a05.htm>

* The Germans reclassified all "*panzerschiffe*" as "*schwere kreuzers*" ("heavy cruisers") in February 1940.

Operation *Berlin*

Historical Background³⁶⁵

Germany had two *schlachtschiffe* (“battleships”) at the start of the war: *Scharnhorst* and *Gneisenau*, evolutionary developments of the *Deutschland*-class *panzerschiffe*, with nine 11-inch guns in three triple turrets and a graceful “clipper” bow for improved sea keeping.³⁶⁶ Operating *au pair* during the first year of the war, they sank the armed merchant cruiser HMS *Rawalpindi* in November 1939, and the British aircraft carrier HMS *Glorious* with her two escorting destroyers in June 1940 as the Allies were evacuating Norway. Following a period of refit and repair after the Norwegian campaign, they would try their hand at commerce raiding in Operation *Berlin* in the winter of 1940-41.



Figure 225: *Scharnhorst* in late 1939³⁶⁷

The operation began with the departure of *Scharnhorst* and *Gneisenau* from Kiel on January 22, 1940. The commander of Operation *Berlin*, Admiral Günther Lütjens, followed the *Kriegsmarine* rules of engagement and did not engage enemy warships, evading the light cruiser HMS *Naiad* patrolling off Iceland, the battleship HMS *Ramillies* escorting convoy HX-106, and the battleship HMS *Rodney* as it escorted convoy HX-114. On March 7, one day after a rendezvous with *U-124* (*Kapitänleutnant* Georg-Wilhelm Schulz), the task force encountered convoy SL-67 off the Cape Verde Islands: 54 merchant ships escorted by the battleship HMS *Malaya*, the armed merchant cruiser HMS *Celicia*, the destroyers HMS *Faulknor* and *Forester*, and the corvette HMS *Asphodel*. The task force alerted OKM in the hope that BdU could gather U-boats to clear its way to the convoy by sinking or disabling HMS *Malaya*.

U-105 (*Kapitänleutnant* Georg Schewe), *U-106* (*Kapitänleutnant* Jürgen Oesten), and *U-124* failed to sink *Malaya*, but did sink six merchant ships, including four in one torpedo salvo from *U-124*. The *Scharnhorst* and *Gneisenau* lingered for one day and then headed west to avoid British reinforcements: a “Walrus” seaplane from HMS *Malaya* had spotted the German task force and a British task force with the aircraft carrier HMS *Ark Royal* and the battle cruiser HMS *Renown* was heading south from Gibraltar. *U-106* finally managed to torpedo and damage [HMS *Malaya*](#) on March 20 as it was escorting the next Sierra Leone convoy, SL-68: that convoy scattered in the event *Scharnhorst* and *Gneisenau* were nearby, but they were long departed and were by then only two days from arriving in Brest, France.³⁶⁸

³⁶⁵ “Operation Berlin,” <http://www.scharnhorst-class.dk/scharnhorst/history/scharnberlin.html>;

“Convoy Web,” <http://www.convoyweb.org.uk/>; <http://www.warsailors.com/convoys/hx114.html>

³⁶⁶ The Germans classified them as *schlachtschiffe* (“battleships”) while the Royal Navy classified them as “battle cruisers.” GWX uses the German naming convention.

³⁶⁷ U.S. Naval Historical Center #NH 101559, <http://www.history.navy.mil>

³⁶⁸ Blair, *Hitler’s U-boat War: The Hunters (1939-1942)*.

Operation *Rheinübung*

Historical Background³⁷¹

The success of Operation *Berlin* convinced the Germans to order Operation *Rheinübung* (“Rhine Exercise”), in which the battleship *Bismarck* would break out from Germany in combination with a breakout of *Scharnhorst* and *Gneisenau* from Brest, France. The ships in Brest were unready due to damage incurred in Operation *Berlin* and from subsequent British air attacks, so the heavy cruiser *Prinz Eugen* joined the *Bismarck*’s task force under Admiral Günther Lütjens. The task force left Gotenhafen on May 18, 1941 with several destroyers and arrived at Bergen, Norway about noon on May 21. The *Prinz Eugen* (but not the *Bismarck*) refueled while both ships painted over their Baltic markings and waited for cloud cover to mask their movements – darkness would be of little help due to its rarity in northern latitudes in late spring. The task force left Bergen that evening just ahead of a British air raid, sailing north until noon on May 22, when it detached its destroyers and headed for the Denmark Strait.

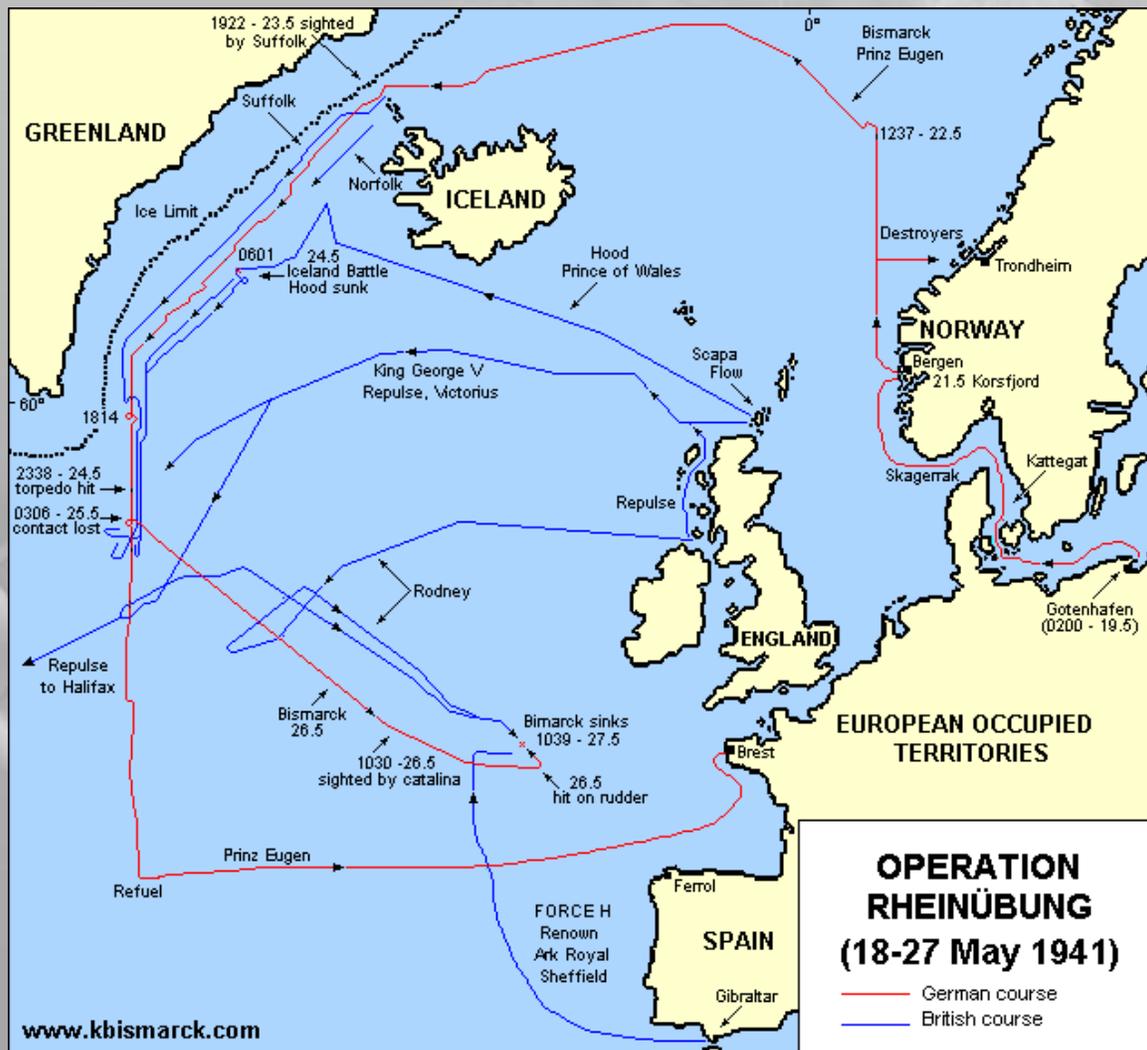


Figure 227: Overview map of Operation *Rheinübung*³⁷²

³⁷¹ Narrative sources: “Operation ‘*Rheinübung*’ (Part 1),” <http://www.bismarck-class.dk/bismarck/history/bisrhein1.html>;

“Operation ‘*Rheinübung*’ (Part 2),” <http://www.bismarck-class.dk/bismarck/history/bisrhein2.html>;

“Operation *Rheinübung*,” <http://www.kbismarck.com/operheini.html>

³⁷² Map credit: <http://www.kbismarck.com/operheini.html> © José M. Rico. Used by permission.

The British were determined to prevent a repeat of the success of Operation *Berlin*. The Home Fleet “battle cruiser” force, with the battle cruiser HMS *Hood* (flagship), battleship HMS *Prince of Wales*, and six destroyers under Vice Admiral Lancelot Holland departed Scapa Flow for the Denmark Strait early on May 22 in case the Germans were also headed there. The rest of the British Home Fleet, consisting of the battleship HMS *King George V* (flagship), battle cruiser HMS *Repulse*, aircraft carrier HMS *Victorious*, cruisers HMS *Galatea*, *Aurora*, *Kenya*, and *Hermione*, and 10 destroyers under Admiral John Tovey sortied to the Iceland-Faeroes gap after aerial reconnaissance late on May 22 that confirmed *Bismarck* had left Bergen. Force “H” at Gibraltar, consisting of the battle cruiser HMS *Renown* (flagship), aircraft carrier HMS *Ark Royal*, light cruiser HMS *Sheffield*, and six destroyers under Vice Admiral Sir James Somerville headed north to replace HMS *Victorious* and HMS *Renown* on convoy escort duties.

The heavy cruisers HMS *Norfolk* and *Suffolk* spotted and began shadowing the German task force in the narrow Denmark Strait in the evening of May 23,³⁷³ using radar to track the task force through fog and cloud (but not precipitation) and limiting its ability to elude them as the Home Fleet battle cruiser force approached. The *Bismarck* and *Prinz Eugen* opened fire on HMS *Hood* and HMS *Prince of Wales* at 5:55 in the morning on May 24; HMS *Hood* blew up and sank at 6:00, and HMS *Prince of Wales* broke off the action at 6:13 with eight of her ten guns temporarily out of commission. Lütjens was under the same rules of engagement as in Operation *Berlin* (destroy merchant shipping; do not engage capital ships), so he left HMS *Prince of Wales* alone and continued into the Atlantic. HMS *Norfolk*, *Suffolk*, and *Prince of Wales* continued to shadow the German task force, while the destroyers that had escorted HMS *Hood* turned to look for her survivors, finding three men out of the ship’s complement of 1,418.



Figure 228: *Bismarck* fires at HMS *Prince of Wales* in the Denmark Strait³⁷⁴

The *Bismarck* took damage during the engagement from three 14-inch shells fired by HMS *Prince of Wales*. The most serious damage came from a shell that passed right through *Bismarck*’s bow section without exploding but which penetrated two oil tanks and flooded a fuel pumping station, resulting in a significant loss of fuel made more serious because *Bismarck* had not refueled in Norway. Lütjens realized *Bismarck* had barely enough fuel remaining to reach France, let alone pursue a long cruise in the Atlantic, so he ordered *Prinz Eugen* to continue the mission while *Bismarck* headed for France to join up with *Scharnhorst* and *Gneisenau*, while every available U-boat went to support *Bismarck* in her attempt to evade her pursuers. Five U-boats, *U-43*, *U-46*, *U-66*, *U-94*, and *U-557*, supported by *U-73* and *U-93*, were to set up a line across the *Bismarck*’s path in map square AJ68 and attack her pursuers as she passed through; *U-48*, *U-73*, *U-74*, *U-78*, *U-98*, *U-108*, and *U-556* assembled in the Western Bay of Biscay to cover the *Bismarck*’s retreat into St. Nazaire, France.³⁷⁵

³⁷³ The Strait was geographically narrow, but made narrower by to pack ice on one side and a British minefield (known to the Germans) on the other.

³⁷⁴ U.S. Naval Historical Center #NH 69730, <http://www.history.navy.mil>

³⁷⁵ BdU War Log, 24-31 May, http://www.history.navy.mil/library/online/sinking_bismarck.html

The British reacted quickly to the loss of HMS *Hood*: all available capital ships broke off their current missions to help find, fix, and sink the *Bismarck*. The battleships HMS *Ramillies*, *Revenge*, and *Rodney* were detached from escort duties; Force “H” left the convoy it was to have escorted to pursue the *Bismarck*; five escorting destroyers left troop convoy WS8B; and all available search aircraft were pressed into service to help maintain contact. HMS *Victorious* launched an air strike with nine Swordfish torpedo bombers and scored one hit that did little damage; however, Lütjens realized that an aircraft carrier was now within striking range, and he resolved to proceed to France by the shortest possible route, even though he would miss the line of U-boats now forming to support him. At 3:00 on the morning of May 25, *Bismarck* evaded her pursuers and set a direct course for St. Nazaire; *Prinz Eugen* evaded the British but developed engine problems and retreated to Brest, arriving on June 1.

About six hours after breaking contact, Lütjens made a long radio report back to Germany regarding the sinking of HMS *Hood*. Radio direction finding, analysis of Lütjens signal, and radio traffic to and from U-boats led the British to an accurate assessment of Lütjens’ intentions, but they were unable to locate *Bismarck* until a British Catalina patrol bomber flown by an American naval officer spotted the *Bismarck* and reported her location, course, and speed at 10:30 on May 26. Force “H” detached its escorting destroyers to refuel on May 24 and closed on *Bismarck* to conduct a series of air attacks on May 26, passing right in front of *Kapitänleutnant* Herbert Wohlfarth in *U-556*; however, he was unable to attack because he was returning from patrol and had already expended all of his torpedoes

HMS *Ark Royal* launched two air strikes on May 26: the first strike nearly torpedoed HMS *Sheffield* as she shadowed *Bismarck*, but the second strike late on May 26 put a torpedo into *Bismarck*’s steering gear, jamming her rudders and locking her on a slow course directly towards the pursuing British battleships. Five destroyers led by Captain (later Admiral of the Fleet) Philip Vian shadowed *Bismarck* through the night, harassing her with periodic torpedo attacks. BdU ordered *U-48*, *U-73*, *U-74*, and *U-97* to proceed at maximum speed towards *Bismarck*’s location, but heavy winds and high seas delayed them: the battleships HMS *King George V* and *Rodney* arrived before the U-boats could intervene, but Tovey specifically ordered the battle cruiser *Renown* to stay out of *Bismarck*’s reach.

The *Bismarck* began firing at 8:50 on May 27, but the concentrated fire of the two battleships and HMS *Norfolk* knocked out her primary fire control director and forward turrets within ten minutes, her secondary fire control director ten minutes after that, and her aft turrets ten minutes after that. The *Bismarck* sank after over an hour of continuous bombardment – *U-556* observed but had no torpedoes, while *Kapitänleutnant* Helmut Rosenbaum in *U-73* actually sighted *Bismarck* but could not travel fast enough under water to catch up and intervene. The British began rescuing survivors, but abandoned their efforts after a reported (but apparently false) periscope sighting. The *Bismarck* had a crew of over 2200 men; of the approximately 800 men who went into the water, the British heavy cruiser HMS *Dorchester* picked up 86 survivors and destroyer HMS *Maori* picked up 25; *Kapitänleutnant* Eitel-Friedrich Kentrat in *U-74* picked up three; and the German weather ship *Sachsenwald* picked up two more. Germany would never again attempt a major surface ship foray into the North Atlantic.

Operation Rheinübung in GWX

Operation *Rheinübung* (“Rhine Exercise”) features a breakout by the battleship *Bismarck* and heavy cruiser *Prinz Eugen*. They meet HMS *Hood* and *Prince of Wales*, sink the *Hood*, and then split up, generally following their historical journeys to survival or destruction.

Operation Cerberus

Historical Background

The German battleships *Scharnhorst* and *Gneisenau* entered Brest, France on March 22, 1941 after conducting [Operation Berlin](#), a North Atlantic breakout and subsequent two-month patrol in which they sank or captured 22 Allied merchant ships displacing more than 110,000 tons. The mission commander, Admiral Günther Lütjens, had departed immediately to assume command of the battleship *Bismarck* and heavy cruiser *Prinz Eugen* during [Operation Rheinübung](#) (“Rhine Exercise”), which attempted in May to repeat the success of *Operation Berlin* and, if successful, would have put four large surface raiders in Brest to bedevil the North Atlantic convoys. The *Bismarck* sank the British battle cruiser HMS *Hood* but was later crippled, cornered, and sunk by the Royal Navy, taking Lütjens and almost her entire crew with her, but the *Prinz Eugen* survived to join the *Scharnhorst* and *Gneisenau* in Brest on June 1, 1941.

The British kept a close watch on the three German raiders in Brest, repeatedly bombing them to try to preclude another breakout.³⁷⁶ In early April, an RAF [Beaufort](#) torpedo bomber flown by Pilot Officer Kenneth Campbell RAFVR torpedoed *Gneisenau* as she lay at anchor: the Germans shot the aircraft down and the crew died in the crash, but P.O. Campbell received a posthumous Victoria Cross, Britain’s highest military award for valor, when the RAF finally learned of his achievement.³⁷⁷

[Halifax](#) heavy bombers hit *Gneisenau* again one week later while she was dry docked to repair the torpedo damage. Five bomb hits severely damaged *Scharnhorst* while she was in La Pallice, France; and *Prinz Eugen* was bombed in July 1941. The ships were therefore unfit for Atlantic duty until the beginning of 1942, but the raiders in Brest and the *Tirpitz* at Trondheim, Norway together tied down a large portion of the Royal Navy and precluded its use in the Mediterranean against the Italians and the DAK.



Figure 229: Bombing *Scharnhorst* & *Gneisenau* in Brest³⁷⁸

Allied commando raids on Norway in December 1941 (*Operation Archery*) persuaded Hitler that Britain and the Soviet Union were planning to attack occupied Norway in early 1942, so he told the *Kriegsmarine* to bring the ships in Brest north to help defend Norway or dismount their guns for use as coastal artillery. The *Kriegsmarine* elected to bring the ships home through the English Channel, and rely on surprise, secrecy, and daring to get home before the British could react effectively.

The Germans planned *Operation Cerberus*, named after the three-headed dog of Greek mythology in reference to the three escaping raiders, to begin at high tide after dark on February 11, 1942. Vizeadmiral Otto Ciliax would command a task force consisting of *Scharnhorst* (flagship), *Gneisenau*, *Prinz Eugen*, six destroyers, and numerous small escorts. The operation would use night and radar jammers to mask the task force until it was half-way to the Dover Strait; after that, the task force would hug the French coast at 25 knots, travel through Channel minefields cleared and marked by minesweepers stationed on their path, and rely on the *Luftwaffe* to provide continuous daylight fighter cover. If all went well the task force would be in Germany before dawn of the second day.

³⁷⁶ “The Channel Dash,” http://www.navweaps.com/index_oob/OOB_WWII_Atlantic/OOB_WWII_Cerberus.htm

³⁷⁷ “Kenneth Campbell,” http://en.wikipedia.org/wiki/Kenneth_Campbell

³⁷⁸ Photo source: Imperial War Museum #C4109, <http://collections.iwm.org.uk/>

The British anticipated a breakout, and gave the codename “*Fuller*” to the combined response of the RAF and the Royal Navy to block it. The RAF assumed most of the burden and allocated over 300 bomber aircraft to the mission; the Navy would not send capital ships within range of the *Luftwaffe*, but provided destroyers, torpedo boats, FAA elements, and a submarine for close-in surveillance of Brest. Britain allocated numerous forces to *Fuller*, but did not ensure unified command and control of the units involved. The result was operational chaos.

Operation *Cerberus* did not begin auspiciously for the Germans: the RAF conducted a night air raid on Brest just as the ships were getting underway but did not realize the ships were preparing to depart, so the only effect was to delay the departure by 90 minutes. Once underway, a combination of British mistakes, command and control problems, deteriorating weather, and bad luck allowed the task force to slip through the British submarine, surface, and aircraft patrols. The British did not realize the game was afoot until late the next morning, finally engaging the task force just after noon, when 9.2-inch coastal artillery fired 33 rounds at extreme range (27,000 yards) as the task force passed the Dover Strait.



Figure 230: *Scharnhorst* and *Gneisenau* as seen from *Prinz Eugen* during Operation *Cerberus*³⁷⁹

The British followed up over the next four hours with a series of heroic, but uncoordinated and ultimately ineffective attacks by six [Swordfish](#) torpedo bombers, 28 Beaufort torpedo bombers³⁸⁰, seven [Hudson](#) bombers, eight motor torpedo boats (MTB), two motor gun boats (MGB), and two flotillas of World War I-era destroyers. The commander of the *Swordfish* attack, Lt-Cdr Eugene Esmonde, RN, had received the Distinguished Service Order the day before for leading the *Swordfish* attack that crippled the *Bismarck* during Operation *Rheinübung*; he received a posthumous Victoria Cross for leading the *Swordfish* attack against the *Cerberus* task force.³⁸¹ Finally, RAF Bomber Command sent over 240 heavy and medium bombers as darkness was falling; only 39 reported finding the task force in gathering darkness and worsening weather, scoring one hit on the torpedo boat *Jaguar* and losing 15 aircraft.

The task force brushed off the British attacks but hit recently laid British minefields off the Dutch coast. *Scharnhorst* stopped dead in the water after striking a mine in mid-afternoon but was able to catch up with the task force; she stayed in formation until crippled by another mine later that evening. The Germans left her unescorted and she limped into Wilhelmshaven towards noon on February 13. *Gneisenau* struck a mine during the evening but suffered only minor damage; she kept up with *Prinz Eugen* and entered Kiel on February 13 a few hours ahead of *Scharnhorst*'s entry into Wilhelmshaven.

³⁷⁹ U.S. Naval Historical Center #NH 69749, <http://www.history.navy.mil>

³⁸⁰ Some mistakenly attacked British destroyers as the destroyers launched torpedoes against the task force.

³⁸¹ “Eugene Esmonde VC,” http://www.royalnavalmuseum.org/info_sheets_eugene_esmonde.htm

There was public outrage in England that the task force had sailed up the English Channel under the noses of the RAF and the Royal Navy (see Figure 231), but *Großadmiral* Raeder wrote, “We have won a tactical victory and suffered a strategic defeat.”³⁸² The “Channel Dash” left the surface raiders in a poor position to threaten Atlantic convoys, and the three ships did little for the remainder of the war:

- *Scharnhorst* had struck two mines during Operation *Cerberus* and was under repair until January 1943. She reached Norway in March 1943, and spent nine months threatening Murmansk convoys. The battleship *Duke of York*, heavy cruiser *Norfolk*, and light cruisers *Jamaica*, *Belfast*, and *Sheffield* caught and sank *Scharnhorst* on December 26, 1943 after a lucky hit from *Duke of York* disabled one of *Scharnhorst*'s boilers. Only 36 of the 1,968 crewmen aboard *Scharnhorst* survived
- *Gneisenau* hit a mine during Operation *Cerberus*; while in dry dock, a British bombing raid hit ammunition improperly stored on *Gneisenau* and blew her bow off, after which the Germans decommissioned her and towed her to Gotenhafen. The Germans considered replacing each of her triple 11-inch gun turrets with twin 15-inch gun turrets, but abandoned these plans when *Scharnhorst* sank in December 1943. The Germans finally sank *Gneisenau* as a block ship in Gotenhafen in March 1945.
- The submarine HMS *Trident* torpedoed *Prinz Eugen* off Norway on February 23, 1942; she completed repairs in October 1942 and spent the rest of the war in the Baltic. She survived two atomic bomb tests at Kwajalein atoll and is now an attraction for scuba divers.

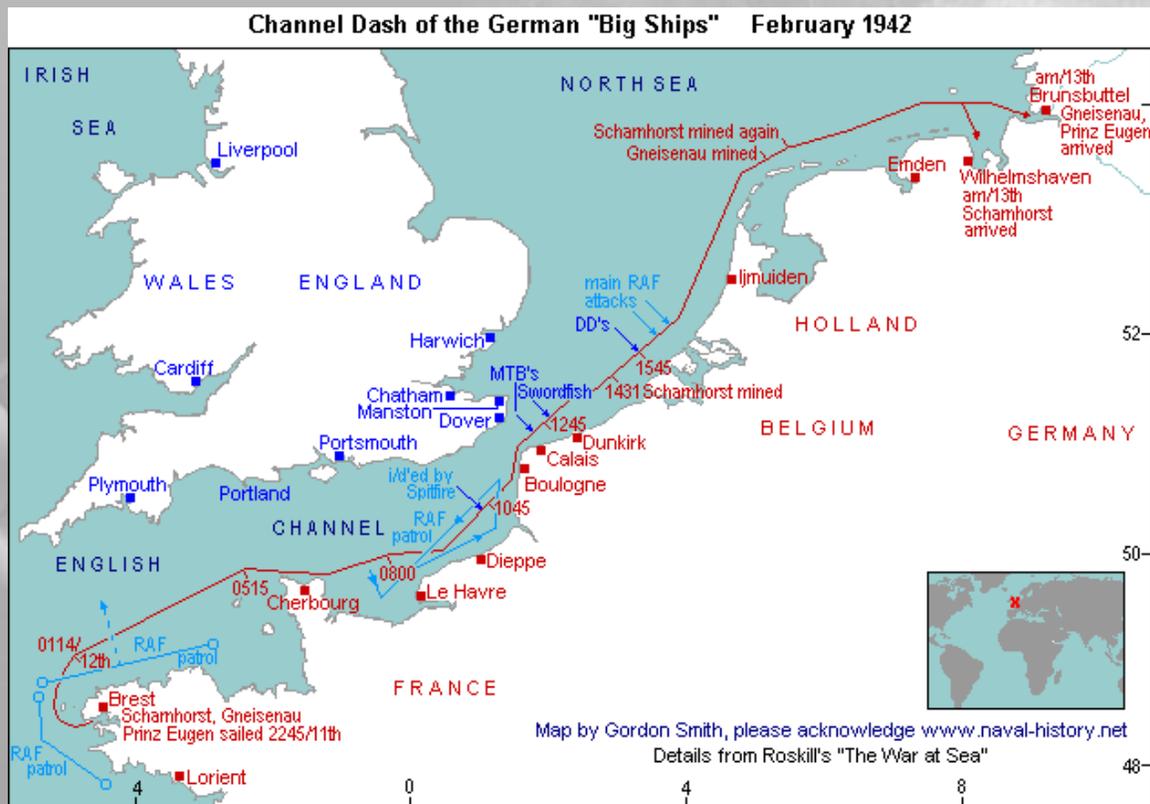


Figure 231: Map of Operation *Cerberus/Fuller*³⁸³

Operation Cerberus in GWX

The Operation *Cerberus* task force in GWX will follow its historical plan, and British forces will attack it along the way at or near the locations where the attacks occurred historically. The attackers will include aircraft, destroyers, and motor torpedo boats.

³⁸² Stephen, Martin. *Sea Battles in Close-Up: World War II*. Naval Institute Press: 1988

³⁸³ Map source: Gordon Smith, <http://www.naval-history.net>

Operation Rösselsprung

Historical Background³⁸⁴

British assistance to the Soviet Union after Germany invaded in June 1941 consisted primarily of convoys to Archangelsk (summer) and Murmansk (winter) starting in August 1941: over 100 merchant ships had made the trip by year's end while losing only one to U-boat attack. Hitler believed in January 1942 that Britain and the Soviet Union would attack Norway, and rushed in reinforcements including the battleship *Tirpitz*, which mounted an attack against convoys PQ-12 and QP-8 in March 1942 (Operation *Sportpalast*) and had narrowly escaped an ambush by aircraft from HMS *Victorious*. *Luftwaffe* bombers, U-boats, and destroyers sank the light cruiser HMS *Edinburgh* and 16 merchant ships in Murmansk-bound convoys PQ-13, -14, -15, and -16, but 71 merchant ships arrived safely.

The Royal Navy recommended suspending the Arctic convoys after PQ-16 in May 1942 due to the threat of round-the-clock *Luftwaffe* air strikes in the continuous daylight, but the situation in the Soviet Union made this politically impossible. The Germans sent the heavy cruisers *Lützow*, *Admiral Scheer*, and *Admiral Hipper*; ten destroyers; 25 U-boats; and *Luftwaffe* reinforcements to join *Tirpitz* in northern Norway to prepare Operation *Rösselsprung*, a sortie by the *Kriegsmarine* against the next Arctic convoy: PQ-17. The operation would proceed only on the orders of *der Führer* himself, who could not tolerate any risk to the German battle fleet from Allied carrier-based aircraft or submarines.

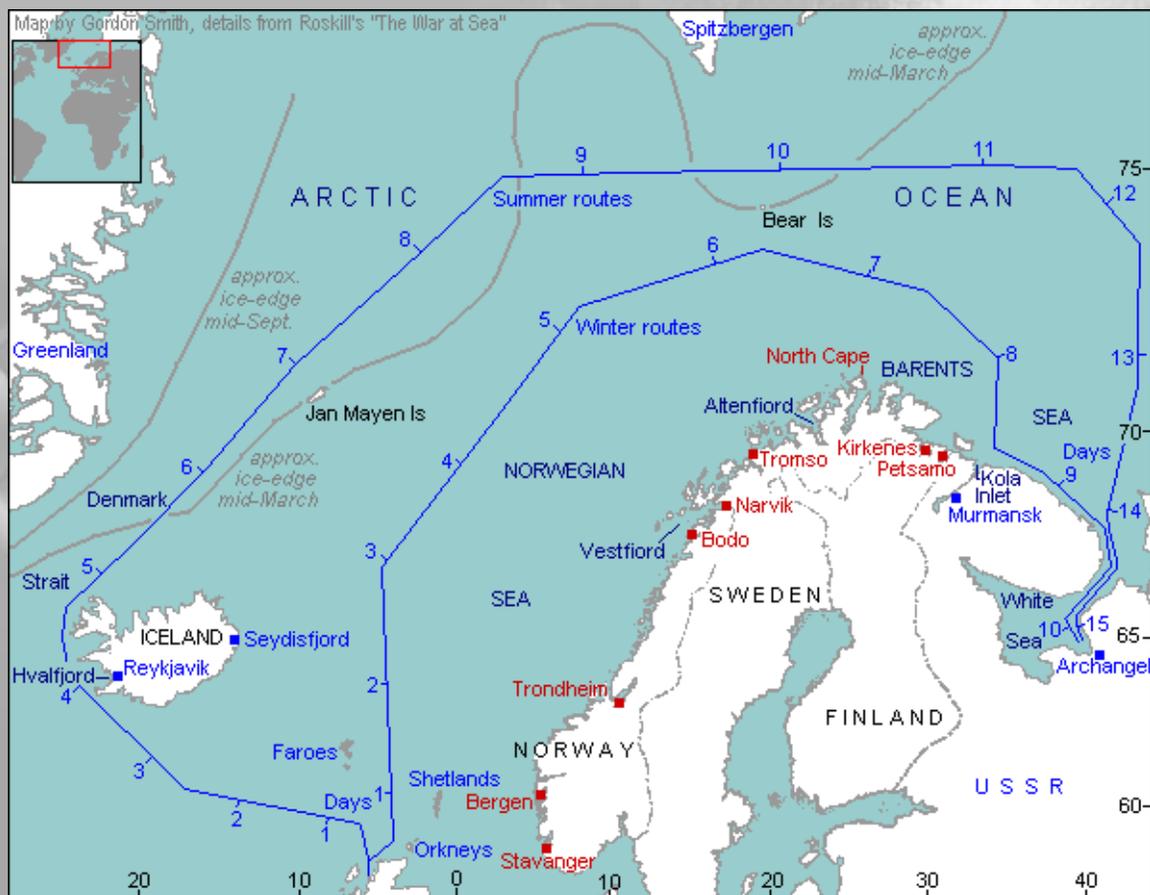


Figure 232: Arctic convoy tracks (German air bases in red)³⁸⁵

³⁸⁴ "Russian Convoys: 1941-1945," <http://www.naval-history.net/WW2CampaignsRussianConvoys.htm>; "Ships in Arctic Convoys," <http://www.warsailors.com/convoys/arctic.html>; and Blair Jr., Clay, *Hitler's U-boat War: The Hunters 1939-1942*

³⁸⁵ Map courtesy of Gordon Smith, <http://www.naval-history.net/WW2CampaignsRussianConvoys.htm>

PQ-17 was the largest convoy yet to Murmansk, with 34 merchants, three rescue ships, and two tankers assigned as fleet oilers to refuel the convoy's close escort group. It would sail simultaneously with convoy QP-13's 35 merchant ships and escorts bound for Britain. The Allies were aware of German dispositions and intentions thanks to *Ultra* intercepts, and prepared for a sortie by German surface raiders. The convoy's defenses included:

- A close escort of six destroyers, four corvettes, three minesweepers, four armed trawlers, and two antiaircraft auxiliary ships
- A cruiser covering force of two British heavy cruisers (HMS *London* and *Norfolk*), two U.S. heavy cruisers (USS *Wichita* and *Tuscaloosa*), and three destroyers
- A distant covering force of two battleships (HMS *Duke of York* and USS *Washington*), an aircraft carrier (HMS *Victorious*), the heavy cruiser HMS *Cumberland*, the light cruiser HMS *Nigeria*, and 14 destroyers
- A submarine force of eight British, one Free French, and six Soviet submarines to detect a German sortie and possibly cripple or sink a surface raider³⁸⁶

Admiral Hubert Schmundt, who as *Admiral Nordmeer* ("Admiral of Northern Waters") was temporarily commanding the U-boats in the operation, put nine U-boats on patrol for the convoy: three north of the Denmark Strait (*U-251*, *U-376*, and *U-408*) and the remainder (*U-88*, *U-255*, *U-334*, *U-456*, *U-457*, and *U-703*) south of Jan Mayen Island. *Kapitänleutnant* Max-Martin Teichert in *U-456* detected PQ-17 on July 1, and *Kapitänleutnant* Reinhard von Hymmen in *U-408* and *Kapitänleutnant* Reinhart Reche in *U-255* confirmed his sighting. Schmundt ordered these three U-boats and *Kapitänleutnant* Heinz Bielfeld in *U-703* to shadow the convoy while the Germans staged forces to the North Cape to prepare for an attack. All available U-boats, including newcomers *U-355* and *U-657* moved up to attack or along the convoy's projected track; the *Rösselsprung* task forces began moving from their bases at Narvik and Trondheim to their operational staging point in Altenfjord; and over 100 *Luftwaffe* medium bombers began staging to far northern air bases. The operation began poorly when several ships ran aground and withdrew from the mission: *Lützow* hit a sand bank as it left Narvik and three destroyers sailing with *Tirpitz* ran aground as they left Trondheim. By July 3, the task forces had combined in Altenfjord under the command of *Admiral* Otto Schniewind and were awaiting the order to proceed with the operation.

The *Luftwaffe* began attacking PQ-17 and the cruiser covering force on July 4, fatally crippling three merchant ships, and damaging another. The initial U-boat attacks sank only the two merchants already crippled by the *Luftwaffe*, but *Korvettenkapitän* Karl Brandenburg in *U-457* caused great consternation when he reported a (non-existent) "battleship" in the cruiser covering force. *Großadmiral* Raeder suspected an aircraft carrier was accompanying the "battleship" and, mindful of Hitler's orders, suspended *Rösselsprung* until the aircraft carrier could be found and sunk; Schmundt immediately ordered all U-boats to ignore the convoy and hunt down the "battleship" and the "aircraft carrier" presumed to be accompanying it.

The British First Sea Lord, Admiral of the Fleet Sir Dudley Pound, was aware through *Ultra* that the German surface ships were heading to the North Cape, but incorrectly assumed they were already moving to attack and that they might engage the convoy and the cruiser force by the next day (July 5). He therefore ordered the convoy to scatter and the cruiser force to withdraw at high speed. Two U-boats (*U-456* and *U-457*) reported the convoy was scattering and that the cruiser force was leaving to the west faster than the U-boats could follow. Schmundt immediately ordered all U-boats to shift back to attacking the convoy, and Raeder was now able to persuade Hitler the risk was now minimal and that *Rösselsprung* could begin.

³⁸⁶ Blair Jr., Clay, *Hitler's U-boat War: The Hunters 1939-1942*



Figure 233: *Admiral Scheer*, *Admiral Hipper*, and destroyers leaving a fjord, as seen from *Tirpitz*³⁸⁷

Operation *Rösselsprung* proved short-lived. The Soviet submarine *K-21* observed *Tirpitz* leaving the fjord and missed *Tirpitz* with two torpedoes; subsequent reports from Catalina maritime patrol bombers and the British submarine HMS *Unshaken* confirmed the composition, course, and speed of the raiding force within three hours of their departure. Raeder cancelled the operation a few hours later after the *B-dienst* alerted him that the Allies knew *Tirpitz* was under way, but U-boats and the *Luftwaffe* had a field day with the ships of the now-scattered convoy, sinking 22 of the 34 merchant ships, one of the rescue ships, and one of the oilers. Convoy QP-13 was unmolested by U-boats, but lost an escort and five merchant ships to a British minefield off Iceland. The horrendous losses forced the British to suspend the Murmansk convoys until September when darkness would again cloak the convoys from German air attack.

Operation Rösselsprung in GWX

The battleship *Tirpitz*, heavy cruiser *Admiral Hipper*, four destroyers and two torpedo boats depart Trondheim at 1800 on July 2, 1942 bound for Altenfjord, but three destroyers run aground and are unable to complete the mission. At the same time, a battle group comprised of the heavy cruisers *Lützow* and *Admiral Scheer*, and five destroyers will proceed from Narvik to Altenfjord, but the heavy cruiser *Lützow* will run aground and be unable to complete the mission.

04 July 1942: The two battle groups join in Altenfjord. Convoy PQ-17 will scatter late in the day.

05 July 1942: The combined battle group departs Altenfjord at 1100. The Soviet submarine *K-21* attacks *Tirpitz* with torpedoes at 1702, but obtains no hits. The ObdM cancels the battle group mission at 2130 and the group returns to Altenfjord without engaging any enemy ships.

³⁸⁷ U.S. Naval Historical Center #NH 71397, <http://www.history.navy.mil>

Operation *Sizilien*

Historical Background

The Spitsbergen (Svalbard) archipelago was Norwegian territory at the start of World War II (under the terms of the Spitsbergen Treaty of 1925) with about 2,000 Soviet citizens and 800 Norwegian citizens engaged in coal mining. Germany held nominal control after conquering Norway in 1940, but the Soviet residents were safe until Germany invaded the Soviet Union in June 1941; Britain and the Soviet Union then agreed to evacuate the residents and deny Spitsbergen's mineral resources to the Germans.

Operation *Gauntlet* evacuated all Soviet and Norwegian citizens and destroyed the coal mines, *etc.*, on Spitsbergen between August 25 and September 3, 1941. The Germans brought in a small weather detachment by air in the fall of 1941, but a U-boat evacuated them when Free Norwegian forces established control of Spitsbergen in the summer of 1942 with a garrison of about 150 men, anti-aircraft guns, and a battery of 3-inch guns. Over the next 14 months, the Allies mounted periodic resupply missions punctuated by periodic aircraft and U-boat bombardment; then the Germans came in force.

The Germans mounted Operation *Sizilien* ("Sicily") on September 8, 1943, using the battleships *Tirpitz*, *Scharnhorst*, and seven destroyers under the command of Admiral Oskar Kummetz. They carried an assault engineer battalion (~600 troops) for an amphibious landing, Operation *Zitronella*, to eliminate the garrison, destroy the facilities, and establish a *Luftwaffe* weather station on Hopen Island. The garrison fought briefly and then followed their standing orders to withdraw into the hills. The raiders bombarded and razed the villages of Longyearby (Longyearbyen) and Barentsburg to the ground, taking about 40 prisoners and losing about 40 men – the only time *Tirpitz* would fire her main guns against an enemy surface target. The Allies evacuated the survivors but re-established control the next year, and the Germans returned to their pattern conducting occasional harassing raids for the rest of the war.³⁸⁸



Figure 234: Barentsburg, Svalbard in flames during Operation *Sizilien*, as seen from *Tirpitz*³⁸⁹

Operation *Sizilien* in GWX

Silent Hunter III game engine limitations preclude destroying land targets, so the task force will move to the Spitsbergen archipelago, attack shipping in harbor, break off the engagement, and return to port.

³⁸⁸ Sources: <http://www.canadiansoldiers.com/mediawiki-1.5.5/index.php?title=Spitsbergen>;
<http://www.german-navy.de/kriegsmarine/articles/feature2.html>; <http://home.online.no/~gestrom/history/nbrigt.txt.htm>;
http://www.warcovers.dk/greenland/geen_main.htm; <http://www.bismarck-class.dk/tirpitz/history/tiopersizilien.html>

³⁸⁹ Photo credit: Anonymous

The Campaign to sink the *Tirpitz*

Historical Background³⁹⁰



Figure 235: *Tirpitz* in Åsfjord in February 1942³⁹¹

The Germans stationed *Tirpitz* near Narvik after Operation *Rösselsprung* where she was closer to the Arctic convoys and outside the range of RAF bases in Britain. In September 1942, Operation *Title* used a fishing boat to tow two “chariots” (human-guided torpedoes with 600-lb warheads) to within striking distance of *Tirpitz*, but the mission failed when the chariots were lost in rough weather. The crew scuttled the boat; all escaped to Sweden but one, whom the Germans caught out of uniform and shot as a spy.

The British tried again in September 1943 with Operation *Source*, an attack by six midget submarines or “X-craft” against the *Tirpitz* and *Scharnhorst* in Kåfjord and *Admiral Scheer* in Langefjord. A “mother” submarine would tow an X-craft to within range, after which the X-craft would close in, drop two 2000kg charges next to or underneath its target, and then slip away while a detonation timer counted down: a well-placed demolition charge could cripple and possibly sink any ship afloat. **Note: GWX does not model Operation *Source*.**

The *Tirpitz* moved to Norway in January 1942, where was a threat to Allied convoys going to and from the Soviet Union; she just missed convoy PQ-12 in March 1942, and an abortive sortie against convoy PQ-17 in July had caused the British to scatter it with the subsequent loss of two-thirds of its merchant ships. As Churchill wrote in 1943, “[*Tirpitz*] exercises a vague general fear, and menaces all parts at once. It appears and disappears, causing immediate reactions and perturbation on the other side. If she were only crippled and rendered unseaworthy the entire naval situation throughout the world would be altered....”

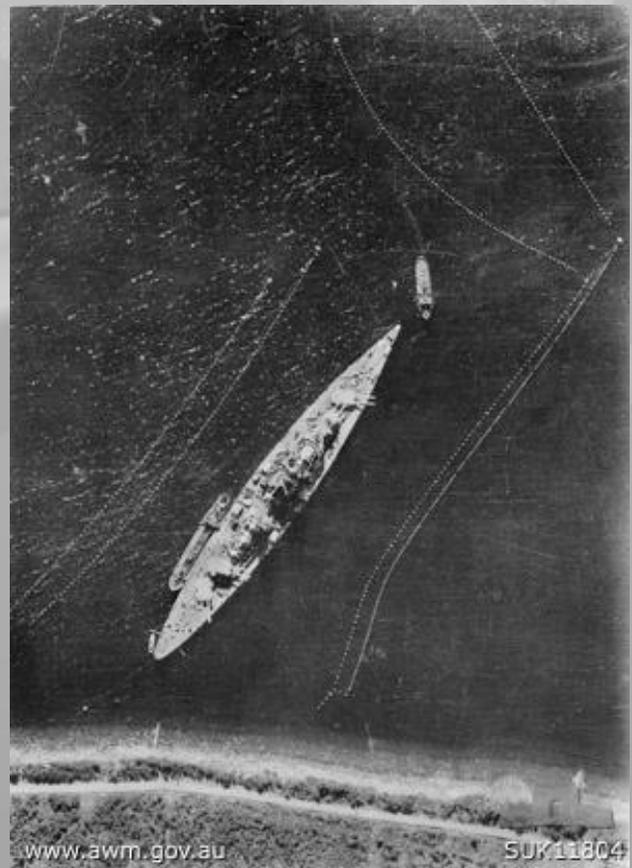


Figure 236: *Tirpitz* behind torpedo nets – July 1942³⁹²

³⁹⁰ Geoff Chalcraft, “British Submarines of World War II,” <http://web.ukonline.co.uk/chalcraft/sm/tirpitz.html>;

“British submarines of World War II,” <http://web.ukonline.co.uk/chalcraft/sm/chariots.html>;

“*Chronik des Seekrieges 1939-1945*,” <http://www.wlb-stuttgart.de/seekrieg/44-08.htm>;

“Captain Class Frigate Association,” <http://www.captainclassfrigates.co.uk/ops/5eg.html>;

Eric Grove, *Sea Battles in Close-up*

³⁹¹ Australian War Memorial #SUK11808, <http://www.awm.gov.au/>

³⁹² Australian War Memorial #SUK11804, <http://www.awm.gov.au/>

Mishaps reduced the force to three X-craft (X-5, X-6, and X-7) which concentrated on *Tirpitz*. At least two of the three X-craft successfully placed their charges: their explosions lifted *Tirpitz*'s stern out of the water, causing significant flooding and damage to mechanical equipment, propulsion, and fire control systems; her 2000-ton "D" turret was permanently jammed when it lifted off its rollers and crashed back on to them.³⁹³ The Germans then set about repairing *Tirpitz* in remote Kåfjord to avoid an RAF attack while in dry dock, as had happened to *Gneisenau*. An attack by Soviet aircraft in February 1944 caused only minor damage, and *Tirpitz* began sea trials in March 1943. Ultra revealed *Tirpitz* was nearing readiness to sail, so the British sent the Fleet Air Arm to stop her, starting with Operation *Tungsten*.

Operation *Tungsten* was a major carrier air strike conducted by Home Fleet task forces under command of Admiral Sir Bruce Fraser. The attack force consisted of the battleships HMS *Duke of York* (flagship) and *Anson*; the fleet carriers HMS *Victorious* and *Furious*; the escort carriers HMS *Searcher*, *Emperor*, *Pursuer*, and *Fencer*; the light cruisers HMS *Belfast*, *Jamaica*, and *Sheffield*; the anti-aircraft cruiser HMS *Royalist*; fifteen destroyers, and two fleet oilers. The strike began at dawn on April 3, 1944, surprising *Tirpitz* as she weighed anchor to resume sea trials. The attack scored numerous hits on *Tirpitz*, killing 122 crewmembers, injuring over 300 (including her commander, *Kapitän z. S.* Hans Meyer) and causing significant damage above her armored deck. The Royal Navy made several follow-up attempts without success over the next two months while the Germans worked to repair the damage. Operation *Brawn* in mid-May and Operation *Tiger Claw* in early June aborted due to poor weather; Operation *Mascot* in mid-June was foiled by *Tirpitz*' smokescreens and intense antiaircraft fire, including barrages of time-fused shells from her main and secondary batteries.



Figure 237: Soviet aerial reconnaissance photo showing *Tirpitz* in Kåfjord ("Kaa fjord") in May 1943³⁹⁴

³⁹³ All three midget submarines were lost; six crewmembers were killed and the other six taken prisoner. The British awarded Lt. Donovan (Commander of X-6) and Lt. Place (Commander of X-7) the Victoria Cross for crippling the *Tirpitz*.

³⁹⁴ Australian War Memorial #SUK11807, <http://www.awm.gov.au/>

The *Tirpitz* was exercising at sea with her accompanying destroyers by the end of July, so the Royal Navy used the sailing of Arctic convoy JW-59 as cover for Operation *Goodwood*, a series of four carrier air strikes by two task forces from August 22-29, 1944. The two task forces were under the command of the new commander-in-chief of the Home Fleet, Admiral Sir Henry Moore, and consisted of:

- The main strike force, with the battleship HMS *Duke of York* (flagship); the fleet carriers HMS *Indefatigable*, *Formidable*, and *Furious*; the heavy cruisers HMS *Berwick* and *Devonshire*; and 14 destroyers
- An escort task force comprised of the escort carriers HMS *Nabob* and *Trumpeter*, and the five frigates of the Fifth Escort Group.³⁹⁵

Note: GWX does not currently script the Allied task forces that conducted Operation *Goodwood*.

The attack failed to knock *Tirpitz* out although air strikes scored several hits, including one by a 1600-lb bomb that penetrated *Tirpitz*' deck armor but which failed to explode. On August 22, *U-354* under *Oberleutnant* z. S. Hans-Jürgen Stahmer attacked the escort task force: he launched a FAT that severely damaged HMS *Nabob* and a GNAT that so badly damaged the Captain-class frigate HMS *Bickerton** that the British scuttled her. *Nabob* limped back to Britain, where the Royal Navy returned her to the US Navy, which sold her for scrap in 1947.[†] *U-354* escaped this engagement, but the escorts of convoy JW-59 caught her trying to penetrate their convoy a few days later after and sank her. It was now clear that the Royal Navy and its Fleet Air Arm, despite heroic efforts, would not be able to finish off the *Tirpitz*, so the British decided to try rely on heavy bombers once again, but this time with bigger bombs capable of knocking a battleship out with one hit. Kåfjord was outside the range of RAF bombers in Britain, so the British arranged with the Soviets to base Lancaster heavy bombers of No. 9 and No. 617 ("Dambusters") squadrons near Archangelsk.

The first attack, Operation *Paravane*, came on September 15, with 27 Lancaster bombers using 12,000 lb. "Tallboy" bombs and mobile mines. One bomb penetrated *Tirpitz* near the bow and detonated beneath her: the Germans decided on September 23 they could no longer make repair *Tirpitz* to be battle-ready, so they sent her to Tromsøfjord to act as a floating gun battery. She was now within range of Lancaster bombers in Britain, and since the Allies were unaware of her status, No. 9 and No. 617 squadrons left the Soviet Union for Lossiemouth, Scotland and prepared to try again.



Figure 238: Lancaster and crew of No. 617 Squadron ("Dambusters")³⁹⁶

³⁹⁵ "Chronik des Seekrieges 1939-1945," <http://www.wlb-stuttgart.de/seekrieg/44-08.htm>

* HMS *Bickerton* was the flagship of the Fifth Escort Group and commanded by Cdr Donald Macintyre, an ace U-boat killer who had commanded the Group when they sank *U-99* (Kretschmer) and *U-100* (Schepke) in 1941.

† The German Steamship Company bought *Nabob*, repaired her and returned her to service as MV *Nabob* in 1952, and under Panamanian registry as SS *Glory* in 1967; she was finally broken up in December 1977.

³⁹⁶ Australian War Memorial #SUK15191, <http://www.awm.gov.au/>

The second Lancaster attack on *Tirpitz*, Operation *Obviate*, occurred on October 28 with 32 Lancaster bombers carrying “Tallboy” bombs each with 12,000 lbs of Torpex, a more powerful explosive normally used in torpedo warheads, rather than TNT. Cloud cover obscured the target, and the bombers managed only a near miss off the stern of the ship. **Note: GWX does not currently script Operation *Obviate***

The third (and final) Lancaster attack, Operation *Catechism*, occurred on November 12, 1944 with 32 Lancaster bombers attacking under optimal conditions: clear weather, no fighters, and no smokescreens. *Tirpitz* suffered three direct hits and one near miss, and capsized after a magazine explosion blew its “C” turret out of the ship. About 950 men went down with the ship, with about 650 survivors. The British had finally succeeded: “the Beast” (as Churchill called her) was dead.



Figure 239: Direct hit on *Tirpitz* with a 12,000 lb “Tallboy” bomb in Operation *Catechism*³⁹⁷

The campaign against the *Tirpitz* in GWX

GWX currently scripts Operation *Tungsten*. *Silent Hunter III* does not support aircraft carrier operations, so the British task forces involved in aircraft carrier operations will deploy off the Norwegian coast, slow down to simulate the effects of conducting aircraft carrier operations, and return home; the aircraft will “appear” and attack *Tirpitz*.

GWX currently scripts the Soviet air attack on *Tirpitz* in February 1944 as well as Operations *Paravane* and *Catechism*: bombers will fly over and attack *Tirpitz* as they did historically.

³⁹⁷ Australian War Memorial SUK13388, <http://www.awm.gov.au/>

Operation 60,000

Historical Background

By November 1943, the Soviets had the German 17th Army with its one German and seven Romanian infantry divisions cut off in the Crimea. The Soviets did not press the attack on the Crimea, but prepared for the future by taking bridgeheads across the Sivash and the Kerch peninsula. Hitler issued a “stand-fast” order to 17th Army, and the Romanian Navy and the German Black Sea flotilla began providing supplies and reinforcements by sea, adding four German infantry divisions (each at only regimental *kampfgruppe* strength) and two assault gun brigades to the defense, for a total of about 220,000 men.

On April 7, 1944 the commander of the Army Group South Ukraine, *Generaloberst* Ferdinand Schörner, inspected the Crimea defenses and found they would hold for “a long time.” On April 8, the Fourth Ukrainian Front resumed its attack on the Crimea, and by April 10, the defenders were in full retreat to Sevastopol whereupon *Generaloberst* Schörner ordered the evacuation of service personnel from the Crimea. The Romanian Navy and the German Black Sea flotilla evacuated over 75,000 personnel from Sevastopol on April 14-27; Soviet attacks on the convoys killed about 1,000 of these evacuees:

- 20,779 Romanians, of which 2,296 were wounded
- 28,394 Germans, of which 4,995 were wounded
- 723 Slovaks
- 15,055 Soviet volunteers, 2,559 Soviet POWs, and 3,748 Soviet civilians



Figure 240: Convoy under air attack during Operation 60000³⁹⁸

The convoys continued to bring supplies and ammunition to Sevastopol, but evacuations slowed until the Soviets began their main assault to retake Sevastopol on May 7; on May 8, with the defenses crumbling, Hitler relented and authorized remaining 60,000 defenders (thus Operation “60000”) to evacuate. German and Romanian convoys evacuated over 47,000 people of the 60,000 personnel awaiting evacuation, plus a number of Soviet evacuees by the time the Soviets recaptured Sevastopol on May 13; Soviet attacks sank several ships and killed about 10,000 evacuees. The Romanian Navy and the German Black Sea Flotilla evacuated almost 94,000 of the 220,000 troops in the Crimea from April 14 through May 13, along with many Soviet volunteers, prisoners, and civilians.³⁹⁹

³⁹⁸ Photo credit: Bogdan Cioroianu collection, <http://www.worldwar2.ro/operatii/?article=776>. © Dragos Pusca and Victor Nitu. Used by permission.

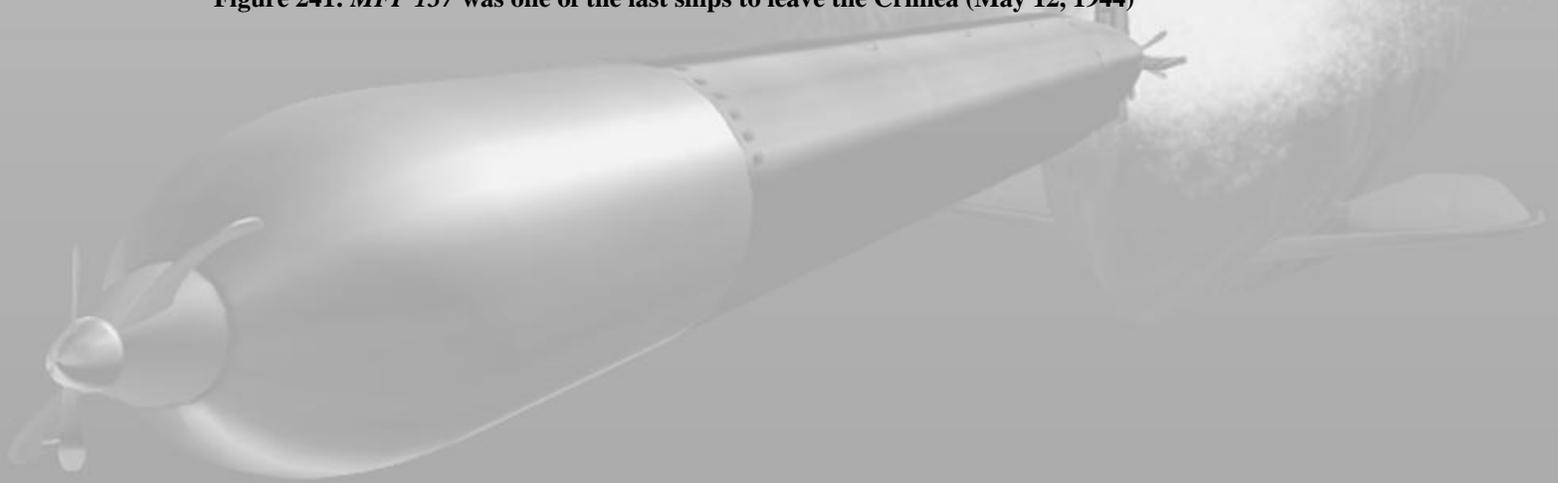
³⁹⁹ Ziemke, Earl. *Stalingrad to Berlin: The German Defeat in the East*. Center of Military History, U.S. Army. 1966; and “Romanian Armed Forces in the Second World War,” <http://www.worldwar2.ro/operatii/?article=776>

Operation 60,000 in GWX

GWX currently scripts the first 12 days (April 14 – 26) of Operation 60,000. There are 16 convoys going to and from Sevastopol during this period that will be subject to attack by Soviet aircraft and torpedo boats.



Figure 241: MFP 137 was one of the last ships to leave the Crimea (May 12, 1944)⁴⁰⁰



⁴⁰⁰ Photo source: “*Marineführprähme im Schwarzen Meer* (Flat-bottomed ferries in the Black Sea),” <http://users.bigpond.net.au/black-veil/mfp.html>

Operations in the Far East

Historical Background

Japan began its undeclared war with China, known in China as “The War of Resistance against Japan,” with the “Mukden Incident” of 1931 and the subsequent invasion of Manchuria and establishment by Japan of the “Manchukuo” government in 1932. Full-scale war between Japan and China began again in 1937 upon Japanese instigation of the “Marco Polo Bridge Incident,” after which they deployed two million troops, or roughly 80% of the Imperial Japanese Army, in China. The Japanese took a great deal of territory, but the war eventually stalled and by April 1940, the Japanese were secretly considering a limited withdrawal from China until events in Europe inspired a new course of action.⁴⁰¹

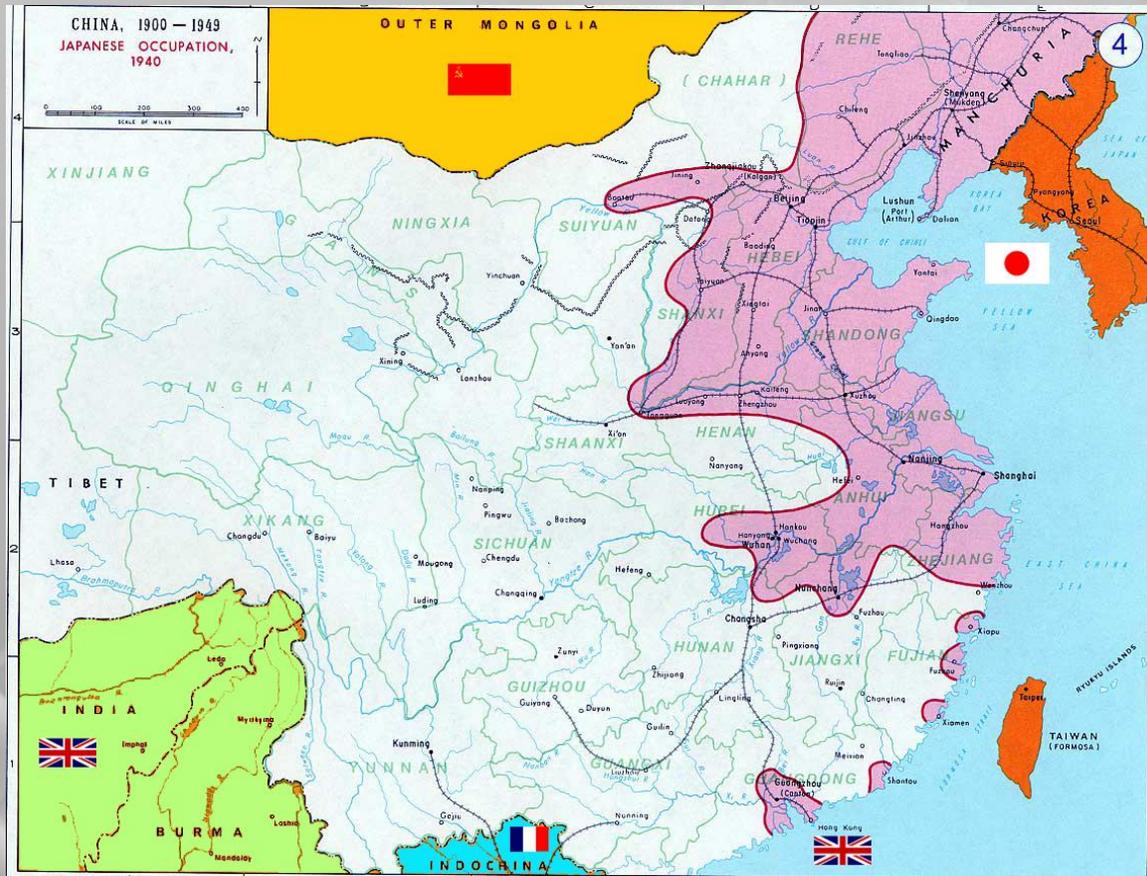


Figure 242: Extent of Japanese occupation of China in 1940⁴⁰²

Germany’s defeat of France and the Netherlands in June 1940, and the intense war in Europe left the European colonial empires in Asia practically undefended, so the Japanese government in July rejected the idea of withdrawal from China and secretly began planning instead for a “new order in Greater East Asia” with Japan leading an “alliance” of Manchukuo and China. The “new order” would wrest control of South East Asia and its vast resources of rubber, tin, tungsten, oil, and rice away from the Europeans, but would avoid war with either the Soviet Union, which had handily beaten the Japanese Army in a series of border incidents in Mongolia in 1938 and 1939, or the United States.⁴⁰³

⁴⁰¹ Toland, John. *The Rising Sun*. Vol. I. New York: Random House. 1970

⁴⁰² Original map: U.S. Military Academy, <http://www.dean.usma.edu>. Flags and alternate colors added by GWX Team.

⁴⁰³ Toland. *The Rising Sun*., Vol. I

Japan had little diplomatic advantage over the U.S. government: it was hostile to Japan's expansion in China, it had cancelled its 1911 Commercial Treaty with Japan in 1940, and it had begun a major rearmament program. The U.S. populace abhorred the atrocities committed by Japan in China but was opposed to military intervention in Asia, so the U.S. had initiated a "moral embargo" of certain materials to Japan in 1938; however, the Export Control Act of 1940 allowed President Roosevelt to formally embargo all of the items previously under "moral embargo." These included arms, ammunition, and implements of war; aircraft, aeronautical equipment, aviation gasoline; and machine tools and raw materials such as aluminum, zinc, copper, lead, and other strategic commodities.⁴⁰⁴

The first steps towards the "new order" came on September 23, 1940, when the Japanese "persuaded" Vichy France to allow the Japanese to use three air bases in northern Indochina (now in northern Vietnam) to support the war in China. Japan followed this a few days later by signing of the Tripartite Pact with Germany and Italy; the U.S. and Britain responded on October 16 by adding iron and metal scrap to the embargo list. Japan responded by publicly announcing the "new order" in November 1940.

On July 22, 1941, Japan "persuaded" Vichy France to allow Japanese forces to use air and naval bases in southern Indochina. This alarmed Britain and the U.S.: British Malaya produced 40% of the world's rubber and 60% of its tin, and it would be within range of Japanese bases in southern Indochina, which the U.S. had learned through intercepted diplomatic messages were coerced from Vichy France by threat of force. The U.S. realized that cutting off Japan's oil would soon result in Japanese attacks on Malaya and the Netherlands East Indies (now called Indonesia) to regain access to natural resources, but the U.S. saw little choice. President Roosevelt froze all Japanese assets in the U.S. on July 26, followed soon thereafter by Britain and the Netherlands government-in-exile: Japan's oil imports were at an end.



The oil embargo came as a complete shock to the Japanese government, which then began to prepare to fight a limited war behind a well-defended perimeter surrounding Japan and its new possessions. The Chief of the Japanese Naval Staff, Admiral Osami Nagano, reported to Emperor *Shōwa* (Hirohito) in early August that Japan's oil stocks would last no more than two years. Nagano's recommendation: "Under such circumstances, we had better take the initiative. We will win."

The Emperor asked, "Will you win a great victory? Like the Battle of Tsushima?"

Nagano replied, "I am sorry, but that will not be possible."

"Then the war will be a desperate one," said the Emperor.⁴⁰⁵

Figure 243: Japanese Plan and Troop Dispositions (Nov. 1941)⁴⁰⁶

⁴⁰⁴ *Peace and War: United States Foreign Policy 1931-1941*. Department of State. U.S. Government Printing Office. 1943.

<http://www.ibiblio.org/hyperwar/Dip/>

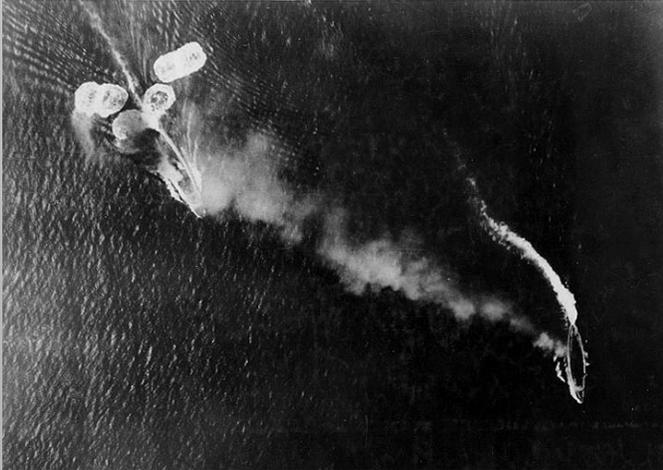
⁴⁰⁵ Toland, *Rising Sun*.

⁴⁰⁶ U.S. Army Center for Military History, <http://www.army.mil/CMH/brochures/pi/PI.htm>

The British Eastern Fleet

Historical Background

President Roosevelt's warning to Prime Minister Churchill in August 1941 that the recent Allied oil embargo against Japan could prompt a strike towards Malaya and the Netherlands East Indies led Britain to create an "Eastern Fleet" to deter Japan. Britain had maintained the "China Station" since 1844, but it had been an imperial backwater since the early 20th Century and ships of destroyer size or larger had gone to Europe by mid-1941, so it ordered the battleship HMS *Prince of Wales*, battle cruiser HMS *Repulse*, and two destroyers to Asia in October 1941 under Acting Admiral Sir Tom Phillips.⁴⁰⁷



Admiral Philips' ships arrived at Singapore on December 2, and combined with two additional destroyers to form Force "Z." They departed on December 8 to engage Japanese transports and their escorts at Singora (now called Songkhla) in Siam (now called Thailand). Force Z failed to find the transports and retreated towards Singapore, but 86 Japanese bombers found Force Z without air cover off Kuantan, Malaya on December 10, sinking HMS *Prince of Wales* and *Repulse* with the death of Admiral Phillips and over 800 men for the loss of three aircraft: the first free-moving battleships sunk at sea by air attack.⁴⁰⁸

Figure 244: HMS *Repulse* and *Prince of Wales* under attack⁴⁰⁹

The Allied command structure was chaotic: there had been only preliminary discussions on coordinating the defense of Malaya and the Dutch East Indies in the event of a Japanese attack and three Allied navies were now defending the same area without the benefit of unified command:

- Admiral Sir Geoffrey Layton took command of the Eastern Fleet; he had been commander-in-chief of the just-disbanded China Station and had transitioned command of the Eastern Fleet to Admiral Phillips on the morning of December 10, only to resume command that afternoon when Admiral Phillips was lost with HMS *Prince of Wales*.⁴¹⁰
- Admiral Thomas C. Hart commanded the U.S. Asiatic Fleet which had retreated from the Philippines in mid-December when Japanese air superiority made their position there untenable⁴¹¹
- The Netherlands Naval Command under Vice Admiral Conrad Lambert

The three navies were split between convoy escort duties and defending Java, and included four heavy cruisers (HMS *Dorsetshire*, *Cornwall*, *Exeter*, and USS *Houston*), eleven light cruisers (HMS *Caledon*, *Dragon*, *Emerald*, and *Enterprise*; HMAS *Perth*; USS *Boise* and *Marblehead*; and HNMS *De Ruyter*, *Jacob van Heemskerck*, *Java*, and *Tromp*), and about 30 destroyers. They were heavily outnumbered, unused to working together, and operating under the threat of complete Japanese air supremacy.

⁴⁰⁷ Stephen, Martin. *Sea Battles in Close-up*.

⁴⁰⁸ Morrison, Samuel E. *History of U.S. Naval Operations during World War II. Volume III: Rising Sun in the Pacific*. Little, Brown & Co. Boston 1948.

⁴⁰⁹ U.S. Naval Historical Center #NH 60566, <http://www.history.navy.mil>

⁴¹⁰ "Geoffrey Layton," http://en.wikipedia.org/wiki/Geoffrey_Layton

⁴¹¹ *The Java Sea Campaign*. Publication Branch, Office of Naval Intelligence, United States Navy. 1943.

<http://www.ibiblio.org/hyperwar/USN/USN-CN-Java/USN-CN-JavaSea-1.html>

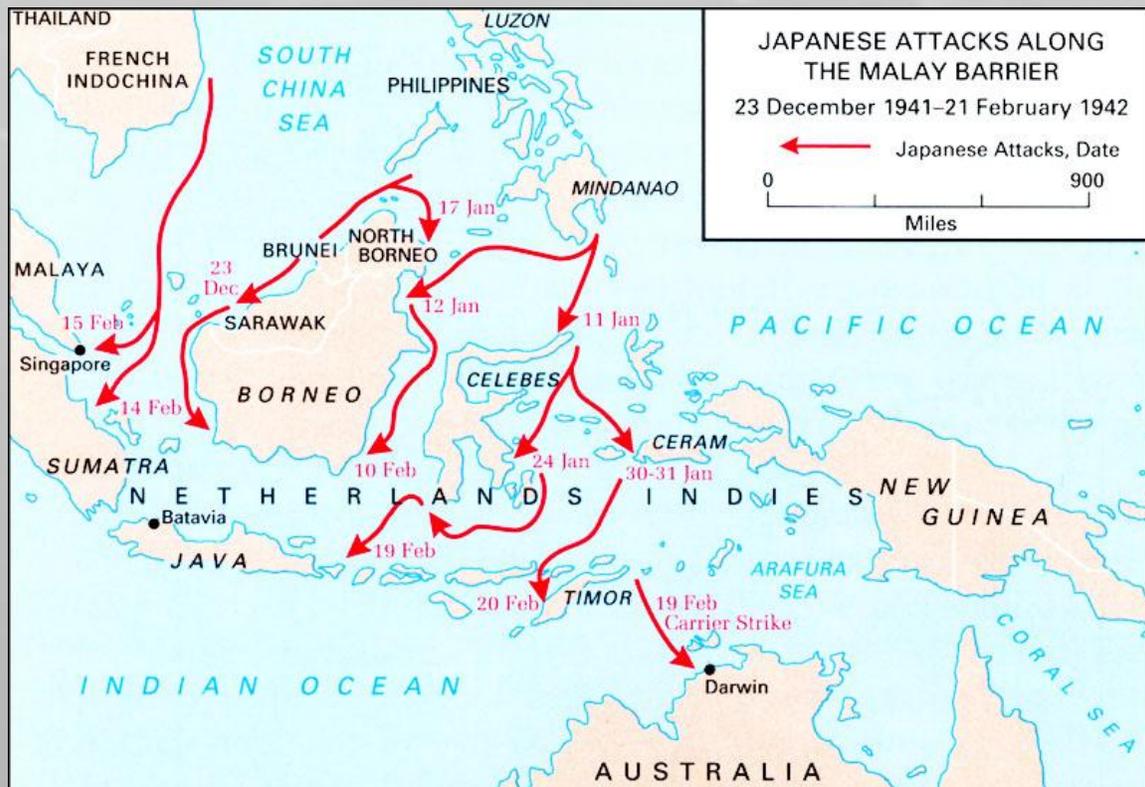


Figure 245: Japanese attacks in the Eastern Fleet area (Dec 1941 - Feb 1942)⁴¹²

In January 1942, the Allies formed the American-British-Dutch-Australian (ABDA) Command under General Sir Archibald Wavell to defend the “Malay Barrier,” Australia’s final defense line against invasion that ran from Malaya through the Netherlands East Indies islands of Sumatra, Java, Timor, and western New Guinea. In late February 1942, the Japanese defeated the ABDA combined striking force of two heavy cruisers (HMS *Exeter* and USS *Houston*), three light cruisers (HMAS *Perth*, and HNMS *De Ruyter* and *Java*), and nine destroyers under Dutch *Schout-bij-nacht* * Karel Doorman in the Battles of the Java Sea and Sunda Strait: only three ABDA destroyers escaped.

By March 1942, the Japanese were in firm possession of the Malay Barrier; ABDA had ceased to exist, and General Douglas MacArthur was Supreme Commander of Allied forces in the Southwest Pacific Area. Vice Admiral Sir James Somerville assumed command of the Eastern Fleet following the fall of Singapore to the Japanese on February 15, and ordered a retreat to Ceylon following the destruction of the ABDA striking force. The British Mediterranean Fleet reinforced the Eastern Fleet, which in turn divided into two main task forces to defend India against further Japanese attacks:

- “Fast Force” consisting of the battleship HMS *Warspite* (flagship); aircraft carriers HMS *Indomitable* and *Formidable*; heavy cruisers HMS *Cornwall* and *Dorsetshire*; light cruisers HMS *Emerald* and *Enterprise*; and six destroyers under the command of Vice Admiral Somerville
- “Slow Force” consisting of the battleships HMS *Resolution* (flagship), *Ramillies*, *Royal Sovereign*, and *Revenge*; the light aircraft carrier HMS *Hermes*†; the light cruisers HMS *Caledon*, *Dragon*, and HNMS *Jacob van Heemskerck*; and eight destroyers under Vice Admiral Algernon Willis.⁴¹³

⁴¹² Map: *The U.S. Army Campaigns of World War II: East Indies*. U.S. Army Center for Military History Pub 72-22, 1972.

<http://www.ibiblio.org/hyperwar/USA/USA-C-Elndies/index.html>

* Equivalent to a U.S. or Royal Navy Rear Admiral

† HMS *Hermes* was the first purpose-built aircraft carrier to be launched (1919).

⁴¹³ “Royal Navy in Pacific and Indian Ocean Area,” <http://pacific.valka.cz/forces/rn.htm#4204>

The Japanese had achieved their strategic objectives in three months by seizing South East Asia and its vast wealth of raw materials while suffering only trivial losses, but there was now disagreement on what to do next. The Army felt it was time to fortify their new possessions and prepare to defend them in a long war against the Allies, but the Navy wanted to keep the Allies on the defensive by invading India, Australia, or the Hawaiian Islands. In the interim, the British Eastern Fleet was a threat to South East Asia's western perimeter, so Japan sent the *Kido Butai* (機動部隊, or Carrier Striking Task Force)* to neutralize the Eastern Fleet while at the same time sending a separate carrier-cruiser force† on a highly successful commerce-raiding mission into the Bay of Bengal that sank 23 ships.⁴¹⁴ Radio intercepts warned Vice Admiral Somerville the Japanese were coming and that he could expect an attack on Ceylon on April 1 or April 2, so the Eastern Fleet made for “Port T,” a secret base established in the latter half of 1941 on Addu Atoll (now called Seenu) at the southern end of the Maldives Islands.

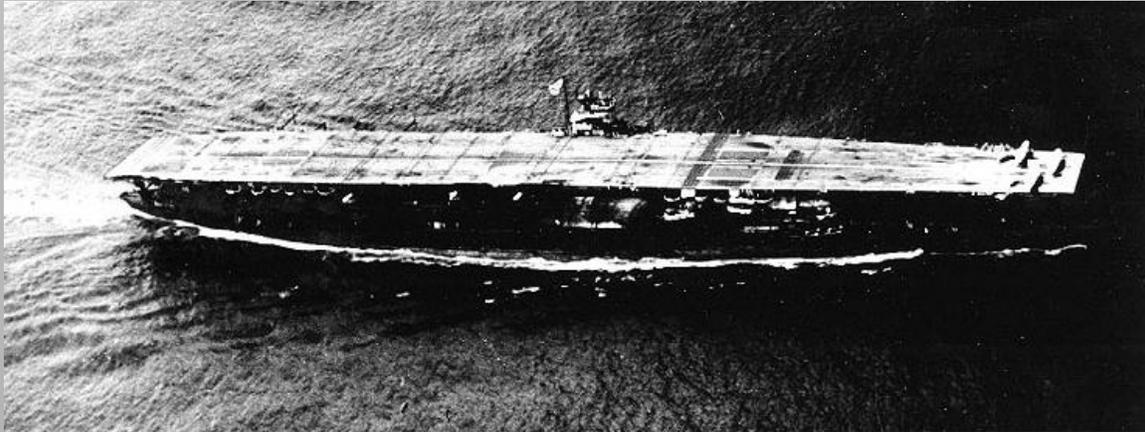


Figure 246: The flagship of the Japanese *Kido Butai*, the aircraft carrier *Akagi* (赤城) in mid- 1941⁴¹⁵

When April 2 passed without incident, the British thought the Japanese had returned to Indonesia and so sent the aircraft carrier HMS *Hermes* back to Ceylon for needed repairs, escorted by the heavy cruisers HMS *Cornwall* and *Dorsetshire* and a destroyer; however, the Japanese had only been delayed. A PBY detected the Japanese approaching Ceylon and was able to broadcast a warning before the Japanese shot it down, but it was too late: Japanese air strikes on April 5 through April 9 sank HMS *Hermes*, *Cornwall*, and *Dorsetshire*; the armed merchant cruiser HMS *Hector*, two destroyers, and a corvette; and caused significant damage in Colombo and Trincomalee.

The Indian Ocean raid persuaded Vice Admiral Somerville that the British bases in Ceylon and at “Port T” were indefensible, so the surviving Eastern Fleet ships retreated to Mombasa, Kenya. The British feared the Japanese would occupy Ceylon – Britain’s best source of rubber following the loss of Malaya – but the Japanese had finally decided on a “long war” strategy to persuade the Allies the war was not worth fighting, rather than try to assist Germany or Italy directly by threatening the Middle East. The Japanese would therefore not invade Australia or attack India to outflank the Suez Canal;⁴¹⁶ instead, they would instead cut Australia off from the United States by occupying New Guinea, Samoa, Fiji, and New Caledonia, and invade Midway Island to try to lure the U.S. Pacific Fleet into a decisive battle.⁴¹⁷

* The Carrier Striking Force for the Indian Ocean raids was comprised of many of the same ships that had attacked Pearl Harbor: the aircraft carriers *Akagi* (flagship), *Sōryū*, *Hiryū*, *Shōkaku*, and *Zuikaku*; fast battleships *Haruna*, *Hiei*, *Kirishima*, and *Kongō*, heavy cruisers *Tone* and *Chikuma*, 18 destroyers, and 7 fleet oilers under Vice Admiral Chūichi Nagumo.

† The commerce raiding force was comprised of the light aircraft carrier *Ryūjō*; heavy cruisers *Chōkai*, *Kumano*, *Suzuya*, *Mogami*, and *Mikuma*; light cruiser *Yura*; and four destroyers under the command of Vice Admiral Jisaburō Ozawa.

⁴¹⁴ “Imperial Japanese Navy Page,” <http://www.combinedfleet.com/>

⁴¹⁵ U.S. Navy Historical Center, #NH 73059 - “Akagi” was originally a battle cruiser, and is named after a Japanese volcano

⁴¹⁶ “Indian Ocean Raid,” http://en.wikipedia.org/wiki/Indian_Ocean_Raid

⁴¹⁷ Toland, *The Rising Sun*, Vol. I.

The resulting Battle of Midway was as decisive as the Japanese had desired, but their defeat there marked the end of their strategic offensive operations; the British recognized the reduced threat and began redeploying major elements of the Eastern Fleet to other areas as part of the Allies' "Germany First" strategy. The Eastern Fleet participated in Operation *Ironclad*, which deprived the Axis of a potential base in the western Indian Ocean by seizing Madagascar from Vichy France in May through November 1942, but otherwise its main duties through 1943 were to pursue Axis merchant cruisers and covert tankers, and to escort Indian Ocean convoys. The Axis eventually learned of "Port T," but the Japanese never attacked it as they were by that time on the strategic defensive; however, *Kapitänleutnant* Fritz Schneewind in *U-183* managed on March 9, 1944 to slip a torpedo through the atoll's submarine nets to damage a tanker in the anchorage beyond repair.

In 1944, capital ship reinforcements began arriving from Europe and allowed the Eastern Fleet to begin offensive operations in Indonesia and to support ground operations in Burma; in late 1944 the Eastern Fleet was renamed the "East Indies Fleet," and the "Pacific Fleet" was established to pursue offensive operations against Japan in the Pacific.

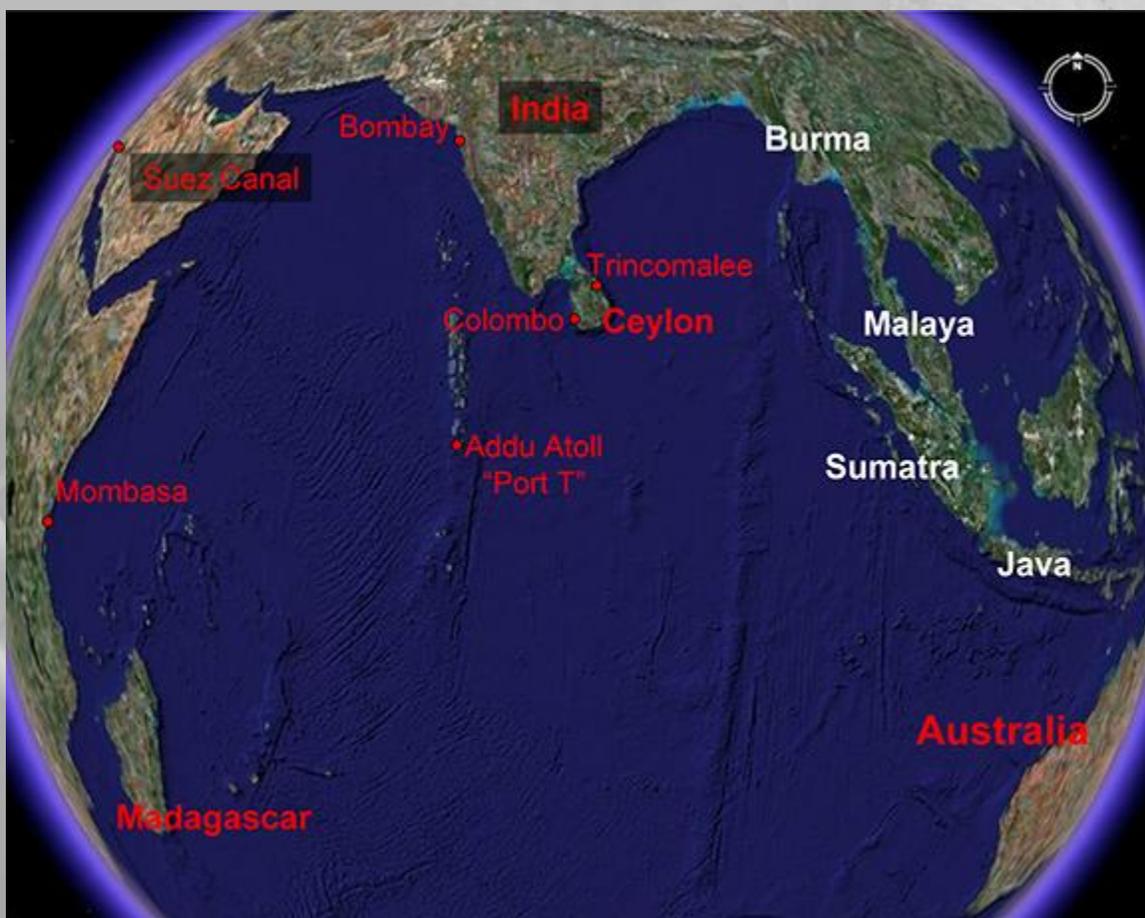


Figure 247: Action Area for the Eastern Fleet⁴¹⁸

The British Eastern Fleet in GWX

GWX scripts the operations of the British Eastern Fleet as individual operations, task forces, and convoy escort operations. The geographic area of operations includes the Indian Ocean and the Malay Barrier.

⁴¹⁸ Map developed using Google Earth

Task Force 74

Historical Background⁴¹⁹

The U.S. Navy formed its Seventh Fleet formed in March 1943 to provide naval support to General MacArthur's forces in the South West Pacific, with Task Force 74 as its initial surface component. Task Force 74 was a joint Australian-U.S. cruiser-destroyer task force that varied in composition over the course of the war, but generally included at least one cruiser and several destroyers under the overall command of Rear Admiral Sir Victor Crutchley, VC, RN.



Figure 248: The heavy cruiser HMAS *Australia*, a charter member of Task Force 74⁴²⁰

Task Force 74 conducted surface patrols, bombarded Japanese-held facilities, and provided shore bombardment and screening for amphibious operations throughout the South West Pacific Theater of Operations, starting with Operation *Chronicle* in June 1943 at Woodlark Island and ending with Operation *Oboe VI* at Balikpapan in June 1945.

Task Force 74 in GWX

GWX is limited in scope to the Indian Ocean, the Malay Barrier, and Australian waters, so the scripting of Task Force 74 in GWX is limited to the movement of warships between Port Moresby, Townsville, Sydney, and Brisbane. This simulates ships from Task Force 74 on their way to and return from refit, repair, training operations, and other activities between engagements.

⁴¹⁹ "Task Force 74," <http://pacific.valka.cz>;

"Australian, British, and New Zealand Navies in the Pacific 1941-1945,"

<http://www.naval-history.net/WW2CampaignsRNPacific.htm>

⁴²⁰ U.S. Naval Historical Center #80-G-12107, <http://www.history.navy.mil>

Operations *Jaywick* and *Rimau*

Historical Background⁴²¹

Australia formed “Special Operations Australia,” a commando and espionage unit operating under the cover name “Inter-Allied Services Department” in March 1942 (renamed in March 1943 to the “Services Reconnaissance Department”) to harass Japanese forces along the Malay Barrier. Its most famous mission was Operation *Jaywick*, a raid on Singapore in which three assault teams, each with two men in a Cockle Mk II collapsible canoe (essentially a canvas kayak), penetrated the harbor and sank six freighters and a tanker by attaching magnetic (“limpet”) mines to them. A follow-up raid, Operation *Rimau* (Malay for “tiger”) in September 1944 sank three merchant ships but at a heavy cost: the Japanese killed 13 of the commandos in action, and eventually captured, tortured, and finally executed the remaining 10 commandos on July 7, 1945.

In early September 1943, 14 commandos of the “Z” Special Unit left Exmouth, Australia in the former Japanese fishing vessel MV *Krait* (ex-*Kofuku Maru*) bound for Singapore. The *Krait* arrived at Pandjang island over 60 kilometers south of Singapore, dropped off the commando teams with their weapons, supplies, and equipment, and tried to look innocent as it milled about the area for awaiting their return. The commandos paddled to Singapore over several nights, arriving at their jump-off point, Subar Island, on September 25.



Figure 249: MV *Krait* just prior to Operation *Jaywick*⁴²²



Figure 250: Area of operations for Operation *Jaywick*⁴²³

The commandos attached the mines that night, and returned across the Strait just as the explosions began about dawn, sinking seven merchant ships totaling 36000 GRT. They waited out the Japanese search efforts, and then paddled 90 km to the rendezvous point with *Krait* a week later. There were tense moments when a small Japanese warship approached them closely, but the ship moved on and the commandos returned to Australia on October 19. Today MV *Krait* is an exhibit in Sydney, Australia.

⁴²¹ “Operation Jaywick,” <http://dynlab.mpe.nus.edu.sg/mpelsb/mdts/OpsJ/OpsJ.html>;

Wolfsohn, Ryan, “Cockleshell Heroes,” <http://www.specialoperations.com/History/WWII/Cockleshell.htm>;

“60th Anniversary of Operation *Jaywick*,” <http://www.dva.gov.au/media/publicat/2003/jaywick/page01.htm>

⁴²² Australian War Memorial #067338, <http://www.awm.gov.au/>

⁴²³ Map developed using Google Earth ®

The Services Reconnaissance Department planned Operation *Rimau* to follow-up the highly successful Operation *Jaywick*. In this operation, the commando team traveled on the submarine HMS *Porpoise* in September 1944 to the island of Merapas, about 80 miles east southeast of Singapore, and established a forward base. HMS *Porpoise* then intercepted and seized a Malay junk, *Mustika*, with the intention of loading a commando team, their one-man “motorized submersible canoes” (one-man submarines), weapons, and supplies and sailing straight into Singapore harbor, where the submersible canoes would fan out and deliver limpet mines to as many ships as they could.

The attack failed when the commandos mistakenly fired on a Malay police launch when it approached the *Mustika* off Laban Island, just 20 km from Singapore. The team leader, Lt Col Ivan Lyon, ordered the commandos to return to Merapas and scuttled the *Mustika* to ensure the Japanese did not capture the submersible canoes. Several of the commandos apparently sank three freighters in Singapore harbor on October 10, but were killed in action or died of wounds as the Japanese hunted them down. The remaining 18 commandos waited at Merapas for pickup by the submarine HMS *Tantulus*; however, the submarine’s commander decided to hunt Japanese ships instead following his orders, and the Japanese found the commandos first. The commandos attempted to return to Australia, but the Japanese eventually killed or captured all of them over the next several months. The 10 commandos who survived capture were tortured and finally executed on July 7, 1945.⁴²⁴

Operations *Jaywick* and *Rimau* in GWX

A small fishing boat will move through Australian waters, and then from Australia to Singapore on or about the historical dates of each of these operations.

⁴²⁴ “Success and failure in the port of Singapore – Z Special Unit and the *Jaywick* and *Rimau* raids,”
<http://www.anzacday.org.au>

Japanese Reconnaissance of Australia

Historical Background

The Japanese decided in early 1942 they would not invade Australia, but they likely carried out covert reconnaissance missions in Australia just as the Allies did in Japanese-occupied territory. Historians have confirmed one such mission: a landing in the Cape Bougainville Aboriginal Area of Western Australia in January 1944 by a small Japanese Army detachment under the command of Lieutenant Sisuhiko Mizuno to verify the presence of a suspected U.S. naval base in Admiralty Bay. Mizuno's detachment left Kupang, Timor on January 16, 1944 in a small fishing boat, the *Hiroshi Maru*.⁴²⁵

The team stopped for three hours at Browse Island, a small, uninhabited atoll approximately 290 km west of the landing site, on January 18 to ensure arrival at dawn on January 19. The team arrived on schedule and conducted reconnaissance on foot over the next two days. They found nothing that indicated the Allies were building a base, and departed for Timor on January 20. The team escaped detection entirely except for RAAF personnel surveying and preparing to build a *real* air base, Truscott Airfield, about 25 km northeast of where the Japanese had landed.⁴²⁶



Figure 251: Area of Operations for January 1944 Japanese Reconnaissance⁴²⁷

Japanese Reconnaissance of Australia in GWX

A small Japanese boat will follow the historical course of the *Hiroshi Maru*. Try not to sink it.

⁴²⁵ "Axis naval activities in Australian waters,"

http://en.wikipedia.org/wiki/Axis_naval_activity_in_Australian_waters#_note-65

⁴²⁶ "Japanese Army Reconnaissance Party Landed in Western Australia near Cartier and Browse Islands during WW2,"

<http://home.st.net.au/~dunn/japsland/land09.htm>

⁴²⁷ Map developed using Google Earth ®

The Destruction of the *Brake* and the *Charlotte Schliemann*

Historical Background

The *Brake* and the *Charlotte Schliemann* were two covert U-boat supply ships operating in the Indian Ocean from bases in the Japanese-occupied Netherlands East Indies. They were crucial to allowing all but the ultra-long range Type IXD2 U-boats to move between Europe and Asia.



Figure 252: MV *Sir Karl Knudsen* before Germany bought and renamed her *Charlotte Schliemann*⁴²⁸

Allied intelligence knew U-boats were appearing in the Orient, and that most U-boats could not sail to Asia unrefueled, so that there must therefore be refueling tankers stationed *en route*. Allied intelligence was able to deduce the location of the covert tankers by intercepting and decrypting the orders sent to the U-boats by BdU: if BdU ordered a U-boat to not to sink any merchant ships sailing alone in a given area it was a likely location for a covert German merchant ship. The Allies decrypted several of these orders in 1943 but could not send their forces in time to intercept the tankers; however, on February 3, 1944, *Kapitänleutnant* Ottoheinrich Junker in *U-532* (Type IXC/40) received orders and coordinates to rendezvous with a covert tanker about 1100 miles east-southeast of Mauritius. The Allies intercepted and rapidly decoded the message, and initiated Operation *Canned* to find and sink the tanker.⁴²⁹

Operation *Canned* began on February 8, 1944 with the departure of the light cruiser HMS *Newcastle* and the destroyer HMS *Relentless* from Mauritius, aided by Mauritius-based Catalina patrol bombers. *U-532* met *Charlotte Schliemann* on February 11 but rough seas prevented resupply, and a Catalina spotted them while they were waiting for calmer seas. *U-532* dived and separated from the tanker to avoid revealing the tanker's mission, but it was too late. HMS *Relentless* showed up the next day to act on the Catalina spotting report, charging in at 30 knots and launching eight torpedoes at a range of 2000 yards: three torpedoes hit and the *Charlotte Schliemann* went down in 10 minutes.⁴³⁰ HMS *Relentless* picked up 40 survivors out of 88 crewmembers* and the other 42 survivors took to the lifeboats: of these, the SS *African Prince* rescued 12 at sea and 10 drifted ashore in Madagascar, from where they went to the Kenya colony for internment along with the other survivors; the rest were lost at sea.⁴³¹

⁴²⁸ Photo source: "Norwegian Merchant Fleet 1939 – 1945," <http://www.warsailors.com/frefleet/norfleets2.html>

⁴²⁹ U.S. National Security Agency, *ULTRA in the Atlantic, Vol. II: "U-Boat Operations--December 1942 to May 1942 including German U-boats and raiders in the Indian and Pacific Oceans,"* Special Research History #008

<http://www.ibiblio.org/hyperwar/ETO/Ultra/SRH-008/index.html>

⁴³⁰ Kenneth Waterson, "My life on board the destroyer HMS *Relentless*,"

<http://www.bbc.co.uk/ww2peopleswar/stories/43/a6977343.shtml>

* One survivor gave a Nazi salute upon being rescued and was thrown back into the sea by an enraged crewmember, whose wife and child had been killed in a German bombing raid on Liverpool. He would have been the 41st survivor.

⁴³¹ Arthur J. Binning, "Survivors," <http://scotland.users.ftech.net/u188p1.htm>

Kapitänleutnant Junker in *U-532* lost contact with the *Charlotte Schliemann* and was unable to reestablish contact, but BdU suspected the British had sunk her and so ordered *Kapitänleutnant* Helmuth Pich in *U-168* (Type IXC/40), *Kapitänleutnant* Siegfried Lüdden in *U-188* (Type IXC/40), and *U-532* to rendezvous with the remaining Indian Ocean tanker, *Brake*, at a new set of coordinates. The Allies intercepted and decoded these instructions as they had for the rendezvous with *Charlotte Schliemann*, and prepared a reception committee comprised of the escort carrier HMS *Battler*; heavy cruiser HMS *Suffolk*; light cruiser HMS *Newcastle* (flagship), and the destroyers HMS *Quadrant* and *Roebuck* under the command of Rear Admiral Arthur Reid.

The U-boats met the *Brake* on March 11, with *U-188* being the first to begin refueling. Refueling operations were still underway on March 12 when aircraft from HMS *Battler* spotted the *Brake* and two of the submarines; the Germans had seen the aircraft and the submarines all dived. The British did not want to risk their heavy ships knowing U-boats were in the area so they sent in HMS *Roebuck*, which engaged *Brake* with long-range gunnery and sank her in about half an hour. *U-168* and *U-532* returned to Indonesia, with *U-168* picking up all but four of the *Brake* survivors; *U-188* had loaded enough fuel to continue on her way to France, arriving in Bordeaux on June 19, 1944.⁴³²

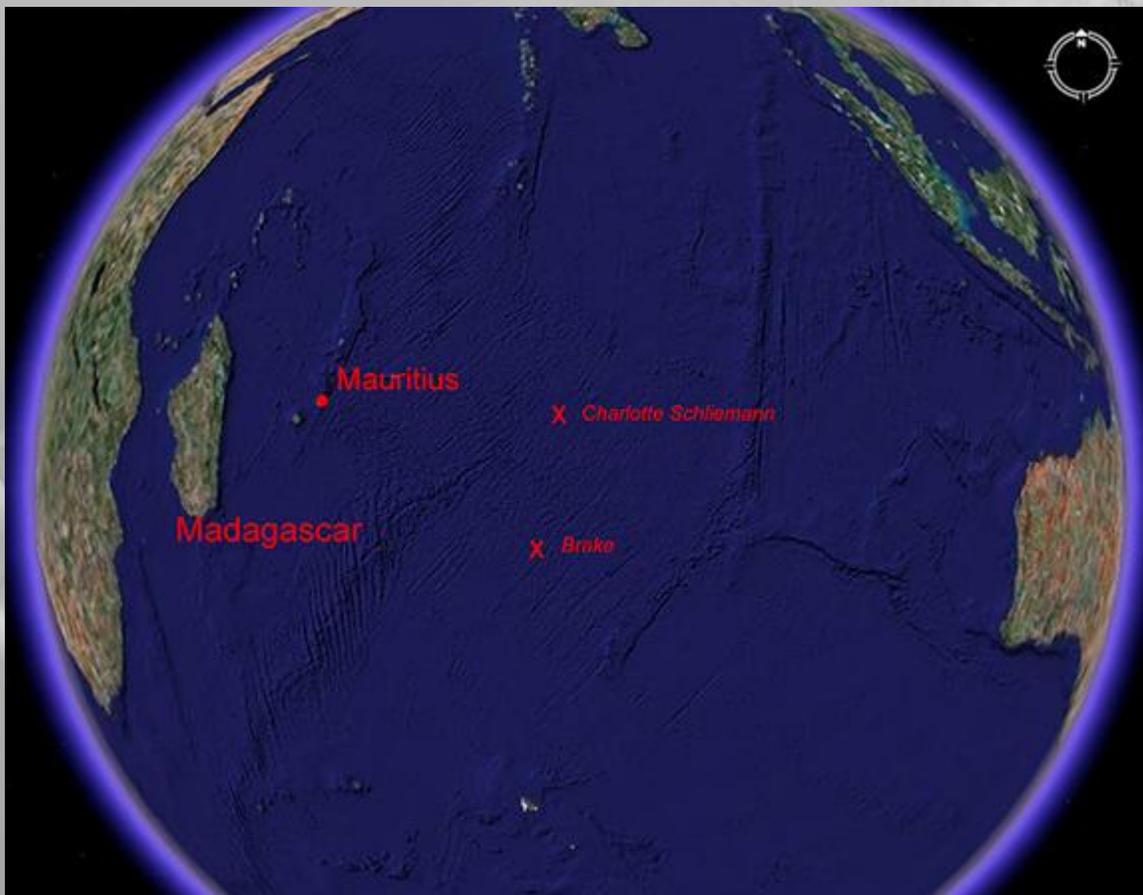


Figure 253: Area of action for the destruction of the *Brake* and the *Charlotte Schliemann*⁴³³

The destruction of the *Brake* and the *Charlotte Schliemann* in GWX

The attacks on these ships will occur as they did historically; however, the *Silent Hunter III* game engine does not allow AI-controlled submarines to surface or dive, so the Type IX U-boats depicted in these actions are “docked” with the tankers.

⁴³² Arthur J. Binning, “Survivors,” <http://scotland.users.ftech.net/u188p4.htm>

⁴³³ Map developed using Google Earth ®

Operation *Diplomat*

Historical Background

Japanese carrier raids on Ceylon (known today as Sri Lanka) in April 1942 forced the British Eastern Fleet back to Mombasa in the crown colony of Kenya. The Japanese defeat at Midway reduced the threat to India so the British slowly stripped the Eastern Fleet of its capital ships; the Eastern Fleet's only offensive actions against the Japanese through 1943 were submarine patrols other than Operation *Ironclad* against Madagascar. It was not until early 1944 that the Royal Navy began shifting capital ships back to the British Eastern Fleet, including the battle cruiser HMS *Renown*, battleships HMS *Queen Elizabeth* and *Valiant*, the aircraft carriers HMS *Illustrious* and *Unicorn*, several escort carriers, and various cruisers and destroyers.

In late February 1944, the aircraft carrier USS *Saratoga* reinforced the British Eastern Fleet when a concentration of Japanese naval units in Singapore led the Allies to believe the Japanese might be planning an operation in the Indian Ocean. Operation *Diplomat* was an Allied fleet training exercise with elements of the British Eastern Fleet and U.S. Task Force 58.5 that took place in March and April 1944 about 850 miles south of Ceylon. Exercise participants included the battle cruiser HMS *Renown* (flagship); battleships HMS *Queen Elizabeth*, HMS *Valiant* and Free French battleship *Richelieu*; aircraft carriers HMS *Illustrious* and USS *Saratoga*; heavy cruisers HMS *London* and *Cumberland*; light cruisers HMNZS *Gambia*, HMS *Ceylon*, and HNMS *Tromp*; 13 destroyers; and three fleet oilers.⁴³⁴



Figure 254: Left to right: *Richelieu*, HMS *Renown*, and HMS *Valiant* during Operation *Diplomat*⁴³⁵

Operation *Diplomat* in GWX

The British Eastern Fleet will depart Trincomalee and rendezvous with a tanker group and a U.S. carrier task force. They will conduct refueling operations and return to port. GWX simulates underway replenishment by sailing the task force on a steady course at 10 – 15 knots for a period of several hours.

⁴³⁴ “Operation *Diplomat*,” http://en.wikipedia.org/wiki/Operation_Diplomat

“Indian Ocean and South East Asia, including Burma,” <http://www.naval-history.net/WW2CampaignsIndianOcean2.htm>

“The New Zealand Navy: The New Zealand Cruisers,” <http://www.nzetc.org/tm/scholarly/tei-WH2Navy-c23.html>

⁴³⁵ U.S. Naval Historical Center #80-G-385067, taken by an aircraft from USS *Saratoga*, <http://www.history.navy.mil>

Operation *Cockpit*

Historical Background

Admiral Ernest King, the U.S. Chief of Naval Operations, asked the British Eastern Fleet to conduct a diversionary attack against Sabang, Sumatra to help cover Operation *Reckless*, the occupation of Hollandia (now called Jayapura) in western New Guinea on April 22, 1944.⁴³⁶ The Eastern Fleet under Admiral Sir James Somerville split into two forces for the operation:

- Force 69 comprised of battleships HMS *Queen Elizabeth* (flagship) and *Valiant*; Free French battleship *Richelieu*; light cruisers HMNZS *Gambia*, HNMS *Tromp*, and HMS *Newcastle*, *Nigeria*, and *Ceylon*; and nine destroyers
- Force 70 comprised of the battle cruiser HMS *Renown*, aircraft carriers HMS *Illustrious* and USS *Saratoga*, heavy cruiser HMS *London*, and six destroyers⁴³⁷
- Several British submarines also deployed near Sabang as inshore lookouts and to act as “lifeguards” in the event damaged Allied aircraft were able to land in the water nearby.

The forces departed Trincomalee, Ceylon on April 16 and launched an air strike against Sabang at about dawn on April 19. The air strike was a complete surprise: the strike sank two Japanese troop transports and a minelayer, and destroyed 24 aircraft on the ground; one U.S. aircraft was lost but the submarine HMS *Tactician* rescued the pilot. The task forces returned to Ceylon without suffering any other losses.

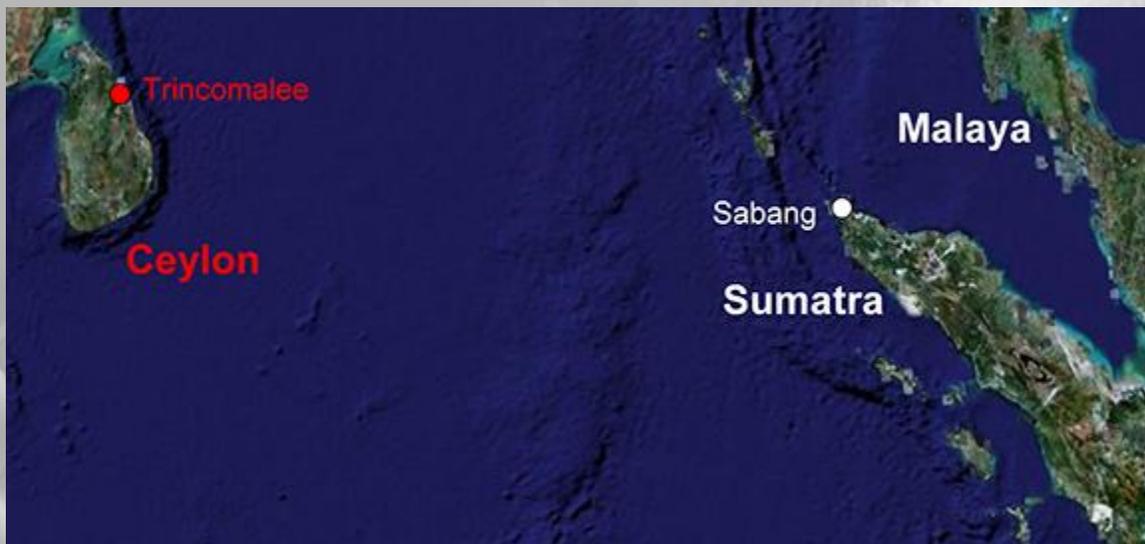


Figure 255: Action Area for Operation *Cockpit*⁴³⁸

Operation *Cockpit* in GWX

The task force will depart Trincomalee, sail to within 100 miles of Sabang, conduct air operations, and then return to base.

⁴³⁶ “The New Zealand Navy: The New Zealand Cruisers,” <http://www.nzetc.org/tm/scholarly/tei-WH2Navy-c23.html>

⁴³⁷ “Royal Navy in Pacific and Indian Ocean area,” <http://pacific.valka.cz/forces/rn.htm>

⁴³⁸ Map developed using Google Earth

Operation *Crimson*

Historical Background

The Eastern Fleet conducted Operation *Crimson*, a shore bombardment mission against Sabang, Sumatra on July 25, 1944. Admiral Sir James Somerville commanded Force 62, comprised of the battleships HMS *Queen Elizabeth* (flagship) and *Valiant*; battle cruiser HMS *Renown*; aircraft carriers HMS *Illustrious* and *Victorious*; heavy cruiser HMS *Cumberland*; light cruisers HMNZS *Gambia*, HNMS *Tromp*, and HMS *Kenya*, *Nigeria*, *Phoebe*, and *Ceylon*; and 10 destroyers.⁴³⁹

The aircraft carriers conducted fighter sweeps at dawn on July 25, followed shortly thereafter by heavy bombardment by the battleships and cruisers; a small force consisting of HNMS *Tromp* and three destroyers detached from the main group and sailed into Sabang harbor itself, bombarding the docks and port facilities at close range. Force 62 did considerable damage to the port infrastructure and sustained only minor damage from Japanese shore batteries in return. The operation concluded the same day and Force 62 returned to Trincomalee.⁴⁴⁰



Figure 256: Sabang under bombardment in *Crimson*⁴⁴¹

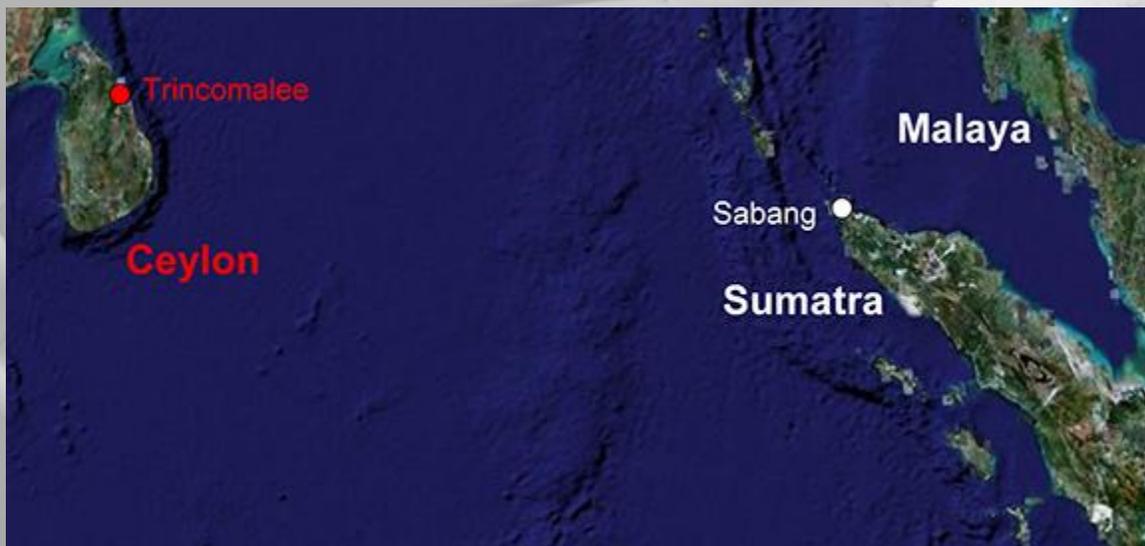


Figure 257: Area of action for Operation *Crimson*⁴⁴²

Operation *Crimson* in GWX

The task force will depart Trincomalee, sail to within 100 miles of Sabang, conduct air operations, and then return to base. **Note: GWX does not simulate the naval bombardment of Sabang due to stock *Silent Hunter III* limitations.**

⁴³⁹ “Royal Navy in Pacific and Indian Oceans area,” <http://pacific.valka.cz/forces/rn.htm>

⁴⁴⁰ *The Royal New Zealand Navy*: “The New Zealand cruisers,” <http://www.nzetc.org/tm/scholarly/tei-WH2Navy-c23.html>

⁴⁴¹ Photo source: Imperial War Museum #A 25105, <http://www.iwmcollections.org.uk>

⁴⁴² Map developed using Google Earth®

Historical Background



The Japanese were no longer a threat to Australia by late 1944, so mine removal operations began in late winter (July 1944) clear the mines laid in 1942 and 1943 to defend against a possible invasion, as they were now more of a threat to Allied shipping than to Japanese warships. Minesweepers conducted sweeping and clearance outside all major ports on a routine basis to ensure any mines laid by Japanese submarines or covert minelayers did not remain for long

Figure 258: Bathurst-class minesweeper HMAS Latrobe⁴⁴³

Australian minesweeping and ASW operations in GWX

GWX has scripted three specific minesweeping actions:

- August 1 – November 27, 1944: Minesweeping off the North and East coasts of Australia
- December 1944: Transfer of four minesweepers from Fremantle to Sydney
- December 1944: Four minesweepers from Sydney to Melbourne for minesweeping operations

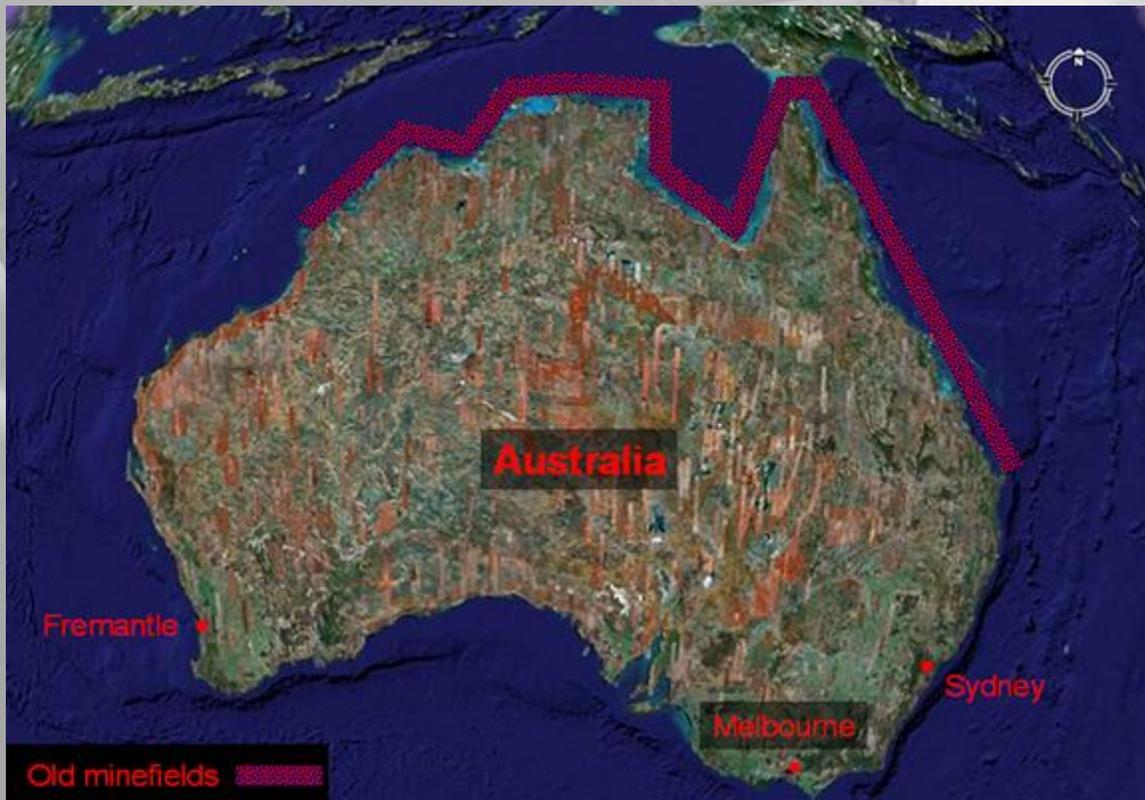


Figure 259: Area of action for Australian minesweeping and ASW Operations⁴⁴⁴

⁴⁴³ Australian War Memorial #044738, <http://www.awm.gov.au/>

⁴⁴⁴ Map developed using Google Earth®

Operation *Interlude*

Historical Background

The U.S. invasion of the Marianas (Operation *Forager*) and the Battle of the Philippine Sea in June 1944 were major U.S. victories, but the U.S. was undecided afterwards whether its next major objective should be Formosa (now called Taiwan) or the Philippine island of Luzon. The U.S. Chief of Naval Operations, Admiral Ernest King, proposed Formosa as the target while the Allied commander in the Southwest Pacific, General Douglas MacArthur, proposed Luzon. The debate continued until the beginning of October 1944, but the U.S. in the meantime began seizing territory for new naval facilities and airbases in the southern Philippine Islands that it would need to support either course of action.⁴⁴⁵

The first preparatory action was Operation *Stalemate II*, consisting of simultaneous amphibious assaults against Peleliu (now called Beliliou) and Angaur in the Palau Islands (Operations *Earthenware* and *Taxpayer*, respectively); Ulithi (Operation *Horror*) halfway between the Palau Islands and the Marianas; and against Morotai (Operation *Interlude*) in the Molucca Islands on September 15, 1944.⁴⁴⁶ The assault forces were to secure the islands (the codeword for Morotai itself was *Tradewind*) in a few days to begin building bases to support subsequent amphibious assaults against the southern Philippines.⁴⁴⁷

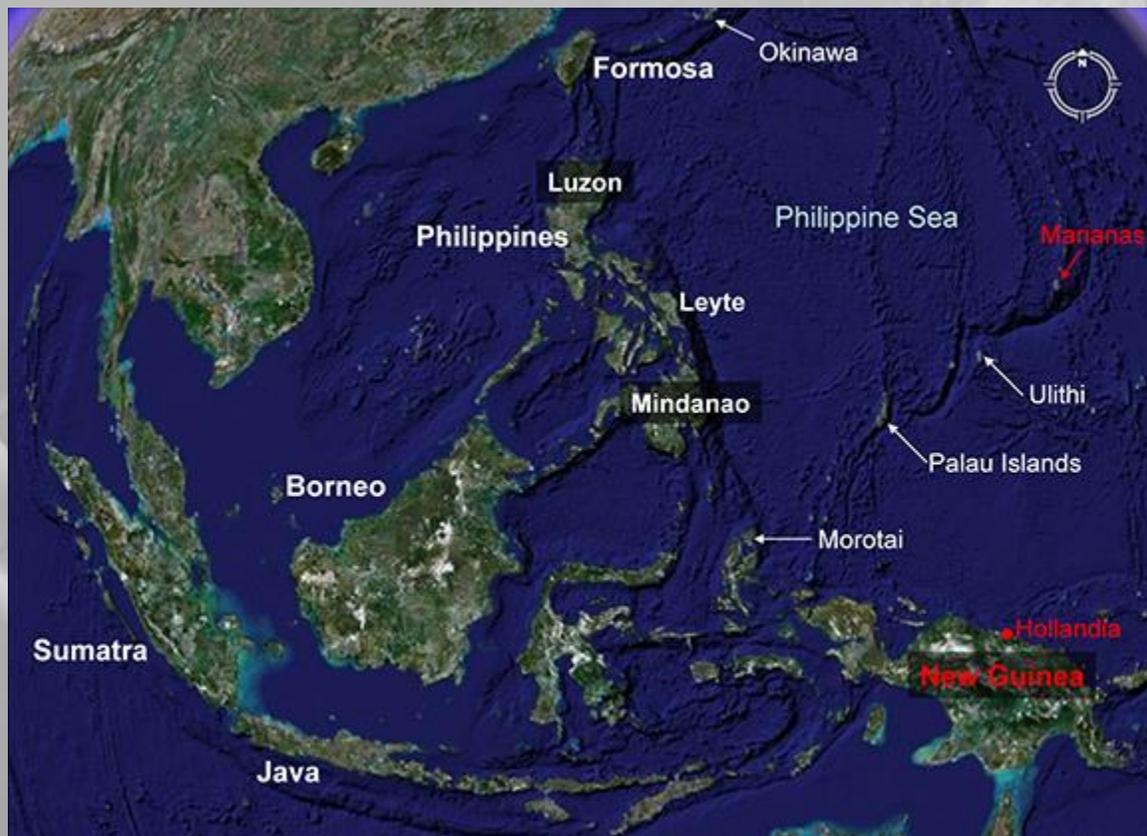


Figure 260: Area of action for Operation *Interlude*⁴⁴⁸

⁴⁴⁵ Cannon, M. Hamlin, *Leyte: Return to the Philippines*, in *United States Army in World War II: The War in the Pacific*, Office of the Chief of Military History, Department of the Army: 1993. CMH Publication 5-9

<http://www.ibiblio.org/hyperwar/USA/USA-P-Return/index.html>

⁴⁴⁶ "Glossary of U.S. Naval Code Words," NAVEXOS P-474, 2nd Edition. Office of Naval History, Navy Department: 1948

http://www.ibiblio.org/hyperwar/USN/ref/USN-NAVEXOS_P-474.html

⁴⁴⁷ Robert Ross Smith, "Luzon vs. Formosa," in *Command Decisions*, Center of Military History, Department of the Army,

http://www.army.mil/cmh-pg/books/70-7_0.htm

⁴⁴⁸ Map developed using Google Earth®

The 31st Infantry division was the Morotai assault force in Operation *Interlude*, commanded by Major General John Persons and transported by Amphibious Force VII. The amphibious force consisted of the following major elements commanded by Rear Admiral Daniel Barbey:

- The Carrier Unit, Task Group 78 (77.1), consisting of the escort carriers USS *Sangamon* (flagship), *Suwannee*, *Chenango*, *Santee*, *Fanshaw Bay*, and *St. Lo*; and eight destroyer escorts commanded by Rear Admiral Thomas Sprague
- The Close Support and Covering Force, Task Force 75 (77.2), consisting of the heavy cruisers HMAS *Australia* and *Shropshire*; light cruisers USS *Phoenix* (flagship), *Nashville*, and *Boise*; and 10 destroyers commanded by Rear Admiral Russell Berkey, with General MacArthur personally observing the landings from USS *Nashville*.
- The Attack Force, Task Group 77.3, consisting of the command ship USS *Wasatch* (flagship), two troop transports, five APD, 11 LST, 12 LCT, 38 LCI, and one LSD; six LCI(G) gunships, four rocket-armed LCI(R), and a demolitions LCI(D) escorted by 12 destroyers, six ASW patrol craft, and four minesweepers.⁴⁴⁹ Two PT boat tenders, USS *Oyster Bay* and *Mobjack*, with 41 PT boats of MTB Squadrons 9, 10, 18, and 33, followed these forces the next day.⁴⁵⁰



Figure 261: USS *Boise* (CL-47) during Operation *Interlude*⁴⁵³

Task Force 38.1 assisted the landings by provided air support and screening the amphibious assault force from any intervention by major surface units of the Japanese Navy. This task force consisted of the aircraft carriers USS *Wasp* and *Hornet* (flagship); the light aircraft carriers USS *Cowpens* and *Monterey*; the heavy cruisers USS *Boston* and *Canberra**; the light cruiser USS *Houston*†; and 11 destroyers under the command of Vice Admiral John S. McCain.⁴⁵¹

The Morotai landings went smoothly with little opposition; the U.S. invasion force outnumbered the Japanese by over 15:1, so the Japanese retreated and harassed U.S. forces rather than defending fixed positions. Fighters based at Morotai began escorting bombing missions to Mindanao on October 7, 1944.⁴⁵²

⁴⁴⁹ “USS *Fletcher* (DD-445) Morotai Action Report, September 15, 1944,” <http://ussfletcher.org/morotai.html>

⁴⁵⁰ “Southwest Pacific – Return to the Philippines,” <http://www.ptboats.org/20-07-05-reports-007.html>

* USS *Canberra* (CA-70) was named in honor of HMAS *Canberra*, sunk at the Battle of Savo Island on August 9, 1942

† USS *Houston* (CL-81) was named after USS *Houston* (CA-30), sunk at the Battle of the Sunda Strait on March 1, 1942

⁴⁵¹ “*Chronik des Seekrieges 1939-1945*,” <http://wiesel.wlb-stuttgart.de/seekrieg/44-08.htm>

⁴⁵² Smith, Robert Ross, *The Approach to the Philippines*, in *United States Army in World War II: The War in the Pacific*, Office of the Chief of Military History, Department of the Army: 1996.

<http://www.ibiblio.org/hyperwar/USA/USA-P-Approach/>

⁴⁵³ U.S. Naval Historical Center #80-G-301528, <http://history.navy.mil/>



Figure 262: LSTs at “Blue” Beach on the eastern coast of the Gila peninsula, Morotai⁴⁵⁴

The landings in the Palaus were a different matter: the 81st Infantry Division landing at Ulithi Atoll was unopposed and Ulithi soon became the Pacific Fleet’s forward fleet support base, the largest and busiest port in the world; but the landing at Angaur Island required one month and about 1,600 casualties (dead and wounded) to overcome organized Japanese resistance.

Ironically, General MacArthur’s staff had on September 15 proposed to advance the date of the invasion of Leyte from late December to mid-October 1944 (General MacArthur was aboard USS *Nashville* at Morotai and under radio silence), and to advance the invasion of Luzon (Operation *Musketeer*) to late December.⁴⁵⁵ This undermined the reason for the Peleliu assault since the airfields were unlikely to support an early invasion, barring minimal Japanese resistance as at Morotai, but the assault on Peleliu went forward anyways against stout Japanese resistance. The 1st Marine Division and the 321st Regimental Combat Team from the 81st Infantry division took eight weeks and incurred over six thousand casualties to establish control of Peleliu. Many Marines considered Peleliu the toughest fight of the war in the Pacific;⁴⁵⁶ one Japanese infantry platoon held out and did not surrender until April 1947.⁴⁵⁷

Operation Interlude in GWX

Operation *Interlude* takes place at the edge of the GWX operational area, so player interaction with this event is limited to attacking the task force somewhere between its starting point at the Allied naval base at Hollandia, New Guinea and its debarkation point at Morotai. GWX does not model the assaults on Peleliu, Angaur, and Ulithi.

⁴⁵⁴ Photo source: <http://www.ibiblio.org/hyperwar/USA/USA-P-Approach/USA-P-Approach-20.html>

⁴⁵⁵ Hough, *The Assault on Peleliu*, Appendix B.

⁴⁵⁶ Hough, Maj Frank O., USMC. *The Assault on Peleliu*, Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps: 1950. <http://www.ibiblio.org/hyperwar/USMC/USMC-M-Peleliu/index.html>

⁴⁵⁷ “One more job,” *Time*, May 5, 1947, Vol. XLIX No. 18

Operation *King II*

Historical Background

The assaults on Morotai, the Palaus, and Ulithi in mid-September 1944 cleared the way for the assault on Leyte, Operation *King II*. The Japanese 14th Area Army defended the Philippines, with ~432,000 troops under General Tomoyuki Yamashita, with ~20,000 troops of the 16th Division defending Leyte. The U.S. Sixth Army formed the Leyte invasion force with 202,500 troops under the command of Lt. General Walter Krueger, with X Army Corps (1st Cavalry and 24th Infantry Divisions, and 6th Ranger battalion), XXIV Army Corps (7th and 96th Infantry Divisions).⁴⁵⁸ There was insufficient amphibious capacity to lift the entire Sixth Army at once so the 32nd Infantry remained at Hollandia and the 77th Infantry Division remained at Guam in reserve, with “A-Day” set for October 20, 1944.⁴⁵⁹

The naval and amphibious forces for the Leyte assault were the largest assembled in the Pacific up until that time. Task Force 38, comprising almost the entire U.S. Third Fleet under Admiral William “Bull” Halsey and divided into four groups (TF 38.1, 38.2, 38.3, and 38.4), deployed north of Leyte to intercept and destroy Japanese naval and air forces in or threatening the invasion. This force included nine large aircraft carriers, eight light aircraft carriers, six battleships, six heavy cruisers, six light cruisers, three anti-aircraft cruisers, and 58 destroyers.

The Seventh Fleet, comprised of Task Forces 77, 78, and 79, provided the invasion force. TF 77 would provide gunfire support and beachhead security under Vice Admiral Thomas Kinkaid, and included:

- The Flagship group, with the command ship USS *Wasatch* (fleet flagship), the light cruiser USS *Nashville* (carrying General MacArthur), and four destroyers under Vice Admiral Kinkaid
- The Bombardment and Fire Support group, with the battleships USS *Pennsylvania*, *Mississippi*, *Tennessee*, *California*, *Maryland*, and *West Virginia*; heavy cruisers USS *Louisville* (flag), *Portland*, and *Minneapolis*; light cruisers USS *Honolulu*, *Columbia*, and *Denver*; the seaplane tender USS *San Carlos*, and 16 destroyers under Rear Admiral Jesse Oldendorf
- The Close Covering group, with the heavy cruisers HMAS *Australia* and *Shropshire*; light cruisers USS *Phoenix* and *Boise*; and seven destroyers under Rear Admiral Russell Berkey
- The Escort Carrier group under Rear Admiral Thomas Sprague divided into three Escort Task Forces (with “Taffy” as their radio call signs) providing close air support for the invasion forces
 - “Taffy 1” with escort carriers USS *Sangamon* (flag), *Suwannee*, *Chenango*, *Santee*, *Saginaw Bay*, and *Petrof Bay*; three destroyers; and four destroyer escorts under Rear Admiral T. Sprague
 - “Taffy 2” with escort carriers USS *Manila Bay*, *Natoma Bay* (flag), *Kadashan Bay*, *Marcus Island*, *Savo Island*, *Ommaney Bay*; three destroyers and five destroyer escorts under Rear Admiral Felix Stump
 - “Taffy 3” with escort carriers USS *St. Lo*, *White Plains*, *Kalinin Bay*, *Fanshaw Bay* (flag), *Kitkun Bay*, and *Gambier Bay*; three destroyers, and four destroyer escorts under Rear Admiral Clifton Sprague (no relation to Rear Admiral Thomas Sprague).⁴⁶⁰

⁴⁵⁸ Cannon, M. Hamlin, *Leyte: Return to the Philippines*, in *United States Army in World War II: The War in the Pacific* <http://www.ibiblio.org/hyperwar/USA/USA-P-Return/index.html>

⁴⁵⁹ Cannon. *Leyte: Return to the Philippines*. <http://www.ibiblio.org/hyperwar/USA/USA-P-Return/USA-P-Return-4.html>

⁴⁶⁰ *King II*, “Operation Plan CANF SWPA 13-44,” 26 Sept 1944, <http://www.ibiblio.org/hyperwar/USN/rep/Leyte/OpPlan/13-44-A.html>

Task Force 78 under Rear Admiral Daniel Barbey carried X Army Corps, and included three command ships, 17 attack troop transports, four troop transports, five destroyer transports, four attack cargo ships, two cargo ships, five LSD, three LSI, 12 LSM, 95 LST, a minelayer, two armed tugboats, and 12 destroyers.⁴⁶¹

Task Force 79 under Vice Admiral Theodore Wilkinson carried XXIV Army Corps, and included three command ships, 21 attack troop transports, five troop transports, one hospital ship, two LSV, four attack cargo ships, two cargo ships, five LSD, two LSM, 55 LST, three armed tugboats, three repair ships, and 28 destroyers.⁴⁶² The PT boat tenders USS *Oyster Bay*, *Willoughby*, and *Wachapreague*, followed the task force, accompanied by 45 PT boats.⁴⁶³



The Japanese Navy had four contingency plans following its defeat in the Philippine Sea. *Shō-Gō 1* (捷1号作戦, *Shō ichigō sakusen* or “Victory Plan 1”) would deal with a U.S. invasion of the Philippines, while *Shō-Gō 2*, *Shō-Gō 3*, and *Shō-Gō 4* addressed invasions of Formosa, the Ryūkyūs, and the Kuriles, respectively. In all cases, the Japanese Navy would conduct aggressive action to engage the U.S. fleet in a decisive battle. *Shō-Gō 1* anticipated the aggressive Admiral “Bull” Halsey would control TF 38, so it called for a Mobile Force (built around aircraft carriers with hardly any aircraft) to lure Halsey northward and leave the invasion beaches open to attack. Once Halsey was out of the way, the First Striking Force would then attack Leyte Gulf from the north with five battleships, 10 heavy cruisers, two light cruisers, and 12 destroyers while the Second Striking Force and a First Striking Force detachment under Rear Admiral Teiji Nishimura attacked from the south with two battleships, three cruisers, and 12 destroyers.⁴⁶⁴

Figure 263: Situation in the Pacific prior to Operation *King II*⁴⁶⁵

⁴⁶¹ *King II*, “Operation Plan CANF SWPA 13-44,” 26 Sept 1944, <http://www.ibiblio.org/hyperwar/USN/rep/Leyte/OpPlan/index.html>

⁴⁶² *King II*, “Operation Plan CANF SWPA 13-44,” 26 Sept 1944, <http://www.ibiblio.org/hyperwar/USN/rep/Leyte/OpPlan/index.html>

⁴⁶³ “*Willoughby*,” <http://www.history.navy.mil/danfs/w9/willoughby-ii.htm>

⁴⁶⁴ Toland, *The Rising Sun*, Vol. II

⁴⁶⁵ Original map: Cannon. *Leyte: Return to the Philippines*.

<http://www.ibiblio.org/hyperwar/USA/USA-P-Return/USA-P-Return-4.html>, *Shō-Gō* regions highlighted by the GWX team.

The U.S. task forces began departing their marshalling areas about six days prior to the actual assault, with a “time-on-target” approach to ensure that ships sailing at different speeds arrived on schedule.⁴⁶⁶ Initial landings to secure islands near the landing beaches were successful, but also tipped off the Japanese who immediately implemented *Shō-Gō 1* and began sending heavy naval, air, and army reinforcements to the aid of Leyte’s defenders.⁴⁶⁷ In addition, Vice Admiral Onishi, the commander of the Japanese First Air Fleet in Manila activated his new *tokubetsu kōgeki tai* (特別攻撃隊, “special attack unit”) that the U.S. and Japan would soon come to know as the *kamikaze* (神風, “divine wind”).⁴⁶⁸



Figure 264: Operation *King II* vs. *Shō-Gō 1*⁴⁶⁹

Shō-Gō 1 played out over the next several days in a series of engagements collectively known as the Battle of Leyte Gulf, the largest naval engagement in history. The Japanese were successful in luring Admiral Halsey and TF 38 away from protecting the landing zones; however, U.S. submarine attacks on off Palawan Island on October 23 sank the heavy cruisers *Atago* (愛宕) and *Maya* (摩耶) and crippled the heavy cruiser *Takao* (高雄), which needed two destroyers to escort it back to Singapore. Air attacks in the Subuyan Sea on October 24 sank the battleship *Musashi* (武蔵) and threw the First Striking Force half a day off schedule, which meant that Vice Admiral Nishimura’s force would not only be heavily outnumbered, but would also face a night engagement against battleships and cruisers equipped with precision fire control radar where his ships were not.⁴⁷⁰

⁴⁶⁶ “Movement Plan,” <http://www.ibiblio.org/hyperwar/USN/rep/Leyte/OpPlan/13-44-C.html>

⁴⁶⁷ Toland, *The Rising Sun*.

⁴⁶⁸ “Kamikaze,” <http://en.wikipedia.org/wiki/Kamikaze>

⁴⁶⁹ Map developed using Google Earth®, after a map at <http://www.history.navy.mil/download/ww2-32.pdf>

⁴⁷⁰ “Battle of Leyte Gulf,” http://en.wikipedia.org/wiki/Battle_of_leyte_gulf

The Battle of the Surigao Strait on the night of October 25/26 was a crushing defeat for the Japanese, who lost the battleships *Fusō* (扶桑) and *Yamashiro* (山城); the heavy cruiser *Mogami* (最上); and three destroyers. TF77 lost only one PT boat, but was low on ammunition and too far to the south to defend the landing beaches when the much larger Central Force attacked from the north the next morning.⁴⁷¹

The Japanese First Striking Force encountered “Taffy 3” off the island of Samar just north of Leyte Gulf, taking the badly outnumbered and out-gunned U.S. forces completely by surprise. A rain squall and a sacrificial charge by Taffy 3’s three destroyers and four destroyer escorts slowed the Japanese long enough for the Escort Carrier Group’s 18 aircraft carriers to arm and launch their aircraft carrying anything – aerial torpedoes, rockets, and even depth charges – to try to slow down the oncoming Japanese. The Japanese sank the escort carrier USS *Gambier Bay*, two destroyers, and one destroyer escort, but the Americans crippled three cruisers, *Chōkai* (鳥海), *Suzuya* (鈴谷), and *Chikuma* (筑摩) in the *mêlée*. After about four hours, Vice Admiral Kurita had had enough. He ordered the three crippled cruisers to scuttle and turned the First Striking Force north to search for TF 38, ending his attempt to destroy the amphibious forces at the beachhead; after the battle, the commander of “Taffy 3,” Rear Admiral Sprague, said that he had expected to at best be swimming by the time Kurita turned away.⁴⁷²



Figure 265: Looking south at the northern Leyte Gulf invasion beach area, October 22, 1944⁴⁷³

TF 38 had obliterated the Mobile Force aircraft carriers and had moved its battleships to just within range of the survivors when an urgent message from Admiral Nimitz forced Admiral Halsey to turn south engage the First Striking Force. TF 38 arrived just too late to catch the First Striking Force as it retreated back through Surigao Strait, but it was a minor failure compared to the catastrophe the U.S. Navy had only just avoided when Vice Admiral Kurita turned away from Leyte Gulf.⁴⁷⁴

⁴⁷¹ Toland, *op cit.*

⁴⁷² Toland, *op cit.*

⁴⁷³ Photo source: Cannon. *Leyte: Return to the Philippines.*

<http://www.ibiblio.org/hyperwar/USA/USA-P-Return/USA-P-Return-5.html>

⁴⁷⁴ S. E. Morison, *History of U.S. Naval Operations in World War II. Vol. XII: Leyte*

Operation King II in GWX

Using *Silent Hunter III* to simulate the adventure of a U-boat in the midst of the hundreds of ships and thousands of aircraft involved in the Battle of Leyte Gulf would likely bring even the most powerful personal computer to its knees. In any event, the only Japanese warship simulated by GWX is the Ch-13 sub chaser, and the GWX Team feels it would be unrealistic to simulate events such as the Battle of Surigao Strait and the ordeal of Taffy 3 with Ch-13 subchasers standing in for the battleships of the Imperial Japanese Navy. Operation *King II* in GWX therefore features the passage of the U.S. Seventh Fleet from its bases at Hollandia and the Admiralty Islands to the beaches in Leyte Gulf, rather than the Battle of Leyte Gulf itself.



Figure 266: USS *Pennsylvania* (BB-38) leads USS *Colorado* (BB-45) and three cruisers (1945)⁴⁷⁵

⁴⁷⁵ Photo source: U.S. National Archives # 80-G-59525, <http://www.archives.gov/research/ww2/photos/>

Operations *Lightning* and *Matador*

Historical Background

Operation *Lightning* was an amphibious assault launched by No. 3 Commando Brigade on January 4, 1945 to secure an airfield at Akyab (now called Sittwe) to support the British advance on Rangoon, Burma. The assault force left Chittagong, India (in modern Bangladesh) on January 2, 1945 under the command of Rear Admiral Arthur Read:

- Force 61: Covering force with the light cruisers HMS *Newcastle* (flagship) and *Nigeria*; anti-aircraft cruiser HMS *Phoebe*; escort carrier HMS *Ameer*; and three destroyers.
- Force 64: Invasion force with two destroyers, a sloop, three transports, and two LCI.

The invasion force found the Japanese had gone, so Operation *Matador*, an amphibious assault by the 26th Indian Infantry Division against the port of Kyaukpyu, followed Operation *Lightning* on January 21. This assault was supported by Force “W” consisting of the battleship HMS *Queen Elizabeth*; escort carrier HMS *Ameer*; anti-aircraft cruiser HMS *Phoebe*; two destroyers; three sloops; and a frigate escorting seven troop transports and two LCI all under the command of Rear Admiral B.C.S. Martin. The British cleared the island of Japanese troops by February 22, 1945.⁴⁷⁶



Figure 267: Action area for Operation *Lightning* and Operation *Matador*⁴⁷⁷

Operations *Lightning* and *Matador* in GWX

British task forces will move against both locations and patrol the area during these operations.

⁴⁷⁶ Vice Admiral Sir Arthur J. Power, “Naval Operations in Ramree Island Area 19th January to 22nd February 1945,” *Supplement to the London Gazette*, No. 38269, 26 April 1948,

<http://www.ibiblio.org/hyperwar/UN/UK/LondonGazette/38269.pdf>;

“*Chronik des Seekrieges 1939-1945*,” <http://www.wlb-stuttgart.de/seekrieg/45-01.htm>;

“*Baffins*,” <http://www.history.navy.mil/danfs/b1/baffins.htm>

⁴⁷⁷ Map developed using Google Earth

Operations *Meridian I* and *Meridian II*

Historical Background

Progress in the war against Germany and Italy allowed Britain to establish the British Pacific Fleet (BPF) under the command of Admiral Sir Bruce Fraser on August 1, 1944. Significant Royal Navy elements began transferring to the Indian Ocean to begin training for carrier warfare in the Pacific, against Japan, where the tactics and logistical problems differed significantly from the war in Europe.

Force 63, commanded by Rear Admiral Sir Philip Vian, finished training and transferred to the Pacific in January 1945: as a “graduation exercise,” it executed Operations *Meridian I* and *Meridian II*, a pair of air strikes against oil refineries near Palembang, Sumatra on January 24 and 29. Force 63 consisted of aircraft carriers HMS *Indomitable* (flagship), *Illustrious*, *Indefatigable*, and *Victorious*; battleship HMS *Duke of York*; anti-aircraft cruisers HMS *Argonaut*, *Black Prince*, and *Euryalus*; and 10 destroyers. Force 69 provided fueling support and consisted of light cruiser HMS *Ceylon*, one destroyer, and three fleet oilers. Force 69 refueled Force 63 at the conclusion of the operation and returned to Trincomalee while Force 63 went on to Fremantle, Australia.⁴⁷⁸

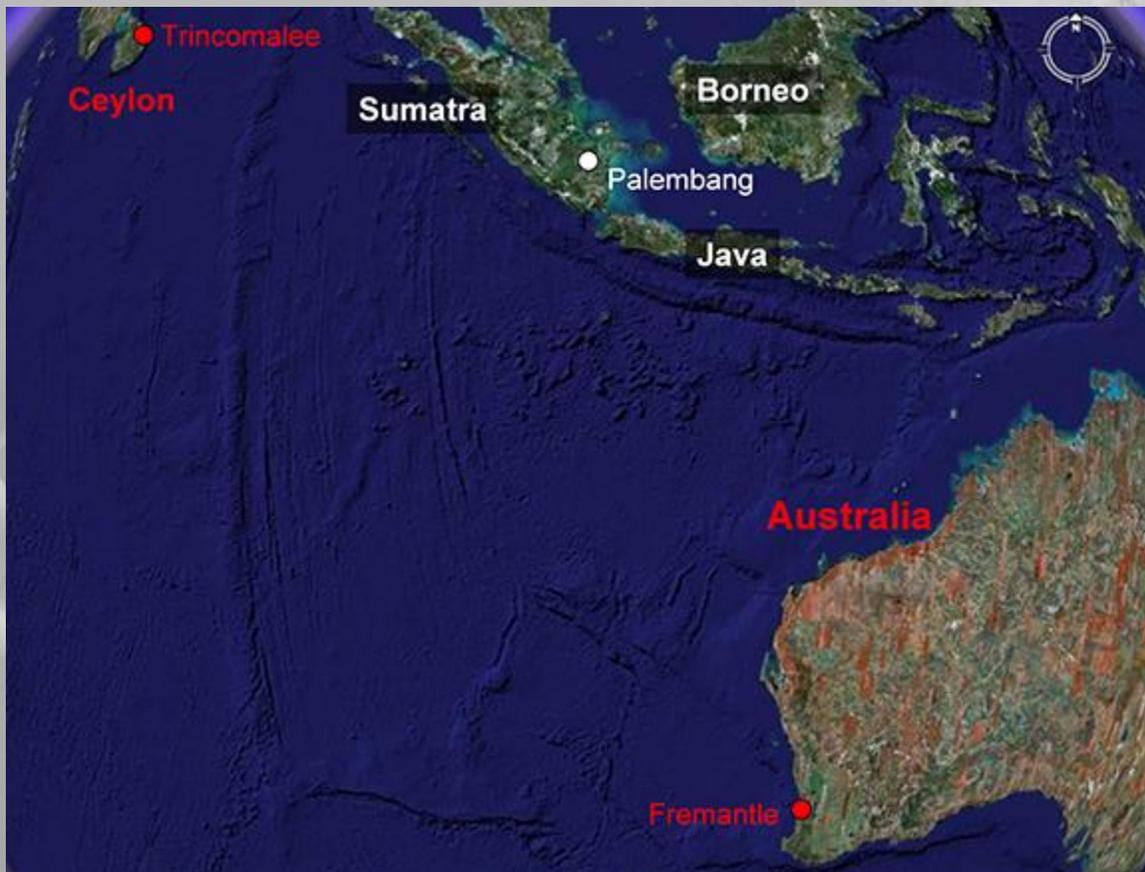


Figure 268: Action area for Operations *Meridian I* and *Meridian II*⁴⁷⁹

Operations *Meridian I* and *Meridian II* in GWX

Force 63 and Force 69 will rendezvous, conduct underway refueling, conduct two air strikes, and finally conduct another underway replenishment. Force 63 and 69 will then move to their destinations.

⁴⁷⁸ “Operation *Meridian*,” http://en.wikipedia.org/wiki/Operation_Meridian

⁴⁷⁹ Map developed using Google Earth®

New Single Player Missions

Historically-based Missions

Atlantic Ocean, North Sea, and Baltic Sea

Bucket Brigade

Description

The months after the U.S. entry into World War II were a “second Happy Time” for U-boats in U.S. and Caribbean waters. The U.S. Navy was unprepared for a two-front war, and U-boats sank 156 ships in January-April 1942 alone. U.S. merchant ships initially refused to accept the wartime radio silence, blackout, zigzag sailing, and other disciplines, and it took months for U.S. cities to impose blackouts.⁴⁸⁰

The U.S. Navy finally instituted a “bucket brigade” convoy system on April 14, 1942. By day, small squadrons of ASW-capable ships relayed the convoys from port to port along the Atlantic coast, with each squadron responsible for conveying all ships within its sector under air cover from shore bases; at night, merchants hid in ports or *ad hoc* anchorages behind minefields and submarine nets.

USCGC *Dione* arrived at her “Bucket Brigade” rendezvous point off Cape Lookout at dawn on April 19. Eight merchant ships, including seven tankers, were awaiting escort to Norfolk; however, the US Navy had reassigned the two destroyers that were to have led the escort so the convoy moved out escorted only by the *Dione*, two British ASW trawlers, and a small USCG patrol boat. At about 6PM local time that evening the convoy had rounded Cape Hatteras (a favorite U-boat hunting ground) and was a few hours out from Norfolk when it was intercepted by *U-136* (*Kapitänleutnant* Heinrich Zimmerman).⁴⁸¹



Figure 269: Action area for “Bucket Brigade”⁴⁸²

⁴⁸⁰ Clay Blair, *Hitler’s U-boat War: The Hunters*

⁴⁸¹ Homer Hickam, *Torpedo Junction*

⁴⁸² Map developed using Google Earth®

Aftermath

U-136 launched a spread of four torpedoes at the convoy, but an ASW patrol aircraft spotted one of them and alerted the convoy: *Dione* evaded one torpedo by about 20 yards, but a second torpedo hit the tanker *SS Axtell J. Byles*. *Dione* and ASW patrol aircraft counter-attacked, but *U-136* was already retreating towards deeper water and remained undetected. The *Axtell J. Byles* survived its torpedo hit without any casualties and limped into Norfolk later that evening. The U.S. did not implement a full convoy system until late May, but the fact that eight ships in this “Bucket Brigade” convoy survived the passage was a portent of things to come as the U.S. began instituting the convoy system in American and Caribbean waters.⁴⁸³

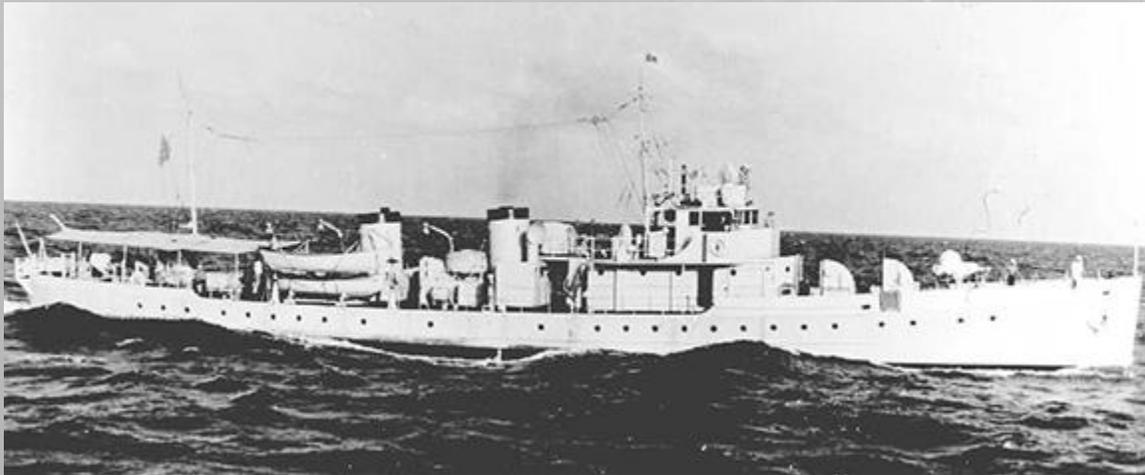


Figure 270: USCGC *Dione* (1935)⁴⁸⁴

“Bucket Brigade” in GWX

The GWX team based “Bucket Brigade” on the “The Bucket Brigades” mission by “Wilhelm Schulz.” The main changes are:

- Reset starting date, time, and location to correspond to the historical attack by *U-163* on this convoy.
- Revised the names, types, course, crew ratings, configuration dates, and speed of all ships to correspond (roughly) to the historical types using new GWX ship types; revised aircraft entries. This mission models USCGC *Dione* as a Flower-class corvette.
- *U-136* is now a Type VIIC U-boat as it was historically, rather than a Type IXB U-boat, with a configuration date of March 24, 1942 (her historical sailing date)
- The game will attempt to provide the player a Type VIIC/41 U-boat. Players who want to use the same type of U-boat as *U-136* should select “Type VIIC (1942)” at the single mission selection screen.
- Added victory condition: sink 10,000 tons of merchant shipping.

⁴⁸³ Homer Hickam, *Torpedo Junction*

⁴⁸⁴ Photo source: U.S. Coast Guard photo, “Dione, 1934,” http://www.uscg.mil/History/WEBCUTTERS/Dione_1934.html

Cerberus

Description

The German battleships *Scharnhorst* and *Gneisenau* entered Brest, France on March 22, 1941 after conducting Operation *Berlin*, a North Atlantic breakout and subsequent two-month patrol in which they sank or captured 22 Allied merchant ships displacing more than 110,000 tons. The heavy cruiser *Prinz Eugen* arrived on June 1, 1942 after the Royal Navy cornered and sank *Prinz Eugen*'s partner in Operation *Rheinübung*, the battleship *Bismarck*.

The British kept a close watch on the three German surface raiders in Brest, and repeatedly attacked them with aircraft to preclude another breakout.⁴⁸⁵ The damage left the three warships unfit for Atlantic duty until early 1942, when Hitler began to believe the Allies were going to invade Norway and he demanded the *Kriegsmarine* bring the surface raiders north to assist in its defense. The *Kriegsmarine* elected to bring the ships home by the most direct route: through the English Channel, and rely on surprise, secrecy, and daring to get home before the British could react effectively.

The Germans planned Operation *Cerberus*, named after the three-headed dog of Greek mythology in reference to the three escaping raiders, to begin at high tide after dark on February 11, 1942. *Vizeadmiral* Otto Ciliax would command a task force consisting of *Scharnhorst* (flagship), *Gneisenau*, *Prinz Eugen*, six destroyers, and numerous small escorts. The operation would use night and radar jammers to mask the task force until it was half-way to the Dover Strait; after that, the task force would hug the French coast at 25 knots, travel through Channel minefields cleared and marked by minesweepers stationed on their path, and rely on the *Luftwaffe* to provide continuous daylight fighter cover. If all went well the task force would be in Germany before dawn of the second day.

Operation *Cerberus* did not begin auspiciously for the Germans: the RAF conducted a night air raid on Brest just as the ships were getting underway in the harbor, but the only effect was to delay the departure by 90 minutes. Once underway, a combination of British mistakes, command and control problems, deteriorating weather, and bad luck allowed the task force to slip through the British submarine, surface, and aircraft patrols. The British did not realize the game was afoot until 11:25AM the next morning. See [Operation Cerberus](#) for a more complete description of this engagement.



Figure 271: Torpedoboot escorting *Scharnhorst* during Operation *Cerberus*⁴⁸⁶

⁴⁸⁵ "The Channel Dash," http://www.navweaps.com/index_oob/OOB_WWII_Atlantic/OOB_WWII_Cerberus.htm

⁴⁸⁶ Photo source: <http://www.wlb-stuttgart.de>

Aftermath

The British followed up over the next four hours with a series of heroic, but uncoordinated and ultimately ineffective attacks by six Swordfish torpedo bombers, 28 Beaufort torpedo bombers⁴⁸⁷, seven Hudson bombers, eight motor torpedo boats (MTB), two motor gun boats (MGB), and two flotillas of World War I-era destroyers. The commander of the Swordfish attack, Lt-Cdr Eugene Esmonde, RN, had received the Distinguished Service Order the day before for leading the Swordfish attack that crippled the *Bismarck* during Operation *Rheiniübung*; he received a posthumous Victoria Cross for leading the Swordfish attack against the task force.⁴⁸⁸ Finally, RAF Bomber Command sent three waves of over 240 heavy and medium bombers as darkness was falling; only 39 reported finding the task force in gathering darkness and worsening weather, scoring one hit on the torpedo boat *Jaguar* and losing 15 aircraft.

The task force had brushed off the British attacks aside but hit recently laid British minefields off the Dutch coast. *Scharnhorst* stopped dead in the water after striking a mine in mid-afternoon but was able to catch up with the task force; she stayed in formation until crippled by another mine later that evening. The Germans left her unescorted and she limped into Wilhelmshaven towards noon on February 13. *Gneisenau* struck a mine during the evening but suffered only minor damage; she kept up with *Prinz Eugen* and entered Kiel on February 13 a few hours ahead of *Gneisenau*'s entry into Wilhelmshaven. There was public outrage in England that the task force had sailed up the English Channel under the noses of the RAF and the Royal Navy, but the "Channel Dash" left the surface raiders in a worse position to threaten the Atlantic convoys, and the three ships accomplished little for the remainder of the war. As *Großadmiral* Raeder wrote, "We have won a tactical victory and suffered a strategic defeat."⁴⁸⁹

"Cerberus" in GWX

The "Cerberus" mission in GWX assumes the Germans deployed U-boats in the North Sea to support Operation *Cerberus* by interdicting any British ships that attempted to intercept them, though this did not happen historically. This mission takes place within the context of this battle as it exists in the GWX campaign.

⁴⁸⁷ Some mistakenly attacked British destroyers as the destroyers launched torpedoes against the task force.

⁴⁸⁸ "Eugene Esmonde VC," http://www.royalnavalmuseum.org/info_sheets_eugene_esmonde.htm

⁴⁸⁹ Stephen, Martin. *Sea Battles in Close-Up: World War II*. Naval Institute Press: 1988

Convoy HX 228

Description

The North Atlantic: March 1943. Convoy HX 228 departed New York on February 28, 1943 bound for Liverpool, England via Halifax, Canada. Upon leaving Halifax it consisted of 61 merchant ships escorted by the destroyers HMS *Harvester* (escort leader) and *Escapade* and ORP *Garland* and *Burza*; corvettes HMS *Narcissus* and *Orchis* and Free French corvettes *Aconit*, *Roselys*, and *Renoncule*; and the escort carrier USS *Bogue* with its two escorting destroyers, USS *Belknap* and *Osmond Ingram*.⁴⁹⁰

BdU formed 13 U-boats into group *Neuland* and directed six other U-boats to join the attack: *U-86*, *U-221*, *U-228*, *U-333*, *U-336*, *U-359*, *U-373*, *U-405*, *U-406*, *U-432*, *U-440*, *U-441*, *U-444*, *U-448*, *U-566*, *U-590*, *U-608*, *U-659*, and *U-757*.⁴⁹¹ The pack formed in the central North Atlantic air coverage gap, where the player's boat, *U-336* (*Kapitänleutnant* Hans Hunger) made the first contact in the early afternoon of March 10, 1943.⁴⁹²



Figure 272: A North Atlantic convoy in calm weather⁴⁹³

Aftermath

The weather was overcast, with winds at Force 6 (averaging 24 knots, or 12 m/sec) or more, with intermittent rain and hail; the seas and swell were rough.⁴⁹⁴ *U-336* gave the convoy's position, but was detected and forced to retreat. Aircraft from USS *Bogue* kept the U-boats at bay on March 10, but the U-boats closed in after she left that afternoon to return to Argentina. The convoy battle ended on March 12 as the convoy left the air coverage gap. The Allies lost the merchant ships *Tucurinca* (UK - 5,412 tons), *William S. Gorgas* (US - 7,197 tons), *Andrea F. Luckenbach* (US - 10,652 tons), and *Brant County* (Norway - 5,001 tons) for a total of 28,262 tons and 113 men.⁴⁹⁵ The Germans lost *U-444* (*Oberleutnant* z. S. Albert Langfeld), rammed by the escorts HMS *Harvester* (Cdr A. A. Tait, RN) and the *Aconit*. HMS *Harvester* crippled herself ramming *U-444*; *U-432* (*Kapitänleutnant* Hermann Eckhardt) later found, torpedoed, and sank *Harvester*, after which *Aconit* counterattacked and sank *U-432*.⁴⁹⁶

⁴⁹⁰ "Convoy HX 228," <http://www.warsailors.com/convoys/hx228.html>

⁴⁹¹ "1943 März," <http://www.wlb-stuttgart.de/seekrieg/43-03.htm>

⁴⁹² U.S. National Security Agency, "Crisis of North Atlantic Offensive, March 1943," *Ultra in the Atlantic: U-boat Operations*. SRH-008.. <http://www.ibiblio.net/hyperwar///ETO/Ultra/SRH-008/SRH008-3.html>

⁴⁹³ Photo source: National Archives of Canada #PA 115005 from *Veterans Affairs Canada*, http://www.vac-acc.gc.ca/printer/sub.cfm?source=history/secondwar/fact_sheets/merchant

⁴⁹⁴ "Convoy HX 228," <http://www.warsailors.com/convoys/hx228page3.html>

⁴⁹⁵ Roger Jordan. *The World's Merchant Fleets 1939*. Naval Institute Press: 1999.

⁴⁹⁶ "HX 228," <http://uboat.net/ops/convoys/battles.htm?convoy=HX-228>

“Convoy HX 228” in GWX

The GWX team based “HX 228” on the “HX 229” mission by gerhi4u@gmx.de. **Note: this mission is highly demanding on your system’s processor and graphics adapter. You should have a system with at least the recommended configuration to play *Silent Hunter III*.** The main changes are:

- Translated from German to English
- The scene of the action moved from near Nova Scotia to the mid-Atlantic, and the calm weather in the original mission is replaced by the historical weather
- Corrected the order of battle to more historical representation
 - All ship configurations changed to January 1, 1943.
 - HMS *Harvester* changed from US *Buckley*-class destroyer escort to British A&B-class destroyer (she was a British *Havant*-class destroyer)
 - HMS *Garland* changed from Hunt I-class destroyer to A&B-class destroyer (she was a Polish G-class destroyer)
 - ORP *Burza* changed from a Hunt I-class destroyer to a *Bourrasque*-class destroyer (she was a Polish *Burza*-class destroyer built by France and based on the *Bourrasque*-class destroyers)
 - HMS *Escapade* changed from US *Buckley*-class destroyer escort to British A&B-class destroyer (she was a British E-class destroyer)
 - HMS *Narcissus* changed from US Flower-class corvette to British Flower-class corvette
 - Added British Flower-class corvette HMS *Orchis*
 - *Renoncule* changed from UK Flower-class corvette to Free French Flower-class corvette
 - *Aconit* changed from UK Flower-class corvette to Free French Flower-class corvette
 - *Roselys* changed from UK Flower-class corvette to Free French Flower-class corvette
 - *Osmond* and *Ingram* (two *Evarts*-class destroyer escorts) replaced by the *Clemson*-class destroyer USS *Osmond Ingram*
 - *Belknap* changed from *Evarts*-class destroyer escort to *Clemson*-class destroyer
 - Player U-boat (*U-336*) changed from Type IXD2 to Type VIIC. The game will automatically provide the player a Type VIIC/42 U-boat. Players who want to use a more historically likely U-boat should select “Type VIIC (1943)” at the single mission selection screen.
- Corrected the aircraft order of battle
 - British Hurricane fighters replaced by US Wildcat fighters
 - British Swordfish torpedo bombers replaced by US Avenger torpedo bombers
 - German Fw 200 removed
- Replaced the original convoy configuration
 - Seven merchants replaced by 61 merchant ships (5 rows of 12 ships, one row with one ship)
 - Separate escort group merged with convoy, with speed increased to the historical value
 - USS *Bogue* and its escorting destroyers are now a separate group
- Removed “U-boat group *Neuland*,” which consisted of eight submerged U-boats and a small *vorpostenboot*, and associated mission objectives and messages
- Modified primary and secondary objectives
 - MS *Gotthilf* is now a “weather ship” instead of a refueling ship and deleted her “ghost” U-tanker. She is now an “Environmental” item rather than a German ship to preclude the Allies from sinking her in the first few minutes of the mission.
 - Objectives regarding lack of aggressiveness, *etc.*, removed.

Convoy KS 502

Description

The U.S. instituted full convoys in mid-May 1942 to replace the earlier “Bucket Brigades”: the new KS (Norfolk to Key West) and KN convoys (Key West to Norfolk) would depart every three days. The same escort group would guard each convoy the entire way: two destroyers, a coast-guard cutter or corvette, two British ASW trawlers, and two Coast Guard patrol vessels. Two experimental convoys, KS-500 heading south from Norfolk and KN-100 heading north from Key West, sailed on May 14 to test the readiness of the merchants, escorts, and aircraft patrols, and all the ships arrived safely. Convoy KS 102 that departed Norfolk early on May 20 was slightly larger, with 11 merchant ships.

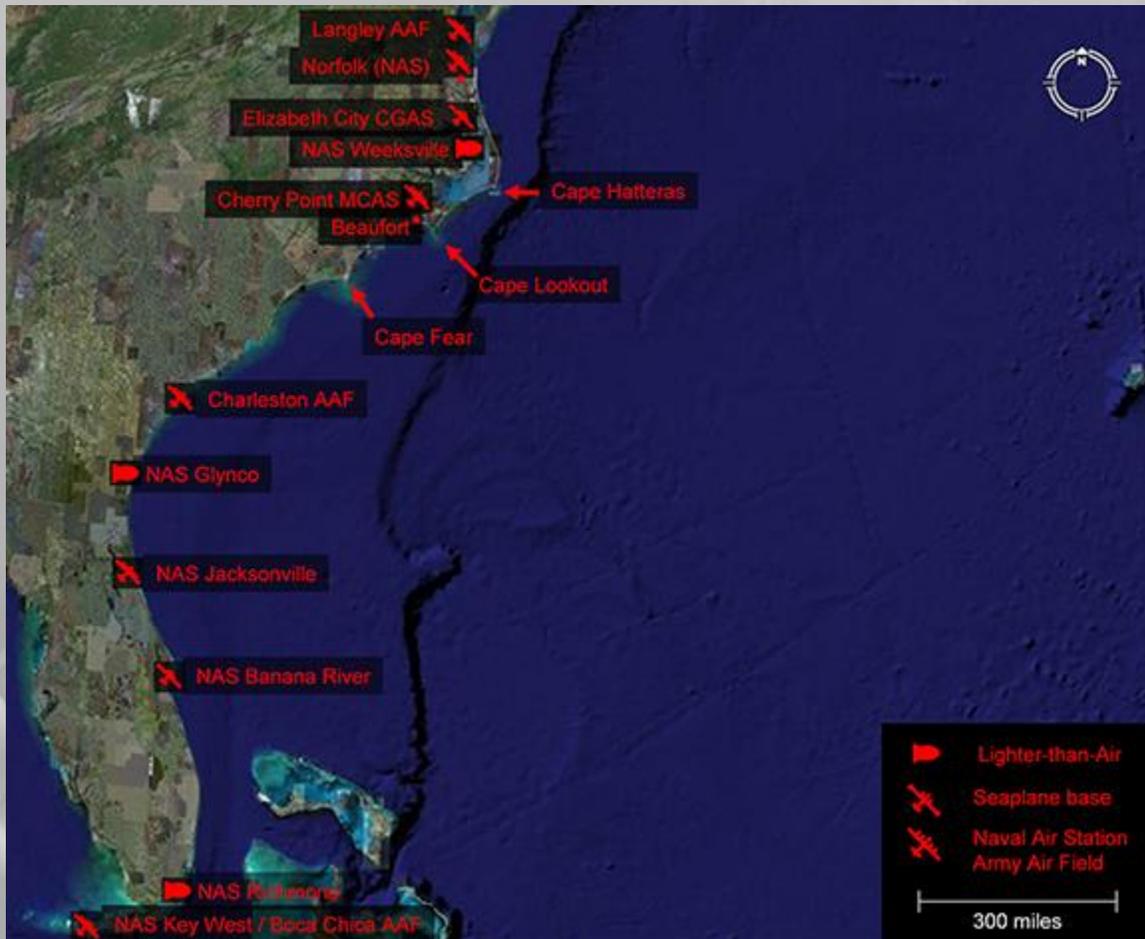


Figure 273: Area of Action for "Convoy KS 502"⁴⁹⁷

Aftermath

The convoy caught the U-boats out of position, and none spotted the convoy though the deck cargo of the SS *Bluefields* accidentally caught fire and an ASW trawler had to escort it to Beaufort for repairs. The other ships arrived two days late off Key West on May 25: the SS *Mogy* could maintain only 7 knots of the planned convoy speed of 10 knots, and the convoy slowed at one point to allow MV *C. O. Stillmann* to catch up after repairing an engine malfunction. The U-boats were out of position: BdU had sent several U-boats to the Caribbean, while others off the southeast Atlantic coast had expended all their torpedoes and were returning to France when KS 502 sailed from Norfolk.⁴⁹⁸

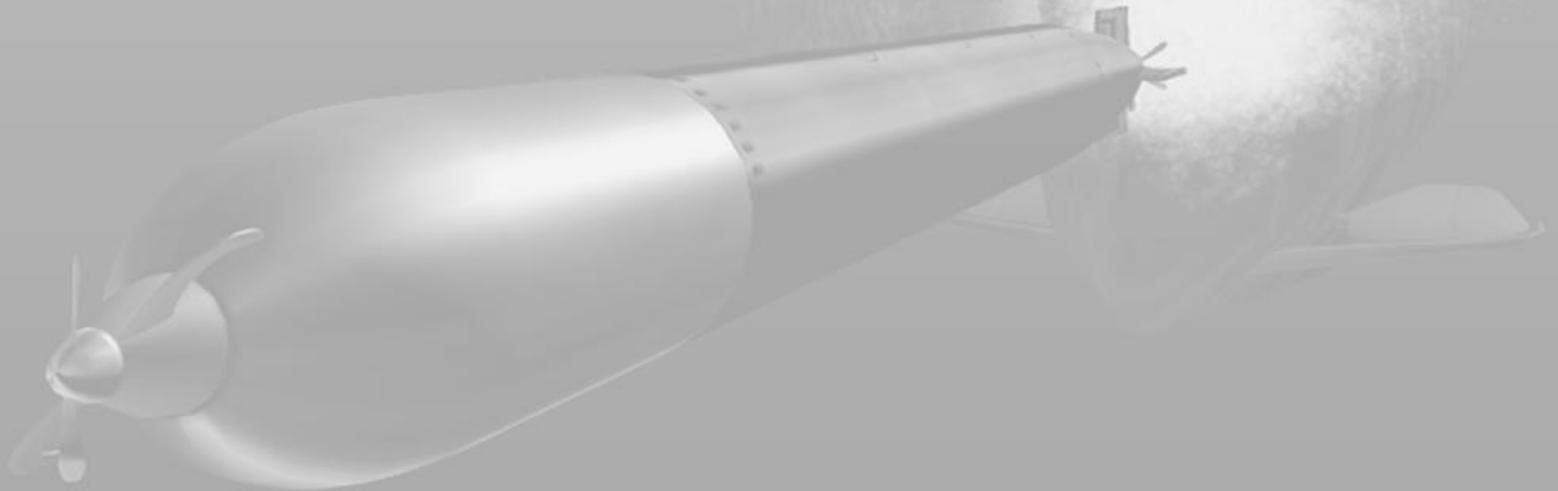
⁴⁹⁷ Map developed using Google Earth®

⁴⁹⁸ Hickam, *Torpedo Junction*

“Convoy KS 502” in GWX

The GWX team based “Convoy KS 502” on the “The First Convoys” mission by “Wilhelm Schulz.” This mission assumes a Type IXB U-boat (*U-107*) that BdU historically assigned to this area was in the area a few days earlier than it was historically, and was in position to attack and/or stalk Convoy KS 502 in its voyage south to Key West. The main changes are:

- Advanced the start date, time, and location to coincide with the convoy’s position late on the afternoon of its departure from Norfolk after *SS Bluefields* left the convoy due to damage from an accidental fire on board, and one of the British ASW trawlers was detached to escort her into Beaufort.
- The convoy will now travel all the way to Key West, arriving at the approximate time of its historical arrival
- Added victory conditions
- Revised the names, types, course, crew ratings, configuration dates, and speed of all ships to correspond (roughly) to the historical types using new GWX ship types; revised aircraft entries. This mission models USCGC *Dione* as a Flower-class corvette.
- The convoy now has air escort most of the time, as was the case historically.



Convoy SC 7

Description

Hitler's cancellation of Germany's plans to invade Britain, Operation *Seelöwe* ("Sea Lion"), in mid-September 1940 meant Germany would begin preparations for the invasion of the Soviet Union. In the meantime, the *Luftwaffe* would conduct night bombing attacks ("the Blitz") against Britain while the *Kriegsmarine*, with the U-boats at the fore, was to cripple Britain's economy to ensure there would be no second front before the Soviet Union was conquered. The U-boat force was still miniscule after one year at war: the snail's pace of new construction had not quite kept up with the few losses incurred by the Royal Navy, but the new U-boat bases in France drastically improved the U-boats efficiency by shortening the distance to the U-boat patrol areas in the western approaches to the British Isles.⁴⁹⁹

The western approaches, from the western shores of the British Isles to the submarine plateau of the Rockall Bank, were the path by which manufactured goods and refined petroleum products arrived in Britain from the Americas, and raw materials arrived from colonies in Africa and Asia after the fall of France closed the English Channel to routine shipping traffic. The convoys sailed from Halifax (HX), Nova Scotia from the weeks of the war, with slow convoys from Sydney, Cape Breton Island, Nova Scotia (SC) initiated in August 1940.⁵⁰⁰

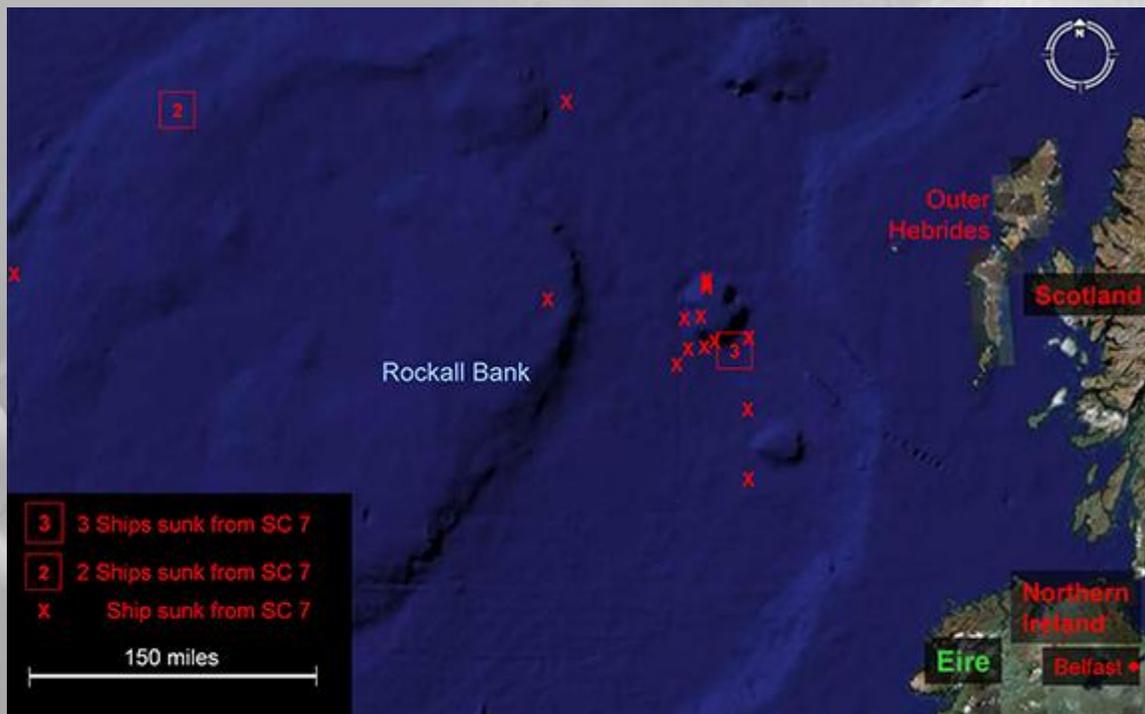


Figure 274: Area of Action for "Convoy SC 7"⁵⁰¹

Convoy SC 7 sailed from Sydney, C.B. on October 5, 1940 with 34 ships escorted by one sloop, HMS *Scarborough*, but encountered bad weather on October 11 that resulted in the separation of several ships: of these, *U-124* (*Kapitänleutnant* Georg-Wilhelm Schulz) sank *SS Trevisa* and *U-38* (*Kapitänleutnant* Heinrich Liebe) sank *SS Aenos*. On October 17, the sloop HMS *Fowey* and corvette HMS *Bluebell* reinforced the convoy escort, but *U-48* (*Kapitänleutnant* Heinrich Bleichrodt) found the convoy later that day and attacked, sinking the tanker *SS Languedoc* and freighter *SS Scoresby*. *Scarborough*

⁴⁹⁹ Clay Blair, *Hitler's U-boat War: The Hunters*.

⁵⁰⁰ Siri Lawson, "Ships in Atlantic Convoys," <http://www.warsailors.com/convoys/index.html>

⁵⁰¹ Map developed using Google Earth®

counterattacked and held *U-48* down so long that both the escort and the U-boat were so far behind the convoy they played no further role. On October 18, the escort was further reinforced by the sloop HMS *Leith* and the corvette HMS *Heartsease*; *U-38* attacked during the day and damaged the freighter SS *Carsbreck* so she could not keep up with the convoy and *Heartsease* was detailed to escort her to safety, so that the surviving 28 merchant ship had only three escorts.

The attacking U-boats kept BdU fully (if belatedly) apprised of the convoy's course and speed, so *Vizeadmiral* Dönitz ordered five U-boats, each commanded by a current or future *Ritterkreuz* ("Knight's Cross") holder, to concentrate to attack the convoy. The U-boats were *U-46* (*Oberleutnant* z. S. Engelbert Endraß), *U-99* (*Kapitänleutnant* Otto Kretschmer), *U-100* (*Kapitänleutnant* Joachim Schepke), *U-101* (*Kapitänleutnant* Fritz Frauenheim), and *U-123* (*Kapitänleutnant* Karl-Heinz Moehle). The U-boats spotted the convoy at 1749 GMT on October 18, and spent the next 2.5 hours getting into position. The convoy made a radical course change to the south at 2000, but the first torpedoes struck the convoy only 20 minutes later.

Aftermath

The U-boats attacked through the night and sank 17 ships by dawn. *U-46* and *U-100* attacked Convoy HX 79 the following night in concert with several other U-boats; the battles of Convoy SC 7 and HX 79 became known together as "*Die Nacht der langen Messer*" ("The Night of the Long Knives").⁵⁰²

U-boat	Ships	Tonnage
<i>U-46</i> (Endraß)	3	8,453
<i>U-99</i> (Kretschmer)	6 ½	28,949
<i>U-100</i> (Schepke)	0	0
<i>U-101</i> (Frauenheim)	3	8,837
<i>U-123</i> (Moehle)	3 ½	14,685

Figure 275: U-boat successes against Convoy SC 7⁵⁰³

"Convoy SC 7" in GWX

The GWX team made several changes to the original "SC-7" mission by "Wilhelm Schulz."

- Created a single-player version
- Adjusted the starting location, time, weather, convoy course and speed, and escort group composition for consistency with the situation at 2000 GMT on October 18, 1940 as noted in KTB of *U-99*⁵⁰⁴ and the after-action report of HMS *Leith*⁵⁰⁵
- Adjusted convoy composition using new GWX shipping to align more closely with historical tonnages and nationalities of the ships in convoy at the start of the main engagement
- Adjusted U-boat team to reflect the historical order of battle

⁵⁰² Gannon, *Black May*.

⁵⁰³ Jürgen Rohwer, *Axis submarine successes of World War Two*, Naval Institute Press: 1999.

⁵⁰⁴ See Clay Blair, *Hitler's U-boats: The Hunters*

⁵⁰⁵ "HMS *Leith*'s Report – Local Escort Convoy SC 7," <http://www.warsailors.com/convoys/sc7report.html>

Convoy SC 94

Description

The North Atlantic: August 1942. Convoy SC 94 departed Sydney, Canada on July 31, 1942 bound for Liverpool, England, consisting of 33 merchant ships escorted by the destroyer HMCS *Assiniboine*; corvettes HMCS *Battleford*, *Chilliwack*, and *Orillia*; and corvettes HMS *Nasturium*, *Dianthus*, and *Primrose* (the escort leader).⁵⁰⁶ BdU formed eight U-boats (*U-71*, *U-210*, *U-379*, *U-454*, *U-593*, *U-597*, *U-607*, and *U-704*) into group *Steinbrinck*,* and directed nine other U-boats (*U-174*, *U-176*, *U-254*, *U-256*, *U-438*, *U-595*, *U-605*, *U-660*, and *U-705*) to join the attack. The pack formed in the central North Atlantic air coverage gap, where the *U-593* (*Kapitänleutnant* Gerd Kelbing) made the first contact on August 5, 1942 and sank SS *Spar* in a small group of ships that had separated from the convoy in fog.⁵⁰⁷

Aftermath

The convoy battle continued through patches of dense fog until August 10 when the convoy left the air coverage gap. Allies lost 11 merchant ships for a total of 53,170 tons, and 63 men.⁵⁰⁸

U-boat	Type	Ships	Tonnage
<i>U-176</i> (Dierksen)	IXC	4	20,028
<i>U-379</i> (Kettner)	VIIC	2	8,904
<i>U-438</i> (Franzius)	VIIC	2	10,447
<i>U-593</i> (Kelbling)	VIIC	1	3,616
<i>U-660</i> (Baur)	VIIC	2	10,336

Figure 276: Historical U-boat scores against SC 94⁵⁰⁹

The Germans lost *U-210* (*Kapitänleutnant* Rudolf Lemcke) when HMCS *Assiniboine* detected her on radar, and engaged her at point blank range in fog; *Assiniboine* rammed *U-210* twice after a half-hour firefight, and finally sank her with depth charges when she tried to dive.⁵¹⁰ *U-379* (*Kapitänleutnant* Paul-Hugo Kettner) was depth charged, rammed, and sunk by HMS *Dianthus*.⁵¹¹ *Assiniboine* returned to Nova Scotia with heavy damage; *Dianthus* lost her sonar when ramming *U-379*, but remained with the convoy.⁵¹²

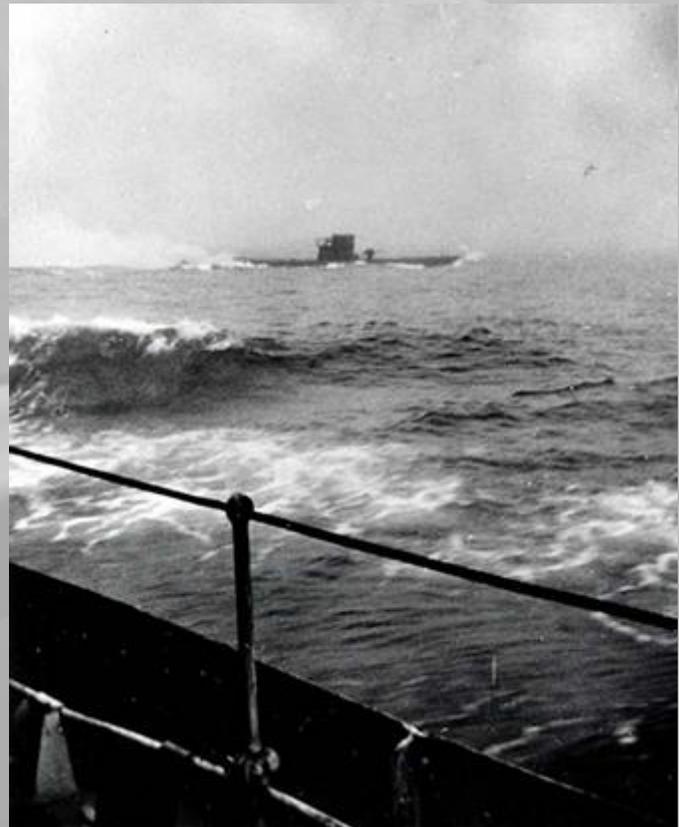


Figure 277: *U-210* as seen from HMCS *Assiniboine*⁵¹³

“Convoy SC 94” in GWX

This mission takes place in the context of this convoy’s transit to Britain within the GWX campaign, with the participation of the player’s U-boat (*U-265*) starting on August 6.

⁵⁰⁶ “Convoy SC 94,” <http://www.warsailors.com/convoys/sc94.html>

* Named for *Kapitänleutnant* Otto Steinbrinck, a U-boat commander who won the *Orden Pour le Mérite* in World War I

⁵⁰⁷ Tim Linclau, “Convoy battles: SC 94,” <http://uboat.net/ops/convoys/battles.htm?convoy=SC-94>

⁵⁰⁸ “Convoy SC 94,” <http://www.warsailors.com/convoys/sc94.html>

⁵⁰⁹ “Convoy Battles: SC 94,” <http://www.uboat.net/ops/convoys/battles.htm?convoy=SC-94>

⁵¹⁰ Lt Cdr John Stubbs, “S.C. 94 – Reports of proceedings of HMCS *Assiniboine*,”

<http://www.junobeach.org/e/2/can-eve-mob-gol-asb-e.htm>

⁵¹¹ “HX 228,” <http://uboat.net/ops/convoys/battles.htm?convoy=HX-228>

⁵¹² Michael J. Watts, “HMS *Dianthus*,” <http://www.cbrnp.com/RNP/Flower/ARTICLES/Dianthus-1.htm>

⁵¹³ Photo source: Library and Archives Canada #PA-37433, <http://www.collectionscanada.ca/>

Convoy SL 125

Description

The “Second Happy Time” off the U.S. Atlantic seaboard and in Caribbean waters ended in the late summer of 1942 as the U.S. established convoy systems and extensive ASW air patrols in these areas. BdU responded in August, 1942 by shifting U-boats from American waters to reinforce U-boat patrols in the North Atlantic “air gap” and to send more U-boats into the mid- and South Atlantic oceans to intercept cargoes coming to Britain from Africa, Asia, and South America. Long-range Type IX U-boats had suffered disproportionate losses towards the end of the American campaign, and were reinforced in these distant areas by Type VIIC U-boats operating with the support of resupply U-boats

Convoy SL 125 departed Sierra Leone on October 16, 1942 bound for Britain with over 42 ships escorted by four corvettes.⁵¹⁴ Its escort was weaker than normal due to the diversion of ASW escorts for the invasion of North Africa, Operation *Torch*, with three amphibious task forces scheduled to arrive at Oran and Algiers in Algeria, and at three points along the west coast of Morocco on November 8, 1942.

U-409 (*Oberleutnant z. S. Hans-Ferdinand Massmann*) spotted convoy SL 125 on October 26 and BdU mobilized U-boat group *Streitaxt* (“Battleaxe”) to intercept, but the weather deteriorated over the next two days, with winds greater than 15 meters/second and waves higher than the U-boats’ conning towers, and only three of the ten U-boats engaged were able to attack. *U-509* (*Oberleutnant z. S. Werner Witte*) sank three ships outright and shared credit for one ship each with *U-203* (*Oberleutnant z. S. Hermann Kottmann*) and *U-604* (*Kaptianleutnant Horst Höltring*). The weather had moderated by the late evening of October 29, and most of the *Streitaxt* U-boats were able to attack over the night of October 29-30.⁵¹⁵

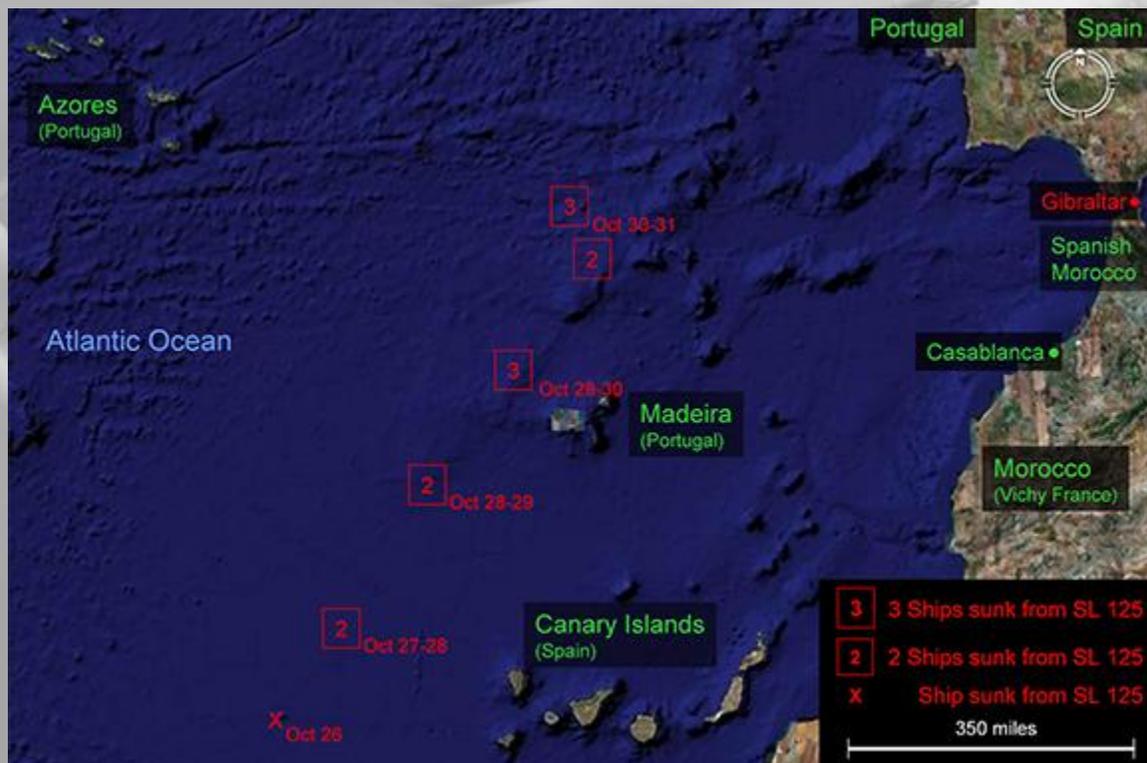


Figure 278: Area of Action for "Convoy SL 125"⁵¹⁶

⁵¹⁴ “Convoy SL.125,” <http://www.convoyweb.org.uk/sl/index.html?sl125.htm~slmain>

⁵¹⁵ “FdU/BdU War Log, October 16-31, 1942,” <http://www.uboatarchive.net/BDUKTB30312B.htm>

⁵¹⁶ Map developed using Google Earth®

Aftermath

U-boat group *Streitaxt* attacked through the night of October 29-30 and again the following night, sinking eight more ships from SL 125 before the arrival of allied aircraft late on October 31 and into November 1 persuaded BdU to call off the attack.⁵¹⁷ Only one U-boat (*U-659*) suffered serious damage requiring it to abort its patrol while *Streitaxt* U-boats inflicted significant damage on the convoy:

U-boat	Type	Commander	Ships sunk	Tonnage
<i>U-103</i>	IXB	<i>Oberleutnant z. S. Gustav-Adolf Janssen</i>	1	6405
<i>U-134</i>	VIIC	<i>Kapitänleutnant Rudolf Schendel</i>	0	0
<i>U-203</i>	VIIC	<i>Oberleutnant z. S. Hermann Kottmann</i>	1 ¹ / ₃	4966
<i>U-409</i>	VIIC	<i>Oberleutnant z. S. Hans-Ferdinand Massmann</i>	0.5	3759.5
<i>U-509</i>	IXC	<i>Oberleutnant z. S. Werner Witte</i>	5 ¹ / ₃	34573.5
<i>U-510</i>	IXC	<i>Korvettenkapitän Karl Neitzel</i>	0	0
<i>U-604</i>	VIIC	<i>Kaptianleutnant Horst Höltring</i>	3 ¹ / ₂	24164.5
<i>U-659</i>	VIIC	<i>Kapitänleutnant Hans Stock</i>	1 ¹ / ₃	6136.5

Figure 279: Historical U-boat scores against Convoy SL 125⁵¹⁸

Convoy SL 125 lost over a quarter of its ships during the five-day battle, but as a result only half of the *Streitaxt* U-boats were in position and in condition a week later to attack the Operation *Torch* landing areas in western Morocco.

“Convoy SL 125” in GWX

The GWX team made several changes to the original “The Decoy” mission by “Wilhelm Schulz.”

- Adjusted the starting location, time, weather, convoy course and speed, to match the situation on the night of October 29-30, 1942, rather than early morning on October 31, consistent with the description in the BdU KTB⁵¹⁹
- Adjusted convoy composition and formation using new GWX shipping to align more closely with the historical convoy, including prior losses and separations
- The game will attempt to provide the player a Type IXC/40 U-boat. Players who want to use the same type of U-boat as *U-509* should select “Type IXC (1942)” at the single mission selection screen.

⁵¹⁷ “FdU/BdU War Log, October 16-31, 1942,” <http://www.uboardarchive.net/BDUKTB30312B.htm>

⁵¹⁸ “Convoy Battles: SL 125,” <http://www.uboard.net/ops/convoys/battles.htm?convoy=SL-125>

⁵¹⁹ “Beaufort Wind Force Scale and Sea State,” *Sea Kayak Chesapeake Bay*, <http://www.seakayak.ws/kayak/kayak.nsf/NavigationList/NT003E2ED2>

Convoy TM 1

Description

The North African campaign did not go as the Allies had hoped: the Germans had rapidly reinforced Tunisia and held it solidly against an Allied advance from the west while their forces in the eastern Sahara retreated to the Mareth Line, a line of fortifications built originally by France to defend Tunisia from a potential Italian invasion. There was not currently enough fuel in the British Isles to meet the needs of large mechanized armies on the move in North Africa, so Britain arranged for several convoys of fast tankers to take refined petroleum products directly from British-controlled refineries in Trinidad directly Allied-controlled ports in North Africa.⁵²⁰

The first of these convoys, TM-1, departed Port of Spain, Trinidad on December 28, 1942 with nine tankers accompanied by four escorts; on January 3, *U-514* (*Kapitänleutnant* Hans-Jürgen Aufferman) was outbound on its way to its patrol station off Trinidad when it spotted the convoy, reported its position to BdU, and crippled the tanker *MV British Vigilance* with a torpedo. *Admiral* Dönitz correctly guessed the convoy was on a direct Great Circle course for Gibraltar to supply Allied forces in North Africa and ordered U-boat group *Delphin* (“Dolphin”) and a few other boats to establish a patrol line approximately 1,500 km west of the Canary Islands. The convoy encountered the patrol line on January 8, when *U-381* (*Oberleutnant z. S.* Wilhelm-Heinrich Graf von Pückler und Limburg) spots the convoy and reports in. The convoy’s ordeal began that night as five U-boats began the attack on convoy TM-1: *U-436* (*Kapitänleutnant* Günther Siebicke), *U-442* (*Korvettenkapitän* Hans-Joachim Hesse), *U-522* (*Kapitänleutnant* Herbert Schneider), *U-571* (*Kapitänleutnant* Helmut Möhlmann), and *U-575* (*Kapitänleutnant* Günther Heydemann).⁵²¹

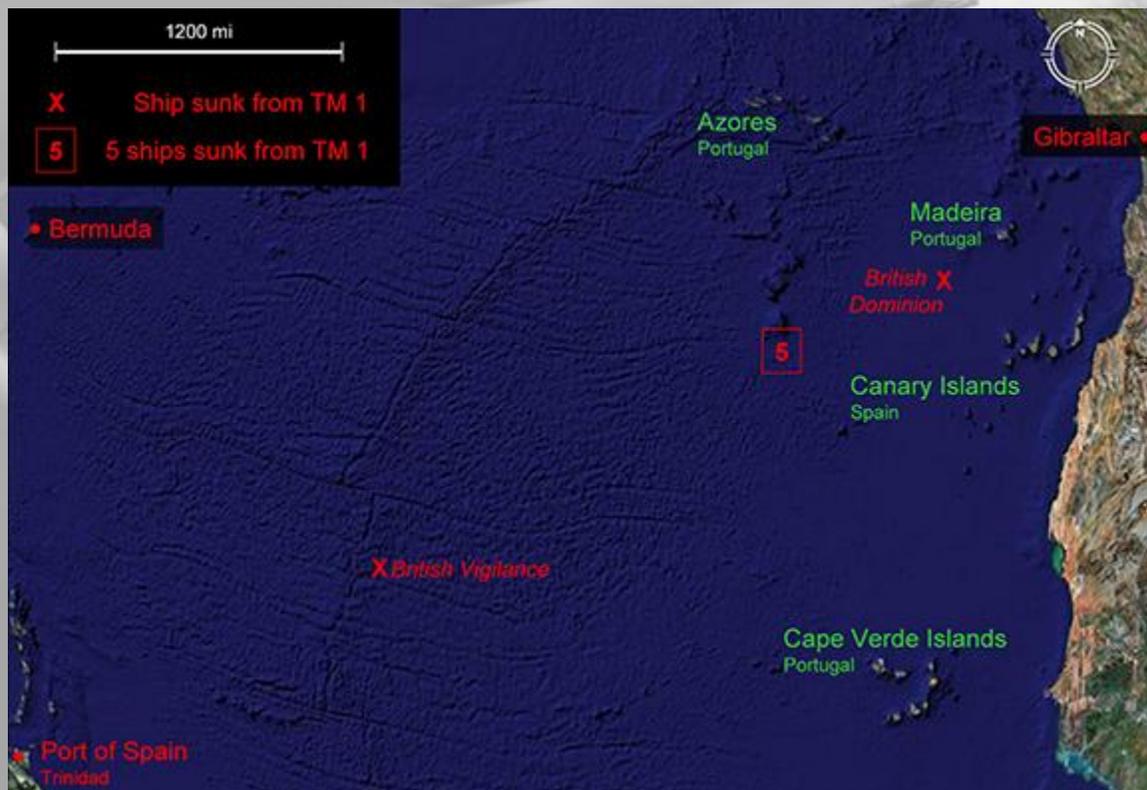


Figure 280: Area of action for "Convoy TM 1"⁵²²

⁵²⁰ Clay Blair, *Hitler's U-boat War: The Hunted*.

⁵²¹ "Convoy Battles: TM-1," <http://uboat.net/ops/convoys/battles.htm?convoy=TM-1>

⁵²² Map developed using Google Earth®

Aftermath

The attacks by U-boat group *Delphin* attacked from the night of January 8 through the evening of January 9 sank five ships from the convoy and one unlucky merchant that blundered into the battle. The U-boats were unable to engage the three surviving tankers until just after midnight on January 11, when *U-522* torpedoed *MV British Dominion*; *U-620* (*Kapitänleutnant* Heinz Stein) finished it off a few hours later. Further U-boat attacks were unsuccessful, and *Admiral* Dönitz called off the attack after the convoy escort was reinforced by three destroyers (*HMS Quiberon*, *Pathfinder*, and *Penn*) and Gibraltar-based Catalina aircraft began patrolling overhead as the surviving tankers, *MV Cliona* and *Vanja* approached Gibraltar.

U-boat	Type	Commander	Ships sunk	Tonnage
<i>U-105</i>	IXB	<i>Kapitänleutnant</i> Jürgen Nissen	½	4046.5
<i>U-436</i>	VIIC	<i>Kapitänleutnant</i> Günther Seibicke	2	14703.0
<i>U-442</i>	VIIC	<i>Korvettenkapitän</i> Hans-Joachim Hesse	1	9807.0
<i>U-514</i>	IXC	<i>Kapitänleutnant</i> Hans-Jürgen Aufferman	½	4046.5
<i>U-522</i>	IXC	<i>Kapitänleutnant</i> Herbert Schneider	2 ½	20,358.5
<i>U-575</i>	VIIC	<i>Kapitänleutnant</i> Günther Heydemann	0	0
<i>U-620</i>	VIIC	<i>Kapitänleutnant</i> Heinz Stein	½	3491.5

Figure 281: Historical U-boat scores against Convoy TM 1 (grayed out did not attack 8-9 January)⁵²³

Two similar but “faster” convoys (TMF-1 and TMF-2) made the passage safely in the latter half of January and carried their cargoes to the Allied forces in North Africa, followed by a series of “OT” (Oil-Torch) convoys carrying petroleum products directly from Caribbean refineries to Allied-controlled ports in North Africa.⁵²⁴

“Convoy TM 1” in GWX

The GWX team made several changes to the original “*Tankergeleit TM-1*” (author unknown):

- Adjusted the starting location, time, weather, convoy course and speed, to match the situation on the night of January 8-9, 1943 consistent with the description in the BdU KTB⁵²⁵ and other historical accounts⁵²⁶
- Adjusted convoy composition and formation using new GWX shipping to align more closely with the historical convoy, including prior losses and separations
- Adjusted U-boat team to reflect the historical order of battle

⁵²³ “Convoy Battles: TM-1,” <http://www.uboa.net/ops/convoys/battles.htm?convoy=TM-1>

⁵²⁴ Clay Blair, *Hitler’s U-boat War: The Hunted*

⁵²⁵ “FdU/BdU War Log, January 1-15, 1943,” <http://www.uboatarchive.net/BDUKTB30315.htm>

⁵²⁶ Anthony Sweeting, “Convoy TM-1,” *Archives and Collections Society*, http://www.aandc.org/research/convoy_tm1.html

Convoy TS 37

Background

The west coast of Africa: April 30, 1943. Increasingly effective ASW defenses in American waters and in the North Atlantic as a whole led BdU in August 1942 to reassign its long-range boats away from American waters and into the South Atlantic Ocean. The west coast of Africa received relatively little attention from U-boats in the first three years of the war when compared to the action in the North Atlantic. There had been a few patrols by long-range U-cruisers, but mostly the Germans did not attack and the Allies barely defended; U-boats sank only eight of the 743 ships that sailed between Takoradi in Britain's colony of the Gold Coast to Freetown in Britain's colony of Sierra Leone from September 1941 through March 1943. The British used minimal ASW escorts given the general lack of U-boat activity here, relying on aircraft to force the U-boats to keep their heads down, and on the U-boats' habit of frequently calling in to BdU to give them advance notice of U-boat activity in the area.



Figure 282: Area of action for "Convoy TS 37"⁵²⁷

U-515 (*Kapitänleutnant* Werner Henke) departed Lorient on February 21, 1943 but sank only two ships in its first two months at sea. On April 28, Henke attacked a convoy of two troop ships escorted by a heavy cruiser and four destroyers, but missed; on April 29, a Catalina patrol bomber diving out of overcast skies surprised *U-515* on the surface west of Freetown, but the Catalina was damaged and driven off by *flak*. For most of the next day, *U-515* remained submerged south-southwest of Freetown, using its hydrophones to search for ships approaching Freetown prior to forming up into the large "SL" convoys to Britain, but did not detect anything.

Surfacing at dusk for a visual sweep of the area, *U-515* noticed smoke to the southeast that heralded the arrival of TS 37: 18 ships escorted by a corvette and two ASW trawlers and bound for Freetown. The convoy escorts had detected (but not decrypted) *U-515*'s radio reports, but had refused to break radio silence to report it, with the result that three Royal Navy destroyers currently in Freetown were not sent to help defend the lightly-escorted convoy, while squall lines and tropical lightning storms hindered RAF patrols that would normally have swept TS 37's path.⁵²⁸

⁵²⁷ Map developed using Google Earth®

⁵²⁸ Michael Gannon, *Black May*. HarperCollins: 1998.

Aftermath

Henke remained on the surface, taking almost three hours to work his way around to the rear of the convoy under skies lit by lightning, and moved under the cover of a squall into the rear of the convoy, an extremely rare feat when convoy escorts were equipped with radar. Henke launched six torpedoes, hitting and sinking four ships: MV *Kota Tjandi* (Netherlands - 7,295 GRT), SS *Nagina* (British - 6,551 GRT), SS *Bandar Shahpour* (British - 5,236 tons), and MV *Corabella* (British - 5,681 GRT). *U-515* dove to 170 meters: the convoy escorts counterattacked but had no effect.

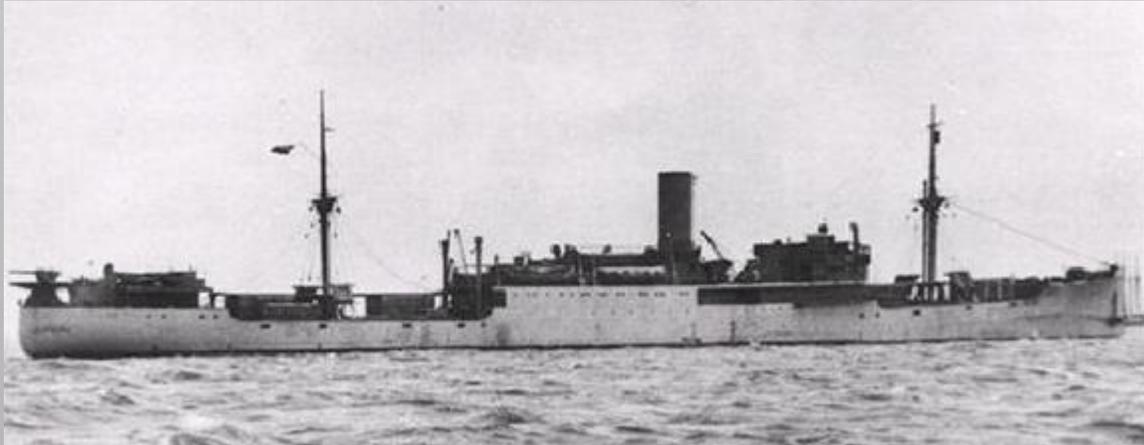


Figure 283: SS *Kota Tjandi*⁵²⁹

U-515 surfaced two-and-a-half hours later, evaded the ASW trawler HMS *Birdlip* as it picked up survivors from the first attack, and caught the convoy three-and-a-half hours later after heading north on the surface at full speed. Henke remained on the surface and again got inside the convoy from astern, hitting and sinking three ships with three torpedoes: SS *Mokambo* (Belgian - 4,996 GRT), SS *City of Singapore* (British - 6,555 tons), and SS *Clan Macpherson* (British - 6,940 GRT). The convoy's star shell barrage showed the approach of two reinforcing Royal Navy destroyers, so Henke left the scene having tied the record for the number of ships sunk in one night held by *Kapitänleutnant* Joachim Schepke (*U-100*) against convoy SC 11 in November 1940. This patrol won Henke the *eichenlaube* ("oak leaves") to add to his *Ritterkreuz*.⁵³⁰

"Convoy TS 37" in GWX

The GWX team based "Convoy TS 37" on the mission by "Wilhelm Schulz." The main changes are:

- Moved the starting locations to the historical site of the sinkings, consistent with recorded positions of ship losses and the interrogation of *U-515* crewmembers captured after a U.S. navy hunter-killer group sank their boat in April 1944. Starting locations and weather were adjusted to emulate the effects of weather since *Silent Hunter III* does not model tropical rain squalls very well: good surface visibility with punctuated by small areas of intense rainfall, lightning, waterspouts, *etc.*
- Convoy TS 37 composition adjusted to reflect the historical record based on ships identified as having come from Tokoradi that departed for Britain in the three SL convoys (SL 129, 130, and 131) that departed after TS 37 arrived, which accounted for the number of ships that survived TS 37.
- Victory conditions increased to 43,000 tons, the same as the historical accomplishment by *U-515*.

⁵²⁹ Photo source: "SS *Kota Tjandi*," *Arendnet Scheepvaart*, <http://www.wivonet.nl/kr140-45-017.htm>

⁵³⁰ Michael Gannon, *Black May*. HarperCollins: 1998.

Force H

Description

North Atlantic: May 26, 1941. The German battleship *Bismarck* is at sea trying to make the port of St. Nazaire, France, after sinking the battle cruiser HMS *Hood* two days earlier. *U-556* is finishing its first war patrol, and her commander, *Kapitänleutnant* Herbert Wohlfarth, already slated to receive the *Ritterkreuz* upon his arrival in Lorient, has spotted Force H under Vice Admiral Somerville approaching from out of the mist nearly head-on at high speed.⁵³¹

Force H at this point consisted solely of HMS *Ark Royal* and the battle cruiser HMS *Renown* without their usual escort: the light cruiser HMS *Sheffield* and six destroyers.⁵³² Force H left its destroyers behind when it departed Gibraltar to hunt for the *Bismarck* on May 24 since the destroyers had not yet refueled after returning on May 22 from a mission ferrying aircraft to Malta,⁵³³ and Somerville had detached the radar-equipped *Sheffield* to shadow *Bismarck*.⁵³⁴

Force H was on a steady course to the east-southeast and unable to zig-zag: *Ark Royal* had to sail straight ahead to conduct air operations and she was about to launch the air strike that would cripple the *Bismarck*. There would never be a more valuable, vulnerable, and critical U-boat target in the entire war, but *U-556* was out of torpedoes and could not intervene.⁵³⁵

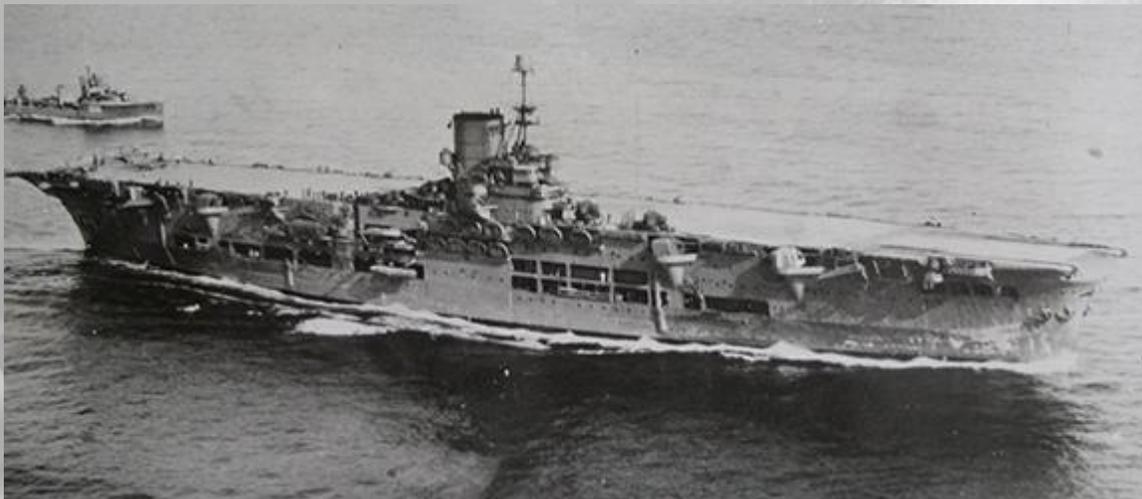


Figure 284: HMS *Ark Royal* with escorting V&W-class destroyer⁵³⁶

⁵³¹ “Unterseeboot 556,” http://en.wikipedia.org/wiki/Unterseeboot_556

⁵³² Admiral Sir John Tovey, “Sinking of the German Battleship *Bismarck* on 27th May, 1941,” *Supplement to the London Gazette* No. 38098, 16 October 1947, <http://www.gazettes-online.co.uk/>

⁵³³ “Order of Battle: Operation *Rheinübung*,”

http://www.navyweaps.com/index_oob/OOB_WWII_Atlantic/OOB_WWII_Rheinubung.htm

⁵³⁴ Mark E. Horan, “With Gallantry and Determination,” <http://kbismarck.com/article2.html>

⁵³⁵ “U-556,” <http://www.ubootwaffe.net/ops/boat.cgi>

⁵³⁶ “HMS *Ark Royal* (91),” http://en.wikipedia.org/wiki/HMS_Ark_Royal_%2891%29

Aftermath

The Royal Navy avoided what could have been a disastrous embarrassment: *U-556* watched *Ark Royal* launch the air strike that crippled *Bismarck*, but could not help her as the Royal Navy closed in. Ironically, *Kapitänleutnant* Wohlfarth had earlier signed a joking *Patenschafts Urkunde* (“Certificate of Sponsorship”) with *Bismarck* in thanks to the commander of the *Bismarck*, *Kapitän z. S.* Ernst Lindemann for “loaning” the *Bismarck*’s band to Wohlfarth for the commissioning of *U-556*:

Wir U556 (500 to) erklären hiermit vor Neptün, dem Herrscher über Ozeane, Meere, Seen, Flüsse, Büche, Teiche und Rinnsale daß wir unserem grossen Brüder, dem Schlachtschiff Bismarck (42.000 to) in jeder Lage, zu Wasser, unter Wasser, zu Lande wie in der Luft beistehen wollen.

*Hamburg, den 28. Januar 1941
Kommandant u Besatzung U556*

Roughly translated:

“We, *U-556* (500 tons), hereby declare before Neptune, Lord over oceans, seas, lakes, rivers, brooks, ponds, and rivulets, that we will provide any desired assistance to our Big Brother, the battleship *Bismarck* (42,000 tons), at any place on the water, under water, on land, or in the air.

“Hamburg, 28 January 1941
Commander and Crew, *U556*”

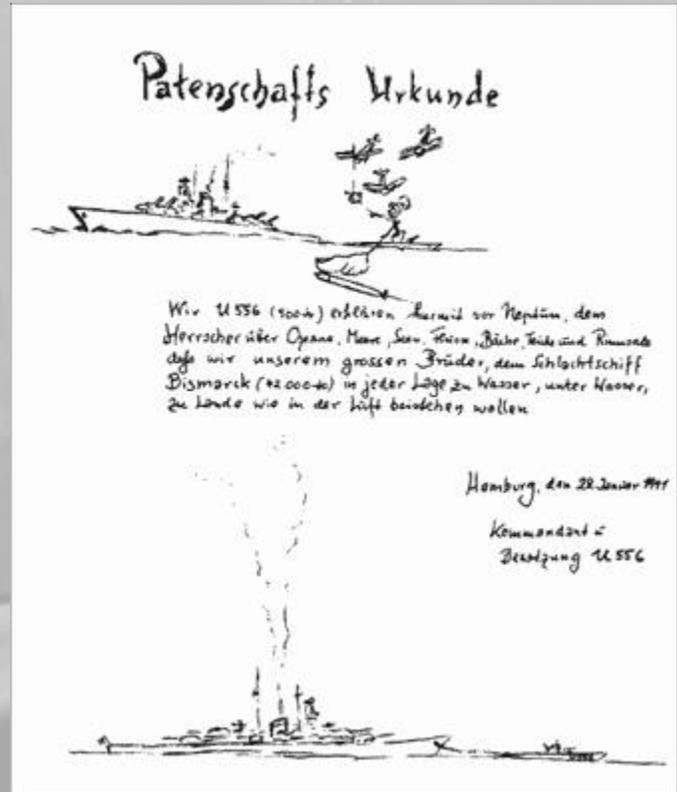


Figure 285: *Patenschafts Urkunde* from *U-556*⁵³⁷

U-556 arrived at Lorient on May 30 and *Kapitänleutnant* Wohlfarth received the *Ritterkreuz* for his successes up to that time, but she sank on June 27 after being depth charged by the frigates *HMS Celandine*, *Gladiolus*, and *Nasturtium*. Wohlfarth and all but five of his crew became prisoners of war.⁵³⁸

The “Force H” mission” in GWX

This mission assumes *U-556* was outbound with a full load of torpedoes when it met Force H, rather than homeward bound with all torpedoes expended. The GWX team made the following general changes to the original “Force H” mission by “Syxx_Killer.”

- Start time adjusted to about time of initial contact (GMT) between Force H and *U-556*.
- The model for the *Renown*-class battle cruiser replaces the *Revenge*-class battleship
- The wind speed is now 15 meters/second. It was historically 50 knots (25 meters/second) with green water shipping over the bow of *HMS Ark Royal*.
- Corrected the location of the engagement, and adjusted the ships’ courses to match the historical record.

⁵³⁷ “*Unterseeboot 556*,” http://en.wikipedia.org/wiki/Unterseeboot_556

⁵³⁸ “*U-556*,” <http://www.uboat.net/boats/u556.htm>

HMS *Exmouth*

Background

In the early morning hours of January 21, 1940, *U-22* (*Kapitänleutnant* Karl-Heinrich Jenisch) was patrolling south at the wide entrance of Moray Firth in calm seas and generally clear weather when it spotted three illuminated ships heading in a northwesterly direction. Jenisch was pondering whether these ships were truly neutral when two darkened ships, a destroyer and a merchant, passed between him and the illuminated ships.

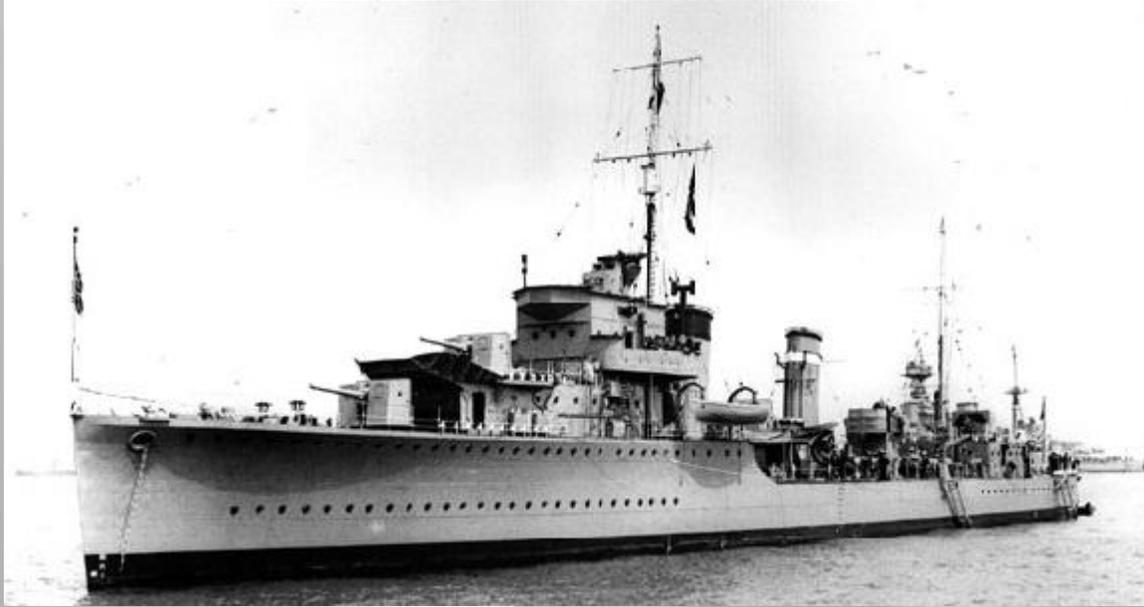


Figure 286: E-class destroyer HMS *Exmouth*⁵³⁹

Aftermath

Jenisch turned and tried to pursue the two darkened ships, but could not achieve a good firing position. After spending an hour trying to get ahead of the enemy formation, he turned and launched one torpedo at each ship: one hit the merchant SS *Cyprian Prince*, but failed to explode as it bounced its way down the ship's hull; the other hit the destroyer HMS *Exmouth* and detonated its forward ammunition magazine, sinking it immediately.

Cyprian Prince radioed an SOS message on behalf of *Exmouth*, then turned back and prepared to stop and rescue survivors, whose voices the merchant's crew heard on the water; however, the Admiralty Defense of Merchant Shipping instructions were clear, so the *Cyprian Prince*'s unhappy captain reconsidered and abandoned the attempt, fleeing to the west at full speed. *Cyprian Prince* unknowingly saved itself by nearly ramming *U-22*: the U-boat changed course to avoid a collision as the merchant left the scene, and *U-22* was too slow to follow. The Royal Navy reacted slowly to the sinking and did not begin rescue operations for 12 hours despite the receipt of the SOS messages on shore. A number of ships and aircraft searched the area over the next day or so, finding an oil slick and surface wreckage but no survivors of the *Exmouth*'s crew of 189.⁵⁴⁰ The wreck of the *Exmouth* was located in 2001 at a depth of 40 meters, and the UK Military Remains Act of 1986 now protects the site as war remains.⁵⁴¹

⁵³⁹ Photo source: Imperial War Museum, <http://www.iwm.org.uk/>

⁵⁴⁰ Robert N. Baird, "HMS *Exmouth*," *Shipwrecks of the North of Scotland*. Birlinn Limited. 2003.

⁵⁴¹ U.K. Maritime and Coastguard Agency, "Protected Wrecks in the UK,"

http://www.mcga.gov.uk/c4mca/mcga-environmental/mcga-dops_row_receiver_of_wreck/mcga-dops-row-protected-wrecks/mcga-dops-sar-row.htm

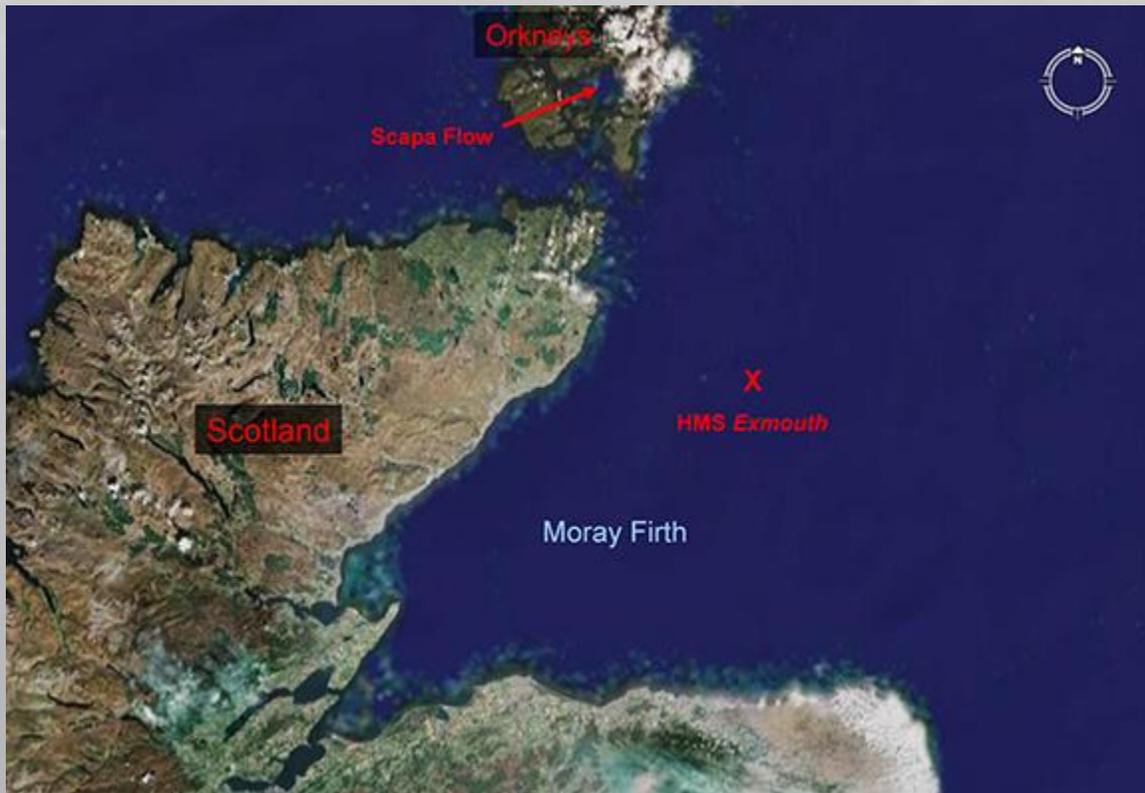


Figure 287: Action area for "HMS *Exmouth*"⁵⁴²

"HMS *Exmouth*" in GWX

The "HMS *Exmouth*" is based on "RUM: 400121, U22" by "The Avon Lady," with the following changes:

- Corrected the location of the wreck of HMS *Exmouth*, and adjusted the starting positions of all ships and *U-22* to reflect the known position of the wreck⁵⁴³
- Starting locations adjusted so HMS *Exmouth* is just crossing the line of sight between the neutral ships and *U-22*, and to put *U-22* a little behind in the chase as it was historically
- Adjusted starting time to just before the point where *U-22* noticed *Exmouth* and *Cyprian Prince*.
- All British ships are now "Allied" and neutral ships are illuminated ships available in GWX
- HMS *Exmouth* is a C-class destroyer with equipment configured for January 1940
- The neutral ships are now "anonymous" except for SS *Tekla*. One source identified one of the neutral ships as the Norwegian ship *Miranda*, but this ship sank one day earlier and so could not have been present during the sinking of HMS *Exmouth*.
- The player must sink both British ships to achieve the mission's primary objective.

⁵⁴² Map developed using Google Earth®

⁵⁴³ U.K. Maritime and Coastguard Agency, "Protected Wrecks in the UK,"

http://www.mcga.gov.uk/c4mca/mcga-environmental/mcga-dops_row_receiver_of_wreck/mcga-dops-row-protected-wrecks/mcga-dops-sar-row.htm

HMS *Malaya*

Background

Convoy SL 68, a slow convoy with 58 merchant ships and their escorts, left Sierra Leone for Britain on March 13, 1941;⁵⁴⁴ the escort consisted of the battleship HMS *Malaya*; armed merchant cruiser HMS *Canton*; and corvettes HMS *Crocus*, *Calendula*, and *Marguerite*.⁵⁴⁵ The convoy was well-protected against the battleships *Scharnhorst* and *Gneisenau* that had menaced Convoy SL 67 one week earlier; however, it had minimal ASW escort given that *U-105* (*Kapitänleutnant* Georg Schewe) and *U-124* (*Kapitänleutnant* Georg-Wilhelm Schulz) and others) had sunk 5 out of SL 67's 54 ships in one day.



Figure 288: HMS *Malaya* in 1941⁵⁴⁶

U-106 (*Kapitänleutnant* Jürgen Oesten) began the attack by torpedoing the independently sailing freighter SS *Almkerk* within sight of SL 68 on March 16, and then began a series of night attacks on the convoy starting on March 17 when *U-106* torpedoed SS *Andalusian* and SS *Tapanoeli*. *U-105* conducted attacks over the next two nights, sinking SS *Medjerda* on March 18 and SS *Mandalika* on March 19. Both U-boats prepared to attack in the late hours of March 20 although they had each expended their entire internal load of torpedoes and were now working off their externally stored torpedoes.

Aftermath

U-106 began the attack at just before midnight and hit two “freighters” on the port side of the convoy. In reality, these were the battleship HMS *Malaya*, heavily damaged in the attack, and the freighter SS *Meerkerk*, which limped on. The convoy changed course as soon as the torpedo hit, and about one hour later ran straight into *U-105*, which torpedoed and sank SS *Clan Ogilvy* and SS *Benwyvis*.⁵⁴⁷

The damage to HMS *Malaya* left the British in a quandary: *Malaya* had been instrumental in keeping the *Scharnhorst* and *Gneisenau* away from SL 67, but *Malaya* was now crippled and the British knew the German battleships were still at sea since they had slaughtered an unescorted convoy (OB 294) on March 14 and 15. The British Admiralty therefore dispersed Convoy SL 67 on March 21 after they realized the extent *Malaya*'s damage rather than risk the possibility that the German surface raiders would return, and the convoy's ships made their way to the Bahamas, Nova Scotia, and Gibraltar to obtain escort to Britain. *U-106* sank one of the scattered convoy ships, SS *Jhelum*, the same evening that the convoy scattered, but the remaining ships escaped.⁵⁴⁸

⁵⁴⁴ “Convoy SL.68,” <http://www.convoyweb.org.uk/sl/index.html?sl068.htm~slmain>

⁵⁴⁵ David Kindall, “Naval Events, March 1941: Saturday 15th – Monday 31st,” *British and Other Navies day-by-day in World War II*, <http://www.naval-history.net/xDKWW2-4103-30MAR02.htm>

⁵⁴⁶ Photo source: Maritimequest, <http://www.maritimequest.com/>

⁵⁴⁷ “U-boat Operations,” <http://www.uboatwaffe.net>; “*Andalusian*,” <http://www.uboat.net/allies/merchants/825.html>; “*Tapanoeli*,” <http://www.uboat.net/allies/merchants/826.html>; “*Medjerda*,” <http://www.uboat.net/allies/merchants/827.html>; “*Mandalika*,” <http://www.uboat.net/allies/merchants/828.html>; “*Malaya*,” <http://www.uboat.net/allies/warships/ship/4059.html>; “*Benwyvis*,” <http://www.uboat.net/allies/merchants/833.html>; “*Clan Ogilvy*,” <http://www.uboat.net/allies/merchants/832.html>

⁵⁴⁸ “*Jhelum*,” <http://www.uboat.net/allies/merchants/831.html>



Figure 289: Area of operations for "HMS Malaya"⁵⁴⁹

The Admiralty's precautions proved unnecessary, as *Scharnhorst* and *Gneisenau* were nearing Brest, France and about to conclude their mission, and nowhere near Convoy SL 68; *Malaya* reached the United States and was repaired in New York (even though the U.S. was technically neutral) until July 1941 and then returned to combat duty.

"HMS Malaya" in GWX

The GWX Team based "HMS Malaya" on the work of "Wilhelm Schulz" and made the following general edits:

- Convoy SL 68 now has its full complement of merchant ships and escorts with as close a match to its historical composition and formation as possible given incomplete historical information
- Location adjusted to align with historically reported location of the torpedoing of HMS *Malaya*
- Victory conditions adjusted to allow a secondary victory by sinking significant merchant tonnage

Stock *Silent Hunter III* limitations give the player's U-boat (*U-106*) a full complement of torpedoes, although by this time *U-106* had used all of its internally stored torpedoes and was now relying on the torpedoes that had been stored outside the pressure hull during the voyage. Players who wish to recreate the historical situation should limit themselves to firing only the torpedoes initially loaded in the stern torpedo tubes during this mission.

⁵⁴⁹ Map developed using Google Earth®

Background

U-515 (*Kapitänleutnant* Werner Henke) departed Lorient on March 30, 1944 bound for the Gold Coast Atlantic on its seventh war patrol.⁵⁵⁰ Henke had been *U-515*'s only commander for all seven patrols since August 1942 as he earned the *Ritterkreuz* in December 1942 and added *eichenlaube* to the *Ritterkreuz* in July 1943, and had sunk 157,000 tons of Allied shipping. These included the ocean liner [SS Ceramic](#) (18,731 tons) in July 1942, from which all but one of 655 passengers and crew were lost,⁵⁵¹ and the 10,850-ton depot ship HMS *Hecla* that November.⁵⁵² *U-515* sent only one message during her voyage: a status report on April 8 when she passed 20° W.⁵⁵³

Ultra intercepted *U-515*'s report and the US 10th Fleet ordered a U.S. hunter-killer force, Task Group (TG) 21.12, to hunt down *U-515* when it appeared that TG 21.12 was only 40 miles away. TG 21.12 centered on the escort carrier USS *Guadalcanal* (CVE-60) with the destroyer escorts USS *Chatelain*, *Flaherty*, *Pillsbury*, and *Pope* under the command of CAPT Daniel Gallery;⁵⁵⁴ the destroyer USS *Forrest* had departed TG 21.12 on April 2 in preparation for [Operation Neptune](#).⁵⁵⁵ TG 21.12 pioneered nighttime air operations from escort carriers during this operation, using that ability to locate *U-515* and harass it throughout the night, preventing it from fully recharging its batteries as the task force closed in.

Chatelain, *Flaherty*, and *Pillsbury* were sweeping for the suspected U-boat ahead of *Guadalcanal* with *Pope* providing close antisubmarine escort at 11:33 the next morning when *Pope* reported a “doubtful” sonar contact 700 yards off her starboard bow. *Pope* investigated, and within 20 minutes confirmed a U-boat was present; she went to General Quarters and began her attack just before noon.⁵⁵⁶



Figure 290: USS *Guadalcanal* (CVE 60) refueling in Casablanca, French Morocco on March 30, 1944⁵⁵⁷

⁵⁵⁰ “F.d.U./B.d.U. War Log, 16-30 April 1944,” <http://uboatarchive.net/BDUKTB30343.htm>, and

“F.d.U./B.d.U. War Log, 16-30 April 1944,” <http://uboatarchive.net/BDUKTB30345.htm>

⁵⁵¹ “Ship details: *Ceramic*,” <http://ubootwaffe.net/ops/ships.cgi?boat=515;nr=13>

⁵⁵² “Ship details: HMS *Hecla*,” <http://ubootwaffe.net/ops/ships.cgi?boat=515;nr=11>

⁵⁵³ “Report on the Interrogation of Survivors of *U-515* sunk April 9, 1944 and *U-68* sunk April 10, 1944,” Navy Department, Office of the Chief of Naval Operations, Washington D.C. 17 June 1944. <http://www.uboatarchive.net/U-515INT.htm>

⁵⁵⁴ Don Baker, “The USS *Guadalcanal*,” http://uboat.net/allies/ships/uss_guadalcanal-4.htm

⁵⁵⁵ “*Forrest*,” <http://www.history.navy.mil/danfs/f3/forrest.htm>

⁵⁵⁶ “Action of U.S.S. *Pope* (DE-134) with German *U-515*,” <http://www.uboatarchive.net/U-515PopeReport.htm>

⁵⁵⁷ U.S. Navy photo, from “Second ASW cruise,” <http://candotg.org/SecondASWCruise.htm>

Aftermath

USS *Pope*'s first two hedgehog barrages missed, and she began a sustained depth charge attack while the other escorts stood by, ready to assist. The commander of TG 21.12's escorts ordered USS *Chatelain* to assist *Pope* about 30 minutes later, and *Chatelain* used its sonar to help *Pope* reacquire *U-515* after each depth charge attack. *U-515* began leaking just after 1:00 PM after depth charges bounced off the *U-515*'s hull and exploded beneath her. *U-515*'s crew could not stop the leaks, so they blew her ballast tanks just after 3:00 PM and began to abandon ship. They were less than 75 yards from USS *Chatelain*, which had just started a depth charge attack and was so close the other ships could not fire for fear of hitting her.

Chatelain immediately opened fire but ceased fire after three minutes when it became apparent the crew of *U-515* was abandoning ship, only to resume firing for a minute with 20mm and 40mm gunfire on several *U-515* crewmembers who ran towards their deck gun. An Avenger from USS *Guadalcanal* made a strafing and rocket attack, but by then *U-515* was going down, and the escorts moved in to rescue her survivors.⁵⁵⁸



Figure 291: USS *Chatelain* (DE 149) firing on *U-515*⁵⁵⁹

The escorts picked up 43 *U-515* survivors out of a crew of 59 including *Kapitänleutnant* Henke: the surviving prisoners reported Henke likely wanted to attack *Guadalcanal*, but had overruled suggestions that he use homing torpedoes against the escorts. Henke was an apparent suicide when he tried to climb over the fence of the Camp Hunt, Maryland POW camp in broad daylight on June 15, 1944, and *Großadmiral* Dönitz gave him a posthumous promotion to *Korvettenkapitän* in January 1945.

The “U-515” mission in GWX

The GWX team made the following general changes to the *U-515* mission by “Wilhelm Schulz.”

- Changed weather conditions to historical (winds @ Force 3)
- USS *Forrest* removed from U.S. order of battle (historically it detached prior to this engagement)
- TG 21.12 redeployed consistent with historical operational deployment
- Added Primary (sink USS *Guadalcanal*) and Secondary (sink a destroyer escort) Objectives
- Significantly increased the presence of U.S. aircraft
- The game will provide the player a Type IXC/40 U-boat. Players who want to use the same type of U-boat as *U-515* should select “Type IXC (1944)” at the single mission selection screen.

⁵⁵⁸ “Action of U.S.S. *Pope* (DE-134) with German *U-515*,” <http://www.uboaarchive.net/U-515PopeReport.htm> and

“Narrative - sinking of *U-515*,” <http://www.uboaarchive.net/U-515ChatelainNarrative.htm>

⁵⁵⁹ Photo source: “Second ASW cruise,” USS *Guadalcanal* Task Group 22.3 Association, <http://candotg.org/SecondASWCruise.htm>, US Navy photo taken by aircraft of Torpedo Squadron 25, USS *Guadalcanal*, after conducting a strafing and rocket attack on *U-1195*.

Description

The English Channel, April 6, 1945. The war in Europe is nearly at an end. In the last week the Soviets have encircled Königsberg in East Prussia, besieged Breslau (known today as Wrocław, Poland) in Silesia, and are on the outskirts of Vienna, Austria; in the west, the U.S. Army has trapped 300,000 German troops of Heeresgruppe B in the Ruhr pocket, while British troops have taken Münster and Osnabrück. Two days ago, 700 U.S. Eighth Air Force heavy bombers attacked Kiel, and yesterday 450 bombers returned and heavily damaged the heavy cruiser *Admiral Hipper* and light cruiser *Emden*.⁵⁶⁰

Here in the Channel, though, the *U-bootwaffe* fights on: *U-1195* (*Kapitänleutnant* Ernst Cordes) is on patrol in mid-Channel south of Portsmouth, England after sinking the Liberty ship *SS John R. Park* in the western approaches to the English Channel on March 21,⁵⁶¹ and mistakenly wandering into the Solent (between the Isle of Wight and the Portsmouth) a few days later.⁵⁶² At about 7:15 AM, convoy VWP 17 from Portsmouth from Le Havre, France appears in front of *U-1195*, with six ASW vessels escorting several empty troop ships including the former French ocean liner *SS Cuba* (11,240 GRT).⁵⁶³

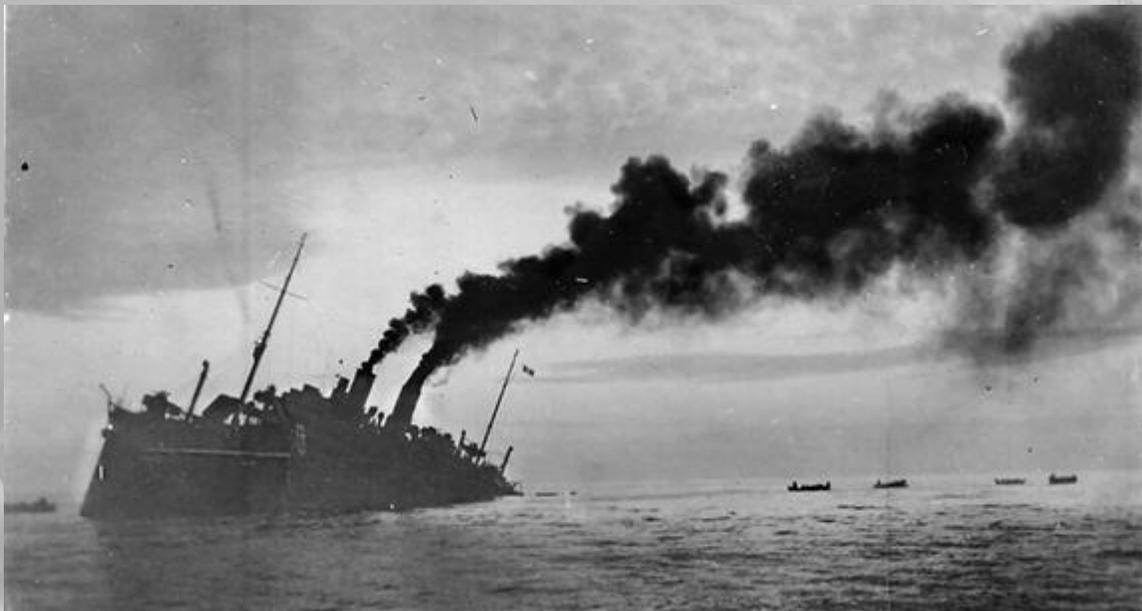


Figure 292: Troop ship *SS Cuba* after *U-1195* torpedoed her, as seen from *HMCS Nene*⁵⁶⁴

The *U-1195* launched a T5 *Zaunkönig* torpedo that the convoy escorts detected. The convoy commodore ordered all ships to slow to 7 knots to reduce noise signatures, but *SS Cuba* accelerated instead so the torpedo homed in and sank her: *HMCS Nene* rescued all but one of her crew of 268 and took them immediately to Portsmouth. The remaining escorts led by the destroyer *HMS Watchman* chased down *U-1195* and sank her as she tried to hide by resting on the shallow bottom of the Channel; 18 of her crew survived by escaping through the conning tower and torpedo loading hatches into captivity.⁵⁶⁵

⁵⁶⁰ "World War II Axis Military History Day-by-Day: April," <http://www.feldgrau.com/april.html>

⁵⁶¹ "U-1195," <http://www.ubootwaffe.net/ops/boat.cgi>

⁵⁶² "Return to U-1195," www.context.tv/de/productions/media/returntou1195int.version.pdf

⁵⁶³ Marc Milner, *The U-boat Hunters: The Royal Canadian Navy and the offensive against Germany's Submarines*. Naval Institute Press: 1994

⁵⁶⁴ Photo source: "SS *Cuba* items," <http://www.ptbo.igs.net/~djdelong/index.htm>

⁵⁶⁵ "SS *Cuba* items," <http://www.ptbo.igs.net/~djdelong/index.htm>

The “U-1195” mission in GWX

The GWX team made the following general changes to the original *U-1195* mission (author unknown).

- The start time now reflects the torpedoing of SS *Cuba* at about 7:30AM
- The weather and wind changed to reflect pictures taken during the event
- All ships in convoy VWP 17 are now troop ships, but one of them is not like the others...
- The configuration of the convoy escorts’ sensors and weapons now reflects April 1, 1945. Beware...
- The configuration date of the *U-1195* now reflects February 25, 1945 (her sailing date). This means the player’s homing torpedo (if you elect to use it) is in the stern rather than the bow. The game will provide the player a Type VIIC/42 U-boat. Players who want to use the same type of U-boat as *U-1195* should select “Type VIIC (1945)” at the single mission selection screen.
- Wrecks representing the current locations of the SS *Cuba* and *U-1195* were replaced with map notes visible in the *Silent Hunter III* Mission Editor as it was too easy for the player to hide under the “wreck of the *U-1195*”
- Modified the mission objectives as follows
 - All formerly hidden objectives are now open
 - Sinking HMS *Watchman* is now an open secondary objective
 - Returning to the approaches to Bergen is now a primary objective
 - Returning to the port of Bergen itself is now a secondary objective
- All GWX minefields, ASW patrols, and aircraft capabilities are in effect. Beware...



Figure 293: V&W-class destroyer HMS *Watchman* escorting convoy VWP 17 in GWX

Arctic and Norway

Narvik I

Description

Narvik, Norway: April 10, 1940. Germany invaded Norway and landed ground troops at Narvik on April 9, 1940. The *Kriegsmarine* detailed three U-boats to guard the approaches through the fjords to Narvik against expected Royal Navy counterattacks: *U-25*, *U-46*, and *U-51*. The British 2nd Destroyer Squadron, with Captain Bernard Warburton-Lee in HMS *Hardy* leading HMS *Hotspur*, *Hostile*, *Havock*, and *Hunter* counterattacked the German ships under *Kommodore* Friedrich Bonte defending Narvik early on April 10. The attack came as a complete surprise since the U-boats missed the British ships entirely as did the destroyer *Diether von Roeder* on patrol outside Narvik.



Figure 294: Aftermath of the First Battle of Narvik: German ships sunk in Narvik harbor⁵⁶⁶

Aftermath

The British lost the destroyers HMS *Hardy* and *Hunter*, with Captain Warburton-Lee killed in action. The Germans lost the destroyers *Wilhelm Heidkamp* and *Anton Schmitt*; four heavily damaged, and three destroyers undamaged but low on ammunition and out of fuel; only one destroyer (*Hermann Künne*) was fit for action. *Fregattenkapitän* Erich Bey succeeded *Kommodore* Bonte when Bonte died in the sinking of the *Heidkamp*. More importantly, the surviving German destroyers were unable to refuel since the British sank their refueling tanker, the converted whaling ship *Jan Wellem*, as well as several ships with supplies for the troops ashore.⁵⁶⁷

“Narvik I” in GWX

This mission takes place within the context of this battle as it exists in the GWX campaign.

⁵⁶⁶ Photo source: Imperial War Museum, <http://www.iwm.org.uk/>

⁵⁶⁷ Eric Grove, *Sea Battles in Close-up*.

Narvik II

Description

Narvik, Norway: April 13, 1940. Germany invaded Norway and landed ground troops at Narvik on April 9, 1940. The Royal Navy quickly blockaded and attacked Narvik, sinking the German supply ships and two *zerstörer*, with the remaining eight *zerstörer* damaged and short of fuel and ammunition. *Der Führer* ordered the U-boats to help defend Narvik: the player's boat (*U-64*) arrived yesterday.

A *zerstörer* has just spotted a British battleship approaching Narvik accompanied by a squadron of destroyers. Attack Stations!



Figure 295: British destroyers advance up Altenfjord during the Second Battle of Narvik⁵⁶⁸

Aftermath

The five U-boats stationed at Narvik proved entirely ineffective against the British force that annihilated the German destroyer force. Swordfish floatplanes from HMS *Warspite* surprised *U-64* on the surface and sank her with two 100-lb. antisubmarine bombs, but German *gebirgsjäger* (mountain troops) pushing out to the wreck in small boats rescued almost the entire crew from the frigid waters. The former commander of *U-64*, *Kapitänleutnant* Wilhelm Schulz, adopted the mountain flower, the *edelweiß* (*Leontopodium alpinum*) as the emblem for his new boat when he and most of the survivors of *U-64* transferred to the new Type IXB *U-124* in June 1940.

“Narvik II” in GWX

This mission takes place within the context of this battle as it exists in the GWX campaign.

⁵⁶⁸ Photo source: “HMS *Firedrake* Association,” <http://www.hmsfiredrake.co.uk>

Convoy PQ 17

Description

The Royal Navy recommended suspending the Arctic convoys after PQ 16 in May 1942 due to the threat of round-the-clock *Luftwaffe* air strikes in the continuous Arctic daylight; however, the desperate situation in the Soviet Union as the Germans moved towards Stalingrad and the Caucasus oil fields made this politically untenable. The Germans sent the heavy cruisers *Liützow*, *Admiral Scheer*, and *Admiral Hipper*; ten destroyers; 25 U-boats; and *Luftwaffe* reinforcements to join *Tirpitz* in northern Norway under the command of *Admiral* Hubert Schmundt. Schmundt was to control Operation *Rösselsprung* (“Knight’s move”), a sortie by the *Kriegsmarine* against the next Arctic convoy, which turned out to be PQ 17. The operation would proceed only on the orders of *der Führer* himself, who could not tolerate any risk to the German battlefleet from Allied carrier-based aircraft or submarines.

PQ 17 left Iceland on June 27, 1942; *Luftwaffe* attacks on PQ 17 and the cruiser covering force began on July 4, fatally crippling three merchant ships and damaging another. The initial U-boat attacks only sank two merchants already crippled by the *Luftwaffe*, but *Korvettenkapitän* Karl Brandenburg in *U-457* caused great concern when he reported a (non-existent) “battleship” in the cruiser covering force. *Großadmiral* Raeder suspected an aircraft carrier was accompanying the “battleship” and, mindful of Hitler’s orders, suspended *Rösselsprung* until the aircraft carrier could be found and sunk; Schmundt immediately ordered all U-boats to ignore the convoy and hunt down the “battleship” and the “aircraft carrier” presumed to be accompanying it.



Figure 296: Northern convoy under air attack⁵⁶⁹

The British First Sea Lord, Admiral of the Fleet Sir Dudley Pound, was aware through *Ultra* that the German surface ships were heading north, but incorrectly assumed they were already moving to attack and that they might engage the convoy and the cruiser force by the next day (July 5). He therefore ordered the convoy to scatter and the cruiser force to withdraw at high speed. Two U-boats (*U-456* and *U-457*) reported the scattering of the convoy and the retreat of the cruiser force: Schmundt immediately ordered all U-boats to shift back to attacking the convoy, and Raeder was now able to persuade Hitler the risk was now minimal and that *Rösselsprung* could begin.⁵⁷⁰

⁵⁶⁹ Photo source: “Convoy PQ 17,” <http://www.mikekemble.com/ww2/convoypq17.html>

⁵⁷⁰ Clay Blair, *Hitler’s U-boat War: The Hunters*.

Aftermath

Operation *Rösselsprung* proved short-lived. The Soviet submarine *K-21* observed *Tirpitz* leaving the fjord and missed *Tirpitz* with two torpedoes; subsequent reports from Catalina maritime patrol bombers and the British submarine HMS *Unshaken* confirmed the composition, course, and speed of the raiding force within three hours of its departure. Raeder cancelled the operation a few hours later after the *B-dienst* alerted him that the Allies knew *Tirpitz* was under way, but U-boats and the *Luftwaffe* had a field day with the ships of the now-scattered convoy, sinking 22 of the 34 merchant ships, one of the rescue ships, and one of the oilers. Convoy QP-13 was unmolested by U-boats, but lost an escort and five merchant ships to a British minefield off Iceland. The horrendous losses forced the British to suspend the Murmansk convoys until September when darkness would again cloak the convoys from German air attack.



Figure 297: The abandoned SS *Hoosier* from PQ 17 receives the *coup de grâce* from *U-376*⁵⁷¹

“Convoy PQ 17” in GWX

This mission takes place in the context of this convoy’s transit to Britain within the GWX campaign, with the participation of the player’s U-boat (*U-265*) starting on July 7.

⁵⁷¹ Photo courtesy of U-boat.net: “Convoy Battles: PQ 17,” <http://uboat.net/ops/convoys/battles.htm?convoy=PQ-17>

Convoy JW 55B

Description

The Allies abandoned summer Arctic convoys after the near-annihilation of convoy PQ-17 in June 1942: continuous summertime daylight north of the Arctic Circle meant *Luftwaffe* bombers flying from bases in northern Norway could attack convoys around the clock. Convoy PQ 18 was the last attempt to force a convoy through the *Luftwaffe* gantlet, with 44 merchants and heavy anti-aircraft escort, including the escort carrier HMS *Avenger* carrying 10 Sea Hurricane fighters. The results better than PQ-17, but still in the Germans' favor, sinking 13 of the 44 merchant ships while losing 25 aircraft and three U-boats.⁵⁷²

The Allies tried sending ships alone in the hope that single ships would be unnoticed: the "FB" convoy consisted of 13 merchant ships dispatched singly and without escort at 12-hour intervals in from October 29 – November 3, 1942, but only five of these reached the Soviet Union.⁵⁷³ The Allies then decided to send two small convoys each month rather than one large one, and to rely on the stormy weather and long nights of the Arctic winter to neutralize the *Luftwaffe*. *Luftwaffe* reconnaissance aircraft provided valuable service detecting and shadowing convoys in all but the worst weather, but it was now up to the *Kriegsmarine* to stop the convoys that were assisting the Soviet Union against Germany.

The Allies resumed the Arctic convoys on December 15, 1942 with convoy JW 51A from which all 16 of its merchants arrived. Convoy JW 51B followed with 14 merchant ships on December 22, but this time the Germans were ready with the heavy cruiser (ex-*panzerschiff*) *Lützow*, heavy cruiser *Admiral Hipper*, and six destroyers against the convoy's escort of the light cruisers HMS *Sheffield* and *Jamaica*, six destroyers, two corvettes, a minesweeper, and two trawlers. The resulting Battle of the Barents Sea was a *Kriegsmarine* fiasco: the Germans lost a destroyer while sinking only a destroyer and a minesweeper. Hitler was furious: *Grossadmiral* Raeder resigned in January 1943 and Hitler promoted *Admiral* Dönitz in his place, but Hitler was ready to disband the surface fleet altogether:

"The entire action shows that the ships are utterly useless and nothing but a breeding ground for revolution, idly lying about and lacking any desire to get into action. This means the passing of the High Seas Fleet; it is now my irrevocable decision to do away with these useless ships."⁵⁷⁴



Figure 298: HMS *Sheffield*, one of the victors in the Battle of the Barents Sea (1942)⁵⁷⁵

⁵⁷² "Russian Convoy Series," <http://www.convoyweb.org.uk/russian/>

⁵⁷³ "Russian Convoy Series," <http://www.convoyweb.org.uk/russian/>

⁵⁷⁴ Martin Stephen, *Sea Battles in Close-up: World War II*.

⁵⁷⁵ Photo source: Alistair Lofthouse, "Shiny Sheff," <http://www.sheffnet.co.uk/default.asp?contentid=423>

Grossadmiral Dönitz staved off Hitler's order by scrapping the heavy cruiser *Admiral Hipper* and the light cruisers *Leipzig* and *Köln* while assembling *Tirpitz*, *Scharnhorst*, *Lützow*, and a number of destroyers at Altafjord, Norway in early 1943 to counter future Arctic convoys. The JW convoys were highly successful, losing only 1 out of 75 merchant ships to hostile action *en route* to the Soviet Union, so the Allies adhered to their new strategy and sent no convoys from spring until the onset of winter. This strategy idled *Tirpitz* and *Scharnhorst* for the year, except for a bombardment of Spitsbergen as part of [Operation Sizilien](#); meanwhile, the Allies harassed *Tirpitz* and finally succeeded in putting her out of action with a minisub attack in September. *Lützow* left in September for refit at Gotenhafen, which left only *Scharnhorst* and five destroyers to attack the winter convoys.⁵⁷⁶



Figure 299: *Scharnhorst* waits at Altafjord, Norway (1943)⁵⁷⁷

The first Arctic convoy of the winter of 1943-44, JW 54A, sailed on November 15, 1943 followed by JW 54B on November 22 and JW 55A on December 12: 53 merchants arrived in the Soviet Union without loss, as did two convoys returning from the Soviet Union. Dönitz believed that allowing these convoys to pass unmolested would lull the British into a false sense of security, and ordered *Scharnhorst* to attack the next convoy that appeared: JW 55B, bound for the Soviet Union. *Luftwaffe* aircraft began shadowing the convoy on December 23 as it passed north of Narvik; in response, Dönitz initiated Operation *Ostfront* ("Eastern Front") on December 25, ordering *Scharnhorst* and five destroyers under *Konteradmiral* Erich Bey to attack the convoy. U-boat group *Eisenbart* ("Ice beard") would shadow the convoy and attack if the opportunity presented itself.⁵⁷⁸

The British always anticipated attacks by German surface ships, and the escorting force for JW 55B, under the command of Admiral Sir Bruce Fraser, commander-in-chief of the Home Fleet, included:

- Convoy JW 55B, bound for the Soviet Union with 19 merchant ships escorted by eight destroyers and a minesweeper;
- Convoy RA 55A, returning to Britain with 23 merchant ships escorted by eight destroyers and a minesweeper, which would cross paths with JW 55B near Bear Island
- "Force 1," consisting of the heavy cruiser HMS *Norfolk* and light cruisers HMS *Belfast* (flag) and *Sheffield* under Vice Admiral R.L. Burnett, which would support RA 55A until it crossed paths with JW 55B, at which time it would defend JW 55B;
- "Force 2," consisting of the battleship HMS *Duke of York* (flag), light cruiser HMS *Jamaica*, and four destroyers under Admiral Fraser, which would provide distant cover to both convoys.⁵⁷⁹

⁵⁷⁶ Martin Stephen, *Sea Battles in Close-up: World War II*

⁵⁷⁷ Photo source: U.S. Naval Historical Center #NH 71392, <http://www.history.navy.mil/>

⁵⁷⁸ Martin Stephen, *Sea Battles in Close-up: World War II*

⁵⁷⁹ Fraser, Admiral Sir Bruce, "Sinking of the battle-cruiser *Scharnhorst* on the 26th December 1943," *Supplement to the London Gazette*, August 7, 1947, No. 38038, <http://www.gazettes-online.co.uk/>

Aftermath

There was no “dawn” on December 26 at this latitude in the winter storm that had arisen, but Force 1 detected *Scharnhorst* by radar at 0840 GMT and learned she was nearly upon the convoy, having slipped overnight between Force 1 and the convoy. The British were fortunate: *Scharnhorst* was on the wrong track because *U-277* (*Kapitänleutnant* Robert Lübsen) had given an early morning position report that was off by 50 miles, and *Konteradmiral* Bey’s refusal to use radar meant he had had to disperse his destroyers to search for the convoy in the Arctic winter darkness rather than concentrate them for action. As a result, *Scharnhorst* missed the convoy, lost track of its destroyers, and was completely surprised when Force 1 (which *was* using radar) remained undetected as it sped past *Scharnhorst*, interposed between her and the convoy, closed to within 13,000 yards, and opened fire at 0920 GMT.⁵⁸⁰

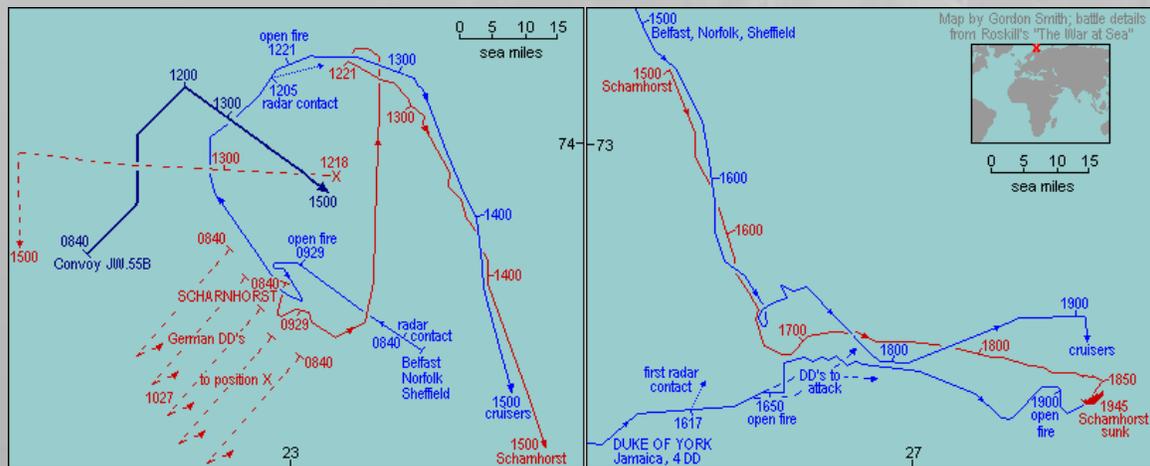


Figure 300: Map of Operation *Ostfront* (the Battle of the North Cape)⁵⁸¹

Scharnhorst returned fire and headed north, but apparently realized the presence of a cruiser force meant the convoy was likely nearby and so approached around noon to try to find a path around Force 1. Force 1 was now reinforced by four destroyers detached from convoy RA 53A and refused to yield, threatening torpedo attacks by its destroyers when *Scharnhorst* tried to close in, and so *Scharnhorst* began a retreat towards Norway pursued by Force 1. *U-277* finally sent a revised spotting report that gave the correct, earlier convoy position and the German destroyers were finally able to search in the right direction, but Bey ordered them to break off and return to port as he began his retreat. Bey did not yet realize it, but his path of retreat towards Altafjord was leading him straight into Force 2, which surprised *Scharnhorst* yet again at 1647 GMT that afternoon with starshells. The 10 14-inch guns of the *Duke of York*’s radar-aimed main battery followed the starshells by a few minutes and put *Scharnhorst*’s Anton turret out of action with the first salvo.

Scharnhorst immediately turned north but encountered Force 1 in pursuit, and so she fled east and began to outrun the British capital ships. By 1820 *Scharnhorst* going out of range and Fraser had signaled to Barnett his intention to rejoin the convoy when the last salvo from *Duke of York* knocked out one of *Scharnhorst*’s boilers, reducing her speed to 22 knots and allowing the British to catch up and resume firing at 1901 GMT. *Scharnhorst* exploded and sank at 1945; the British found only 37 survivors out of a complement of 1,948, with all of the officers having gone down with the ship.⁵⁸²

⁵⁸⁰ Alfred Jacobsen, “The *Eisenbart* wolfpack and the sinking of the *Scharnhorst*,” <http://uboat.net/articles/index.html?article=62>

⁵⁸¹ Map source: Gordon Smith, <http://www.naval-history.net>

⁵⁸² Martin Stephen, *Sea Battles in Close-up World War II*



Figure 301: King George V-class battleship HMS Duke of York (1943)⁵⁸³

“Convoy JW 55B” in GWX

The attack on “Convoy JW 55B” in GWX builds on history in that it keeps the weather, order of battle, and locations of Allied ships as close as possible to the actual forces involved within the limits of *Silent Hunter III* and GWX; however, this mission assumes a few key changes from the historical narrative:

1. *U-277* (the player’s U-boat) gives its position accurately and continues to shadow the convoy, rather than giving an inaccurate report and then losing contact. This allows *Scharnhorst* to focus on attacking the convoy rather than conducting a blind search.
2. *Scharnhorst* and all German ships use radar instead of indulging in their historical abstinence. Using radar is the default behavior in stock *Silent Hunter III*, and allows *Scharnhorst* to keep its destroyers in a tighter formation and under tactical control, as well as detecting the convoy where she completely missed it historically.
3. *Konteradmiral* Bey realizes his primary mission is to destroy enemy shipping, and will therefore follow Dönitz’s wishes and valiantly fight his way through any escorts to attack the convoy; however, he will also follow Dönitz’s intent for him to make only a “hit-and-run” raid before any Allied battleships can appear.
4. The convoy will not scatter, as there is no advanced warning that *Scharnhorst* is upon the convoy. A real convoy would have scattered if it appeared its escort would be overwhelmed.

The U-boat’s primary mission is to help clear the way for *Scharnhorst*, as no one U-boat can match the rapid ship-killing ability of a battleship in GWX. You are free to take whatever advantage you can of the damage wrought by *Scharnhorst* once she is clear.

⁵⁸³ Photo source: “HMS Duke of York,” <http://www.maritimequest.com>

Tungsten

Description

Operation *Tungsten* was a major carrier air strike conducted by Home Fleet task forces under command of Admiral Sir Bruce Fraser. The attack force consisted of the battleships HMS *Duke of York* (flagship) and *Anson*; the fleet carriers HMS *Victorious* and *Furious*; the escort carriers HMS *Searcher*, *Emperor*, *Pursuer*, and *Fencer*; the light cruisers HMS *Belfast*, *Jamaica*, and *Sheffield*; the anti-aircraft cruiser HMS *Royalist*; fifteen destroyers, and two fleet oilers divided into several task forces.



Figure 302: Ships during Operation *Tungsten* as seen from HMS *Emperor*⁵⁸⁴

Aftermath

The strike began at dawn on April 3, 1944, surprising *Tirpitz* as she weighed anchor to resume sea trials. The attack scored numerous hits on *Tirpitz*, killing 122 crewmembers, injuring over 300 (including her commander, *Kapitän z. S.* Hans Meyer), and causing significant damage above her armored deck. The Royal Navy made several follow-up unsuccessful attacks the next two months while the Germans worked to repair the damage. Operation *Brawn* in mid-May and Operation *Tiger Claw* in early June aborted due to poor weather; Operation *Mascot* in mid-June was foiled by *Tirpitz*' smokescreens and intense antiaircraft fire, including barrages of time-fused shells from her main and secondary batteries.

“Tungsten” in GWX

The “Tungsten” mission in GWX assumes the Germans detected the approach of the British task force and responded, though this did not happen historically. This mission takes place within the context of this battle as it exists in the GWX campaign.

⁵⁸⁴ Photo source: Imperial War Museum #A 22649, <http://www.iwmcollections.org.uk/> Ships in view are the aircraft carrier HMS *Furious*; escort carriers HMS *Searcher* and *Pursuer*; and light cruiser HMS *Jamaica*, seen from HMS *Emperor*.

Mediterranean Sea

HMS *Barham*

Description

The Eastern Mediterranean, November 1941. The British Eighth Army launched Operation *Crusader* on November 18, its latest attempt to to relieve the seven-month siege of Tobruk (ط برق), Libya by *Panzergruppe Afrika* under *General der Panzertruppen* Erwin Rommel. The Royal Navy supported the Eighth Army's advance by sinking Axis convoys bearing supplies and reinforcements to North Africa.

On November 23, the Royal Navy under Admiral Cunningham deployed to intercept Axis convoys:

- Force B (Rear Admiral Rawlings) consisting of light cruisers HMS *Ajax* (flag), *Neptune*, *Naiad*, and *Euryalus* with four destroyers moved west from Alexandria
- Force K (Captain Agnew), with light cruisers HMS *Aurora* (flag) and *Penelope* and two destroyers left Malta to interdict the port of Benghazi (ب بنغازي), Libya
- The Mediterranean Fleet Battle Force (Admiral Cunningham) with battleships HMS *Queen Elizabeth* (flag), *Barham*, *Valiant*, and eight destroyers patrolled south of Crete, ready to reinforce Force B or Force K in the event of a sortie by the Italian battle fleet.⁵⁸⁵

On November 25, *U-331* (*Oberleutnant z. S. Freiherr Hans-Deidrich von Tiesenhausen*) was patrolling south of Crete when the Battle Force sailed onto its position. The escorts failed to detect *U-331*, which hit HMS *Barham* with three torpedoes at a range of 410 yards. *Barham* stopped, rolled over, and sank four minutes later when her aft ammunition magazines exploded with 862 dead and 449 survivors. *Valiant* saw and tried to ram *U-331* when it broached after firing, but missed. Tiesenhausen won the *Ritterkreuz* for sinking *Barham*, but the British captured him one year later when *U-331* sank after being caught on the surface by a Hudson patrol bomber; only 17 of the 51 men on board survived.



Figure 303: HMS *Barham* explodes while rolling over after after *U-331* torpedoed it⁵⁸⁶

Operation *Crusader* relieved Tobruk and drove *Panzergruppe Afrika* back to El Agheila, known today as Al'-Uqaylah (ال ع ق ل), Libya, where it had started in April 1941, but the loss of HMS *Barham* combined with those of HMS *Queen Elizabeth* and *Valiant* in Alexandria Harbor to Italian "chariot" manned torpedoes one month later ended Britain's ability to contest the Mediterranean Sea.

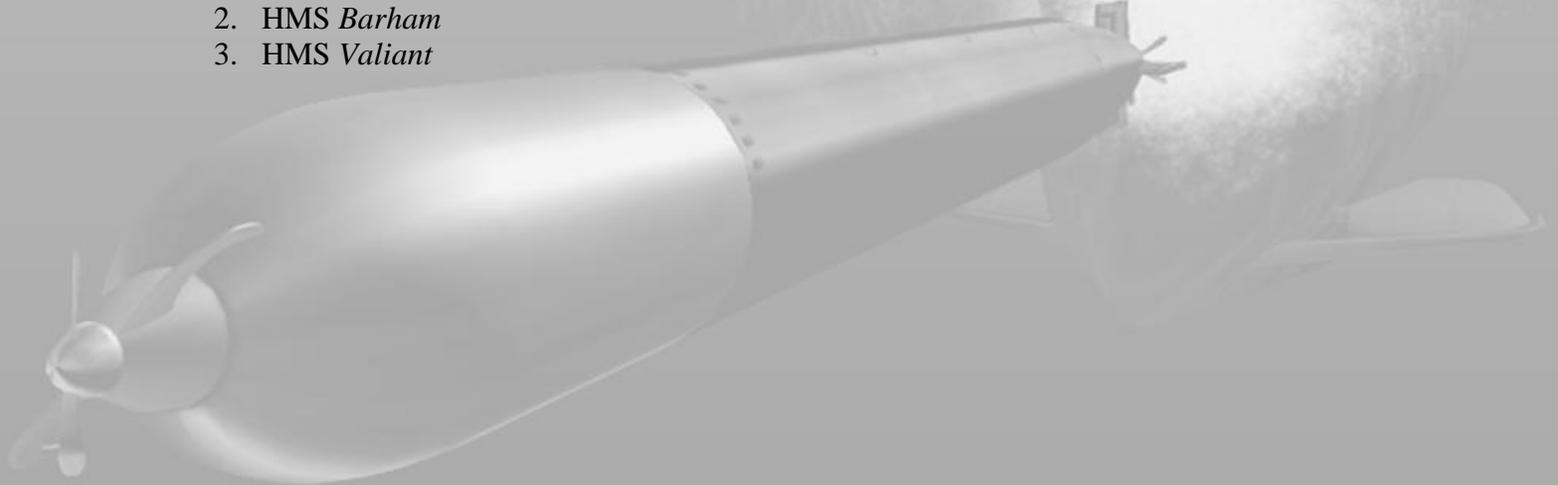
⁵⁸⁵ "Naval Events, November 1941," <http://www.naval-history.net/xDKWW2-4111-38NOV02.htm>

⁵⁸⁶ Photo source: "HMS *Barham* (04)," http://en.wikipedia.org/wiki/HMS_Barham_%281914%29

The “HMS Barham” mission in GWX

The GWX team has created a new “HMS Barham” mission by making the following general changes to the “Barham” mission from stock *Silent Hunter III*. GWX retains the stock version.

- HMS *Valiant* is now a *Revenge*-class battleship rather than a *Nelson*-class battleship. The reason was that announced victory condition was to sink any British capital ship, but the programmed victory condition was to sink a *Revenge*-class battleship, so if you sank the *Valiant* you didn't get any credit for a primary objective since it was of the wrong class
- Changed the engagement's location to the correct latitude and longitude, and corrected the position of *U-331* so it can reach its historical firing position
- All British destroyers are now have their historical names and the nearest GWX approximation to their historical type
- All British destroyers now have CrewRating=1 instead of CrewRating=0
- Wind speed is now 3 instead of 7: eyewitness reports noted a calm sea, and photos indicated only small waves without whitecaps
- Changed the order of sailing for the battleships to their historical order:
 1. HMS *Queen Elizabeth*
 2. HMS *Barham*
 3. HMS *Valiant*



HMS *Eagle*

Description

The Western Mediterranean, August 1942. The island fortress of Malta is under siege with food and fuel running out. The Allies mount a last ditch effort to resupply Malta: Operation *Pedestal*, with four aircraft carriers, two battleships, seven cruisers, and 33 destroyers guarding the 14 largest and fastest merchant ships (13 freighters and one tanker, SS *Ohio*) available. Axis spies warned of the convoy's departure and soon over 780 aircraft, 20 submarines, and numerous S-boats and MAS line the Axis gantlet from Gibraltar to Malta.⁵⁸⁷



Figure 304: Operation *Pedestal*: HMS *Eagle* follows *Indomitable*⁵⁸⁸

Aftermath

The Italian submarine *Uarsciek* attacked unsuccessfully early on August 11; *U-73* (*Kapitänleutnant* Helmut Rosenbaum) attacked at 1PM (local time), penetrating the screen and hitting the aircraft carrier HMS *Eagle* with four torpedoes. *Eagle* sank in 10 minutes with the loss of 160 of her crew of 1087, but *U-73* evaded her escorts and remained undetected.



Figure 305: SS *Ohio* arrives at Malta under “close” escort⁵⁹⁰

The *Pedestal* convoy battle continued through August 15. Only five of the 14 merchants reached Malta, but it was enough. Each ship carried food, petroleum products, and ammunition so the loss of any freighter cost only part of the convoy's total load; the exception was SS *Ohio*, carrying the convoy's entire load (over 10,000 tons) of kerosene and diesel fuel oil. Two destroyers (HMS *Bramham* and *Penn*) lashed themselves to the critically damaged *Ohio*, towing her to Malta where she unloaded 90% of her cargo before she sank, and thereby forestalled Malta's surrender.⁵⁸⁹

The Italians lost the submarines *Dagabur* (rammed by HMS *Wolverine*) and *Cobalto* (rammed by HMS *Ithuriel*), and damage to the heavy cruiser *Bolzano* and light cruiser *Muzio Attendolo* (torpedoed by submarine HMS *Unbroken*) knocked them out of the war. The British lost the aircraft carrier HMS *Eagle*, light cruisers HMS *Cairo* and *Manchester*, the destroyer HMS *Foresight*, and the nine merchant ships, but Malta was now resupplied and was able to help cut the *Afrika Korps*' supply line in the three months leading up to the battle of El Alamein in November 1942.⁵⁹¹

⁵⁸⁷ “Operation Pedestal,” http://en.wikipedia.org/wiki/Operation_Pedestal

⁵⁸⁸ Photo source: “HMS *Eagle* I,” <http://www.fleetairarchive.net/Ships/Eagle1.html>

⁵⁸⁹ Sam Modes, *At All Costs*, New York: Random House, 2006

⁵⁹⁰ Photo source: Imperial War Museum #GM 1505

⁵⁹¹ “British Navy in the Mediterranean,” <http://www.naval-history.net/WW2CampaignsRNMed2.htm>

Kapitänleutnant Rosenbaum won the *Ritterkreuz* for sinking HMS *Eagle* and went on to be the first commander of [XXX U-flotille](#) in the Black Sea. He died in an air crash in May 1944.⁵⁹²

“HMS *Eagle*” in GWX

The GWX team made the following changes to the original “HMS *Eagle*” mission (author unknown).

- Order of Battle⁵⁹³
 - The composition of the *Pedestal* convoy was increased to 13 merchant ships and one tanker corresponding to the historical 14 merchant vessels, with the historical “Force X” close escort of four light cruisers and 11 destroyers
 - The *Pedestal* covering force, “Force Z,” now matches its historical composition: battleships HMS *Nelson* and *Rodney*; aircraft carriers HMS *Victorious*, *Indomitable*, and *Eagle*; light cruisers HMS *Charybdis*, *Phoebe*, and *Sirius*; and 15 destroyers
 - Added the historical Operation *Bellows* force (aircraft carrier HMS *Furious* and two destroyers temporarily detached from the *Pedestal* covering force) that was accompanying the *Pedestal* convoy when *U-73* attacked
 - Added five reinforcing destroyers (HMS *Keppel*, *Malcolm*, *Amazon*, *Venemous*, and *Wolverine*) detached from “Force W” that arrived historically on the afternoon of August 11
 - Added “Force R” that was refueling *Pedestal* convoy destroyers when *U-73* attacked: two tankers (RFA *Dingledale* and *Brown Ranger*), four corvettes (HMS *Jonquil*, *Geranium*, *Spirea*, and *Coldsfoot*), and two armed tugboats (HM Tugs *Jaunty* and *Silvonia*)
- The speed of the *Pedestal* convoy is increased to its real-life value at the time of the attack
- The primary victory condition is to sink any one of the aircraft carriers; the secondary victory condition is to sink the only tanker in the *Pedestal* convoy, SS *Ohio*.
- The convoy’s direction of travel is now the historical west-to-east rather than east-to-west.

⁵⁹² “Helmut Rosenbaum,” <http://www.uboot.net/men/rosenbaum.htm>

⁵⁹³ Vice Admiral E. N. Syfret, RN, “Operation *Pedestal*,” Supplement to the *London Gazette*, No. 38377, August 11, 1948, <http://www.gazettes-online.co.uk/>

Finish Line

Description

The Central Mediterranean, August 1942. The *Pedestal* convoy to resupply Malta began with 14 of the largest and fastest merchant ships in the Allied merchant marine, escorted by four aircraft carriers, two battleships, seven cruisers, and 33 destroyers, and will be under air cover from Malta within four hours. Much of the escort turned back south of Sardinia, and to the Allies' misfortune, four days of nearly continuous attacks by Axis submarines, aircraft, and motor torpedo boats have reduced the convoy to three merchant ships escorted by two light cruisers and four destroyers. These attacks have separated three other merchants and four destroyers that are trying to rejoin the convoy as it races towards the finish line: the point where Malta-based Spitfire fighters can begin providing air cover.



Figure 306: Tanker SS *Ohio* torpedoed by Axis aircraft during Operation *Pedestal*⁵⁹⁴

Aftermath

Axis air attacks during the morning sank two merchant ships, MV *Dorset* and SS *Clan Ferguson*, but it was enough that five of the 14 merchant ships reached Malta. Each ship carried food, petroleum products, and ammunition so any freighter that arrived could help; the exception was SS *Ohio* carrying the convoy's entire load (over 10,000 tons) of kerosene and diesel fuel oil. Two destroyers (HMS *Bramham* and *Penn*) lashed themselves to the critically damaged *Ohio*, towing her to Malta where she sank after she unloaded 90% of her cargo and thereby forestalled the island's surrender.⁵⁹⁵

“Finish Line” in GWX

“Finish Line” in GWX places a U-boat in the path of the convoy during its final run towards Malta, though historically all the attacks against the convoy south of Sicily were made by aircraft. The game will automatically try to provide the player a Type VIIC/41 U-boat. Players who want to use a more historically likely U-boat should select “Type VIIC (1942)” at the single mission selection screen.

⁵⁹⁴ Photo source: “Clan Line,” <http://www.merchantnavyofficers.com/clanline5revb.html>

⁵⁹⁵ Sam Modes, *At All Costs*, New York: Random House, 2006

Operation *Gibbon*

Description

The Italian government under *Maresciallo d'Italia* (“Marshal”) Pietro Badoglio began negotiating in great secrecy with the Allies to withdraw Italy from the war after King Victor Emmanuel III sacked Prime Minister Benito Mussolini in late July 1943, following the Allied invasion of Sicily (Operation *Husky*) and the resulting vote of “no confidence” by the Fascist Grand Council. The secret armistice negotiations concluded on September 3, 1943, the same day the Allies began landing in Calabria, Italy (Operation *Baytown*) and the Allies announced the Armistice on September 8 as Allied forces were about to land at Salerno, Italy (Operation *Avalanche*). The Germans moved rapidly to disarm the Italian army, which was entirely unprepared as Marshal Badoglio had not informed the Italian armed forces about the negotiations or given them any orders regarding the armistice.⁵⁹⁶

The Italian Navy was going to attack the Salerno invasion when the Italian government confirmed the Armistice, but the Germans did not move quickly against the battle fleet so the Navy began leaving its bases before dawn on September 9. The fleet units from La Spezia and Genoa under *Ammiraglio di Armata* (“Admiral”) Carlo Bergamini in his flagship, the battleship RN *Roma*, made for Maddalena, Sardinia to join up with the Italian government and await further instruction, but *Konteradmiral* Meendsen-Bohlken, *Befehlshaber deutsches Marine-Kommando Italien* (Commander, German Naval Command, Italy) stationed at La Spezia saw the Italians leaving and warned OKM. The battle fleet reversed course away from Maddalena when German forces took control of the port before the fleet’s arrival, and at 3:20 that afternoon German Do-217 bombers found and hit *Roma* with two radio-controlled “smart bombs.”⁵⁹⁷ The second bomb ignited *Roma*’s forward magazine and blew its “B” main turret overboard: the ship soon sank, taking Admiral Bergamini and almost 1,400 of the over 2,000 men with her.⁵⁹⁸



Figure 307: The RN *Roma*’s forward magazine explodes⁵⁹⁹

Several ships, including the light cruiser RN *Attilio Regolo* and destroyers RN *Mitragliere*, *Fuciliere*, and *Carabiniere*, left the battle fleet to pick up the *Roma*’s survivors and fled to internment in fascist Spain rather than accept internment by the Allies. The Italian government, now unable to flee to Sardinia, decided instead to head for Brindisi in southern Italy, and ordered the battle fleet to head to Malta for internment (not “surrender”) after first meeting up with British naval forces near Bône (now called Annaba), Algeria early on September 10.

⁵⁹⁶ “Benito Mussolini,” http://en.wikipedia.org/wiki/Benito_Mussolini

⁵⁹⁷ “The Armistice,” <http://regiamarina.it/armistice.htm>

⁵⁹⁸ “Il Fatto,” *L’affondamento della corazzata Roma*, (“The sinking of the battleship *Roma*”), <http://www.carloforte.it/mammamahon/ilfatto.htm>

⁵⁹⁹ Photo source: “Loss of the Battleship *Roma*,” <http://www.bobhenneman.info/roma.htm>



Figure 308: Action Area for “Operation Gibbon”⁶⁰⁰

The Mediterranean Fleet was heavily engaged in Operation *Avalanche* but detached an “honor guard” for Operation *Gibbon*^{*}, the Royal Navy’s meeting with the Italian battle fleet survivors to escort them into internment (but *not* captivity).⁶⁰¹

- The Italian battle fleet, now under the command of *Ammiraglio di Divisione* (“Rear Admiral”) Romeo Oliva, consisted of the battleships RN *Italia* and *Vittorio Veneto*; light cruisers RN *Eugenio di Savoia* (flag), *Duca d’Aosta*, *Raimondo Montecuccoli*, *Luigi di Savoia Duca degli Abruzzi*, and *Giuseppe Garibaldi*; and five destroyers.
- The Force H detachment consisted of the battleships HMS *Valiant* and *Warspite* and seven destroyers, including the Greek destroyer RHS *Vasilissa Olga* (Βασιλίσσα Όλγα) and the Free French destroyer *Le Terrible*.⁶⁰²

The few U-boats remaining in the Mediterranean Sea at this time were in the port of Toulon or relocating between Pola and Salamis; Spain had interned *eichenlaube* holder *Kapitänleutnant* Albrecht Brandt, who scuttled *U-617* after a British air attack crippled her off Spanish Morocco on September 6. Only *U-565* (*Kapitänleutnant* Wilhelm Franken), which departed Toulon on September 6, could have intercepted the Italian battle fleet before it reached Bône, and only if the Germans had ferreted out its escape route far enough in advance to allow a relatively slow U-boat to intercept them.

⁶⁰⁰ Map developed using Google Earth®

^{*} Named in honor of British historian Edward Gibbon, author of *The History of the Decline and Fall of the Roman Empire*

⁶⁰¹ Admiral Sir Arthur B. Cunningham, “Operations in connection with the landings in the Gulf of Salerno on 9th September 1943,” Supplement to *The London Gazette* No. 38899, April 28, 1950

⁶⁰² Dan Muir, “Order of Battle: Surrender of the Italian Fleet to the Allies,”

http://www.navweaps.com/index_oob/OOB_WWII_Mediterranean/OOB_WWII_Italian-Surrender.htm

Aftermath

The Italian and Allied fleets made rendezvous at 8:30 AM on September 10, after which the Allied squadron escorted the Italian battle fleet to Malta, arriving on September 11; the fleets were unhindered in their journey to Malta, where a few other Italian ships from Taranto and the Adriatic ports joined the battle fleet in internment. Italy became a “co-belligerent” (not an “ally”) against Germany in October 1943, but the Allies kept all the surviving Italian battleships (RN *Italia*, *Vittorio Veneto*, *Andra Doria*, *Caio Duilio*, and *Giulio Cesare*) interned in the Suez Canal, but allowed all but *Italia* and *Vittorio Veneto* to leave in June 1944 to conduct training operations in and around Sicily.⁶⁰³ Other Italian units, including MAS torpedo boats and commando units began making significant contributions to the war effort against Germany and its Italian puppet-state, the *Repubblica Sociale Italiana* (RSI).

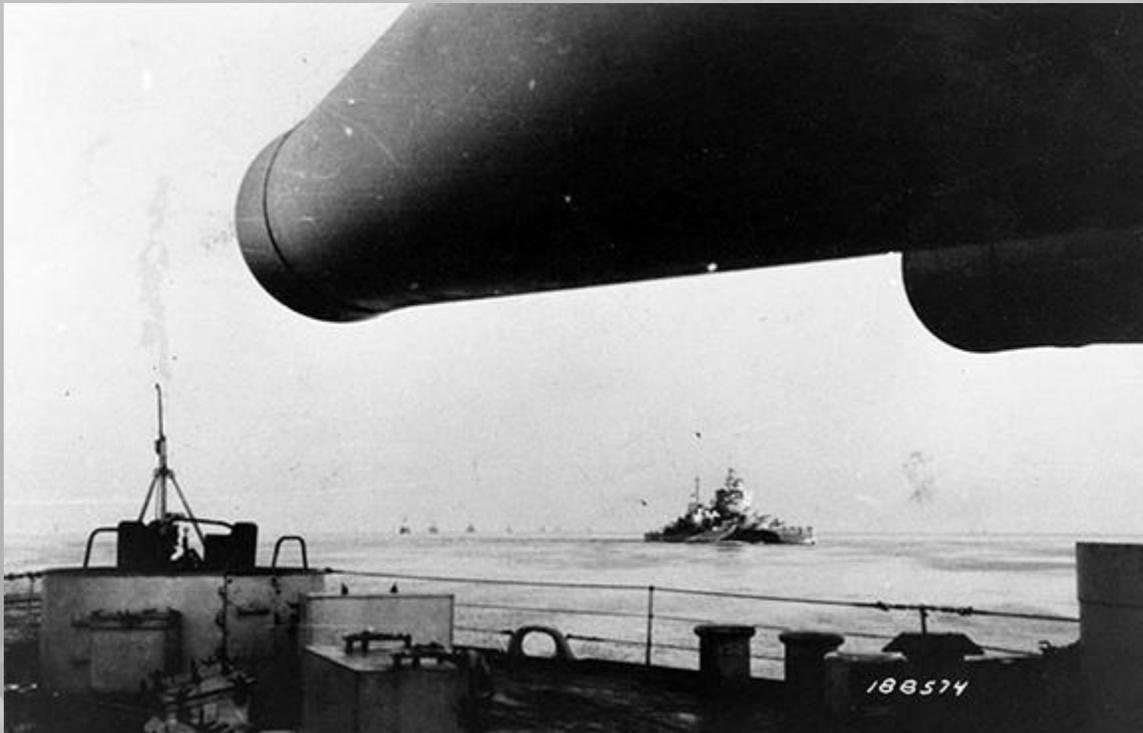


Figure 309: HMS *Valiant* leads the Italian battle fleet to Malta, as seen from HMS *Warspite*⁶⁰⁴

“Operation Gibbon” in GWX

The conduct of Operation “*Gibbon*” in GWX builds on history in that it keeps the weather, order of battle, and locations of Allied ships as close as possible to the forces involved within the limits of *Silent Hunter III* and GWX; however, this mission assumes a few key changes from the historical narrative:

- This mission assumes *U-565* was ordered to a location where it could intercept the Italian battle fleet before the fleet could reach Malta, but it would have been fortunate to reach an intercept point in time given that it historically left on patrol from Toulon on September 6.
- The game will offer the player a Type VIIC/42 U-boat. Players who want to use the same type of U-boat as *U-565* should select “Type VIIC (1943)” at the single mission selection screen.

⁶⁰³ “The Armistice,” <http://regiamarina.it/armistice.htm>

⁶⁰⁴ Photo source: United States National Archives #SC 188574, <http://www.archives.gov/>

Indian and Pacific Oceans

Brake

Description

The loss of the German covert tanker *Charlotte Schliemann* in the Indian Ocean on February 12, 1944 left only one tanker to support U-boats in transit between Europe and the U-boat bases in Asia. BdU ordered *Kapitänleutnant* Junker in *U-532* (Type IXC/40), whom the *Charlotte Schliemann* was supposed to refuel when the Royal Navy caught and sank her, *Kapitänleutnant* Helmuth Pich in *U-168* (Type IXC/40), and *Kapitänleutnant* Siegfried Lüdden in *U-188* (Type IXC/40) to rendezvous with the remaining Indian Ocean tanker, *Brake*, at a new set of coordinates. The Allies intercepted and decoded these instructions and prepared a reception committee comprised of the escort carrier HMS *Battler*; heavy cruiser HMS *Suffolk*; light cruiser HMS *Newcastle* (flagship), and the destroyers HMS *Quadrant* and *Roebuck* under the command of Rear Admiral Arthur Reid.

Aftermath

The U-boats met the *Brake* on March 11, with *U-188* being the first to begin refueling. Refueling operations were still underway on March 12 when aircraft from HMS *Battler* spotted the *Brake* and two of the submarines; the Germans had seen the aircraft and the submarines all dived. The British did not want to risk their heavy ships knowing U-boats were in the area so they sent in HMS *Roebuck*, which engaged *Brake* with long-range gunnery and sank her in about half an hour. *U-168* and *U-532* returned to Indonesia, with *U-168* picking up all but four of the *Brake* survivors; *U-188* had loaded enough fuel to continue on her way to France, arriving in Bordeaux on June 19, 1944.⁶⁰⁵

See [The Destruction of the *Brake* and the *Charlotte Schliemann*](#) for further details on this event.

“*Brake*” in GWX

This mission takes place within the context of the GWX campaign.

⁶⁰⁵ Arthur J. Binning, “Survivors,” <http://scotland.users.ftch.net/u188p4.htm>

Convoy PA 69

Description

The Italian surrender reopened the Mediterranean to convoy traffic so oil tankers now took the much shorter trip through the Mediterranean rather than sail around Africa. The “PA” convoys took ships from the Persian Gulf to Aden, and through the Suez Canal and thence to England; AP convoys went the reverse route. These convoys consisted primarily of large tankers generally carrying crude oil, and were a lucrative target to any U-boat stationed in Asian waters. Convoy PA 69 departed Bandar Abbas, Persia on February 16, 1944 escorted by the minesweepers HMAS *Tamworth* and HMIS *Orissa*.⁶⁰⁶

U-510 (*Oberleutnant z. S. Karl Eick*) deployed from France in November 1943 to join the *Monsun* boats in Penang, Netherlands East Indies. She refueled from the U-tanker *U-219* (*Korvettenkapitän Walter Burghagen*) in the South Atlantic and from the covert tanker *Charlotte Schliemann* off Madagascar, and then began her combat patrol in the Arabian Sea, Persian Gulf, and the Gulf of Aden.⁶⁰⁷



Figure 310: MV *San Alvaro*, Eagle Tanker Company, 7,385 GRT⁶⁰⁸

Aftermath

U-510 found the convoy early on February 23, 1944, torpedoing and sinking the tankers *San Alvaro* (7,385 GRT) and *E. G. Seubert* (9,181 GRT) at about 12:30AM local time. *U-510* broke off the attack, stalked the convoy for four hours, and then torpedoed the tanker *Erling Brøvig* (9,970 GRT), breaking her back but just failing to sink her; *Erling Brøvig* was salvaged and repaired after the war, serving on in Chinese service into the late 1970s.⁶⁰⁹ *U-510* continued its mission, sinking three more ships for a patrol total of over 31,000 tons, and arrived in Penang on April 5, 1944.

“Convoy PA 69” in GWX

The GWX team made the following general changes to the original “PA 69” mission by “Syxx_Killer.”

- Modeled the composition of convoy PA 69 on convoy PA 58 (three months earlier) and gave PA 69 its historical escorts
- PA 69 now starts moving east to west towards Aden as it did historically; *U-510*’s position has been adjusted accordingly
- Mission start time adjusted to historical (~2:30AM local time) start
- The game will provide the player a Type IXC/40 U-boat. Players who want to use the same type of U-boat as *U-510* should select “Type IXC (1944)” at the single mission selection screen.

⁶⁰⁶ “HMAS *Tamworth*,” <http://www.navy.gov.au/spc/history/ships/tamworth.html>

⁶⁰⁷ “Ritterkreuzträger Alfred Eick,” <http://www.ritterkreuztraeger-1939-45.de/Kriegsmarine/E/Eick-Alfred.htm>

⁶⁰⁸ Photo source: *Helderline Shell Tankers*, <http://www.helderline.nl/tankers/1063/San+Alvaro/>

⁶⁰⁹ “M/T *Erling Brøvig*,” <http://www.warsailors.com/singleships/erlingbrovig.html>

Historical Background

Progress in the war against Germany and Italy allowed Britain to establish the British Pacific Fleet (BPF) under the command of Admiral Sir Bruce Fraser on August 1, 1944. Significant Royal Navy elements began transferring to the Indian Ocean to begin training for carrier warfare in the Pacific, against Japan, where the tactics and logistical problems differed significantly from the war in Europe.

Force 63, commanded by Rear Admiral Sir Philip Vian, completed its training and transferred to the British Pacific Fleet in January 1945: as a “graduation exercise,” it executed Operations *Meridian I* and *Meridian II*, a pair of air strikes against oil refineries near Palembang, Sumatra on January 24 and 29. Force 63 consisted of the aircraft carriers HMS *Indomitable* (flagship), *Illustrious*, *Indefatigable*, and *Victorious*; battleship HMS *Duke of York*; anti-aircraft cruisers HMS *Argonaut*, *Black Prince*, and *Euryalus*; and 10 destroyers.⁶¹⁰



Figure 311: F4U Corsairs readying on HMS *Victorious*⁶¹¹

Aftermath

The Royal Navy did not lose any ships in this operation, nor did any enemy ships come within sight of the task force. The first raid on January 24 consisted of 52 Avenger bombers and 12 Firefly fighter-bombers, 44 Corsair fighters, and 20 Hellcat fighters. The second raid on January 29 consisted of 44 Avenger bombers and 12 Firefly fighter-bombers, 48 Corsair fighters, and 16 Hellcat fighters. The total British air losses totaled 41 aircraft. Force 63 refueled from Force 69 and went on to Fremantle, Australia at the conclusion of the operation.⁶¹²

“Force 63” in GWX

This mission takes place in the context of the GWX campaign. The only U-boat that could have intercepted Force 63, *U-862*, left on patrol from Jakarta two weeks before the attacks on Palembang and could have intercepted had the Japanese been forewarned by spies or a submarine report of the approach of Force 63, and might have been available to intercept the task force between first and second air strikes.

⁶¹⁰ “Operation *Meridian*,” http://en.wikipedia.org/wiki/Operation_Meridian

⁶¹¹ Photo source: Imperial War Museum #A 25750, <http://www.iwmcollections.org.uk>

⁶¹² Admiral Arthur J. Power, “The carrier-borne aircraft attacks on oil refineries in the Palembang (Sumatra) area in January, 1945,” *The London Gazette*, #39191, 5 April 1951, <http://www.gazettes-online.co.uk/>

Hypothetical Missions

Atlantic Ocean, North Sea, and Baltic Sea

Airship Escort

Description

The Americans are now using convoy tactics to counteract the success of Operation Drumroll. You are patrolling south of New York City in shallow water less than 20km off the coast. You already know to be especially cautious about aircraft this close to the U.S. coast....

April Fool

Description

The end of the Thousand-Year Reich is near. Heavy bombing in Wilhelmshaven has rendered the port unusable, so the remaining boats and their support vessels based there have anchored just south of Heligoland to continue operations. The Allies have detected this movement and a cruiser-destroyer task force has been despatched with air cover to attack this exposed target. Your Type XXI U-boat is the only one available to help defend Heligoland since only it survived the latest bombing. Western countries traditionally observe April 1st by the playing of practical jokes: who will play the April Fool this time?

Curaçao

Description

You are in command of a Type IXC U-boat. BdU has alerted you that a small but fast convoy of approx 6 large tankers has recently left the oil refining port of Curaçao. BdU believes they are headed southeast toward the La Cruz channel choke point prior to heading east out of the Caribbean and into the Atlantic. You are in the 12km wide channel northwest of La Cruz...surely a prime position. Do not let the tankers escape into the Atlantic.

Drumbeat!

Description

A Type IXB U-boat encounters a small, unescorted American convoy in the early days of 1942. BdU wishes you, "Good hunting!"

Early Christmas

Description

The Commander-in-Chief of the U.S. Navy, Admiral King, mindful of the pressure on U.S. naval forces in the Pacific, is transferring reinforcements to the Pacific Fleet from the Atlantic Fleet via the Panama Canal now that the Allies are having success over the U-boat menace in the Atlantic. You and your crew have a meager tally in the southwest Caribbean thus far. Is Christmas about to come early?

Evacuation

Description

A makeshift Polish convoy is fleeing to Britain into the teeth of the Kriegsmarine. The Poles must fight through by themselves.

Freetown Convoy

Description

Long-range U-boats began to appear in February 1941 off the African port of Freetown, where rumors flew that the U-boats outnumbered the hammerhead sharks. B-dienst reports a convoy to the south of your current location. Move to intercept and sink as many ships as possible, but be aware that air activity in this area has been high.

Tiger's Den

Description

A Type IXD2 U-boat encounters a well-escorted convoy off Newfoundland in early 1944. BdU wishes you, "Good hunting!"

Tiger's Jaws

Description

A Type VIIC U-boat encounters a well-escorted convoy off Iceland in March 1943. BdU wishes you, "Good hunting!"

"Tiger's Jaws" in GWX

The game will automatically try to provide the player a Type VIIC/42 U-boat. Players who want to use a more historically likely U-boat should select "Type VIIC (1943)" at the single mission selection screen.

Troopship

Description

The Allies often used fast ocean liners to transfer troops across the Atlantic. These ships would often sail unescorted because the Allies believed their high cruising speeds would protect them from slow-moving U-boats. The time of the planned Normandy invasion is approaching and the Americans are using these fast liners to bolster their troop numbers in Britain. You are about 650km south of Iceland and in a prime position but the weather is deteriorating and evening approaches.... can you act quickly enough?

Arctic and Norway

Ice Ice Baby 1

Description

In mid-January 1942, a new Type IX Uboat encounters scattered small convoys on their way to a fjord in eastern Greenland. Clear visibility should help you figure out what is what.

Ice Ice Baby 2

Description

In mid-January 1942, a new Type IX Uboat encounters scattered small convoys on their way to a fjord in eastern Greenland. The weather is not nearly as good as it could be, however, so you will need to stay on your toes.

Iceland

Description

BdU suspects the Allies are planning a big convoy to Russia from Reykjavik, and wants you to reconnoiter the harbor. If you find a convoy is assembling then the fewer ships that go to Russia the better off we all shall be.

Russian Convoy

Description

The United States and Great Britain are sending convoys into the stormy north to resupply their Soviet allies. Hitler has ordered Dönitz to counter these convoys by sending send U-Boats up north. The U-boats are sailing from Bergen, Narvik, and other Norwegian bases to attack the convoys.

Scharnhorst

Description

The British have trapped the battleship *Scharnhorst*, which is reduced to a maximum speed of 22 knots after being damaged by the British battleship HMS *Duke of York*. It is only a matter of time before the British finish her off. You must render assistance to the *Scharnhorst* by destroying the battleship and, if possible, the light cruiser that are attacking her.

Mediterranean Sea

ALARM!

Description

July 1943. The British Mediterranean Fleet is out in force. BdU wishes you, “Good hunting!”

“ALARM!” in GWX

The game will automatically try to provide the player a Type VIIC/42 U-boat. Players who want to use a more historically likely U-boat should select “Type VIIC (1943)” at the single mission selection screen.

Italia

Description

Mussolini has fallen and Italy has declared war on Germany. The battleships *Italia* and *Vittorio Veneto* are returning to Malta from patrol in the Aegean. You must sink them.

“Italia” in GWX

The game will automatically try to provide the player a Type VIIC/42 U-boat. Players who want to use a more historically likely U-boat should select “Type VIIC (1943)” at the single mission selection screen.

Tiger’s Revenge

Description

November 1944. A large British battlegroup is transferring from the Atlantic to the Indian Ocean by way of your current location. BdU wishes you, “Good hunting!”

“Tiger’s Revenge” in GWX

The game will automatically try to provide the player a Type VIIC/42 U-boat. Players who want to use a more historically likely U-boat should select “Type VIIC (1944)” at the single mission selection screen.

Tiger’s Tail

Description

July 1943. A British convoy is moving from Gibraltar towards the Central Mediterranean, possibly towards Sicily. BdU wishes you, “Good hunting!”

“Tiger’s Tail” in GWX

The game will automatically try to provide the player a Type VIIC/42 U-boat. Players who want to use a more historically likely U-boat should select “Type VIIC (1943)” at the single mission selection screen.

Indian and Pacific Oceans

In the fall of 1943, the Japanese allowed their German allies to operate long-range Type IXC and IXD2 U-boats from Japanese naval bases in the occupied Netherlands East Indies. Their operations were generally restricted to the waters in and around the Indian Ocean and Australia to take advantage of limited Allied ASW capabilities in these areas, but the Type IXD2 U-boat could reach anywhere in the Pacific Ocean from its Asian bases.

Far East Fleet

Description

Japanese coastwatchers have reported a British carrier task force leaving Hollandia in Northern New Guinea, and the Japanese naval commander in Singapore has the U-boats based there to try to intercept it.

Monsoon

Description

It is now the summer of 1944, and U.S. invasion of the Marianas and the catastrophic defeat inflicted on the Japanese Navy in the Battle of the Philippine Sea have prompted the Japanese to ask Germany for direct assistance in its war against the United States. BdU has ordered your U-boat to assist the Japanese, and wishes you, “Good Hunting!”

New Multiplayer Missions

Historically-Based Missions

Atlantic Ocean and North Sea

Convoy SC 7

Description

Hitler's cancellation of Germany's plans to invade Britain, Operation *Seelöwe* ("Sea Lion"), in mid-September 1940 meant Germany would begin preparations for the invasion of the Soviet Union. In the meantime, the *Luftwaffe* would conduct night bombing attacks ("the Blitz") against Britain while the *Kriegsmarine*, with the U-boats at the fore, was to cripple Britain's economy to ensure there would be no second front before the Soviet Union was conquered. The U-boat force was still miniscule after one year at war: the snail's pace of new construction had not quite kept up with the few losses incurred by the Royal Navy, but the new U-boat bases in France drastically improved the U-boats efficiency by shortening the distance to the U-boat patrol areas in the western approaches to the British Isles.⁶¹³

The western approaches, from the western shores of the British Isles to the submarine plateau of the Rockall Bank, were the path by which manufactured goods and refined petroleum products arrived in Britain from the Americas, and raw materials arrived from colonies in Africa and Asia after the fall of France closed the English Channel to routine shipping traffic. The convoys sailed from Halifax (HX), Nova Scotia from the weeks of the war, with slow convoys from Sydney, Cape Breton Island, Nova Scotia (SC) initiated in August 1940.⁶¹⁴

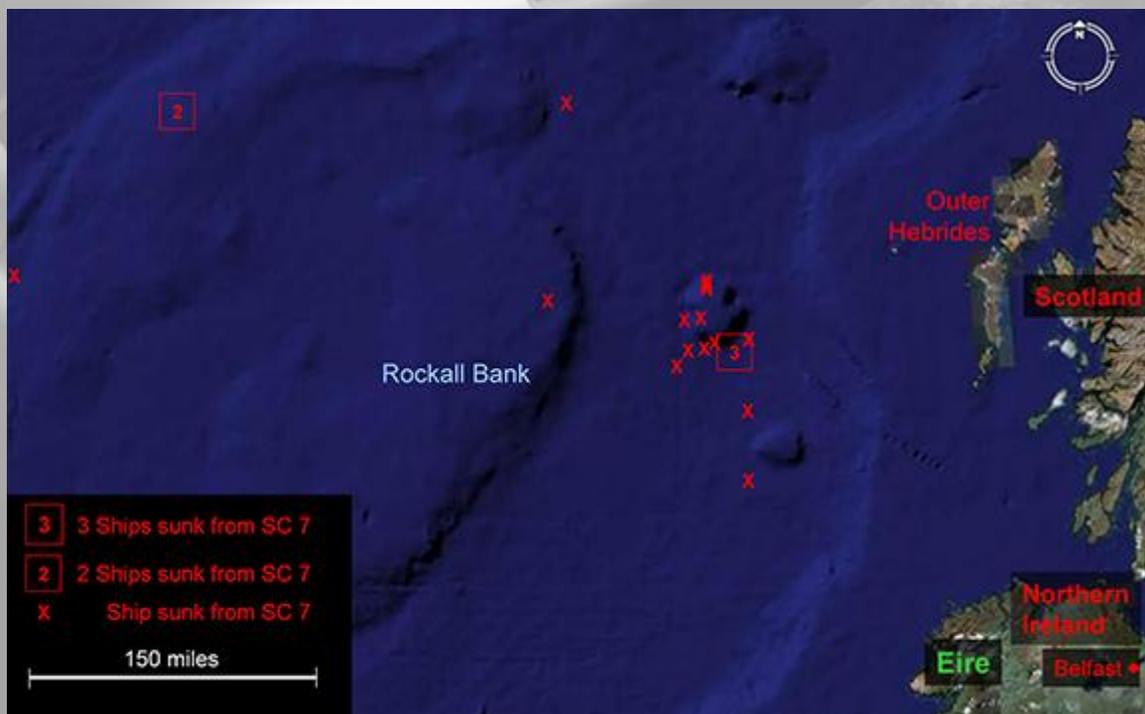


Figure 312: Area of Action for "Convoy SC 7"⁶¹⁵

⁶¹³ Clay Blair, *Hitler's U-boat War: The Hunters*.

⁶¹⁴ Siri Lawson, "Ships in Atlantic Convoys," <http://www.warsailors.com/convoys/index.html>

⁶¹⁵ Map developed using Google Earth®

Convoy SC 7 sailed from Sydney, C.B. on October 5, 1940 with 34 ships escorted by one sloop, HMS *Scarborough*, but encountered bad weather on October 11 that resulted in the separation of several ships: of these, *U-124* (*Kapitänleutnant* Georg-Wilhelm Schulz) sank SS *Trevisa* and *U-38* (*Kapitänleutnant* Heinrich Liebe) sank SS *Aenos*. On October 17, the sloop HMS *Fowey* and corvette HMS *Bluebell* reinforced the convoy escort, but *U-48* (*Kapitänleutnant* Heinrich Bleichrodt) found the convoy later that day and attacked, sinking the tanker SS *Languedoc* and freighter SS *Scoresby*. *Scarborough* counterattacked and held *U-48* down so long that both the escort and the U-boat were so far behind the convoy they played no further role. On October 18, the escort was further reinforced by the the sloop HMS *Leith* and the corvette HMS *Heartsease*; *U-38* attacked during the day and damaged the freighter SS *Carsbreck* so she could not keep up with the convoy and *Heartsease* was detailed to escort her to safety, so that the surviving 28 merchant ship had only three escorts.

The attacking U-boats kept BdU fully (if belatedly) apprised of the convoy's course and speed, so *Vizeadmiral* Dönitz ordered five U-boats, each commanded by a current or future Ritterkreuz holder, to concentrate to attack the convoy. The U-boats were *U-46* (*Oberleutnant* z. S. Engelbert Endraß), *U-99* (*Kapitänleutnant* Otto Kretschmer), *U-100* (*Kapitänleutnant* Joachim Schepke), *U-101* (*Kapitänleutnant* Fritz Frauenheim), and *U-123* (*Kapitänleutnant* Karl-Heinz Moehle). The U-boats spotted the convoy at 1749 GMT on October 18, and spent the next 2.5 hours getting into position. The convoy made a radical course change to the south at 2000, but the first torpedoes struck the convoy only 20 minutes later.

Aftermath

The U-boats attacked through the night and sank 17 ships by dawn. *U-46* and *U-100* attacked Convoy HX 79 the following night in concert with several other U-boats; the battles of Convoy SC 7 and HX 79 became known together as “*Die Nacht der langen Messer*” (“The Night of the Long Knives”).⁶¹⁶

U-boat	Ships	Tonnage
<i>U-46</i> (Endraß)	3	8,453
<i>U-99</i> (Kretschmer)	6 ½	28,949
<i>U-100</i> (Schepke)	0	0
<i>U-101</i> (Frauenheim)	3	8,837
<i>U-123</i> (Moehle)	3 ½	14,685

Figure 313: U-boat successes against Convoy SC 7⁶¹⁷

“Convoy SC 7” in GWX

The GWX team made several changes to the original “SC-7” mission by “Wilhelm Schulz.”

- Adjusted the starting location, time, weather, convoy course and speed, and escort group composition for consistency with the situation at 2000 GMT on October 18, 1940 as noted in KTB of *U-99*⁶¹⁸ and the after-action report of HMS *Leith*⁶¹⁹
- Adjusted convoy composition using new GWX shipping to align more closely with historical tonnages and nationalities of the ships in convoy at the start of the main engagement
- Adjusted U-boat team to reflect the historical order of battle

Player Team

The player team has four Type VIIB U-boats (*U-46*, *U-99*, *U-100*, and *U-101*), and one Type IXB U-boat (*U-123*).

⁶¹⁶ Gannon, *Black May*.

⁶¹⁷ Jürgen Rohwer, *Axis submarine successes of World War Two*, Naval Institute Press: 1999.

⁶¹⁸ See Clay Blair, *Hitler's U-boats: The Hunters*

⁶¹⁹ “HMS *Leith*'s Report – Local Escort Convoy SC 7,” <http://www.warsailors.com/convoys/sc7report.html>

Convoy SC 94

Description

The North Atlantic: August 1942. Convoy SC 94 departed Sydney, Canada on July 31, 1942 bound for Liverpool, England, consisting of 33 merchant ships escorted by the destroyer HMCS *Assiniboine*; corvettes HMCS *Battleford*, *Chilliwack*, and *Orillia*; and corvettes HMS *Nasturium*, *Dianthus*, and *Primrose* (the escort leader).⁶²⁰ BdU formed eight U-boats (*U-71*, *U-210*, *U-379*, *U-454*, *U-593*, *U-597*, *U-607*, and *U-704*) into group *Steinbrinck*,* and directed nine other U-boats (*U-174*, *U-176*, *U-254*, *U-256*, *U-438*, *U-595*, *U-605*, *U-660*, and *U-705*) to join the attack. The pack formed in the central North Atlantic air coverage gap, where the *U-593* (*Kapitänleutnant* Gerd Kelbing) made the first contact on August 5, 1942 and sank SS *Spar* in a small group of ships that had separated from the convoy in fog.⁶²¹

Aftermath

The convoy battle continued through patches of dense fog until August 10 when the convoy left the air coverage gap. Allies lost 11 merchant ships for a total of 53,170 tons and 63 men.⁶²²

U-boat	Type	Ships	Tonnage
<i>U-176</i> (Dierksen)	IXC	4	20,028
<i>U-379</i> (Kettner)	VIIC	2	8,904
<i>U-438</i> (Franzius)	VIIC	2	10,447
<i>U-593</i> (Kelbling)	VIIC	1	3,616
<i>U-660</i> (Baur)	VIIC	2	10,336

Figure 314: Historical U-boat scores against SC 94⁶²³

The Germans lost *U-210* (*Kapitänleutnant* Rudolf Lemcke) when HMCS *Assiniboine* found her on radar and engaged her at point blank range in fog. *Assiniboine* tried to ram *U-210* several times during the firefight and finally rammed her twice and sank her with as she tried to dive.⁶²⁴ *U-379* (*Kapitänleutnant* Paul-Hugo Kettner) was depth charged, rammed, and sunk by HMS *Dianthus*.⁶²⁵ *Assiniboine* returned to Nova Scotia with heavy damage; *Dianthus* lost her sonar when ramming *U-379* but was able to stay with the convoy.⁶²⁶



Figure 315: *U-210* as seen from HMCS *Assiniboine*⁶²⁷

⁶²⁰ "Convoy SC 94," <http://www.warsailors.com/convoys/sc94.html>

* Named for *Kapitänleutnant* Otto Steinbrinck, a U-boat commander who won the *Orden Pour le Mérite* in World War I

⁶²¹ Tim Linclau, "Convoy battles: SC 94," <http://uboat.net/ops/convoys/battles.htm?convoy=SC-94>

⁶²² "Convoy SC 94," <http://www.warsailors.com/convoys/sc94.html>

⁶²³ Jürgen Rowher, *Axis Submarine Successes*

⁶²⁴ Lt Cdr John Stubbs, "S.C. 94 – Reports of proceedings of HMCS *Assiniboine*,"

<http://www.junobeach.org/e/2/can-eve-mob-gol-asb-e.htm>

⁶²⁵ "HX 228," <http://uboat.net/ops/convoys/battles.htm?convoy=HX-228>

⁶²⁶ Michael J. Watts, "HMS *Dianthus*," <http://www.cbrnp.com/RNP/Flower/ARTICLES/Dianthus-1.htm>

⁶²⁷ Photo source: Library and Archives Canada #PA-37433, <http://www.collectionscanada.ca/>

“Convoy SC 94” in GWX

This mission takes place in the context of this convoy’s transit to Britain within the GWX campaign, with the participation of the player U-boat team starting on August 7.

Player Team

The player team has six Type VII U-boats (*U-379*, *U-438*, *U-593*, *U-660*, *U-605*, and *U-705*) and two Type IXC U-boats (*U-174* and *U-176*). Historically, these boats all participated with varying degrees of success against this convoy, with the loss of one (*U-379*).

U-boat	Type	Commander	Ships sunk	Tonnage
<i>U-174</i>	IXC	<i>Fregattenkapitän</i> Ulrich Thilo	0	0
<i>U-176</i>	IXC	<i>Kapitänleutnant</i> Reiner Dierksen	3	20,028
<i>U-379</i>	VIIC	<i>Kapitänleutnant</i> Paul-Hugo Kettner [†]	2	8,904
<i>U-593</i>	VIIC	<i>Kapitänleutnant</i> Gerd Kelbing	1	3,616
<i>U-438</i>	VIIC	<i>Kapitanleutnant</i> Rudolf Franzius	2	10,447
<i>U-660</i>	VIIC	<i>Kapitänleutnant</i> Götz Baur	2	10,336
<i>U-605</i>	VIIC	<i>Kapitanleutnant</i> Herbert-Viktor Schütze	0	0
<i>U-705</i>	VIIC	<i>Kapitänleutnant</i> Karl-Horst Horn	0	0

Figure 316: Historical U-boat scores against Convoy SC 94; shaded U-boat lost in this action⁶²⁸

[†] Killed in action while engaging Convoy SC 94

⁶²⁸ Jürgen Rowher, *Axis Submarine Successes*

Convoy SL 125

Description

The “Second Happy Time” off the U.S. Atlantic seaboard and in Caribbean waters ended in the late summer of 1942 as the U.S. established convoy systems and extensive ASW air patrols in these areas. BdU’s responded in August, 1942 by shifting U-boats from American waters to reinforce U-boat patrols in the North Atlantic “air gap” and to send more U-boats into the mid- and South Atlantic oceans to intercept cargoes coming to Britain from Africa, Asia, and South America. Long-range Type IX U-boats had suffered disproportionate losses towards the end of the American campaign, and were reinforced in these distant areas by Type VIIC U-boats operating with the support of resupply U-boats

Convoy SL 125 departed Sierra Leone on October 16, 1942 bound for Britain with over 42 ships escorted by four corvettes.⁶²⁹ Its escort was weaker than normal due to the diversion of ASW escorts for the invasion of North Africa, Operation *Torch*, with three amphibious task forces scheduled to arrive at Oran and Algiers in Algeria, and at three points along the west coast of Morocco on November 7, 1942.

U-409 (*Oberleutnant z. S. Hans-Ferdinand Massmann*) spotted convoy SL 125 on October 26 and BdU mobilized U-boat group *Streitaxt* (“Battleaxe”) to intercept, but the weather deteriorated over the next two days, with winds greater than 15 meters/second and waves higher than the U-boats’ conning towers, and only three of the ten U-boats engaged were able to attack. *U-509* (*Oberleutnant z. S. Werner Witte*) sank three ships outright and shared credit for one ship each with *U-203* (*Oberleutnant z. S. Hermann Kottmann*) and *U-604* (*Kaptianleutnant Horst Höltring*). The weather had moderated by the late evening of October 29, and most of the *Streitaxt* U-boats were able to attack over the night of October 29-30.⁶³⁰

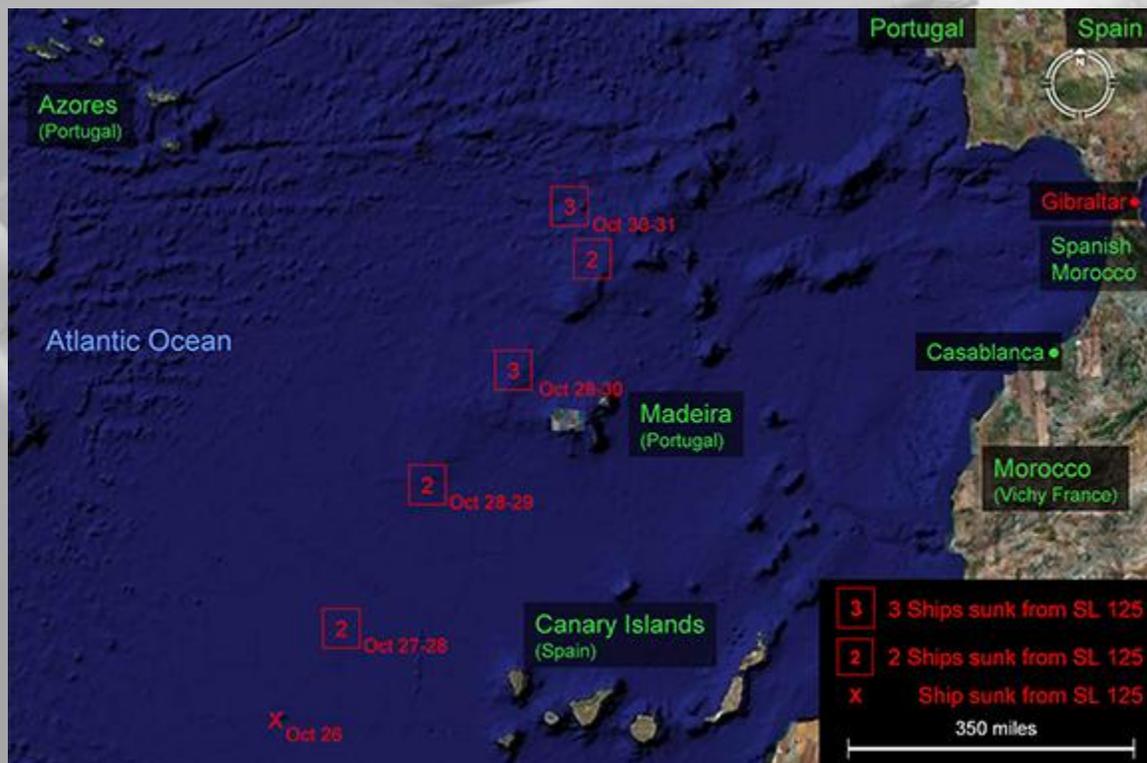


Figure 317: Area of Action for "Convoy SL 125"⁶³¹

⁶²⁹ “Convoy SL.125,” <http://www.convoyweb.org.uk/sl/index.html?sl125.htm~slmain>

⁶³⁰ “FdU/BdU War Log, October 16-31, 1942,” <http://www.uboatarchive.net/BDUKTB30312B.htm>

⁶³¹ Map developed using Google Earth®

Aftermath

U-boat group *Streitaxt* attacked through the night of October 29-30 and again the next night, sinking eight more ships from SL 125 before the arrival of allied aircraft late on October 31 and into November 1 persuaded BdU to call off the attack.⁶³² Only one U-boat (*U-659*) suffered serious damage requiring it to abort its patrol while *Streitaxt* U-boats inflicted significant damage on the convoy, which lost over a quarter of its ships during the five-day battle. On the other hand, only half of the *Streitaxt* U-boats were in position and in condition a week later to attack the Operation *Torch* landing areas in Morocco.

“Convoy SL 125” in GWX

The GWX team made several changes to the original “The Decoy” mission by “Wilhelm Schulz.”

- Adjusted the starting location, time, weather, convoy course and speed, to match the situation on the night of October 29-30, 1942, rather than early morning on October 31, consistent with the description in the BdU KTB⁶³³
- Adjusted convoy composition and formation using new GWX shipping to align more closely with the historical convoy, including prior losses and separations
- Adjusted U-boat team to reflect the historical order of battle

Player Team

The player team has five Type VIIC U-boats (*U-134*, *U-203*, *U-409*, *U-604*, and *U-659*); one Type IXB U-boat (*U-103*); and two Type IXC U-boats (*U-509* and *U-510*). Historically, these boats all participated with varying degrees of success against this convoy on or about October 29-30, 1942.

U-boat	Type	Commander	Ships sunk	Tonnage
<i>U-103</i>	IXB	<i>Oberleutnant z. S. Gustav-Adolf Janssen</i>	1	6405
<i>U-134</i>	VIIC	<i>Kapitänleutnant Rudolf Schendel</i>	0	0
<i>U-203</i>	VIIC	<i>Oberleutnant z. S. Hermann Kottmann</i>	1 1/3	4966
<i>U-409</i>	VIIC	<i>Oberleutnant z. S. Hans-Ferdinand Massmann</i>	0.5	3759.5
<i>U-509</i>	IXC	<i>Oberleutnant z. S. Werner Witte</i>	5 1/3	34573.5
<i>U-510</i>	IXC	<i>Korvettenkapitän Karl Neitzel</i>	0	0
<i>U-604</i>	VIIC	<i>Kaptianleutnant Horst Höltring</i>	3 1/2	24164.5
<i>U-659</i>	VIIC	<i>Kapitänleutnant Hans Stock</i>	1 1/3	6136.5

Figure 318: Historical U-boat scores against Convoy SL 125⁶³⁴

The mission does not include two boats that were present but did not engage the convoy: *U-572* (*Kapitänleutnant* Heinz Hirsacker) and *U-440* (*Kapitänleutnant* Heinz Geissler). Hirsacker had previously failed to try to penetrate the Strait of Gibraltar, and failed to attack viable targets during the U-boat response to the *Torch* landings: *Admiral* Dönitz had him arrested upon the return of *U-572* to base. He was subsequently court-martialed, convicted of cowardice in the face of the enemy, and committed suicide with a gun smuggled into his prison cell rather than face execution.⁶³⁵

⁶³² “FdU/BdU War Log, October 16-31, 1942,” <http://www.uboaarchive.net/BDUKTB30312B.htm>

⁶³³ “Beaufort Wind Force Scale and Sea State,” *Sea Kayak Cheseapeake Bay*, <http://www.seakayak.ws/kayak/kayak.nsf/NavigationList/NT003E2ED2>

⁶³⁴ Jürgen Rowher, *Axis Submarine Successes*

⁶³⁵ Clay Blair, *Hitler’s U-boat War: The Hunted*.

Convoy TM 1

Description

The North African campaign did not go as the Allies had hoped: the Germans had rapidly reinforced Tunisia and held it solidly against an Allied advance from the west while their forces in the eastern Sahara retreated to the Mareth Line, a line of fortifications built originally by France to defend Tunisia from a potential Italian invasion. There was not currently enough fuel in the British Isles to meet the needs of large mechanized armies on the move in North Africa, so Britain arranged for several convoys of fast tankers to take refined petroleum products directly from British-controlled refineries in Trinidad directly Allied-controlled ports in North Africa.⁶³⁶

The first of these convoys, TM-1, departed Port of Spain, Trinidad on December 28, 1942 with nine tankers accompanied by four escorts; on January 3, *U-514* (*Kapitänleutnant* Hans-Jürgen Aufferman) was outbound on its way to its patrol station off Trinidad when it spotted the convoy, reported its position to BdU, and crippled the tanker *MV British Vigilance* with a torpedo. *Admiral* Dönitz correctly guessed the convoy was on a direct Great Circle course for Gibraltar to supply Allied forces in North Africa and ordered U-boat group *Delphin* (“Dolphin”) and a few other boats to establish a patrol line approximately 1,500 km west of the Canary Islands. The convoy encountered the patrol line on January 8, when *U-381* (*Oberleutnant z. S.* Wilhelm-Heinrich Graf von Pückler und Limburg) spotted and reported the convoy. The convoy’s ordeal began that night as five U-boats began the attack on convoy TM-1: *U-436* (*Kapitänleutnant* Günther Siebicke), *U-442* (*Korvettenkapitän* Hans-Joachim Hesse), *U-522* (*Kapitänleutnant* Herbert Schneider), *U-571* (*Kapitänleutnant* Helmut Möhlmann), and *U-575* (*Kapitänleutnant* Günther Heydemann).⁶³⁷

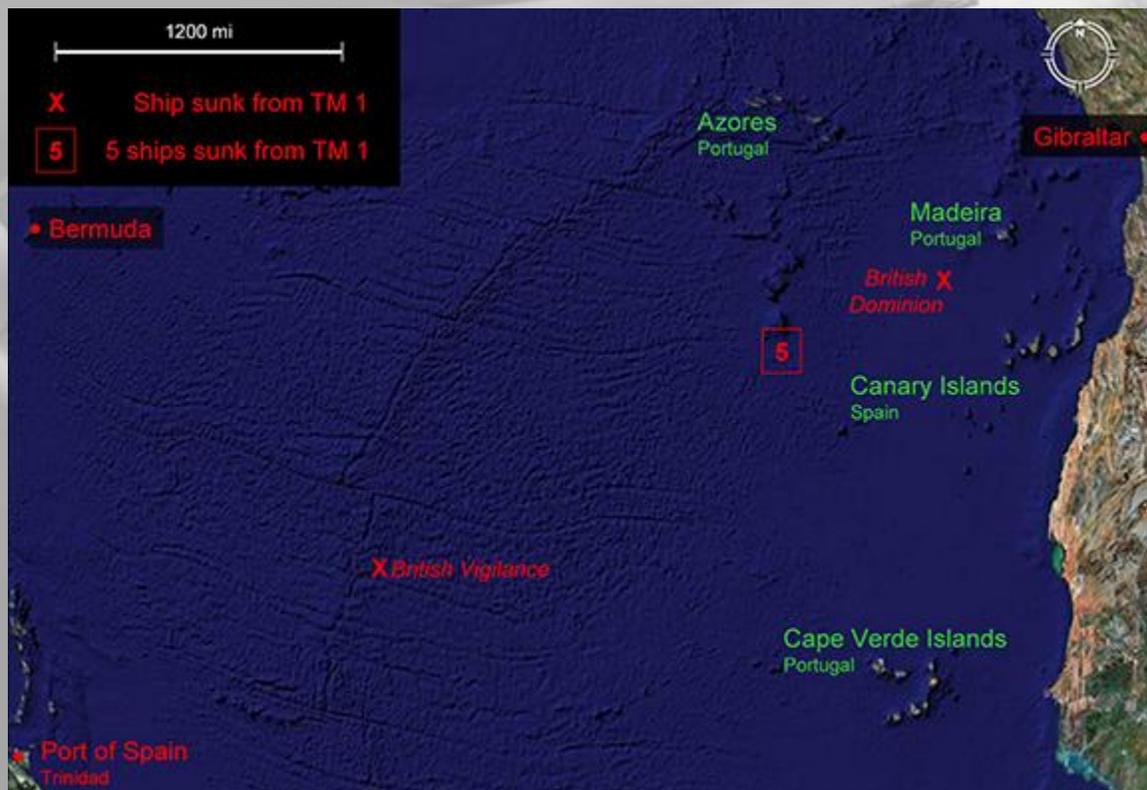


Figure 319: Area of action for "Convoy TM 1"⁶³⁸

⁶³⁶ Clay Blair, *Hitler's U-boat War: The Hunted*.

⁶³⁷ "Convoy Battles: TM-1," <http://uboat.net/ops/convoys/battles.htm?convoy=TM-1>

⁶³⁸ Map developed using Google Earth®

Aftermath

The attacks by U-boat group *Delphin* attacked from the night of January 8 through the evening of January 9 sank five ships from the convoy and one unlucky merchant that blundered into the battle. The U-boats were unable to engage the three surviving tankers until just after midnight on January 11, when *U-522* torpedoed *MV British Dominion*; *U-620* (*Kapitänleutnant* Heinz Stein) finished it off a few hours later. Further U-boat attacks were unsuccessful, and *Admiral* Dönitz called off the attack after the convoy escort was reinforced by three destroyers (*HMS Quiberon*, *Pathfinder*, and *Penn*) and Gibraltar-based Catalina aircraft began patrolling overhead as the surviving tankers, *MV Cliona* and *Vanja*, approached Gibraltar.

Two similar but “faster” convoys (TMF-1 and TMF-2) made the passage unmolested in the latter half of January and carried their cargoes to the Allied forces in North Africa, followed by an equally successful series of “OT” (*Oil-Torch*) convoys carrying petroleum products directly from Caribbean refineries to Allied-controlled ports in North Africa.⁶³⁹

“Convoy TM 1” in GWX

The GWX team made several changes to the original “*Tankergeleit TM-1*” by an unknown author:

- Adjusted the starting location, time, weather, convoy course and speed, to match the situation on the night of January 8-9, 1943 consistent with the description in the BdU KTB⁶⁴⁰ and other historical accounts⁶⁴¹
- Adjusted convoy composition and formation using new GWX shipping to align more closely with the historical convoy, including prior losses and separations
- Adjusted U-boat team to reflect the historical order of battle

Player Team

The player team has three Type VIIC U-boats (*U-436*, *U-442*, and *U-575*) and two Type IXC U-boats (*U-514* and *U-522*). Historically, these boats all participated with varying degrees of success against this convoy on January 8-9, 1943. *U-105* and *U-620* attacked Convoy TM-1 during its crossing, but did not participate in the attack on the date covered by this mission.

U-boat	Type	Commander	Ships sunk	Tonnage
<i>U-105</i>	IXB	<i>Kapitänleutnant</i> Jürgen Nissen	½	4046.5
<i>U-436</i>	VIIC	<i>Kapitänleutnant</i> Günther Seibicke	2	14703.0
<i>U-442</i>	VIIC	<i>Korvettenkapitän</i> Hans-Joachim Hesse	1	9807.0
<i>U-514</i>	IXC	<i>Kapitänleutnant</i> Hans-Jürgen Aufferman	½	4046.5
<i>U-522</i>	IXC	<i>Kapitänleutnant</i> Herbert Schneider	2 ½	20,358.5
<i>U-575</i>	VIIC	<i>Kapitänleutnant</i> Günther Heydemann	0	0
<i>U-620</i>	VIIC	<i>Kapitänleutnant</i> Heinz Stein	½	3491.5

Figure 320: Historical U-boat scores against Convoy TM 1 (greyed out did not attack 8-9 January)⁶⁴²

⁶³⁹ Clay Blair, *Hitler's U-boat War: The Hunted*

⁶⁴⁰ “FdU/BdU War Log, January 1-15, 1943,” <http://www.uboatarchive.net/BDUKTB30315.htm>

⁶⁴¹ Anthony Sweeting, “Convoy TM-1,” *Archives and Collections Society*, http://www.aandc.org/research/convoy_tm1.html

⁶⁴² “Convoy Battles: TM-1,” <http://www.uboat.net/ops/convoys/battles.htm?convoy=TM-1>

Arctic and Norway

Convoy PQ 17

Description

The Royal Navy recommended suspending the Arctic convoys after PQ 16 in May 1942 due to the threat of round-the-clock *Luftwaffe* air strikes in the continuous Arctic daylight; however, the desperate situation in the Soviet Union as the Germans moved towards Stalingrad and the Caucasus oil fields made this politically untenable. The Germans sent the heavy cruisers *Lützow*, *Admiral Scheer*, and *Admiral Hipper*; ten destroyers; 25 U-boats; and *Luftwaffe* reinforcements to join *Tirpitz* in northern Norway under the command of *Admiral* Hubert Schmundt. Schmundt was to control Operation *Rösselsprung*, a sortie by the *Kriegsmarine* against the next Arctic convoy, which turned out to be PQ 17. The operation would proceed only on the orders of *der Führer* himself, who could not tolerate any risk to the German battlefleet from Allied carrier-based aircraft or submarines.

PQ 17 left Iceland on June 27, 1942; *Luftwaffe* attacks on PQ 17 and the cruiser covering force began on July 4, fatally crippling three merchant ships and damaging another. The initial U-boat attacks only sank two merchants already crippled by the *Luftwaffe*, but *Korvettenkapitän* Karl Brandenburg in *U-457* caused great concern when he reported a (non-existent) “battleship” in the cruiser covering force. *Großadmiral* Raeder suspected an aircraft carrier was accompanying the “battleship” and, mindful of Hitler’s orders, suspended *Rösselsprung* until the aircraft carrier could be found and sunk; Schmundt immediately ordered all U-boats to ignore the convoy and hunt down the “battleship” and the “aircraft carrier” presumed to be accompanying it.



Figure 321: Northern convoy under air attack⁶⁴³

The British First Sea Lord, Admiral of the Fleet Sir Dudley Pound, was aware through *Ultra* that the German surface ships were heading north, but incorrectly assumed they were already moving to attack and that they might engage the convoy and the cruiser force by the next day (July 5). He therefore ordered the convoy to scatter and the cruiser force to withdraw at high speed. Two U-boats (*U-456* and *U-457*) reported the scattering of the convoy and the retreat of the cruiser force, so Schmundt immediately ordered all U-boats to shift back to attacking the convoy, and Raeder was now able to persuade Hitler the risk was now minimal and that *Rösselsprung* could begin.⁶⁴⁴

⁶⁴³ Photo source: “Convoy PQ 17,” <http://www.mikekemble.com/ww2/convoypq17.html>

⁶⁴⁴ Clay Blair, *Hitler’s U-boat War: The Hunters*.

Aftermath

Operation *Rösselsprung* proved short-lived. The Soviet submarine *K-21* observed *Tirpitz* leaving the fjord and missed *Tirpitz* with two torpedoes; subsequent reports from Catalina maritime patrol bombers and the British submarine HMS *Unshaken* confirmed the composition, course, and speed of the raiding force within three hours of their departure. Raeder cancelled the operation a few hours later after the *B-dienst* alerted him that the Allies knew *Tirpitz* was under way, but U-boats and the *Luftwaffe* had a field day with the ships of the now-scattered convoy, sinking 22 of the 34 merchant ships, one of the rescue ships, and one of the oilers. Convoy QP-13 was unmolested by U-boats, but lost an escort and five merchant ships to a British minefield off Iceland. The horrendous losses forced the British to suspend the Murmansk convoys until September when darkness would again cloak the convoys from German air attack.



Figure 322: The abandoned SS *Hoosier* from PQ 17 receives the *coup de grâce* from U-376⁶⁴⁵

Player Team

Ten Type VIIC U-boats. **Note:** Only Type VIIC U-boats appeared in this event historically.

⁶⁴⁵ Photo courtesy of U-boat.net: “Convoy Battles: PQ 17,” <http://uboat.net/ops/convoys/battles.htm?convoy=PQ-17>

Tungsten

Description

Operation *Tungsten* was a carrier air strike against the *Tirpitz* conducted by the British Home Fleet and commanded by Admiral Sir Bruce Fraser. The attack force consisted of the battleships HMS *Duke of York* (flagship) and *Anson*; the fleet carriers HMS *Victorious* and *Furious*; the escort carriers HMS *Searcher*, *Emperor*, *Pursuer*, and *Fencer*; the light cruisers HMS *Belfast*, *Jamaica*, and *Sheffield*; the anti-aircraft cruiser HMS *Royalist*; fifteen destroyers, and two fleet oilers sailing in several task forces.



Figure 323: British task force during Operation *Tungsten*⁶⁴⁶

Aftermath

The strike began at dawn on April 3, 1944, surprising *Tirpitz* as she weighed anchor to resume sea trials. The attack scored numerous hits on *Tirpitz*, killing 122 crewmembers, injuring over 300 (including her commander, *Kapitän z. S.* Hans Meyer), and causing significant damage above her armored deck. The Royal Navy made several unsuccessful follow-up attacks over the next two months while the Germans worked to repair the damage. Operation *Brawn* in mid-May and Operation *Tiger Claw* in early June aborted due to poor weather; Operation *Mascot* in mid-June was foiled by *Tirpitz*' smokescreens and intense anti-aircraft fire, including barrages of time-fused shells from her main and secondary batteries.

“Tungsten” in GWX

The “Tungsten” mission in GWX assumes the Germans detected the approach of the British task force and responded, though this did not happen historically. This mission takes place within the context of this battle as it exists in the GWX campaign.

Player Team

Eight Type IXB U-boats

⁶⁴⁶ Photo source: Imperial War Museum #A 22649, <http://www.iwmcollections.org.uk/> Ships in view are the aircraft carrier HMS *Furious*; escort carriers HMS *Searcher* and *Pursuer*; and light cruiser HMS *Jamaica*, seen from HMS *Emperor*.

Indian and Pacific Oceans

Brake

Description

The sinking of the German covert tanker *Charlotte Schliemann* by the Royal Navy in the Indian Ocean on February 12, 1944 left only one tanker to support U-boats in transit between Europe and the U-boat bases in Asia. *Charlotte Schliemann* sank before it could refuel *U-532*, a Type IXC/40 U-boat commanded by *Kapitänleutnant* Ottoheinrich Junker, so BdU ordered Junker, *Kapitänleutnant* Helmuth Pich in *U-168* (Type IXC/40), and *Kapitänleutnant* Siegfried Lüdden in *U-188* (Type IXC/40) to rendezvous with the remaining Indian Ocean tanker, *Brake*, at a new set of coordinates. The Allies intercepted and decoded these instructions and prepared a reception committee comprised of the escort carrier HMS *Battler*; heavy cruiser HMS *Suffolk*; light cruiser HMS *Newcastle* (flagship), and the destroyers HMS *Quadrant* and *Roebuck* under the command of Rear Admiral Arthur Reid.

Aftermath

The U-boats met the *Brake* on March 11, with *U-188* being the first to begin refueling. Refueling operations were still underway on March 12 when aircraft from HMS *Battler* spotted the *Brake* and two of the submarines; the Germans had seen the aircraft and the submarines all dived. The British did not want to risk their heavy ships knowing U-boats were in the area so they sent in HMS *Roebuck*, which engaged *Brake* with long-range gunnery and sank her in about half an hour. *U-168* and *U-532* returned to Indonesia, with *U-168* picking up all but four of the *Brake* survivors; *U-188* had loaded enough fuel to continue on her way to France, arriving in Bordeaux on June 19, 1944.⁶⁴⁷

See [The Destruction of the Brake and the Charlotte Schliemann](#) for further information on this event.

“Brake” in GWX

This mission takes place within the context of the GWX campaign.

Player Team

Three Type IXC U-boats.

⁶⁴⁷ Arthur J. Binning, “Survivors,” <http://scotland.users.ftch.net/u188p4.htm>

Historical Background

Progress in the war against Germany and Italy allowed Britain to establish the British Pacific Fleet (BPF) under the command of Admiral Sir Bruce Fraser on August 1, 1944. Significant Royal Navy elements began transferring to the Indian Ocean to begin training for carrier warfare in the Pacific, against Japan, where the tactics and logistical problems differed significantly from the war in Europe.

Force 63, commanded by Rear Admiral Sir Philip Vian, finished training and transferred to the Pacific in January 1945: as a “graduation exercise,” it executed Operations *Meridian I* and *Meridian II*, a pair of air strikes against oil refineries near Palembang, Sumatra on January 24 and 29. Force 63 consisted of the aircraft carriers HMS *Indomitable* (flagship), *Illustrious*, *Indefatigable*, and *Victorious*; battleship HMS *Duke of York*; anti-aircraft cruisers HMS *Argonaut*, *Black Prince*, and *Euryalus*; and 10 destroyers.⁶⁴⁸



Figure 324: F4U Corsairs readying on HMS *Victorious*⁶⁴⁹

Aftermath

The Royal Navy did not lose any ships in this operation, nor did any enemy ships come within sight of the task force, but the attacks caused significant damage to the oil refineries. The first raid on January 24 consisted of 52 Avenger bombers and 12 Firefly fighter-bombers, 44 Corsair fighters, and 20 Hellcat fighters. The second raid on January 29 consisted of 44 Avenger bombers and 12 Firefly fighter-bombers, 48 Corsair fighters, and 16 Hellcat fighters. The British lost a total of 41 aircraft, many of them due to operational damage or crash landings on board the carriers. Force 63 refueled from Force 69 and went on to Fremantle, Australia at the conclusion of the operation.⁶⁵⁰

“Force 63” in GWX

This mission takes place in the context of the GWX campaign. Germany had only seven U-boats remaining in Asia by early 1945, and it was in the process of configuring them for use as submarine transports. This mission assumes all of them are available and configured for anti-ship attack.

Player Team:

Three Type IXD2 U-boats and four Type IXC U-boats

⁶⁴⁸ “Operation *Meridian*,” http://en.wikipedia.org/wiki/Operation_Meridian

⁶⁴⁹ Photo source: Imperial War Museum #A 25750, <http://www.iwmcollections.org.uk>

⁶⁵⁰ Admiral Arthur J. Power, “The carrier-borne aircraft attacks on oil refineries in the Palembang (Sumatra) area in January, 1945,” *The London Gazette*, #39191, 5 April 1951, <http://www.gazettes-online.co.uk/>

Hypothetical Missions

Hypothetical missions are there for the fun of it. May the highest scorer win!

Atlantic Ocean and North Sea

Atlantic Convoy

Description

'Twas the Night before Christmas and in the deck house not a creature was stirring, not even a mouse. The sailors were all snuggled all safe in their bunks were visions of ... well, whatever sailors dream of ... danced in their heads, when from the loudspeakers there arose such a clatter: the cry, "Action Stations!" so started the battle.

Player Team

Six Type VIIB U-boats

Bismarck Breakout

Description

Battleship BISMARCK and heavy cruiser PRINZ EUGEN are trying to break out into the North Atlantic, but the British Home Fleet has them cornered in grid square AD. All U-boats move immediately to grid square AD and help our ships break through!

Note: this mission is highly demanding on your system's processor and graphics adapter. You should have a system with *at least* the recommended configuration to play *Silent Hunter III*.

Player Team

Six Type VIIC U-boats

Florida '44

Description

You are to patrol off the east coast of Florida. The water is deep there and will afford some protection. Your mission is to sink all the Allied shipping you find. There will be plenty of ALL types of ships and aircraft, and some of them will be *very, very good* at their job.

Player Team

Eight Type IXC U-boats

Galveston

Description

Intercept any ships leaving Galveston Bay. If you are bold enough, sail into Galveston Bay and attack any ships in port.

Player Team

Eight Type IXC U-boats

Georges Bank

Description

A U-boat has reported a large convoy halfway between New York and Halifax along Georges Bank.

Player Team

Eight Type IXB U-boats

Gibraltar-bound

Description

A Condor reconnaissance aircraft has spotted a convoy heading south from Britain with general cargo, war materiel, and troops for North Africa. It is heavily guarded and is likely heading towards Gibraltar. The *Luftwaffe* reports they spotted a submarine in the convoy, but this would be highly unusual...

Player Team

Eight Type VIIC U-boats

Iceland

Description

BdU suspects the Allies are planning a big convoy to Russia from Reykjavik, and wants your wolfpack to smash shipping in and around the harbor. If you find a convoy is assembling then the fewer ships that go to Russia the better off we all shall be.

Player Team

Eight Type IXB U-boats

Labrador's Coast

Description

B-Dienst reports an important raw goods convoy is heading towards Iceland with a final destination of Loch Ewe in England. Sink as many freighters as possible.

Player Team

Six Type VIIC U-boats

Movie Moments

Description

Frau Riefenstahl: * “In this scene your U-boats leave the dock under air attack, shoot down the planes, and then head out to sink the Royal Navy's battleships. You go out, win, and all come back to sing a rousing chorus of ‘Springtime for Hitler.’ Just lip-synch to the recording for now - we will record your voices later.”

“Quiet on the set ... Cue Ships ... Cue stunt aircraft ... Lights ... Camera ... ACTION!”

Note: this mission is highly demanding on your system’s processor and graphics adapter. You should have a system with *at least* the recommended configuration to play *Silent Hunter III*.

Player Team

Six Type VIIB U-boats

New York

Description

Your wolf pack is at the entrance to New York Harbor, where materiel is gathering for shipment to Europe. Sink as many as you can and engage if possible as many aircraft as possible. Abwehr agents have provided (what they think) is a route through defensive minefields.

Player Team

Eight Type IXD2 U-boats

Thomsen

Description

This is our chance! Our reconnaissance reported the Tommies have their entire fleet ready to roll in a Greenland fjord, and we have met at the entrance to that fjord. Head out to the route plotted on your map: *Tirpitz*, *Hipper*, and some destroyers are coming to assist you.

Player Team

Eight Type IXD2 U-boats

Tiger’s Den

Description

A convoy of Canadian and American merchant ships with supplies for the invasion of Europe is currently off the coast of Newfoundland. Your mission is to sink as much tonnage as possible.

Player Team

Six Type IXD2 U-boats

* This is a reference to Leni Riefenstahl. She directed *Triumph des Willens* (“Triumph of the Will”), the Nazi propaganda masterpiece that documented the 1934 Nazi Party rally in Nürnberg.

Tiger's Jaws

Description

You are off the southern coast of Iceland preparing to attack a heavily guarded eastbound convoy.

Player Team

Six Type VIIC U-boats

Unescorted I

Description

You are over Celtic Shelf, approximately 320 km south of Mizen Head. *Luftwaffe* reconnaissance reports a convoy without escort is in the area.

Player Team

Eight Type VIIB U-boats

West Approach 42

Description

It is August of 1942: we are sinking as many merchant ships as ever, despite the entry of American ships to the battle. Your objective is to attack the convoy reported in front of you.

Player Team

Eight Type IXB U-boats

West Approach 44

Description

It is June of 1944: we are losing fewer U-boats only because there are fewer to sink. Try to sink some ships from the fast Allied convoy in front of you.

Player Team

Eight Type VIIC U-boats

Arctic and Norway

Arctic

Description

Luftwaffe reconnaissance has sighted a large convoy headed for Russia hiding in a slow moving ice field. Intelligence is sketchy on the exact size of the destroyer screen. Your mission is to take out as many of the bigger ships of the convoy as possible. Weather conditions are marginal. The GWX Team developed this mission from an original mission by “Wayne57.”

Player team

Eight Type IXD2 U-boats

Arctic Meeting

Description

Der Führer had an intuition and ordered a special convoy to the North Pole, but forgot about the polar ice cap. The convoy tried its best to obey orders, but the Allies are closing in having intercepted the convoy's orders. Wait for our convoy to head out and then protect *Tirpitz*, following the sailing instructions your navigator has already received.

Player team

Seven Type IXD2 U-boats

Battleship Hunt

Description

The battleships *Tirpitz* and *Scharnhorst* have sortied from Trondheim to intercept an Allied convoy returning from Russia. The British know the German battleships are at sea: they have ordered their convoy out of the area and have brought up most of the Home Fleet to catch and sink the German battleships.

Player Team

Six Type VIIC U-boats

Carrier Group

Description

An enemy carrier group is trying to reach our combat zone. Convoy guarded by veteran escort group.

Player Team

Eight Type IXD2 U-boats

Eisiger Wahnsinn (“Icy Insanity”)

Description

Der Führer has ordered a massive assault on Santa Claus and ordered your group of Type IID U-boats to carry the assault troops. Hey, it's one fat man and a bunch of elves - how many stormtroopers do you *think* you will need? An Allied aircraft spotted your U-boat group while you pondered this latest wisdom from Berlin, and a group of warships and destroyers is now coming to hunt you down.

Player Team

Eight Type IID U-boats

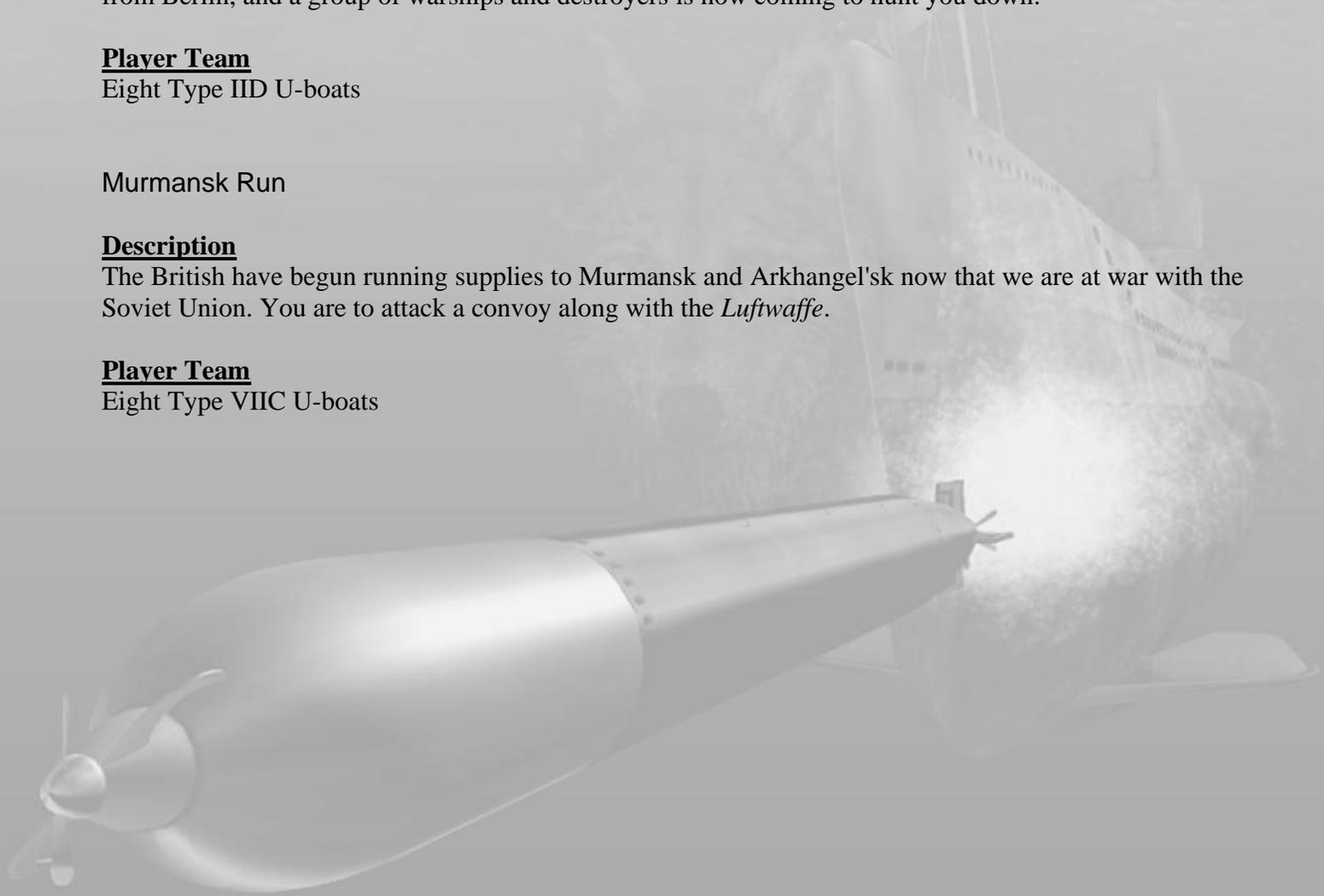
Murmansk Run

Description

The British have begun running supplies to Murmansk and Arkhangel'sk now that we are at war with the Soviet Union. You are to attack a convoy along with the *Luftwaffe*.

Player Team

Eight Type VIIC U-boats



Mediterranean Sea

Convoy to Egypt

Description

The British have sent a daring troop convoy to reinforce their troops defending Egypt against *Generaloberst* Rommel and the Afrika Korps. You are to attack this convoy. Let no ship pass.

Player Team

Six Type VIIC U-boats

Gibraltar Harbor

Description

Gibraltar is the most heavily defended port in the Western Mediterranean Sea. Your objective is to make the British realise that no port is invulnerable.

Player Team

Five Type VIIC U-boats

Tiger's Revenge

Description

You are one of the few U-boats left in the Mediterranean Sea, but you have met great good fortune at last: a lightly escorted battle group is heading directly towards you.

Player Team

Six Type IXD2 U-boats

Unescorted II

Description

You are approximately 200 km west of Malta. *Luftwaffe* reconnaissance reports a convoy without escort is in the area and heading towards Malta.

Player Team

Eight Type VIIB U-boats

Indian and Pacific Oceans

Red Sea

Description

A convoy carrying war materiel has departed Suez en route to Colombo, Sri Lanka, escorted by a large number of warships that are to fight German and Japanese submarines in the Indian Ocean. All U-boats in the Indian Ocean have assembled and been stationed in the Red Sea to intercept the convoy.

Player Team

Six Type IXC U-boats

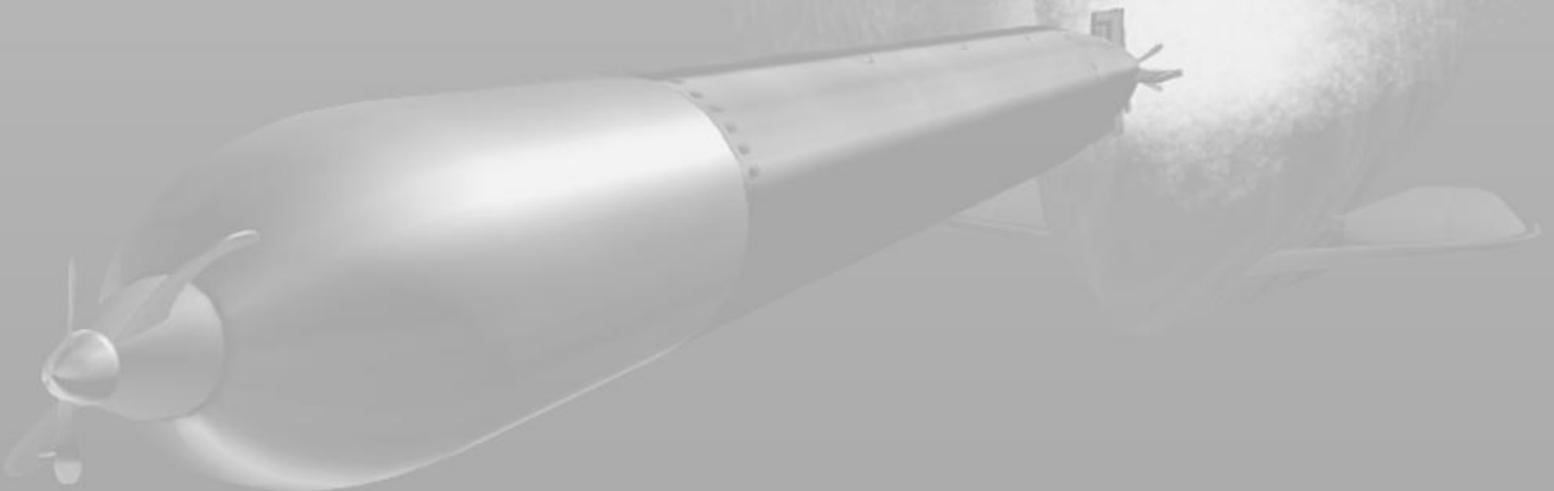
South Pacific

Description

The Allies are hunting down the Atlantic wolfpacks, but the wolves hunt more freely in the Pacific. Your wolfpack has intercepted a heavily escorted convoy. Show them the meaning of fear!

Player Team

Eight Type IXD2 U-boats



New and Remodeled Warships and Submarines

Order of Battle changes

Table 19: Changes to stock *Silent Hunter III* National Orders of Battle for warships and submarines

Nation	Added	Removed
Australia	<i>Kent</i> -class heavy cruiser <i>Devonshire</i> -class heavy cruiser N-class destroyer Q&R-class destroyer Tribal-class destroyer River-class frigate <i>Bathurst</i> -class corvette / minesweeper	Flower-class corvette River-class destroyer escort
Canada	<i>Fiji</i> -class light cruiser HMCS <i>Uganda</i> A&B-class destroyer C&D-class destroyer Town-class destroyer River-class frigate Isles-class minewsweeper	<i>Clemson</i> -class destroyer River-class destroyer escort
Egypt	Vosper motor torpedo boat	
France	<i>Bourrasque</i> -class destroyer	
Free France	<i>Bourrasque</i> -class destroyer Hunt III destroyer River-class frigate	River-class destroyer escort
Germany	Aircraft carrier <i>Graf Zeppelin</i> Battleship <i>Tirpitz</i> Battleship <i>Gneisenau</i> Battleship <i>Scharnhorst</i> Heavy cruiser (<i>panzerschiff</i>) <i>Deutschland (Lützow)</i> Heavy cruiser (<i>panzerschiff</i>) <i>Admiral Scheer</i> Heavy cruiser (<i>panzerschiff</i>) <i>Admiral Graf Spee</i> Heavy cruiser <i>Admiral Hipper</i> Heavy cruiser <i>Prinz Eugen</i> Heavy cruiser <i>Blücher</i> K-class light cruiser <i>Soldati</i> -class destroyer Type 1936A (Mob) destroyer <i>Flottenbegleiter</i> Torpedo boat (Type 23-24) - (Type 35-37) Minesweeper (Type 35) - <i>Sperrbrecher</i> - <i>Räumboot</i> (R-boat) <i>Vorpostenboot</i> <i>Kriegsfischkutter</i>	
	AI-controlled Type IIB U-boat AI-controlled Type VIIC U-boat AI-controlled Type VIIC “U-flak” U-boat AI-controlled Type XIV <i>milchkuh</i> resupply U-boat AI-controlled Type XXIII U-boat	

Nation	Added	Removed
Great Britain	Battleship HMS <i>King George V</i> Battleship HMS <i>Prince of Wales</i> Battleship HMS <i>Duke of York</i> Battleship HMS <i>Anson</i> Battleship HMS <i>Howe</i> Battleship HMS <i>Nelson</i> Battleship HMS <i>Rodney</i> Battle cruiser HMS <i>Hood</i> <i>Renown</i> -class battle cruiser County-class heavy cruiser (<i>Kent</i> subclass) - (<i>London</i> subclass) - (<i>Dorsetshire</i> subclass) Town-class light cruiser A&B-class destroyer L-class anti-aircraft destroyer Q&R-class destroyer S&T-class destroyer Town-class destroyer Captain I-class frigate Captain II-class frigate Colony-class frigate River-class frigate Isles-class minesweeper (minesweeping configuration) Isles-class minesweeper (ASW configuration) Vosper motor torpedo boat RAF high speed launch S-class submarine T-class submarine	<i>Clemson</i> -class destroyer River-class destroyer escort
Greece	<i>Pisa</i> -class armored cruiser RHS <i>Georgios Averof</i> Hunt II-class destroyer Hunt III-class destroyer A&B-class destroyer V&W-class destroyer	Hunt I-class destroyer
India	<i>Bathurst</i> -class corvette / minesweeper	Flower-class corvette Hunt I-class destroyer
Ireland	Vosper motor torpedo boat	
Italy	Battleship <i>Littorio (Italia)</i> Battleship <i>Vittorio Veneto</i> Battleship <i>Roma</i> Heavy cruiser <i>Zara</i> Heavy cruiser <i>Fiume</i> Heavy cruiser <i>Gorizia</i> Heavy cruiser <i>Pola</i> Light cruiser <i>Luigi di Savoia Duca degli Abruzzi</i> Light cruiser <i>Giuseppe Garibaldi</i> <i>Schnellboot</i> (S-boat) MAS torpedo boat <i>Argonauta</i> -class submarine	
Japan	Subchaser Class 13	
Netherlands	N-class destroyer Town-class destroyer River-class Frigate Flower-class corvette	

Nation	Added	Removed
New Zealand	<i>Fiji</i> -class light cruiser HMNZS <i>Gambia</i> Flower-class corvette	
Norway	S&T-class destroyer Town-class destroyer Hunt II-class destroyer Hunt III-class destroyer	
Poland	<i>Bourrasque</i> -class destroyer A&B-class destroyer L-class anti-aircraft destroyer N-class destroyer V&W-class destroyer Hunt II-class destroyer	Hunt I-class destroyer
Portugal	Isles-class minesweeper (ASW configuration)	
Romania	Type 34 destroyer (represents unmodeled ship) Vosper motor torpedo boat <i>Kriegsfischkutter</i>	
RSI	<i>Soldati</i> -class destroyer MAS torpedo boat <i>Schnellboot</i> (S-boat)	
South Africa	None	Flower-class corvette
Soviet Union	<i>Revenge</i> -class battleship <i>Archangel'sk</i> <i>Kirov</i> (Project 26)-class light cruiser <i>Maxim Gorky</i> (Project 26bis)-class light cruiser <i>Storozhevoy</i> -class destroyer <i>Novik</i> -class destroyer Town-class destroyer <i>Urugan</i> -class destroyer escort Sub chaser Elco PT boat	
	<i>Shchuka</i> -class submarine	
Sweden	<i>Schnellboot</i> (S-boat)	
United States	<i>Essex</i> -class aircraft carrier <i>Iowa</i> -class battleship <i>Nevada</i> -class battleship (pre-war configuration) <i>New Orleans</i> -class heavy cruiser <i>Brooklyn</i> -class light cruiser River-class frigate <i>Tacoma</i> -class frigate Flower-class corvette	
	<i>Gato</i> -class submarine <i>Balao</i> -class submarine	

Australia

***Bathurst*-class minesweeper / corvette**

Historical background



Figure 325: *Bathurst*-class corvette *Horsham*⁶⁵³

Britain needed all of its ASW escort vessels for use against the U-boats, so Australia began developing the *Bathurst*-class minesweepers, commonly called “corvettes,” to ensure ASW patrol vessels were available in the Pacific and Indian Oceans, with the first ship, *Bathurst*, laid down in August 1940 and commissioned in December. Australia built 60 *Bathurst*-class corvettes, of which they provided four to the Indian Navy.⁶⁵¹ These ships carried one 4-inch gun; one 40mm and two 20mm antiaircraft guns; and depth charges, and had a maximum speed of 15 knots; only one was lost to enemy action.⁶⁵²

The *Bathurst*-class corvette / minesweeper in GWX

These ships function as ASW corvettes, as *Silent Hunter III* does not model minesweeping operations. They can be found escorting convoys and in specifically scripted campaign missions.



Figure 326: *Bathurst*-class minesweeper / corvette in GWX

⁶⁵¹ “HMAS *Bathurst*,” <http://www.navy.gov.au/spc/history/ships/bathurst1.html>

⁶⁵² “*Bathurst* class,” <http://uboat.net/allies/warships/class.html?ID=141>

⁶⁵³ Australian War Memorial #045087, <http://www.awm.gov.au/>

France

***Bourrasque*-class destroyer**

Historical Background

France commissioned the first *Bourrasque*-class *contre-torpilleur* (“destroyer”) in 1926 during its post-war naval modernization program, displacing about 1,300 tons with a maximum speed of 33 knots. Their armament consisted of four 5.1-inch guns, two 37mm antiaircraft guns and four 13mm machine guns, and six torpedo tubes but no depth charges. France built 12 *Bourrasque*-class destroyers through 1936; its namesake is a type of thunderstorm or violent squall found in the Mediterranean.⁶⁵⁴

Bourrasque, *Cyclone*, *Orage*, and *Sirocco* were lost prior to the French surrender; Britain captured *Mistral* and *Ouragan* and turned them over to the FFL. The others served Vichy France: The Allies sank *Tornado* and *Tramontaine*; *Typhon* scuttled; and *Simoun* and *Tempête* joined the FFL after Operation *Torch*. *Trombe* scuttled when Germany invaded Vichy France in November 1942; the Germans raised her and gave her to Italy, which turned her over to the FFL when Italy declared war on Germany.⁶⁵⁵



Figure 327: *Bourrasque*-class *contre-torpilleur* (destroyer) *Mistral*⁶⁵⁶

The *Bourrasque*-class destroyer in GWX

Bourrasque-class destroyers in GWX will appear randomly and as called for by the campaign.



Figure 328: *Bourrasque*-class destroyer in GWX

⁶⁵⁴ “Glossary of Meteorology,” *American Meteorological Society*,

<http://amsglossary.allenpress.com/glossary/browse?s=b&p=35>

⁶⁵⁵ “*Bourrasque*-class destroyers,” http://en.wikipedia.org/wiki/Bourrasque_class

⁶⁵⁶ Photo source: “*Plans de bateaux (Mistral, 1925)*,” *Service historique de la Défense*,

<http://www.servicehistorique.sga.defense.gouv.fr/>

Germany

Aircraft carrier *Graf Zeppelin*

Historical background⁶⁵⁷

Großadmiral Raeder proposed *Graf Zeppelin* as the first of several aircraft carriers under the “Z” plan. It launched in 1938 but never completed construction or commissioned due to labor and material shortages and turf battles within the Nazi hierarchy. *Generalfeldmarschall* Hermann Göring wanted aircraft on ships to be part of “his” *Luftwaffe* instead of the *Kriegsmarine*, and refused to provide aircraft or crews; when ordered to cooperate by Hitler, Göring offered out-of-date Bf 109E fighters and Ju-87B *Stukas* .

The *Kriegsmarine*’s lack of success with its surface ships cooled Hitler’s desire to put additional labor and steel into an aircraft carrier instead of tanks and aircraft: in her planned configuration, *Graf Zeppelin* would have been able to carry 40 to 50 aircraft, less than half that of an *Essex*-class aircraft carrier. By 1943, the *Graf Zeppelin* was still only 95% complete and *Großadmiral* Dönitz ordered construction halted after he succeeded *Großadmiral* Raeder as ObdM. The Germans scuttled the hull in Stettin (now called Szczecin, Poland) in April 1945; the Soviets raised it and sank it as a target in August 1947 while testing ways to sink the aircraft carriers of the United States, its “main enemy” in the Cold War.

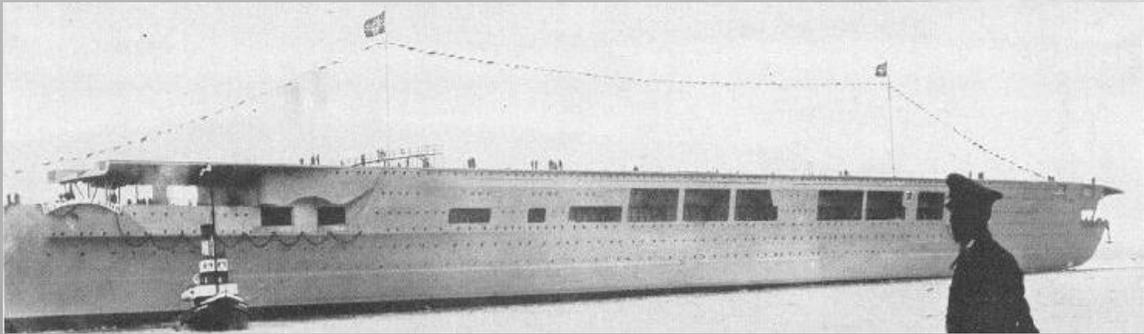


Figure 329: Aircraft Carrier *Graf Zeppelin* just after launch, before fitting out⁶⁵⁸

The aircraft carrier *Graf Zeppelin* in GWX

The *Graf Zeppelin* will appear in the harbors it occupied historically (Kiel, Gotenhafen, and Stettin) in the time periods it was in those harbors.



Figure 330: Aircraft carrier *Graf Zeppelin* in GWX, fitting out at Kiel shipyard

⁶⁵⁷ http://en.wikipedia.org/wiki/German_aircraft_carrier_Graf_Zeppelin

⁶⁵⁸ U.S. Navy photo. http://en.wikipedia.org/wiki/German_aircraft_carrier_Graf_Zeppelin

Battleship *Tirpitz*

Historical background

The Germans launched the *Bismarck*-class battleship *Tirpitz* on April 1, 1939. She was undergoing sea trials and crew work-ups when the British sank *Bismarck* in April 1941, and became operational in January 1942. Hitler sent her to Norway to defend against invasion and attack Arctic convoys, but the only offensive use of her main guns was the bombardment of Spitsbergen in September 1943. Her best sortie against the Arctic convoys was against PQ-17, when the threat of her use caused the British to scatter the convoy, greatly increasing U-boat and *Luftwaffe* effectiveness against the convoy.

Called “*Den ensomme Nordens Dronning*” (“the Lonely Queen of the North”) by the Norwegians, the British hounded *Tirpitz* with air strikes and mini-submarine attacks until a direct hit from a 12,000 lb “Tallboy” bomb put her out of commission during Operation *Obviate* in September 1944. She sank after several direct hits from “Tallboy” bombs during Operation *Catechism* in November 1944.⁶⁵⁹



Figure 331: “The Lonely Queen of the North”: *Tirpitz* in Altenfjord, 1942⁶⁶⁰

The battleship *Tirpitz* in GWX

The battleship *Tirpitz* in GWX is a clone of the *Bismarck* with unique camouflage and minor equipment variations. The *Tirpitz* will appear randomly starting in 1942, and as called for by scripted events.



Figure 332: *Tirpitz* in GWX

⁶⁵⁹ Narrative sources: <http://www.bismarck-class.dk>; http://en.wikipedia.org/wiki/German_battleship_Tirpitz

⁶⁶⁰ U.S. Naval Historical Center #NH 71390, <http://www.history.navy.mil>

***Gneisenau*-class battleship**

Historical background

Germany began building the *Gneisenau*-class battleships (*Gneisenau* and *Scharnhorst*) in early 1934 in violation of the Versailles Treaty. They reflected the design philosophy of the German World War I battle cruisers (“*große kreuzer*”): fast (31 knots), and well protected with displacement comparable to contemporary battleships (over 31,000 tons vs. about 34,000 tons for HMS *Nelson*). Their armament consisted of three triple 11-inch gun turrets, twelve 5.9-inch (150mm) guns, and 14 4.1-inch (105mm), 12 37mm, and 10 20mm antiaircraft guns: a main armament that was much greater than that of heavy cruisers (8-inch guns) but much less than that of contemporary battleships (14- to 16-inch guns).

The *Scharnhorst* and *Gneisenau* were effective commerce raiders and caused the Royal Navy great pain when they operated *au pair* during the first two years of the war. They sank the armed merchant cruiser HMS *Rawalpindi* as well as the aircraft carrier HMS *Glorious* and two escorting destroyers, and sank 22 merchant ships during [Operation Berlin](#), but the retreat from Brest ([Operation Cerberus](#)) in February 1942 marked the end of their effective employment.

Scharnhorst struck two mines during *Operation Cerberus* and was under repair until January 1943. She reached Norway in March 1943, and spent nine months threatening Murmansk convoys. The battleship HMS *Duke of York*, heavy cruiser HMS *Norfolk*, and light cruisers HMS *Jamaica*, *Belfast*, and *Sheffield* caught and sank *Scharnhorst* on December 26, 1943 in the Arctic night off the North Cape of Norway. Only 36 of the 1,968 men aboard *Scharnhorst* survived.

Gneisenau hit a mine during *Operation Cerberus*; a bombing raid blew her bow off while she was in dry dock for repairs, after which the Germans decommissioned her and towed her to Gotenhafen. There was some discussion of refitting her with three dual 15-inch gun turrets, but the *Kriegsmarine* scrapped these plans when the *Scharnhorst* sank and the surface forces lost all credibility in Hitler’s eyes. The Germans finally sank *Gneisenau* as a block ship in Gotenhafen in March 1945 to help defend the city against a possible Soviet invasion force.⁶⁶¹



Figure 333: *Gneisenau* on sea trials in early 1939 after receiving the “Atlantic” clipper bow⁶⁶²

⁶⁶¹ “*Scharnhorst* Operational History,” <http://www.scharnhorst-class.dk/scharnhorst/scharnoperationhist.html>;

“*Gneisenau* Operational History,” <http://www.scharnhorst-class.dk/gneisenau/gneiseoperationhist.html>

⁶⁶² Photo source: http://en.wikipedia.org/wiki/German_battlecruiser_Gneisenau

The *Gneisenau*-class battleships in GWX

GWX models the battleships *Gneisenau* and *Scharnhorst* as separate ships, with unique camouflage and minor equipment variations. These ships will appear randomly and as called for by scripted events.



Figure 334: *Gneisenau*-class battleship *Gneisenau* in GWX



Figure 335: *Gneisenau*-class battleship *Scharnhorst* in GWX

***Deutschland*-class heavy cruiser (*panzerschiff*)**

Historical background

The *Deutschland*-class *panzerschiffe* (“armored ships”) used technological innovations such as diesel engines and electric welding in place of rivets to try to keep within the 10,000-ton displacement limits of the Versailles Treaty; even so, they were faster than most battleships and their 11-inch guns outmatched any cruiser. The lead ship, *Deutschland*, displaced 12,630 tons at her commissioning in 1932, followed by *Admiral Scheer* (13,660 tons) in 1934 and *Admiral Graf Spee* (14,890 tons) in 1936.⁶⁶³ In January 1940, Hitler renamed *Deutschland* to *Lützow* at *Grossadmiral Raeder*’s request, and in February OKW reclassified the *panzerschiffe* as “heavy cruisers,” but the British still called them “pocket battleships.”

Deutschland started the war at sea as a commerce raider but sank only two ships before being damaged in a storm and returning early to port; during Operation *Weserübung* she was damaged trying to force entry into Oslo and had part of her stern blown off by a torpedo from submarine HMS *Spearfish*. A British bomber torpedoed her as she sortied for the North Atlantic in June 1941 after a year of repair work; after another year of repairs, she was in Norway when she ran aground preparing to pursue convoy PQ-17; later, she was part of the Battle of the Barents Sea fiasco in December 1942.⁶⁶⁴

Admiral Scheer was Germany’s most successful commerce raider, sinking 16 merchant ships and the armed merchant cruiser HMS *Jervis Bay* on her one mission into the South Atlantic and the Indian Ocean from October 15, 1940 and April 1, 1941. *Grossadmiral Dönitz* sent her and *Lützow* to the Baltic in 1943 as training ships; they provided shore bombardment as the Germans retreated in late 1944.⁶⁶⁵

Admiral Graf Spee started the war in the South Atlantic, sinking nine merchant ships there and the Indian Ocean before running into the cruisers HMS *Exeter*, *Ajax*, and *Achilles* off Montevideo, Uruguay in December 1939. She suffered only minor damage in the battle but scuttled after her commander, *Kapitän z S.* Hans Langsdorff, was tricked into thinking a large British force, including the aircraft carrier *Ark Royal* and the battle cruiser HMS *Renown*, awaited him outside the harbor.⁶⁶⁶



Figure 336: *Admiral Graf Spee* in Montevideo, Uruguay after the Battle of the *Río de la Plata*, 1939⁶⁶⁷

⁶⁶³ “*Deutschland/Lützow & Admiral Scheer & Admiral Graf Spee – Technical layout*,” <http://www.deutschland-class.dk/technicallayout/generaldetails.html>

⁶⁶⁴ “*Deutschland*,” http://www.deutschland-class.dk/deutschland_luetzow/deutschland_luetzow_operation_hist.html

⁶⁶⁵ “*Admiral Scheer*,” http://www.deutschland-class.dk/admiral_scheer/admiral_scheer_operation_hist.html

⁶⁶⁶ “*Admiral Graf Spee*,” http://www.deutschland-class.dk/admiral_graf_spee/admiral_graf_spee_operation_hist.html

⁶⁶⁷ U.S. Naval Historical Center #NH59658, <http://www.history.navy.mil>

The Deutschland-class heavy cruiser (*panzerschiff*) in GWX

GWX models each of the *Deutschland*-class heavy cruisers as “battle cruisers” with unique camouflage and minor equipment variations. , and GWX models the careers of these ships as follows:

- *Deutschland* will begin the game in the mid-Atlantic ocean and return to port, whereupon *Lützow* will replace it February 1940 and take part in its historical deployments and actions
- *Admiral Scheer* will conduct its raid into the South Atlantic and Indian Ocean and take part in the historical deployments and actions of the *Admiral Scheer*
- *Admiral Graf Spee* will begin in the North Atlantic and travel the Indian and South Atlantic oceans until it reaches the *Rio de la Plata*. GWX does not model the Battle of the River Plate at this time.



Figure 337: *Deutschland*-class heavy cruiser (*panzerschiff*) *Deutschland* in GWX



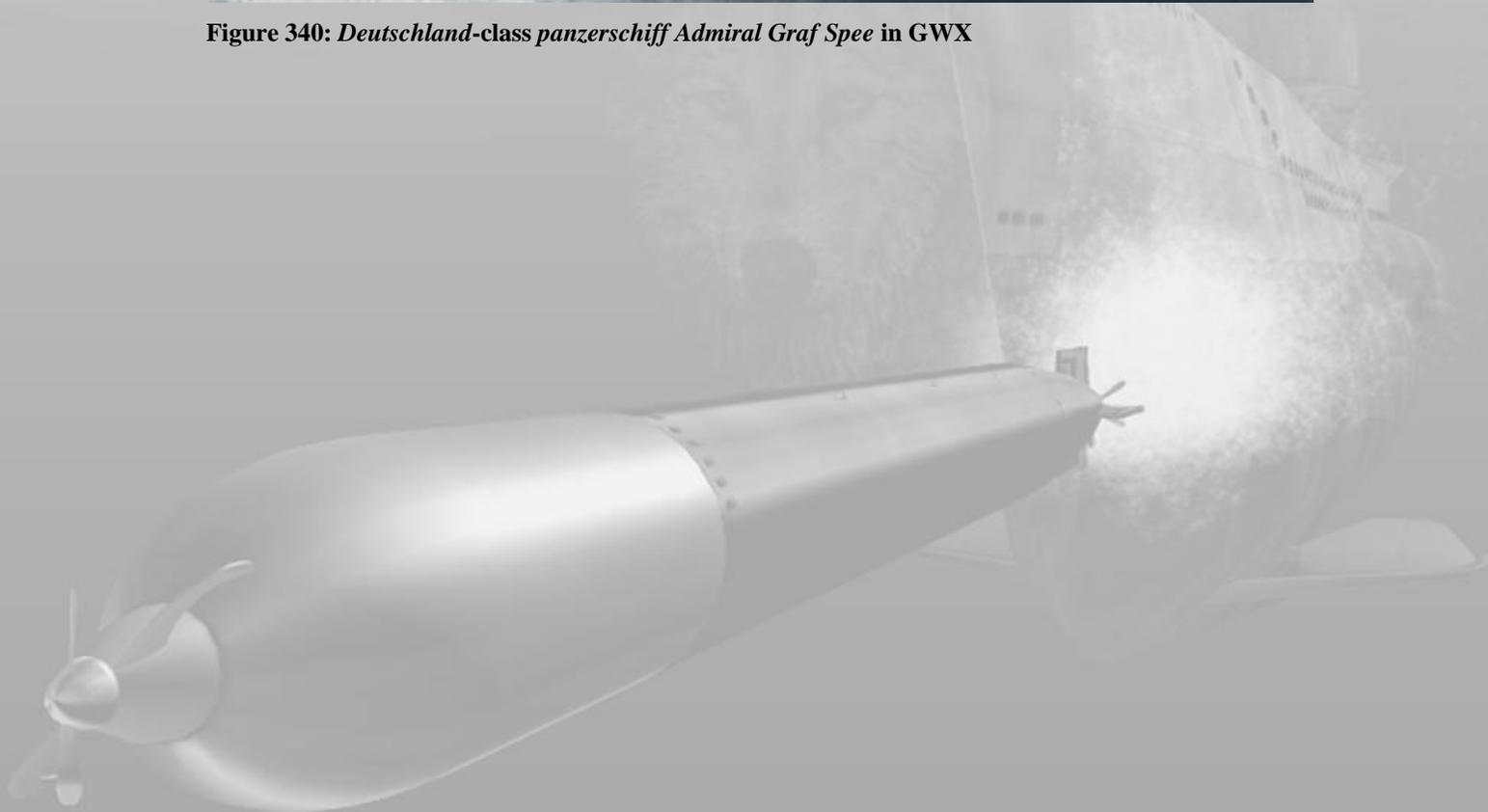
Figure 338: *Deutschland*-class heavy cruiser (*ex-panzerschiff*) *Lützow* (*ex-Deutschland*) in GWX



Figure 339: *Deutschland*-class heavy cruiser (*panzerschiff*) *Admiral Scheer* in GWX



Figure 340: *Deutschland-class panzerschiff Admiral Graf Spee* in GWX



***Admiral Hipper*-class heavy cruiser**

Historical Background

Germany began building the *Admiral Hipper*-class heavy cruisers in 1935, intending to use them as commerce raiders in any war with Great Britain. They exceeded the Treaty limits by almost 90%, but only the Treaty of Versailles, which lapsed in 1936, limited Germany's cruisers. *Admiral Hipper* and *Blücher* displaced 18,200 tons when they commissioned in April and September 1939, respectively, while the slightly improved *Prinz Eugen* displaced 18,400 tons when she commissioned in August 1940. Germany began converting *Seydlitz* to an aircraft carrier (but never completed her), and sold *Lützow* in early 1940 to the Soviet Union, where she helped defend Leningrad during the World War II siege.⁶⁶⁸

Admiral Hipper, named for a World War I admiral, conducted two raids on North Atlantic convoys. In Operation *Nordseetour* (January 1940), she severely damaged the heavy cruiser HMS *Berwick* as it defended Convoy WS5A, but ended the attack after sinking only one merchant ship; the second mission was more successful, sinking seven merchant ships in unescorted convoy SLS 64 on February 11, 1941. She returned to Germany in March 1941, and went to Norway in March 1942. Her last battle was the Battle of the Barents Sea against Convoy JW 51B – a fiasco where two light cruisers (HMS *Jamaica* and *Sheffield*) and the destroyers, corvettes, and ASW trawlers escorting the convoy drove off the *panzerschiff Admiral Scheer*, heavy cruiser *Admiral Hipper*, and seven destroyers. *Großadmiral* Dönitz, commanding the *Kriegsmarine* after the departure of *Großadmiral* Raeder, decommissioned *Admiral Hipper* to appease Hitler, but recommissioned her in 1944 as a Baltic training ship. She evacuated refugees from Gotenhafen in January 1945, and her crew scuttled her in drydock on May 3, 1945.⁶⁶⁹

Blücher, named for the Prussian field marshal who fought against Napoleon in 1813 and 1815, had a very short career: the coastal defenses of Oslo, Norway sank her on April 9, 1940 on her first mission.

Prinz Eugen, named for Prince Eugene of Savoy, was the only major German surface ship to survive World War II. She joined *Bismarck* in Operation *Rheinübung*, and returned to Germany with the battleships *Scharnhorst* and *Gniesenau* in Operation *Cerberus*. She spent the rest of the war in the Baltic, and finally sank in Kwajalein Atoll in the central Pacific after surviving two atomic bomb tests.



Figure 341: USS *Prinz Eugen* (IX-300) at Bikini Atoll prior to the “Able” atomic bomb test (1946)⁶⁷⁰

⁶⁶⁸ “*Admiral Hipper*,” <http://www.german-navy.de/kriegsmarine/ships/heavycruiser/admiralhipper/history.html>

⁶⁶⁹ “*Schwere kreuzer Admiral Hipper*,” <http://www.feldgrau.com/ahipper.html>

⁶⁷⁰ Photo source: U.S. National Archives #80-G-627444, http://de.wikipedia.org/wiki/Prinz_Eugen_%281938%29

The Admiral Hipper-class heavy cruiser in GWX

The *Admiral Hipper*-class heavy cruisers in GWX have their own camouflage and equipment variations.



Figure 342: *Admiral Hipper*-class heavy cruiser *Admiral Hipper* in GWX



Figure 343: *Admiral Hipper*-class heavy cruiser *Blücher* in GWX



Figure 344: *Admiral Hipper*-class heavy cruiser *Prinz Eugen*

K-class light cruiser

Historical Background

Germany began commissioning the three K- or *Königsberg*-class light cruisers, *Königsberg*, *Köln*, and *Karlsruhe*, in 1929. These ships were limited to 6,000 tons GRT by the Versailles Treaty,⁶⁷¹ with steam turbines for high-speed operations and diesel engines for fuel-efficient cruising, with a maximum speed of 32 knots and a range of 7,100 miles. Their main armament was three triple-150mm (5.9-inch) gun with one turret facing forward and two facing aft, with the two aft turrets offset from the ship's center line; they also had three dual-88mm, four dual-37mm, and eight 20mm anti-aircraft guns.⁶⁷²

These ships had poor long-range endurance due to the weakness of their welded construction and were limited to operations in the Baltic and the North Sea. *Königsberg* and *Karlsruhe* were lost during Operation *Weserübung*, while *Köln* served in the Baltic and in Norway threatening convoys through 1943, ending as a training ship before British bombers sank her at Wilhelmshaven on March 3, 1945.⁶⁷³



Figure 345: K-class light cruiser *Köln* in the late 1930s⁶⁷⁴

The K-class light cruiser in GWX

The K-class light cruiser represents the light cruisers *Emden*, *Leipzig*, and *Nürnberg* in addition to the original K-class light cruisers in GWX, and will appear randomly and as called for by the campaign.



Figure 346: K-class light cruiser in GWX

⁶⁷¹ "Treaty of Versailles," http://en.wikisource.org/wiki/Treaty_of_Versailles

⁶⁷² "German K-class cruiser," http://en.wikipedia.org/wiki/German_K_class_cruiser

⁶⁷³ "*Köln*, light cruiser (1930-1945)," <http://www.history.navy.mil/photos/sh-fornv/germany/gersh-k/koln.htm>

⁶⁷⁴ U.S. Naval Historical Center # NH 98268, <http://www.history.navy.mil>

Type 1936A (Mob) "Narvik"-class destroyer

Historical background

The numerical superiority of British destroyers and the qualitative superiority of French destroyers led the Germans to develop a "super" destroyer, the Type 1936A, that began construction in 1938. These ships were to have a twin 5.9-inch gun turret forward and three single 5.9-inch guns amidships and aft, but the twin turrets were not available until 1942-1943. The Allies identified these ships as *Narvik*-class destroyers. "Mob" stands for *Mobilisierung* ("Mobilization") to indicate differences between this class and the original Type 1936A destroyers.

There were seven destroyers in this class: Z31, Z32, Z33, Z34, Z37, Z38, and Z39. All but Z32 survived the war. The Germans continued to modify these ships to accept greater antiaircraft armament as the war drew on, with individual ships having unique configurations.⁶⁷⁵

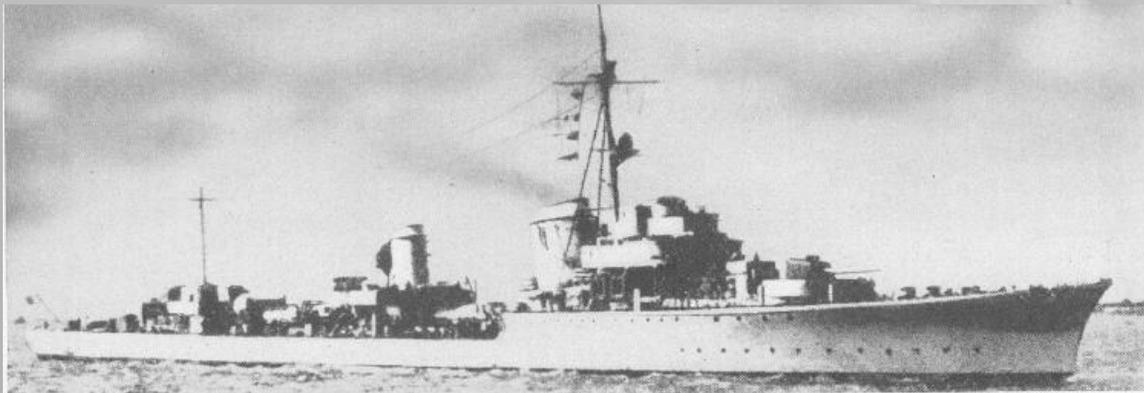


Figure 347: Type 1936A (Mob) "Narvik"-class destroyer⁶⁷⁶

The Type 1936A (M) destroyer in GWX

The Type 1936A (M) destroyer will appear as a randomly generated unit and as called for by the campaign. GWX models this destroyer with the twin 5.9-inch forward gun turret.



Figure 348: Type 1936A (Mob) "Narvik"-class destroyer in GWX

⁶⁷⁵ "Zerstörer 1936A (Mob)," <http://www.german-navy.de/kriegsmarine/ships/destroyer/zerstorer1936amob/index.html>;

"Z Class Destroyers Z23 - Z30 Narvik Type," http://smmlonline.com/articles/zclass/zclassz23_z30.html

⁶⁷⁶ Photo source: "Narvik-class destroyer," http://en.wikipedia.org/wiki/Narvik_class_destroyer

***Flottenbegleiter* (“Naval Escort”)**

Historical background

The Germans built 10 of these ships (F1 through F10) in the mid-1930’s to have a small ship that could be configured as fast escorts, minesweepers, and submarine hunters; however, their highly unreliable engines relegated them to non-combat support tasks such as retrieving torpedoes launched by U-boat training flotillas. Destroyers, torpedo boats, purpose-built minesweepers, and captured escort-class vessels assumed the intended role of the *flottenbegleiter*, which the Germans gradually withdrew from service.⁶⁷⁷



Figure 349: *Flottenbegleiter* F8⁶⁷⁸

The *Flottenbegleiter* in GWX

A *flottenbegleiter* will escort your U-boat through the minefields and submarine nets around your base: if you stay in its wake until you clear the port entrance you should be all right. Upon returning to port, you can navigate to the pier on your own, await the arrival of the *flottenbegleiter* to escort you in; or end the game within 25 kilometers of the port entrance and select the “Return to Port” option.



Figure 350: *Flottenbegleiter* in GWX

⁶⁷⁷ “*Flottenbegleiter*,” <http://www.german-navy.de/kriegsmarine/ships/escorts/flottenbegleiter/index.html>

⁶⁷⁸ Photo source: *Deutsche Kriegsschiffe*, <http://www.deutsche-kriegsschiffe.de>

Torpedo Boats

Type 1923-1924 torpedo boat

Historical background

Germany maintained six Type 1923 and six Type 1924 *torpedoboote* (“torpedo boats”) under the Versailles Treaty. Naval tactics called for the use of small, fast, torpedo-armed ships to charge an enemy battle fleet at high speed, turn to release a volley of torpedoes, and then dash away again, so these ships sacrificed gun armament and armor to increase speed and carry more torpedoes. The Type 1924 *Raubtier* (“Predator”) torpedo boats were slightly larger and faster than the Type 1923 *Raubvogel* (“Raptor”) torpedo boats, displacing 932 tons with a maximum speed of 35 knots. They carried six torpedoes but only three 105mm/L45 cannon (the same as used by the Type IX U-boat) and two (later four to seven) 20mm anti-aircraft guns. It could carry up to 30 mines but no depth charges.⁶⁷⁹

The Germans used the Type 1923 and 1924 torpedo boats as minelayers and escort vessels in coastal waters. All but one of these ships were lost by 1942, with the last (*Jaguar*) sunk in June 1944.

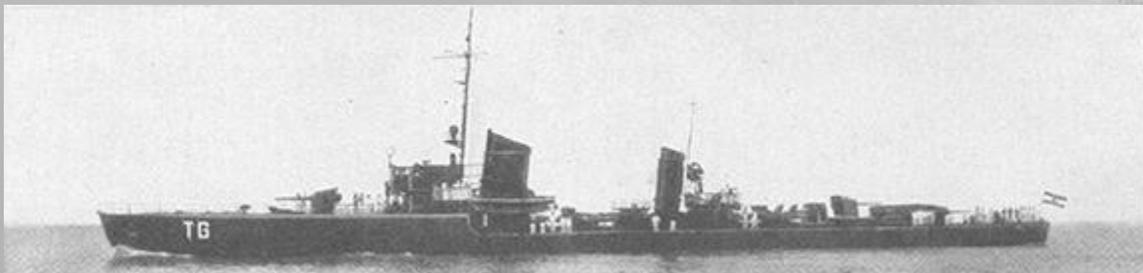


Figure 351: Type 1924 *torpedoboote* *Tiger* (pre-1935)⁶⁸⁰

The Type 1924 torpedo boat in GWX

The Type 1924 torpedo boat represents the Type 1923 and Type 1924 torpedo boat in GWX.



Figure 352: *Torpedoboote* Type 23-24 in GWX

⁶⁷⁹ “*Torpedoboote* 1924,” <http://www.german-navy.de/kriegsmarine/ships/torpedoboats/torpedoboote1924/index.html>

⁶⁸⁰ Photo: “German torpedoboats of World War II,” http://en.wikipedia.org/wiki/German_torpedoboats_of_World_War_II

Type 1935-1937 torpedo boat

Historical background

Germany developed the Type 1935 *torpedoboot* as an ocean-going version of the earlier *Raubtier*- (“Predator”) and *Raubvogel*- (“Raptor”) class torpedo boats. The new boats displaced 1088 tons with a speed of 35 knots, and sacrificed an already-weak main gun armament for increased anti-aircraft armament. They were armed with six torpedoes, but only one 105mm/45L cannon, two twin-37mm and 12 x 20mm anti-aircraft guns. It could carry up to 30 mines but no depth charges. These ships suffered, like the *flottenbegleiter*, from serious maintenance issues with their high-pressure steam turbines and the Germans relegated them to reserve or training duties. Only one of 12 Type 1935 torpedo boats was lost before 1944, but only three of them survived the last year of the war.⁶⁸¹



Figure 353: Type 1935 *torpedoboot* (1942)⁶⁸²

The Type 1935 torpedo boat in GWX

The Type 1935 torpedo boat represents the Type 1935 and Type 1937 torpedo boats in GWX.



Figure 354: *Torpedoboot* Type 35 in GWX

⁶⁸¹ “*Torpedoboot* 1935,” <http://www.german-navy.de/kriegsmarine/ships/torpedoboats/torpedoboot1935/index.html>

⁶⁸² Photo source: “Torpedo boats of the *Kriegsmarine*,” <http://www.paolopizzi.com/paolopizzi/articles/km-tb/photo-ship.htm>

Minesweepers

Type 1935 minesweeper (M-boat)

Historical background

The 1935 *Minensuchboot* / *M-boot* (“mine search boat” or “minesweeper” / “M-boat”), was the first launched by Germany since World War I, with a maximum speed of 18 knots and displacement of 870 tons. It carried one or two 105mm/L45 cannons (the same as on Type IX U-boats), a 37mm and six 20mm antiaircraft guns. It carried four depth charge launchers and up to 30 mines.

German minesweepers proved successful: the Allies sank 34 of them during the war but took several of them into their own service after the war, with some serving in the Soviet Black Sea Fleet into the 1960s as well as with the reconstituted German Federal Navy (*Bundesmarine*).⁶⁸³

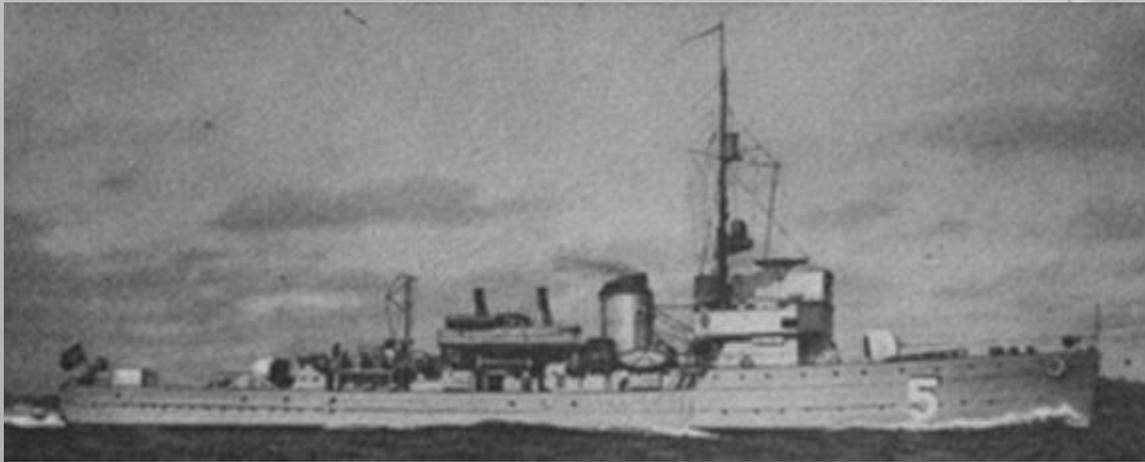


Figure 355: Type 1935 *minensuchboot* M-5⁶⁸⁴

The Type 1935 minesweeper in GWX

The Type 1935 minesweeper represents all minesweepers of the Type 1935, 1940, and 1943 in GWX.



Figure 356: The Type 35 minesweeper in GWX

⁶⁸³ “*Minensuchboot* 1935,” <http://www.german-navy.de/kriegsmarine/ships/minehunter/mboot35/index.html>

⁶⁸⁴ Photo source: “*Minensuchboote*,” <http://www.lexikon-der-wehrmacht.de/Waffen/Minensuchboote.htm>

Coastal Minesweeper (R-boat)

Historical Background

Germany built the first *minenräumboot* (“minesweeping boat”) or “R-boat” in 1933 for use in clearing coastal minefields, with about 300 more built by the end of the war. These ships displaced about 150 tons with a speed of 19 knots, with armament of a few 20mm and one 37mm antiaircraft gun; late in the war they carried the *Raketenabschußgestell* (RAG) (“rocket launching rack”), an antiaircraft rocket launcher for use against low-flying Allied aircraft. The RAG carried nine “*Föhn*” *raketen sprenggranate* (“high explosive rocket shell”) M43/44, similar to the British “Unrotated Projectile” from earlier in the war. **Note: GWX does not model antiaircraft rockets.**

The Germans used R-boats for convoy escort, air-sea rescue, and escorting U-boats in and out of port through aircraft-laid minefields; about half of all R-boats were lost during the war, with about 100 of the survivors forming the *Deutsche Minenräumdienst* (“German Mine Sweeping Administration” /GMSA) under the auspices of the Western Allies after the war.⁶⁸⁵

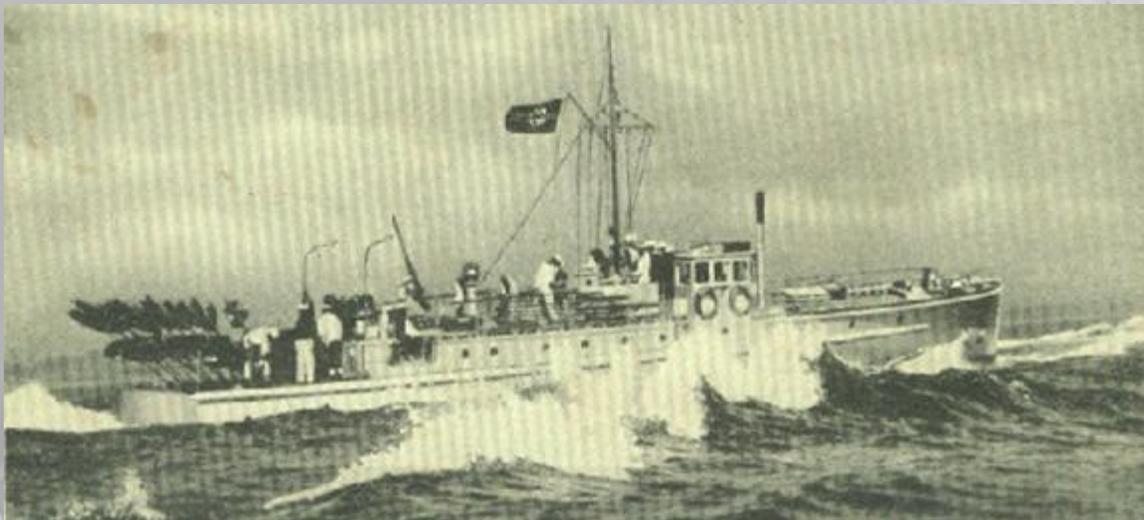


Figure 357: Unidentified *Räumboot* (R-boat)⁶⁸⁶

The Coastal Minesweeper (R-boat) in GWX

The Coastal Minesweeper will appear as a randomly generated unit and as called for by the campaign.



Figure 358: Coastal minesweeper (aka *Räumboot*, or R-boat) in GWX

⁶⁸⁵ “R-boat,” <http://www.german-navy.de/kriegsmarine/ships/minehunter/rboat/index.html>

⁶⁸⁶ Photo source: Postcard, <http://www.epier.com>

Sperrbrecher

Historical background

The *Sperrbrecher* (“barrier breaker”) was generally a small merchantman converted into a combination minesweeper and flak ship, with hull armor and reinforcement, and carrying buoyant cargo to help keep it afloat in the event it struck a mine. The *sperrbrecher* used one of two methods to make a path for a more valuable ship through mine barriers laid by enemy aircraft and submarines near the entrances to friendly harbors. The first method used a powerful electromagnetic field generator to detonate magnetic mines at a safe distance ahead of the *sperrbrecher*; in the second method, the *sperrbrecher* simply ran over and detonated any mines in the path of the more valuable ship, hoping its buoyant cargo would help keep the *sperrbrecher* afloat. Germany converted over 100 merchant ships into *sperrbrecher*, of which about half were lost due to enemy action.⁶⁸⁷



Figure 359: *Sperrbrecher* No. 1 (ex-MV Saar), displacing 3261 GRT⁶⁸⁸

The *Sperrbrecher* in GWX

The *sperrbrecher* in GWX helps guard U-boat pens and helps escort U-boats going on patrol and returning from patrol through potential minefields near U-boat bases. Stock *Silent Hunter III* does not simulate magnetic or other non-contact mines, so the *sperrbrecher* clears mines from the U-boats path by running over them.



Figure 360: *Sperrbrecher* in GWX

⁶⁸⁷ “Sperrbrecher,” <http://www.german-navy.de/kriegsmarine/ships/minehunter/sperrbrecher/index.html>

⁶⁸⁸ Photo source: <http://www.german-navy.de/kriegsmarine/ships/minehunter/sperrbrecher/image2.html>

AI-controlled U-boats

Historical Background

The Versailles Treaty forbade Germany to have or build submarines, so the *Kriegsmarine* arranged a partnership with AG Vulcan and two Friedrich Krupp AG subsidiaries, *Germaniawerft* and AG Bremen, to establish a front company, NV *Ingenieurskantoor voor Scheepsbouw* (IvS, “engineer office for shipbuilding”) in The Hague (*'s-Gravenhage*), Netherlands, in 1922 to maintain German submarine design and construction expertise. Krupp AG purchased the Fijenoord shipyard in Rotterdam, and the *Kriegsmarine* persuaded Blohm und Voss GmbH to extend its licence to install MAN diesels in IvS submarines, but the IvS did not win its first contract until 1925 when Turkey ordered two submarines, followed in 1926 by an order from Finland for three *Vetehinen*-class submarines.⁶⁸⁹

The first IvS design translated into a wartime U-boat was the Spanish *E-1*, ordered in 1929 but purchased by Turkey when Spain became a republic in 1932 and cancelled the deal; this design became the Type IA U-boat (*U-25* and *U-26*), from which Germany would later develop the Type IX U-boats. In 1930, IvS ordered the submarine CV-707 from the Crichton-Vulcan shipyard in Turku, Finland that Germany used and tested extensively before making it the prototype of the Type IIA U-boats, known to the Germans as “*Einbaum*” (lit. “One tree” – “dugout canoe”).⁶⁹⁰ IvS also designed three mine-laying submarines for Sweden 1930 as well as three submarines for the Soviet Union in 1934.⁶⁹¹

Germany laid the keel for the first Type VII U-boat (*U-27*) on November 11, 1935 and commissioned her on August 12, 1936. The designer, Friedrich Schürer,⁶⁹² derived these ~750-ton boats from the World War I UB III U-boats with modifications based on his experience at IvS. The *Führer der U-boote* (FdU), *Kapitän z. S.* Karl Dönitz, selected the Type VII in 1936 as the principal U-boat for German naval rearmament, as he intended it for service around the British Isles similar to the way Germany had employed U-boats during World War I. The Type VIIB U-boats that went into production in 1936 were slightly larger than the Type VII; this allowed the installation of the *Gruppenhorchgerät* (GHG) hydrophone array as well as enough fuel to increase the U-boat’s range by 50%. The Type VIIC U-boats went into production in 1938, with slightly larger fuel tanks than the Type VIIB. The Type VIIC/41 was essentially a Type VIIC U-boat with a pressure hull made with higher-grade steel.⁶⁹³

Germany developed the Type IX U-boats from the Type IA U-boats to attack targets more distant from Britain consistent with the overall German naval strategy to threaten distant British interests (such as shipping traffic near the Suez Canal) with an eye to preventing the Royal Navy from concentrating against Germany in the North Sea.⁶⁹⁴ The Type IXA displaced ~1030 GRT and had a surface range of 10,500 miles while the Type IXC/40 grew to displace ~1140 GRT with a range of 13,850 miles; the Type IXD₂ was significantly larger than even the Type IXC/40, with displacement of ~1,610 GRT and a range of 23,500 miles.⁶⁹⁵

⁶⁸⁹ “*Ingenieurskantoor voor Scheepsbouw*,” <http://www.dutchsubmarines.com/>

⁶⁹⁰ “German Type II Submarine,” http://en.wikipedia.org/wiki/Type_II_U-boat

⁶⁹¹ “*Ingenieurskantoor voor Scheepsbouw*,” <http://www.dutchsubmarines.com/>

⁶⁹² “Ministerialdirektor Dr. Ing. e. h. Dipl. Ing. Friedrich Schürer,”

http://www.geocities.com/~orion47/WEHRMACHT/KRIEGSMARINE/Vizeadmirals/SCHUERER_FRIEDRICH.html

⁶⁹³ Westwood, *The Type VII U-boat*

⁶⁹⁴ “Type IX Uboats,” <http://www.uboatwar.net/IX.htm>

⁶⁹⁵ “German Type IX U-boat,” <http://www.uboataces.com/uboa-type-ix.shtml>

AI-controlled Type IIB U-boat

Historical background

The Type IIB U-boat was one in a series of *Einbaum* U-boats built in the early 1930's in contravention of the Versailles Treaty. The Type IIB had an overall range of 5000 km, double that of its predecessor, the Type IIA U-boat, but like the other "canoes" it was built for coastal defense. They carried only five torpedoes and had no watertight compartments within the pressure hull.⁶⁹⁶

These U-boats began the war in front-line service but the Germans relegated them to training flotillas as they commissioned newer and larger Type VII and IX U-boats of various types.



Figure 361: Type IIB U-boat⁶⁹⁷

The AI-controlled Type IIB U-boat in GWX

The AI-controlled Type IIB U-boat appears in GWX as harbor traffic in and around harbors with active training or combat flotillas using the Type II U-boat. The Type IIB U-boat resides only on the surface and can fire neither torpedoes nor its anti-aircraft gun due to stock *Silent Hunter III* limitations.



Figure 362: AI-controlled Type IIB U-boat in GWX (Wilhelmshaven, 1939)

⁶⁹⁶ "German Type II Submarine," http://en.wikipedia.org/wiki/Type_II_U-boat

⁶⁹⁷ Photo source: "Unterseebootwaffe," <http://www.dataphone.se/~ms/ubootw/welcom.htm>

AI-controlled Type VIIC U-boat

Historical background

Germany based the Type VII U-boats on original NV IvS designs sold to countries such as Spain, Sweden, and Romania. The *Kriegsmarine* carefully examined these designs, and German crews tested the submarines built from them before delivery to their foreign buyers. The lessons learned from these activities resulted in the Type VII U-boat having the range, weapons capacity, and toughness to pose a strategic threat to Great Britain, with the first commissioned in 1935; however, only 18 Type VIIA and VIIB U-boats were in commission when the war began. The Type VIIC U-boats began commissioning in 1940, and were the most common type of U-boat with 660 built before the end of the war.⁶⁹⁸



Figure 363: Two Type VIIC U-boats meet at sea⁶⁹⁹

The AI-controlled Type VIIC U-boat in GWX

The Type VIIC U-boat will appear wherever Type VIIC U-boats deployed historically, including those in training flotillas prior to combat deployments. The Type VIIC U-boat resides only on the surface; it can fire neither its torpedoes nor its deck gun due to stock *Silent Hunter III* limitations, but it can fire its anti-aircraft guns; these will increase as the war goes on.



Figure 364: AI-controlled Type VIIC U-boat in GWX with *flottenbegleiter* at left (St. Nazaire, 1941)

⁶⁹⁸ Westwood, David. *Anatomy of the Ship: The Type VII U-boat*

⁶⁹⁹ Photo source: <http://www.wv2incolor.com/gallery/german-navy>

AI-controlled Type VIIC “U-Flak”

Historical background

The Germans developed the *U-flak* as a trap for unsuspecting Allied ASW patrol aircraft by taking an existing Type VIIC U-boat and replacing its light anti-aircraft armament with two 2cm *Flakvierling* anti-aircraft guns and a twin-3.7cm anti-aircraft gun. Four U-boats completed the U-Flak conversion: *U-256*, *U-441*, *U-621*, and *U-953*, with *U-441* being the first completed and designated “*Flak-U 1*.” A U-Flak carried only five torpedoes – those in the torpedo tubes – to make room for an additional 20 anti-aircraft gunners, and only enough fuel for operations in the Bay of Biscay.



Figure 365: *Flak-U 1* (ex-*U-441*)⁷⁰⁰

The *U-flak* concept was not very successful: they shot down two ASW aircraft without losing any U-flak, but the Allies soon countered them with new tactics. U-boats usually dived under air attack so ASW aircraft usually attacked them with bombs and depth charges; however, U-flak fought it out on the surface and so the Allies began sending in teams of maritime strike aircraft that outgunned the U-flak. For example, *Flak-U 1* shot down a Sunderland flying boat in May 1943, but two months later a team of three Beaufighters attacked *U-441* from different directions, splitting its defensive fire and killing or wounding the 24 men on watch and operating the anti-aircraft battery, including all the navigational and communications officers, before the U-boat was able to dive. In desperation, the U-boat’s doctor took command and was able to navigate the boat to Brest. The Germans abandoned the *U-Flak* concept in November 1943 returned the U-flak to their regular configurations, which by early 1944 included much heavier anti-aircraft armament in any case.⁷⁰¹

The AI-controlled Type VIIC “U-Flak” in GWX

The AI-controlled Type VIIC U-Flak is available in GWX during the fall of 1943 as an escort for U-boats leaving ports on the Bay of Biscay (Lorient, St. Nazaire, and Bordeaux). These escorts follow a routine pattern that will allow you to join up with them just after your naval escort vessel leaves you. It cannot fire its torpedoes, but can fire its anti-aircraft guns.



Figure 366: U-Flak in GWX (St. Nazaire, late 1943)

⁷⁰⁰ Photo source: “U-flak aircraft traps,” <http://uboat.net/types/u-flak.htm>

⁷⁰¹ “U-flak aircraft traps,” <http://uboat.net/types/u-flak.htm>

AI-controlled Type IXB U-boat

Historical Background

In the mid-1930's, FdU *Kapitän z. S.* Dönitz engaged in a prolonged debate with OKM regarding the types of U-boats Germany should build as it rearmed. Dönitz felt a large force of relatively small (500-ton) U-boats could effectively blockade Britain from within the waters in and around the British Isles, while OKM felt British aircraft and ASDIC-equipped warships would mount a stout defense of their local waters and therefore felt long-range 750-ton U-boats operating against British ships in distant seas would produce better results.⁷⁰² The result was a compromise of sorts, where Germany focused on building the 500-ton Type VII U-boats but built eight of the 750-ton Type IX boats as a hedge. The Type IXB U-boat was the second generation of Type IX U-boats, and as a class sank over 1,300,000 tons of enemy shipping, or an average of over 100,000 tons per boat.⁷⁰³

The capture of the Type IX U-boat *U-110* (*Kapitänleutnant* Fritz-Julius Lemp) was a turning point in the Atlantic War, as the British recovered *Enigma* encoding devices that helped them roll up the German covert tanker network in the North Atlantic, thereby curtailing future commerce raiding missions by German surface raiders.⁷⁰⁴

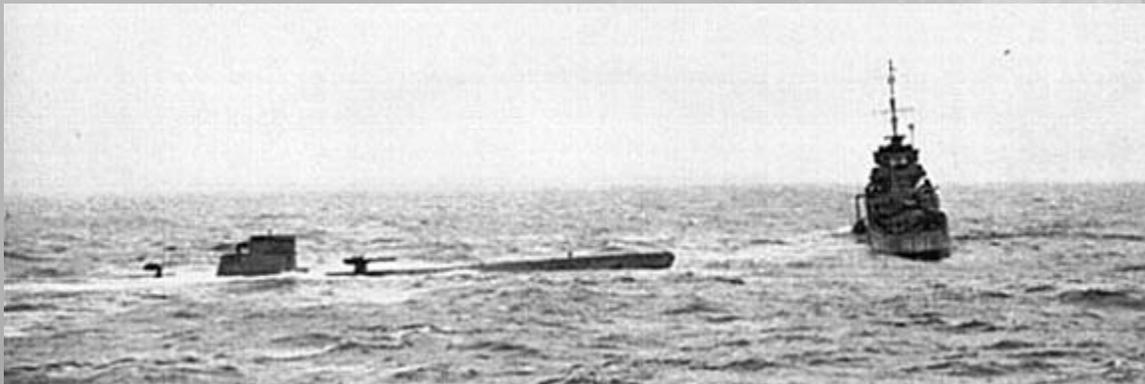


Figure 367: HMS *Bulldog* captures the Type IXB U-boat *U-110* in June 1941⁷⁰⁵

The Type IXB AI-controlled U-boat in GWX

The AI-controlled Type IXB U-boat will appear wherever Type IXB U-boats deployed historically, primarily in American and African waters. Unlike the player-controlled Type IXB, the AI-controlled Type IXB U-boat resides only on the surface; it can fire neither its torpedoes nor its deck gun due to stock *Silent Hunter III* limitations, but can fire its antiaircraft guns.



Figure 368: Type IXB U-boat in GWX

⁷⁰² Clay Blair, *Hitler's U-boat War: The Hunters*

⁷⁰³ "Type IXB," <http://www.uboat.net/types/ixb.htm>

⁷⁰⁴ Clay Blair, *Hitler's U-boat War: The Hunters*

⁷⁰⁵ Photo source: "Captain Joe Baker-Cresswell," <http://uboat.net/allies/personnel/cresswell.htm>, courtesy of U-boat.net

AI-controlled Type XIV U-tanker “Milchkuh”

Historical background



Figure 369: The first U-tanker, U-459⁷⁰⁷

Germany began building the Type XIV U-tankers, known “Milchkühe,” or “milk cows,” in 1940 to provide food, fuel, lubricating oil, and a few extra torpedoes to short-ranged Type VII U-boats operating in distant seas. The U-tankers were armed only with anti-aircraft guns, could only dive to relatively shallow depths (~150 meters), and were relatively unmaneuverable. The first U-tanker patrol began in March 1942.⁷⁰⁶

Germany built 10 U-boat tankers, the first of which successfully supported Operation *Paukenschlag* (“Drumbeat”) in the Caribbean Sea and off the east coast of the U.S. during 1942. They became high priority targets once the Allies learned of their existence and Allied cryptanalysis began revealing their general location to ASW forces, and the Allies sank eight of the 10 U-boat tankers by October 1943, and the remaining two by June 1944. Germany cancelled 14 additional U-tankers under construction when it became apparent the tankers would be unable to fulfill their intended role due to effective Allied countermeasures, though the Germans did not suspect the magnitude of Allied cryptologic successes.⁷⁰⁸

The AI-controlled Type XIV U-tanker “Milchkuh” in GWX

The AI-controlled Type XIV U-tanker, or “Milchkuh” in GWX functions as a U-boat resupply point as described in the [U-boat tankers](#) section. The Type XIV U-boat is found only on the surface and cannot launch torpedoes or fire its guns. U-tankers are available in their approximate historical locations until the dates upon which the Allies sank them historically.

A U-tanker will likely be destroyed if you manage to draw Allied ASW forces on to a it; however, it will “regenerate” for your next patrol provided it has not yet reached its historical “expiration date.”



Figure 370: AI-controlled Type XIV U-tanker in GWX

⁷⁰⁶ “Type XIV,” <http://www.uboot.net/types/xiv.htm>

⁷⁰⁷ Photo source: “Chronik des Seekrieges 1939-1945,” <http://www.wlb-stuttgart.de/seekrieg/43-07.htm>

⁷⁰⁸ “Milk Cows,” <http://www.uboot.net/types/milkcows.htm>

AI-controlled Type XXIII U-boat

Historical background

Germany began developing the Type XXIII U-boat in 1942 as a replacement for the Type II coastal U-boats, which the *Kriegsmarine* had relegated by then to training duties, with the only exception the six Type II U-boats of [XXX U-Flotille in the Black Sea](#). The Type XXIII was roughly the same size as the Type II; its main feature was the advanced technology of the Type XXI *Elektroboot*, with the drawback was that it carried only two torpedoes (one per torpedo tube) with no reloads, so a Type XXIII patrol was over after only one or at most two attacks. It was rail transportable to allow Germany to ship it overland for use in the Mediterranean or in the Black Sea. The Japanese naval attaché in Berlin kept the Allies fully aware of the submarines' capabilities and deployment by sending status reports in Japanese diplomatic codes long since broken by the Allies.⁷⁰⁹

Germany completed the first Type XXIII U-boat in April 1944; it commissioned in June, but the normal 5-6 month crew training and work-ups meant these boats were not ready for action until early 1945, during which time seven Type XXIII U-boats were lost to accidents or unknown causes. Type XXIII U-boats made six patrols, sinking five ships without losing any to enemy action: *U-2336* (*Kapitänleutnant* Emil Klusmeier) sank the last merchant ship of the war in Europe at 11PM on May 7, 1945.⁷¹⁰



Figure 371: Type XXIII U-boat *U-2363* after surrendering to Britain, May 1945⁷¹¹

The Type XXIII U-boat in GWX

The Type XXIII U-boat will appear as a randomly generated unit and as called for by the campaign.

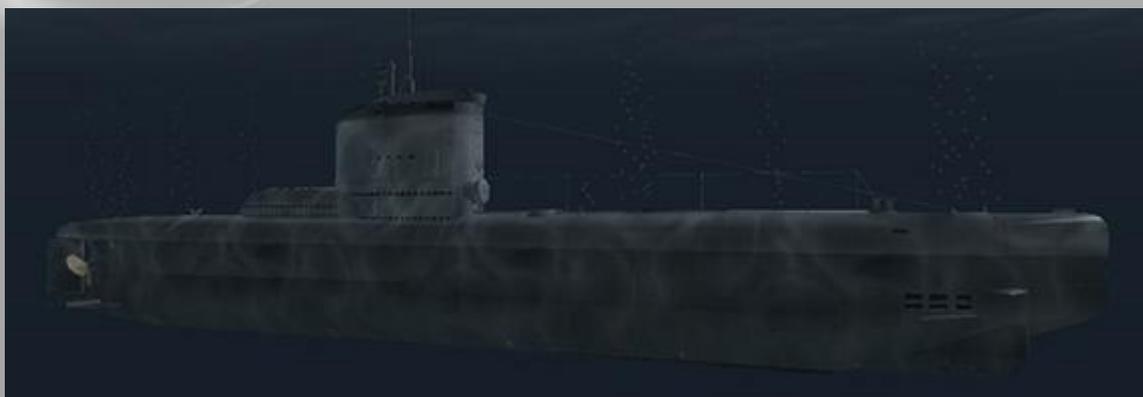


Figure 372: Underwater view of the Type XXIII U-boat

⁷⁰⁹ U.S. National Security Agency, "German-Japanese exchange of information," *Ultra in the Atlantic, Vol. IV*, SRH-25, <http://ibiblio.org/hyperwar/ETO/Ultra/SRH-025/SRH025-5.html>

⁷¹⁰ "Type XXIII U-boat," <http://www.uboataces.com/uboat-type-xxiii.shtml>

⁷¹¹ Photo source: <http://www.uboat.net>; photo by Paul Galla

Great Britain

King George V-class battleship

Historical Background

The British designed the *King George V*-class battleships (HMS *King George V*, *Prince of Wales*, *Duke of York*, *Anson*, and *Howe*) in accord with the Second London Naval Treaty of 1936, which limited battleships to using 14-inch guns and a maximum displacement of 35,000 GRT.

King George V-class battleships helped sink *Bismarck* and played a key role in sinking *Scharnhorst*. Japanese bombers sank HMS *Prince of Wales* with the battle cruiser HMS *Repulse* in December 1941 but otherwise these ships went relatively unscathed during the war.⁷¹²



Figure 373: *King George V*-class battleship HMS *Prince of Wales*⁷¹³

The *King George V*-class battleship in GWX

GWX models the *King George V*-class battleships as separate ships, with unique camouflage and minor equipment variations. These ships will appear randomly and as called for by scripted events.



Figure 374: HMS *King George V* in GWX



Figure 375: *King George V*-class battleship HMS *Prince of Wales* in GWX

⁷¹² “King George V-class battleship (1939),” http://en.wikipedia.org/wiki/King_George_V_class_battleship_%281939%29

⁷¹³ U.S. Naval Historical Center #NH-67194-A, <http://www.history.navy.mil>



Figure 376: *King George V*-class battleship *HMS Duke of York* in GWX



Figure 377: *King George V*-class battleship *HMS Anson* in GWX



Figure 378: *King George V*-class battleship *HMS Howe* in GWX

***Nelson*-class battleship**

Historical Background

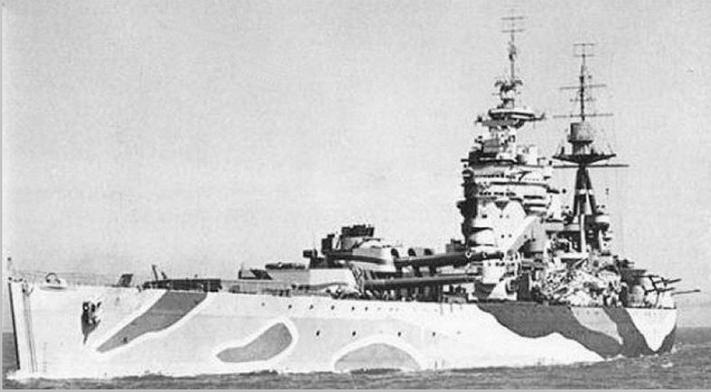


Figure 379: *Nelson*-class battleship HMS *Rodney*⁷¹⁶

HMS *Nelson* and her sister ship, *Rodney*, were built under the limitations of the Washington Naval Treaty of 1922, sacrificing speed for armor and armament, as well as using a unique armament configuration to stay within the treaty limits of 35,000 GRT.⁷¹⁴ HMS *Nelson* and *Rodney* survived the war though damaged by mines and torpedoes; the Type IIC *U-56* (*Kapitänleutnant Wilhelm Zahn*) hit HMS *Nelson* with three torpedoes on October 30, 1939, but none of them detonated.⁷¹⁵

The *Nelson*-class battleship in GWX

GWX models the *Nelson*-class battleships as separate ships, with unique camouflage and minor equipment variations. These ships will appear randomly and as called for by scripted events.



Figure 380: HMS *Nelson* in GWX



Figure 381: HMS *Rodney* in GWX

⁷¹⁴ "HMS *Nelson*," http://en.wikipedia.org/wiki/HMS_Nelson_%281925%29

⁷¹⁵ Nikolay Nedelchev, "The Norwegian Operation and the Torpedo Crisis," http://uboat.net/history/torpedo_crisis.htm

⁷¹⁶ "British battleships of World War II pictures," <http://news.webshots.com/album/4725838mwnqsEceAm?start=12>

Admiral-class battle cruiser HMS *Hood*

Historical background

British Admiral Sir John “Jackie” Fisher began in 1905 to develop the concept of the “large armored cruiser” (later known as the “battle cruiser”), a high-speed “all-big-gun” counterpart to his revolutionary “all-big-gun” battleship, HMS *Dreadnought*. Fisher intended the battle cruiser to hunt down and sink enemy commerce raiders up to and including armored (“heavy”) cruisers, so it sacrificed armor for more powerful engines on the assumption its advantages in speed and gun size would allow it to pursue and sink enemy armored cruisers without coming within range of their smaller guns.⁷¹⁷

The battle cruiser concept worked when the Royal Navy used battle cruisers as Fisher had intended: the battle cruisers HMS *Invincible* and *Inflexible* pursued and sank the armored cruisers SMS *Scharnhorst* and *Gneisenau* at the Battle of the Falklands in 1914; however, the results were catastrophic when the British used battle cruisers as battleships. The battle cruisers HMS *Invincible*, *Indefatigable*, and *Queen Mary* exploded and sank at the Battle of Jutland in 1916, upon which Rear Admiral David Beatty, the British battle cruiser commander, remarked: “There seems to be something wrong with our bloody ships today.” In contrast, the Germans in both World Wars followed *Großadmiral* Tirpitz’ dictum that “the supreme quality of a warship is that it should stay afloat” and built battle cruisers (“*Große kreuzer*”) that achieved greater speed by using smaller guns rather than by decreasing armor protection. As a result, German battle cruisers (and battleships) could still outgun enemy cruisers, but could (and did) also take a real pounding in the line of battle against British battleships and remain afloat.⁷¹⁸

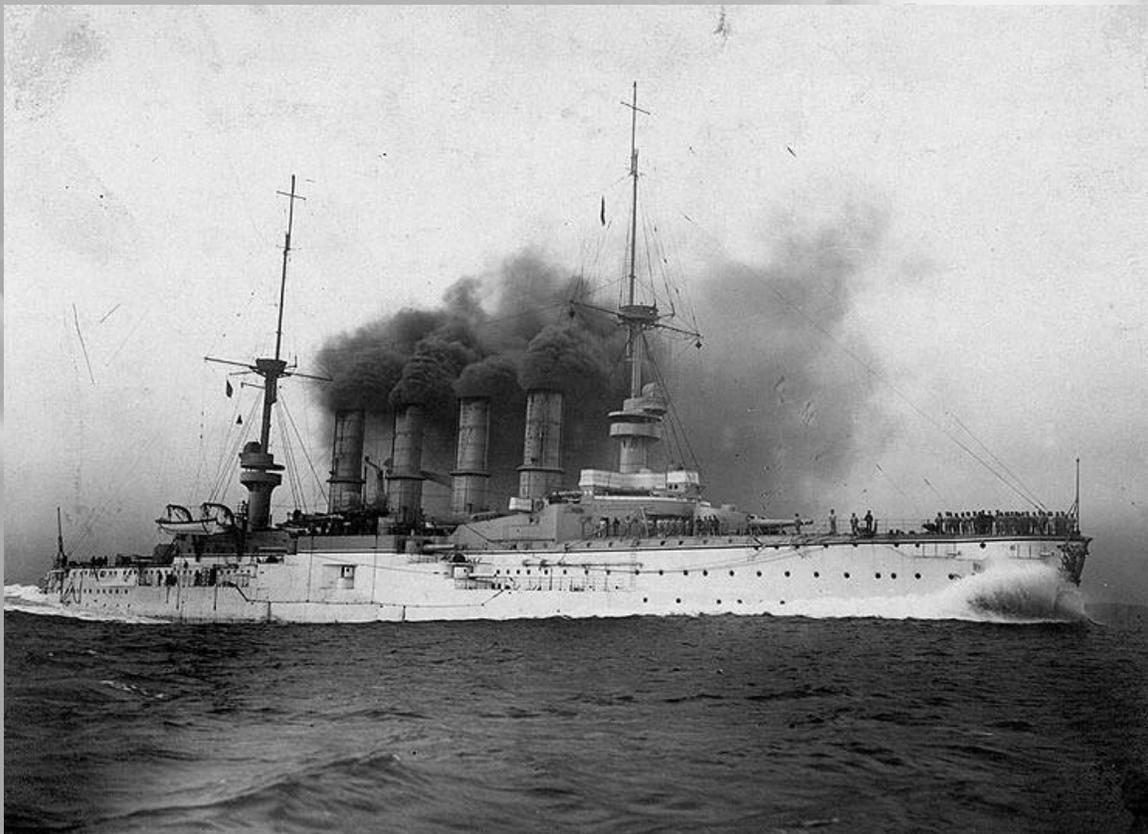


Figure 382: Battle cruisers were to prey on German armored cruisers like SMS *Scharnhorst*, above⁷¹⁹

⁷¹⁷ Massie, Robert K. *Dreadnought: Britain, Germany, and the coming of the Great War*. Random House. 1991.

⁷¹⁸ Massie, Robert K. *Castles of Steel*.

⁷¹⁹ U.S. Naval Historical Center #NH 46837, <http://www.history.navy.mil>

HMS *Hood* was the first of four Admiral-class battle cruisers laid down in 1916, of which she was the only one completed. The British added armor and structural reinforcement to her design due to lessons learned at the Battle of Jutland, so that by 1941 the “Mighty *Hood*” was the largest ship in the history of the Royal Navy up to that time.⁷²⁰ HMS *Hood* exploded and sank in the Battle of the Denmark Strait in May 1941 while engaging the German battleship *Bismarck*. The cause of the explosion is unknown, but may have been due to a cordite propellant explosion in her aft magazines following a hit from *Bismarck*’s 15-inch guns.⁷²¹



Figure 383: HMS *Hood* in Scapa Flow in late 1940, prior to receiving radar⁷²²

The Admiral-class battle cruiser *Hood* in GWX

HMS *Hood* appears randomly until late May 1941; she will be involved in Operation *Rheinübung* and sunk by *Bismarck* on May 24, 1941 as happened historically.



Figure 384: Admiral-class battle cruiser HMS *Hood* in GWX

⁷²⁰ Ian Johnston, “The Construction of H.M.S. *Hood*,” <http://www.hmshood.com/history/construct/construction.htm>

⁷²¹ William Jurens, “The loss of HMS *Hood*: A re-examination.” <http://www.warship.org/no21987.htm>

⁷²² Photo source: H.M.S. *Hood* Association Collection, © H.M.S. *Hood* Association. Used by permission.

***Renown*-class battle cruiser**

Historical background

The battle cruisers HMS *Renown* and *Repulse* were the world's largest warships when they commissioned in September 1916; the Royal Navy added over 4,300 tons of additional armor in post-war refits after losing three battle cruisers at Jutland due to weak armor protection. Both ships had three twin-15-inch gun turrets, but *Renown* had more anti-aircraft and torpedo protection by late 1939.

Both ships served in the Home Fleet and Mediterranean Fleet until late 1941 when *Repulse* went to the Far East to try to deter a Japanese attack on British possessions there, but to no avail; Japanese bombers sank *Repulse* and the battleship HMS *Prince of Wales* off Singapore on December 10, 1941. *Renown* went to the shipbreakers in 1948 as the only pre-war battle cruiser to survive World War II.⁷²³



Figure 385: HMS *Renown* in Scapa Flow (1943)⁷²⁴

The *Renown*-class battle cruiser in GWX

The *Renown*-class battle cruiser appears in GWX as a single ship in task forces, and as scripted in the campaign.



Figure 386: *Renown*-class battle cruiser in GWX

⁷²³ "HMS *Renown* (1916)," http://en.wikipedia.org/wiki/HMS_Renown_%281916%29

⁷²⁴ Photo source: "Cyber-Heritage," <http://www.navyphotos.co.uk/>

County-class heavy cruiser

Historical background

The County-class heavy cruisers consisted of 15 ships divided between three sub-classes (*Kent*, *London*, and *Dorsetshire*) under the terms of the London Naval Treaty of 1922: they displaced only 10,000 tons but had very long cruising ranges for anti-commerce raider patrols. Their armament included four twin 8-inch gun turrets and eight torpedo tubes, with major alterations before and during World War II.⁷²⁵

Kent-class heavy cruiser

Historical background

The British laid down seven *Kent*-class heavy cruisers (HMS *Kent*, *Suffolk*, *Cornwall*, *Cumberland*, and *Berwick*; HMAS *Australia* and *Canberra*) of 9,750 tons displacement in 1924-25; HMS *Cornwall* and the heavy cruiser HMS *Dorsetshire* were lost to Japanese carrier aircraft off Ceylon in April 1942, while HMAS *Canberra* was lost at Guadalcanal in August 1942.⁷²⁶



Figure 387: *Kent*-class heavy cruiser HMS *Suffolk* (1942)⁷²⁷

The *Kent*-class heavy cruiser in GWX

The *Kent*-class heavy cruiser appears in GWX alone, in task forces, and per the campaign script.



Figure 388: *Kent*-class heavy cruiser in GWX

⁷²⁵ “County class cruiser,” http://en.wikipedia.org/wiki/County_class_cruiser

⁷²⁶ “HMS *Norfolk*,” http://home.swipnet.se/~w-11578/hms_norfolk.htm

⁷²⁷ Photo source: “HMS *Berwick* (65),” http://en.wikipedia.org/wiki/HMS_Berwick_%2865%29

London-class heavy cruiser

Historical background

The British laid down four *London*-class heavy cruisers (HMS *London*, *Devonshire*, *Sussex*, and *Shropshire*) of 9,850 tons displacement in 1926-27; all survived the war, with HMS *Shropshire* transferred to the Royal Australian Navy in 1943 as HMAS *Shropshire* to replace the *Kent*-class heavy cruiser HMAS *Canberra* that was lost at Guadalcanal in 1942.⁷²⁸



Figure 389: *London*-class heavy cruiser HMS *Shropshire* just prior to its transfer to the RAN (1943)⁷²⁹

The *London*-class heavy cruiser in GWX

The *London*-class heavy cruiser appears in GWX as a single ship, in task forces, and as scripted in the campaign. GWX shows this ship in its pre-war configuration.



Figure 390: *London*-class heavy cruiser in GWX

⁷²⁸ "HMS Norfolk," http://home.swipnet.se/~w-11578/hms_norfolk.htm

⁷²⁹ Photo source: "HMS Shropshire (73)," http://en.wikipedia.org/wiki/HMS_Shropshire

Dorsetshire-class heavy cruiser

Historical background

The British laid down two *Dorsetshire*-class heavy cruisers (HMS *Dorsetshire* and *Norfolk*) displacing 9,900 tons in 1927; HMS *Dorsetshire* was lost along with the *Kent*-class heavy cruiser HMS *Cornwall* to Japanese carrier aircraft off Ceylon in April 1942.⁷³⁰



Figure 391: *Dorsetshire*-class heavy cruiser HMS *Norfolk* (May 1943)⁷³¹

The *Dorsetshire*-class heavy cruiser in GWX

The *Dorsetshire*-class heavy cruiser appears in GWX as a single ship in task forces, and as scripted in the campaign. GWX shows this ship in its pre-war configuration.



Figure 392: *Dorsetshire*-class heavy cruiser in GWX

⁷³⁰ "HMS *Norfolk*," http://home.swipnet.se/~w-11578/hms_norfolk.htm

⁷³¹ Photo source: "HMS *Norfolk*," http://home.swipnet.se/~w-11578/hms_norfolk.htm

Town-class light cruiser

Historical background

The Washington Naval treaty of 1922 limited “light cruisers” to 6-inch guns, but did not limit the number of 6-inch guns they could carry, resulting in “light” cruisers with the same close-range firepower as “heavy” cruisers. The British commissioned the first Town-class light cruisers (the HMS *Southampton* class) starting in 1937, with 12 6-inch guns in four triple-gun turrets. The HMS *Gloucester* sub-class had increased turret armor, while the HMS *Edinburgh* sub-class carried substantially larger anti-aircraft armament. Three of the earlier Town-class cruisers (HMS *Glasgow*, *Sheffield*, and *Newcastle*) had their anti-aircraft armament increased by replacing their aft (“Y”) main gun turret with two quad-40mm batteries.

These ships saw extensive service during World War II, fighting in several major engagements. Four Town-class light cruisers were lost during the war: HMS *Edinburgh*, *Gloucester*, *Manchester*, and *Southampton*. HMS *Belfast* survives today as a floating Imperial War Museum exhibit in London.⁷³²



Figure 393: Town-class light cruiser *Southampton*⁷³³

The Town-class light cruiser in GWX

GWX models the HMS *Southampton* and *Gloucester* sub-classes of the Town-class light cruisers. These ships will appear alone, at random in convoys, and when called by scripted events as themselves or to appear randomly along with *Fiji*-class light cruisers as stand-ins for other British cruisers. The Walrus search aircraft normally carried by these cruisers does not play a part in GWX, and is always considered to be “out on patrol” whenever you actually see a ship of this class in the game.



Figure 394: Town-class HMS *Southampton* in GWX

⁷³² “Town class cruiser (1936),” [http://en.wikipedia.org/wiki/Town_class_cruiser_\(1936\)](http://en.wikipedia.org/wiki/Town_class_cruiser_(1936))

⁷³³ Photo source: “Southampton,” <http://uboat.net/allies/warships/ship/1235.html>, courtesy of uboat.net

A&B-class destroyer

Historical Background

The British began building eight A-class destroyers and a slightly enlarged A-class destroyer leader (with accommodation for the squadron staff and more communications gear) in 1927 to replace their World War I-era destroyers, with Canada buying two additional destroyers. They displaced 1,350 tons and had a maximum speed of 35 knots, and carried two quad torpedo launchers, four 4.7-inch guns, and two 2-pdr anti-aircraft guns when constructed; however, the Navy removed their planned ASDIC and most of their depth charges as economy measures during construction, and did not restore them until 1941. The Royal Navy planned for these ships to operate as a single squadron, and added accommodations for a squadron commander and his staff on the destroyer leader HMS *Codrington*.⁷³⁴

The British began building eight B-class destroyers and a slightly enlarged B-class destroyer leader (HMS *Keith*) in 1930. These ships displaced were nearly identical to the A-class destroyers.⁷³⁵

These ships were heavily involved in the war: Only four A-class (HMS *Active*, *Antelope*, *Anthony*, and HMCS *Saguenay*) and four B-class destroyers (HMS *Beagle*, *Boreas*, *Brilliant*, and *Bulldog*) survived. HMS *Boreas* transferred to Greece in 1944 and survived as RHS *Salamis* (Σαλάμια); a freighter rammed HMCS *Saguenay* in late 1942, after which it was a training hulk for the duration of the war.



Figure 395: A-class destroyer HMS *Acheron*⁷³⁶

The A&B-class destroyer in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 396: A&B-class destroyer in GWX

⁷³⁴ "A-class destroyer," http://en.wikipedia.org/wiki/A_class_destroyer

⁷³⁵ "B-class destroyer," http://en.wikipedia.org/wiki/B_class_destroyer

⁷³⁶ Photo source: "A-class destroyer," http://en.wikipedia.org/wiki/A_class_destroyer

L-class anti-aircraft destroyer

Historical Background

The L-class anti-aircraft destroyer was a variant of the basic L-class destroyer, displacing about 1935 tons with a maximum speed of 36 knots. The anti-aircraft destroyers differed from the L-class carrying eight torpedo tubes instead of the four on the L-class destroyers; a shortage of 4.7-inch guns caused the replacement of the usual three twin low-angle 4.7-inch guns with four twin 4-inch high-angle guns suitable for anti-aircraft fire. The anti-aircraft destroyers also carried one quad pom-pom and various 20mm and 0.50-caliber machine guns, and depth charges.

All destroyers of this class (HMS *Gurkha* (II) *, *Lance*, *Legion*, and *Lively*) were lost by mid-1942.⁷³⁷



Figure 397: L-class anti-aircraft destroyer HMS *Lively*⁷³⁸

The L-class anti-aircraft destroyer in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 398: L-class anti-aircraft destroyer in GWX

* The Royal Navy renamed HMS *Lorne* to HMS *Gurkha* (II) in honor of the Tribal-class destroyer HMS *Gurkha* lost off Norway on April 9, 1940.

⁷³⁷ "L-class," <http://www.uboard.net/allies/warships/class.html?ID=30>

⁷³⁸ "Class L," <http://www.warshipsww2.eu/lode.php?language=E&period=2&idtrida=92>

N-class destroyer

Historical Background

The British began building eight N-class destroyers in 1940 as a repeat of the J- and K- class destroyers. These ships were smaller than Tribal-class destroyers were, with fewer guns but with heavier torpedo armament, but were among Britain's most modern and powerful destroyers until the Battle-class destroyers began commissioning in late 1944.

The N-class destroyers were British property throughout the war, but five were manned by Australian crews (HMAS *Napier*, *Nepal*, *Nestor*, *Nezam*, and *Norman*), two by the Netherlands government-in-exile (HNMS *Van Galen* and *Tjerk Heddes*), and one by the Polish government in exile (ORP *Piorun*, or "Thunderbolt"). All of these destroyers except HMAS *Nestor* survived the war, returning to British control at its conclusion.⁷³⁹

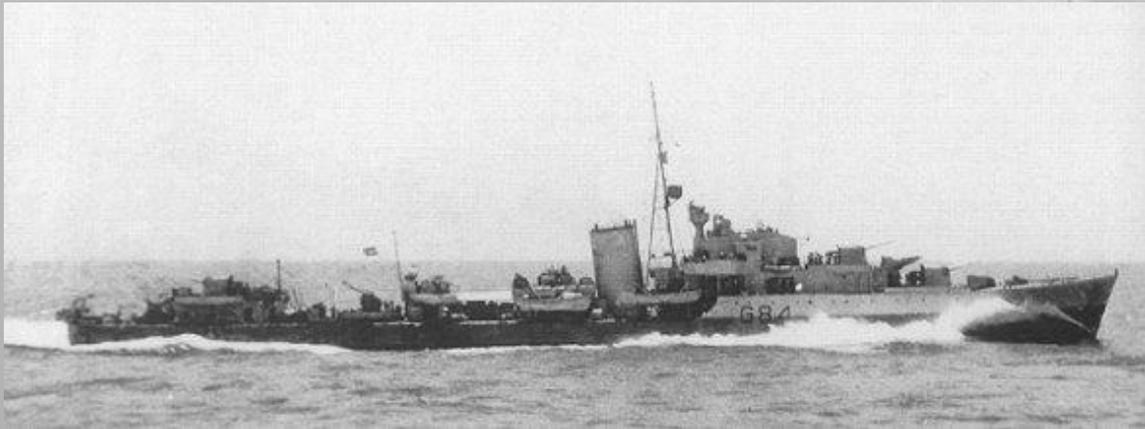


Figure 399: N-class destroyer HNMS *Van Galen* (ex-HMS *Noble*)⁷⁴⁰

The N-class destroyer in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 400: N-class destroyer in GWX

⁷³⁹ "J, K, and N-class destroyer," http://en.wikipedia.org/wiki/N_class_destroyer

⁷⁴⁰ "World War II Unit Histories,"

http://www.unithistories.com/units_index/default.asp?file=../units_dutch/navy_destroyers.asp

Q&R-class destroyer

Historical Background

The Q- and R-class destroyers commissioned in 1941-1942 and comprised 16 of the 112 destroyers Britain built under the War Emergency Program. The Royal Navy called them “utility” destroyers because they were not as effective as the full-size Tribal-class destroyers were, but they were cheaper and could be built more quickly at a time when the British needed every escort vessel they could find.⁷⁴¹

Britain lost two Q-class destroyers during the war and transferred two to Australia. Britain transferred one to the Netherlands after the war, and the remaining three to Australia, which converted them into Type-15 and -16 ASW frigates when post-war submarines proved faster under water than wartime ASW frigates, corvettes, and sloops had been on the surface. Britain converted four R-class destroyers to Type-15 ASW frigates for the same reason.⁷⁴²



Figure 401: Q-class destroyer HMS *Queenborough*⁷⁴³

The Q&R-class destroyer in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 402: Q&R-class destroyer in GWX

⁷⁴¹ “War Emergency Programme,” http://en.wikipedia.org/wiki/War_Emergency_Programme_destroyers

⁷⁴² “Type 15 Frigate,” http://en.wikipedia.org/wiki/Type_15_frigate

⁷⁴³ “HMS *Queenborough*,” <http://www.uboat.net/allies/warships/ship/4501.html>, courtesy of uboat.net

S&T-class destroyer

Historical Background

Britain commissioned the S- and T-class destroyers in 1942-1943, comprising 16 of the 112 destroyers Britain built under the War Emergency Program. The Royal Navy called them “utility” destroyers because they were not as effective as the full-size Tribal-class destroyers were, but they were cheaper and could be built more quickly at a time when the British needed every escort vessel they could find.

Britain transferred HMS *Shark* and *Success* to the Norwegian government-in-exile where they served as *Svenner* and *Stord*, respectively.⁷⁴⁴ The British converted the T-class destroyers after the war into Type-15 and -16 ASW frigates when post-war submarines proved faster under water than wartime ASW frigates, corvettes, and sloops had been on the surface.⁷⁴⁵



Figure 403: S-class destroyer HMS *Success*, later transferred to Norway as HNoMS *Stord*⁷⁴⁶

The S&T-class destroyer in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 404: S&T-class destroyer in GWX

⁷⁴⁴ “War Emergency Programme,” http://en.wikipedia.org/wiki/War_Emergency_Programme_destroyers

⁷⁴⁵ “Type 15 Frigate,” http://en.wikipedia.org/wiki/Type_15_frigate

⁷⁴⁶ Photo credit: “HNoMS *Stord*,” <http://uboat.net/allies/warships/ship.html?ID=5413>, courtesy of uboat.net

Town-class destroyer

Historical background

The Anglo-American Destroyers for Bases Agreement of September 1940 transferred 50 destroyers from the U.S. Navy to the Royal Navy in exchange for basing rights in British possessions in the Western Hemisphere. These destroyers were of the *Wickes*, *Caldwell*, and *Clemson* classes, with the *Caldwell*- and *Wickes*-class destroyers built in 1917-1918 and the *Clemson* class built from 1919 to 1922; the British considered all these ship classes “Town-class” destroyers regardless of their original class type. These destroyers were similar in their “flush deck” configuration and in having four smokestacks, whereas subsequent destroyers had split-level decks and two or three smokestacks.⁷⁴⁷

The Royal Navy subsequently transferred several of the 50 destroyers to the Royal Canadian Navy, the Dutch and Norwegian governments-in-exile, and to the Soviet Navy. Eight of these ships were lost in action, the most famous of which was HMS *Campbeltown* (ex-USS *Buchanan*), an ex-*Wickes*-class destroyer that rammed and destroyed the Normandie Dock in St. Nazaire as part of Operation *Chariot* on March 28, 1942, thus denying to the battleship *Tirpitz* the services of the only dry dock in western Europe capable of holding her.⁷⁴⁸



Figure 405: Town-class destroyer HMS *Broadway* (ex-Clemson-class USS *Hunt*, DD-194)⁷⁴⁹

The Town-class destroyer in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 406: Town-class destroyer in GWX

⁷⁴⁷ “Town class destroyer,” http://en.wikipedia.org/wiki/Town_class_destroyer

⁷⁴⁸ “Operation *Chariot*,” http://en.wikipedia.org/wiki/Operation_Chariot

⁷⁴⁹ Photo source: <http://en.wikipedia.org>.

Captain-class frigate

Historical background

The Captain-class frigates were U.S.-built *Evarts* and *Buckley*-class destroyer escorts sent to Britain under terms of the Lend-Lease.⁷⁵⁰ The U.S. sent 32 *Evarts*-class and 46 *Buckley*-class destroyer escorts to Britain starting in 1943, seven of which were lost in action during the war.⁷⁵¹



Figure 407: Captain-class frigate *Thornborough* (GWX Captain II-class)⁷⁵²

The Captain-class frigate in GWX

GWX models the *Evarts*-class destroyer escorts as “Captain I”-class frigates, and the *Buckley*-class destroyer escorts as “Captain II”-class frigates. These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 408: “Captain I”-class frigate in GWX



Figure 409: “Captain II”-class frigate in GWX

⁷⁵⁰ “Captain-class frigate,” http://en.wikipedia.org/wiki/Captain_class_frigate

⁷⁵¹ “Captain class,” <http://uboat.net/allies/warships/class.html?ID=234&navy=HMS>

⁷⁵² Photo source: <http://uboat.net/allies/warships/ship/5679.html>, courtesy of uboat.net

River-class frigate

Historical background

Britain designed its River-class frigates to have the ASW and convoy defense capabilities of the Black Swan-class sloops while being less expensive and easier to produce in large numbers, displacing from 1370 to 1545 tons, with a top speed of 20 knots. These ships carried two to four 4-inch guns, a hedgehog launcher, and at least 50 depth charges; frigates serving in the Atlantic focused on ASW capabilities, carrying four twin-20mm anti-aircraft guns and 150 depth charges, while those in the Pacific had heavier anti-aircraft armament: three 40mm and two twin-20mm anti-aircraft guns, with only 50 depth charges.⁷⁵³

The River-class frigates were highly successful convoy escorts: Britain built 151 River-class frigates, including two purchased by the U.S.: USS *Asheville* (PF-1) and *Natchez* (PF-2).⁷⁵⁴ Four ships of this class were lost during the war: HMCS *Valleyfield* and HMS *Itchen*, *Mourne*, and *Tweed*.⁷⁵⁵



Figure 410: River-class frigate HMS *Swale*⁷⁵⁶

The River-class frigate in GWX

GWX replaces the stock *Silent Hunter III* River-class frigate model and updates its ASW sensors and damage characteristics consistent with the GWX mod.



Figure 411: River-class frigate in GWX

⁷⁵³ "River class frigate," http://en.wikipedia.org/wiki/River_class_frigate

⁷⁵⁴ "Frigates," <http://www.uboot.net/allies/warships/types.html?type=Frigate>

⁷⁵⁵ "River Class," <http://www.uboot.net/allies/warships/class.html?ID=5>

⁷⁵⁶ Photo source: "River class frigate," http://en.wikipedia.org/wiki/River_class_frigate

Colony-class frigate

Historical background

The Colony-class frigates were U.S. [Tacoma-class frigates](#) (themselves near copies of the [River-class frigate](#)) provided to the Royal Navy under Lend-Lease. The major differences changes from the River-class frigates were the use of 3-inch guns, heavier anti-aircraft armament, and single pole mast in place of the 4-inch guns and tripod mast found on the River-class frigates. The U.S. built the Colony-class frigates using merchant marine shipyards and standards rather than naval shipyards. This allowed the rapid construction of 21 Colony-class frigates, but these ships had somewhat less structural strength than the River-class frigates as a result.⁷⁵⁷

All of the Colony-class frigates survived the war and returned to U.S. control. A few of these ships ended up in South American navies; for example, HMS *Caicos* became ARA *Santissima Trinidad*.⁷⁵⁸

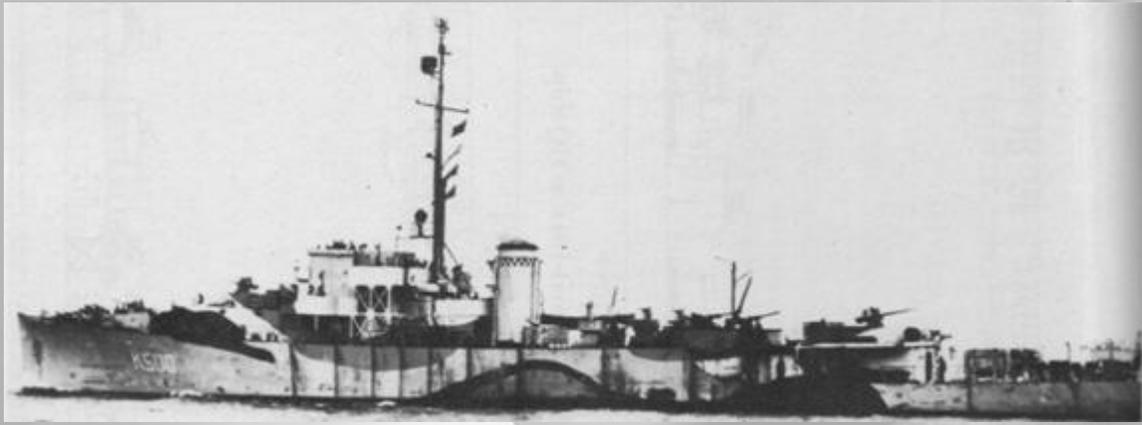


Figure 412: Colony-class frigate HMS *Anguilla*, ex-USS *Hallowell* (PF-72)⁷⁵⁹

The Colony-class frigate in GWX

These ships will appear as lone ASW patrollers, as convoy escorts, and when called by scripted events.



Figure 413: Colony-class frigate in GWX

⁷⁵⁷ "PF-1 *Tacoma*," <http://www.globalsecurity.org/military/systems/ship/pf-1.htm>

⁷⁵⁸ "HMS *Caicos*," <http://www.navalhistory.org/archives/12/08077.htm>

⁷⁵⁹ Photo source: "Naval History," <http://www.navalhistory.org>, an Imperial War Museum photo from Peter Elliott, *Allied Escort Ships of World War II*

Isles-class minesweeping trawler

Historical background

The Royal Naval Patrol Service employed minesweeping trawlers to sweep aerially- and submarine-laid mines ahead of convoys in friendly coastal waters and in the approaches to Allied ports. The displaced just over 500 tons, had a maximum speed of 12 knots, and were armed with a 12-pounder (76mm) cannon, three 20mm antiaircraft guns, and depth charges. Britain and Canada built 168 Isles-class minesweeping trawlers in all, with 160 trawlers allocated to the Royal Navy.⁷⁶⁰ There were over 700 minesweeping trawlers of all types.⁷⁶¹

The Royal Navy lost 12 Isles-class minesweeping trawlers during the war; Britain and Canada sold off the remainder after the war.



Figure 414: Isles-class minesweeping trawler HMCS *Anticosti*⁷⁶²

The Isles-class minesweeping trawler in GWX

The Isles-class minesweeping trawler in GWX can appear in a minesweeping configuration with a winch and paravane on the stern, or in an ASW configuration with depth charges.



Figure 415: Isles-class minesweeper in minesweeping configuration (left) and ASW configuration (right)

⁷⁶⁰ "Isles Class," <http://www.uboot.net/allies/warships/class.html?ID=339>

⁷⁶¹ "MS Trawlers," <http://www.uboot.net/allies/warships/types.html?type=MS+Trawler>

⁷⁶² Photo source: "HMCS *Anticosti*," <http://www.uboot.net/allies/warships/ship/2717.html>

Vosper Motor Torpedo Boat (MTB)

Historical background

The Royal Navy deployed Motor Torpedo Boats (MTBs) and Motor Gun Boats (MGBs) to patrol Allied coastal waters; intrude into coastal areas of occupied Europe to perform reconnaissance, land infiltrators, and communicate with Resistance forces; and harass enemy warships and shipping. MTBs carried two to four torpedoes to attack enemy surface ships, but few guns; MGBs carried more guns but no torpedoes: their only defenses were surprise, darkness, and speed.

The Royal Navy used several types of MTBs, including two types from Vosper: the Vosper Type 1 carried four torpedoes, a 20mm cannon, and two machine guns; the Type 2 carried two torpedoes, a 57mm cannon, a 20mm cannon, and two machine guns. By comparison, one late-war MGB carried two 57mm cannon, one twin-20mm cannon, two single 20mm cannon, and two twin machine guns.⁷⁶³



Figure 416: Vosper Type 2 Motor Torpedo Boat (MTB) 529⁷⁶⁴

The Vosper Motor Torpedo Boat in GWX

GWX models the Vosper Motor Torpedo Boat Mk. 1, which players will find on patrol anywhere in Allied-controlled waters, on raids into enemy controlled waters, and as called for by the campaign.



Figure 417: Vosper Type 1 Motor Torpedo Boat in GWX

⁷⁶³ "Motor Torpedo Boat," http://en.wikipedia.org/wiki/Motor_torpedo_boat

⁷⁶⁴ Photo source: "Chronik des Seekrieges 1939-1945," <http://www.wlb-stuttgart.de/seekrieg/44-07.htm>

RAF rescue launch

Historical background⁷⁶⁵

The British Power Boat (BPB) Company built 69 of its 63-foot Type 2 High Speed Launch (HSL), known as the “Whaleback,” for the RAF Air-Sea Rescue service from May 1940 through early 1942.



Figure 418: RAF High Speed Launch No. 124⁷⁶⁶

Three 500-horsepower gasoline engines gave a maximum speed of 36.5 knots and a range (at lower throttle settings) of 600 nautical miles. BPB built the HSL to withstand heavy seas, with six compartments divided by five watertight bulkheads for maximum flotation. Each launch had a number of radios, climbing nettings and rubber rafts to assist fliers into the boat, and a sick bay capable of holding five patients on litters. The boats initially had two single 0.303-cal machine gun turrets, but later carried armament of up to two twin 0.50-cal machine gun turrets, two twin 0.303-cal machine guns, and a 20mm cannon.

These boats were responsible for rescuing hundreds of downed Allied flyers in the English Channel and the North Sea, the Mediterranean, and the Indian Ocean. Enemy fire destroyed eleven HSL during the war, as they were armed vessels and therefore legitimate targets.

The RAF rescue launch in GWX

Players can find these boats in and around the English Channel and the North Sea during the Battle of Britain, and less frequently near Allied ports in the Mediterranean and the Indian Ocean.



Figure 419: RAF High Speed Launch in GWX

⁷⁶⁵ John Pritchard, “RAF Whaleback HSL,” <http://www.dynagen.co.za/eugene/whale.html>;

“HSL No. 142 – 63-foot High Speed Launch,” http://www.bmpt.org.uk/boat_histories/HSL-142/

⁷⁶⁶ Photo credit: Donald Smith, RAF Marine Craft Historian. Used by permission.

AI-controlled submarines

Historical Background

The invention of the self-propelled torpedo by Charles Whitehead in 1866 was a serious threat to British seapower by the 1880's: any small boat within torpedo range (~1,000 yards) could sink the Royal Navy's largest battleship. Captain John "Jacky" Fisher RN helped counter the threat by developing quick-firing guns as the Royal Navy's Director of Naval Ordnance (1885-90) and torpedo boat destroyers ("destroyers") as Rear Admiral and Third Sea Lord (1892-93) to sink torpedo boats at a distance, but all of these were ineffective against the submarine developed by John Holland in 1898.⁷⁶⁷ This submarine had a gasoline engine for surface travel, electric engines for traveling submerged, and one torpedo tube.

The torpedo-armed submarine threatened the naval strategy Britain had used since the mid-18th century: close blockade, with warships stopping ships outside every enemy port. The U.S. Navy purchased its first submarine, USS *Holland*, from Holland's Electric Boat Company in 1900, and Britain built a squadron of five Holland submersible torpedo boats ("submarines") starting in 1901 to evaluate their effectiveness. Captain Reginald Bacon RN, who commanded the squadron and achieved decisive results in naval exercises in 1904, wrote, "The risks of allowing a large ship to approach ... a port [defended by submarines] are so great that I unhesitatingly affirm that in wartime it should never be allowed."⁷⁶⁸ The Third Sea Lord, Rear Admiral Sir Arthur Wilson, exemplified the mindset of the senior admirals:

*"[They are] underhand, unfair and damned un-English. They'll never be any use in war and I'll tell you why: I'm going to get the First Lord to announce that we intend to treat all submarines as pirate vessels in wartime and that we'll hang all the crews."*⁷⁶⁹



Figure 420: *Holland-class submarine HMS Holland 3 under weigh off Portsmouth*⁷⁷⁰

⁷⁶⁷ Robert K. Massie, *Dreadnought*.

⁷⁶⁸ Massie, *ibid*

⁷⁶⁹ "The Most Dangerous Service," <http://www.iwm.org.uk/upload/package/12/submarines/intro.htm>

⁷⁷⁰ Brayton Harris, "World Submarine History Timeline," <http://www.submarine-history.com/NOVAtwo.htm>

Sir John “Jacky” Fisher, now First Sea Lord and Vice Admiral, declined Wilson’s idea. Fisher believed the Royal Navy’s role was to sink enemy warships and did not care if submarines were underhand, unfair, or un-English: he only cared that they worked, and if they could sink the enemy then the Royal Navy should have them.⁷⁷¹ As Admiral Fisher wrote in 1904,

*“It is astounding to me, perfectly astounding, how the very best amongst us fail to realize the vast impending revolution in Naval warfare and Naval strategy that the submarine will accomplish!”*⁷⁷²

Admiral Fisher championed submarine construction, and by August 1914, Britain had the world’s largest submarine fleet, with 15 ocean-going and 47 coastal submarines. By the end of the war, there were 130 British submarines in service, after the loss of 56 submarines with 1,174 men.⁷⁷³

British submarine activities during World War I concentrated in the North Sea, the Baltic, and the Dardanelles. Britain adopted a “distant blockade” strategy even before *Kapitänleutnant* Weddigen in *U-9* showed the folly of a close blockade by sinking the armored cruisers *HMS Aboukir*, *Cressy*, *Hawke*, and *Hogue* in September-October 1914. Britain obtained Germany’s naval codes from Russia and kept its battle fleet in and around the British Isles to await a breakout by the German High Seas Fleet, while destroyers and submarines patrolled the North Sea: British submarines sank 18 U-boats and *HMS E31* managed to shoot down a low-flying Zeppelin in May 1916.⁷⁷⁴

Danish neutrality allowed British submarines to slip into the Baltic during World War I: operating from Russian bases, they paralyzed Baltic shipping traffic* until Germany introduced a convoy system in 1916.⁷⁷⁵ British submarines attacked the Dardanelles defenses after Turkey entered the war in November 1914; several of these penetrated into the Sea of Marmara and Constantinople harbor itself:

- *HMS B11* sank the Turkish coastal defense ship *Mesudiye* in the Dardanelles on December 13, 1914, for which her commander, Lt Norman Holbrooke, won the Victoria Cross
- *HMS E14* was the first Allied submarine to penetrate through the Dardanelles to the Sea of Marmara in April 1915, for which her commander, Lt Cdr E.C. Boyle, won the Victoria Cross
- *HMS E11* sank nine Turkish ships in one patrol of less than three weeks in May-June 1915 (for which her commander, Lt Cdr Martin Dunbar-Nasmith, won the Victoria Cross), and sank the pre-dreadnought battleship *Hayreddin Barbarossa* (ex-SMS *Kurfürst Friedrich Wilhelm*) in August 1915 as it moved to attack the Gallipoli landing site.⁷⁷⁶



Figure 421: E-class submarine *HMS E11* returns to Lemnos from the Sea of Marmara in June 1915⁷⁷⁷

⁷⁷¹ Massie, *Dreadnought*.

⁷⁷² Brayton Harris, “400 Years of Subs,” <http://www.pbs.org/wgbh/nova/lostsub/hist1900.html>

⁷⁷³ “Royal Navy Submarine Disposition, November 1918,” <http://www.gwpda.org/naval/fdrn0007.htm>;

“The First World War (1914-1918),” <http://www.iwm.org.uk/upload/package/12/submarines/ww1.htm>

⁷⁷⁴ “British submarines and the North Sea,” http://www.historylearningsite.co.uk/british_submarines_and_the_north.htm

* Fear of British submarines set loose in the Baltic was one of the reasons Germany invaded Denmark in 1940

⁷⁷⁵ “British submarines and the Baltic Sea,” http://www.historylearningsite.co.uk/british_submarines_and_the_balti.htm

⁷⁷⁶ “Ottoman or Turkish Navy,” <http://www.naval-history.net/WW1NavyTurkish.htm>

⁷⁷⁷ Photo source: Edward C. Whitman, “Daring the Dardanelles,” *Undersea Warfare*, Summer 2000, Vol 2 No. 4.

http://www.chinfo.navy.mil/NAVPALIB/CNO/N87/usw/issue_8/daring_dardanelles.html

Britain entered World War II with 58 submarines, the same number as Germany, divided primarily between short-ranged S- and U-class coastal submarines intended for use in the North Sea and in the Mediterranean, and the large T-class submarines intended for long-range operations in the Pacific.⁷⁷⁸ Britain deployed a force of 206 submarines during World War II, not counting “X-craft” midget submarines and “Chariot” manned torpedoes, losing 74 submarines with 3,142 men killed, and 359 men as prisoners of war.



Figure 422: U-class submarine HMS *United* (1944)⁷⁷⁹

British submarines operated primarily in Norwegian waters, the North Sea, the Mediterranean, and the Far East during World War II:

- Operations in Norwegian waters initially supported Allied forces in Norway, and afterwards on attacking merchant ships traveling between Norway and Germany.
- Operations in the North Sea and later, Occupied Europe focused on minelaying at the entrances to the Baltic and off German-controlled ports, and on interdicting German warships and U-boats to and from their bases.
- Operations in the Mediterranean focused on sinking merchant ships supplying Axis forces in North Africa.
- The loss of British naval bases in Southeast Asia precluded British submarine operations in the Pacific and generally restricted them to patrols in the Netherlands East Indies from bases in India and Ceylon until late in the war.⁷⁸⁰
- British submarines provided considerable support to clandestine operations along the coasts of Europe and Asia: landing Allied agents, supplying Resistance forces, towing midget submarines and “Chariot” manned torpedoes, transporting commando teams, and conducting pre-invasion beach reconnaissance.⁷⁸¹

⁷⁷⁸ “The Interwar Years,” <http://www.iwm.org.uk/upload/package/12/submarines/interwar.htm>

⁷⁷⁹ “Submarines,” <http://www.cyber-heritage.co.uk/ironclad/exp.htm>

⁷⁸⁰ “The Second World War,” <http://www.iwm.org.uk/upload/package/12/submarines/ww2.htm>

⁷⁸¹ “Clandestine Operations,” <http://www.iwm.org.uk/upload/package/12/submarines/clandestine.htm>

AI-controlled S-class Submarine

Historical background

Britain built 12 S-class submarines in the early 1930s to patrol the North Sea and the Mediterranean. They displaced 640 to 670 tons, had a maximum surface speed of about 14 knots and 10 knots submerged, and armament of six torpedo tubes with 12 torpedoes, and a 3-inch gun. The start of World War II prompted the construction of 50 “Improved” S-class submarines from 1940 through 1945. These submarines had a displacement of up to 872 tons and a maximum speed of about 15 knots and 8 knots submerged; some of these had an external stern torpedo tube (one torpedo, no reload) in addition to the six bow torpedo tubes with 12 torpedoes, and a 3- or 4-inch gun.⁷⁸²

Two of the 12 original S-class submarines (HMS *Seawolf* and *Sturgeon*) survived the war (*Sealion* was expended as a target in March 1945); *U-34* (*Kapitänleutnant* Wilhelm Rollmann) sank one of these boats, HMS *Spearfish*. Seven of the 50 “Improved” S-class submarines also were lost (HMS *Sahib*, *Saracen*, *Sickle*, *Simoom*, *Spendid*, *Stonehenge*, and *Syrtis*).⁷⁸³

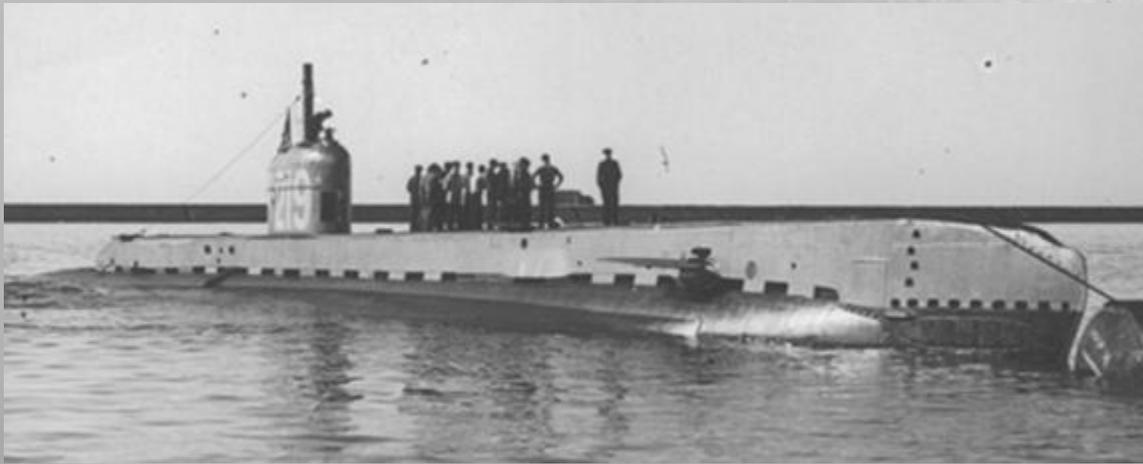


Figure 423: Improved S-class submarine HMS *Seraph*⁷⁸⁴

The British S-class submarine in GWX

The S-class submarine will appear on patrol in surface configuration anywhere in GWX.



Figure 424: British S-class submarine in GWX

⁷⁸² “S-class,” <http://uboaat.net/allies/warships/class.html?ID=52&navy=HMS>

⁷⁸³ “British Submarines of World War II,” <http://home.cogeco.ca/~gchalcraft/sm/index.htm>

⁷⁸⁴ Photo source: “Submarines,” <http://www.cyber-heritage.co.uk/ironclad/exp.htm>

AI-controlled T-class submarine

Historical background

Britain commissioned HMS *Triton* in 1937 as the first of 53 T-class submarines built to perform long-distance patrols in the Pacific in the event of war with Japan. They displaced about 1100 tons, had a maximum surface speed of about 15 knots and 9 knots submerged, armament of six internal and four to five external torpedo tubes (one torpedo, no reloads) with 16-17 torpedoes, and a 4-inch gun.

Britain lost 16 T-class submarines during the war: HMS *Talisman*, *Tarpon*, *Tempest*, *Terrapin*, *Tetrarch*, *Thames*, *Thistle* (sunk by U-4 under Oberleutnant z. S. Hans-Peter Hinsch), *Thorn*, *Thunderbolt*, *Tigris*, *Traveller*, *Triad*, *Triton*, *Triumph*, *Trooper*, and *Turbulent*.⁷⁸⁵



Figure 425: T-class submarine HMS *Terrapin* (note external bow torpedo tube opening)⁷⁸⁶

The T-class submarine in GWX

The T-class submarine will appear on patrol in surface configuration anywhere in GWX.



Figure 426: T-class submarine in GWX

⁷⁸⁵ “British Submarines of World War II,” <http://home.cogeco.ca/~gchalcraft/sm/index.htm>

⁷⁸⁶ Photo source: “British Submarines of World War II,” <http://home.cogeco.ca/~gchalcraft/sm/page20.html>

Greece

Pisa-class Armored Cruiser RHS Georgios Averof

Historical background⁷⁸⁷

The Orlando Shipyard in Livorno, Italy built the armored cruisers *Pisa* and *Amalfi* for the Italian government and a third, unnamed armored cruiser on speculation in 1906-1909. Greece bought the third cruiser and commissioned her in May 1911 as the RHS *Georgios Averof* (Γεώργιος Αβέρωφ). Her main armament consisted of two twin turrets with 234mm (9.2-inch) guns and four twin turrets with 190mm (7.5-inch) guns, with 3-inch and 37mm anti-aircraft guns added just before World War II. Her coal-fired boilers gave her a maximum speed of about 20 knots.

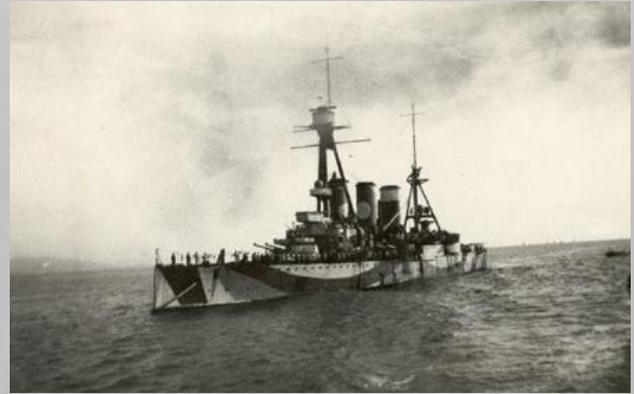


Figure 427: RHS *Georgios Averof*⁷⁸⁸

The RHS *Georgios Averof*, named for a Greek millionaire-philanthropist who bequeathed the money used to buy the ship, was the flagship of the Greek Navy and instrumental in defeating the Turkish Navy during the First Balkan War (1912-1913) and the Greco-Turkish War (1919-1923). Her crew disobeyed scuttling orders when Germany invaded in April 1941 and took her to Alexandria, Egypt; she performed convoy escort and patrol duties while stationed in Bombay (now called Mumbai), India though December 1942. She then served as Greek Navy headquarters in Port Said, Egypt until she returned to Greece in October 1944 bearing the Greek government-in-exile. She is now a museum in Faliron Bay, near Athens: every Greek Navy ship renders passing honors to the decommissioned *Georgios Averof*.

The *Pisa-class Armored Cruiser RHS Georgios Averof* in GWX

The *Georgios Averof* will conduct operations consistent with her historical deployments.



Figure 428: The RHS *Georgios Averof* in GWX

⁷⁸⁷ “Greek cruiser Georgios Averof,” http://en.wikipedia.org/wiki/Greek_cruiser_Georgios_Averof

⁷⁸⁸ Photo credit: The Battleship *G. Averof* Museum, <http://www.bsaverof.com>. Used by permission.

Italy

***Littorio*-class battleship**

Historical background

The *Littorio*-class battleships (RN *Littorio*, *Vittorio Veneto*, and *Roma*) were the Italian Navy's most modern battleships and fought in many battles during the war. They displaced over 41,000 tons and had a maximum speed of 31 knots, and were armed with nine 15-inch guns; 12 6-inch guns; and 12 90mm, 20 twin-37mm, and 30 twin-20mm antiaircraft guns.

After the armistice in September 1943, the Italians turned RN *Littorio* (renamed *Italia*) and *Vittorio Veneto* over to the Allies, who sent them to internment in the Great Bitter Lake within the Suez Canal. RN *Roma* blew up and sank on her way to internment when two Ruhrstahl SD 1400 X ("Fritz X") radio-controlled "smart bombs," launched from German Do-217 heavy bombers, hit her. **Note: GWX does not model the use of guided missiles or "smart bombs."**⁷⁸⁹

Historical note: *Littorio* is the Italian translation of the Latin word *lictor*, which was a magistrate's bodyguard in Roman times whose symbol of power and authority was the *fascis lictoriae*, an axe bound up in a bundle of birch sticks; the Italian Fascist Party adopted fasces as its symbol. The post-Mussolini Italian government renamed RN *Littorio* to RN *Italia* to erase its literal association with fascism.⁷⁹⁰



Figure 429: Italian *Littorio*-class battleship RN *Roma*⁷⁹¹

The *Littorio*-class battleship in GWX

GWX models each of the *Littorio*-class battleships as separate ships, with unique camouflage and minor equipment variations. They appear as themselves or as stand-ins whenever the campaign calls for an Italian battleship. The *Luftwaffe* will attack RN *Italia* (ex-*Littorio*), *Vittorio Veneto*, and *Roma* as they sail from La Spezia to Malta after the Italian surrender.



Figure 430: *Littorio*-class battleship RN *Littorio* in GWX

⁷⁸⁹ "*Littorio*-class battleship," http://en.wikipedia.org/wiki/Littorio_class_battleship

⁷⁹⁰ "Fasces," Wikipedia. <http://en.wikipedia.org/wiki/Fasces>; "Lictor," Wikipedia. <http://en.wikipedia.org/wiki/Lictor>

⁷⁹¹ Photo credit: Italian Ministry of Defense, <http://www.marina.difesa.it/storia/Almanacco/Parte02/Navi0216-02.htm>



Figure 431: *Littorio*-class battleship RN *Italia* (ex-*Littorio*)



Figure 432: *Littorio*-class battleship RN *Roma*



Figure 433: *Littorio*-class battleship RN *Vittorio Veneto* in GWX

***Zara*-class heavy cruiser**

Historical background

The Italians completed four *Zara*-class cruisers in 1931-1933: RN *Zara*, *Fiume*, *Gorizia*, and *Pola*. They displaced between 11,000 and 12,000 tons and had a maximum speed of 33 knots; they carried eight 8-inch (203mm) guns, six 3.9-inch guns, with four 40mm and eight 0.50-caliber (12.7mm) machine guns. During the Battle of Gaudo (Cape Matapan) in March 1941, a Swordfish torpedo bomber from HMS *Formidable* hit and crippled *Pola*. *Zara*, *Fiume*, and two destroyers turned back to guard *Pola* but were without radar: the radar-equipped British battleships HMS *Barham*, *Valiant*, and *Warspite* closed in at night and caught the three heavy cruisers and their escorts by surprise at point-blank range ... and then there was one. The Germans took control of RN *Gorizia* in La Spezia after the Italian surrender in September 1943; Italian frogmen on a “chariot” manned torpedo sank her in June 1944.⁷⁹²



Figure 434: Heavy cruiser RN *Zara* at the Battle of Punta Stilo (Calabria) in July 1940⁷⁹³

The *Zara*-class heavy cruiser in GWX

The *Zara*-class cruisers will appear at random and as called for by the campaign scripting



Figure 435: *Zara*-class heavy cruiser *Zara* in GWX

⁷⁹² “*Zara* class cruiser,” http://en.wikipedia.org/wiki/Zara_class_cruiser

⁷⁹³ Photo credit: Italian Ministry of Defense, <http://www.marina.difesa.it/storia/Almanacco/Parte04/Navi0420.htm>



Figure 436: *Zara-class heavy cruiser Fiume*



Figure 437: *Zara-class heavy cruiser Gorizia in GWX*



Figure 438: *Zara-class heavy cruiser Pola in GWX*

***Condottieri*-class light cruiser**

Historical background

The Italians deployed five types of these cruisers named after Italian military leaders (“*condottieri*”). These ships emphasized the ability to move rapidly along and between the east and west coast of Italy: the first were the *Alberto di Guissano*-class commissioned in 1931, which sacrificed almost all their armor for increased speed. The evolution of the next three series (*Luigi Cadorna*-, *Raimondo Montecuccoli*-, and *Duca d’Aosta*-class) increased armor (and engine power to maintain speed); the fifth and final generation *Duca degli Abruzzi*-class had 10 six-inch guns and displaced 11,350 tons with a maximum speed of 34 knots. The final ship of the *Duca degli Abruzzi* class, RN *Giuseppe Garibaldi*, was fitted with surface-to-air guided missiles in 1953, and decommissioned in 1972.⁷⁹⁴

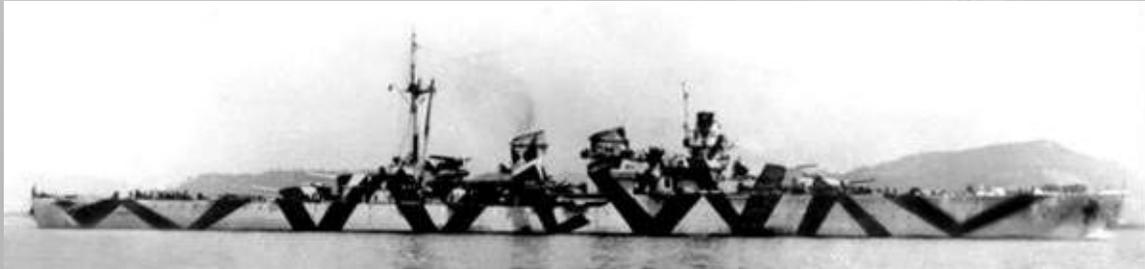


Figure 439: *Condottieri*-class light cruiser *Luigi di Savoia Duca degli Abruzzi*⁷⁹⁵

The Italian Condottieri-class light cruiser in GWX

GWX models RN *Luigi di Savoia Duca degli Abruzzi* and RN *Giuseppe Garibaldi* of the *Duca degli Abruzzi* series of the *condottieri*-class cruisers to represent the entire class. These ships will appear as Axis ships prior to the Italian surrender in September 1943 and as Allied ships after the surrender.



Figure 440: The *Condottieri*-class light cruiser *Luigi di Savoia Duca degli Abruzzi* in GWX



Figure 441: The *Condottieri*-class light cruiser *Giuseppe Garibaldi* in GWX

⁷⁹⁴ “*Condottieri* class cruiser,” http://en.wikipedia.org/wiki/Condottieri_class_cruiser

⁷⁹⁵ Photo credit: Italian Ministry of Defense, <http://www.marina.difesa.it/storia/Almanacco/Parte04/Navi0426.htm>

***Motoscafo armato silurante* (MAS)**

Historical background

The Italians contracted with the *Società Veneziana Automobili Navali* (SVAN) in 1915 to build the first of twenty-two armed motorboats (*Motorbarca Armata SVAN*, or MAS), which were highly successful during World War I, sinking the Austro-Hungarian pre-dreadnought battleship SMS *Wien* (“Vienna”) and dreadnought battleship SMS *Szent István* (“Saint Stephen”). The Italian Navy began developing a new generation of these boats in 1935 to oppose the stronger French or British navies, calling the new boat the *motoscafo* (pl. *motoscafi*) *armato silurante* (“armed torpedo motorboat”) or a *motoscafo anti sommergibile* (“anti-submarine motorboat”), each known as “MAS.”⁷⁹⁶



Figure 442: *Motoscafi armati siluranti* (MAS) stationed in the Black Sea⁷⁹⁷

The *Motoscafo armati siluranti* (MAS) in GWX

Players will find the MAS on patrol anywhere in Italian-controlled waters, on raids into enemy controlled waters, and as called for by the campaign.



Figure 443: *Motoscafo armato silurante* (MAS) in GWX

⁷⁹⁶ Barry Taylor, “Naval Weaponry: Italy’s MAS Torpedo Boats,”

http://www.historynet.com/wars_conflicts/military_technology/3033126.html?page=1;

“Naval Craft: M.A.S. and Assault Craft,” <http://www.regiamarina.it/masengl.htm>

⁷⁹⁷ Photo source: Italian Ministry of Defense, <http://www.marina.difesa.it/storia/storianavale/Storia08.asp>

AI-controlled *Argonauta*-class submarine

Historical background

Italy began deploying the first of five series (*Argonauta*, *Sirena*, *Perla*, *Adua*, and *Platino*) of its “600”-class coastal submarines in the late 1920s for use in the Mediterranean Sea, starting with R.Sm.g. *Argonauta* (“Argonaut”) in 1932. The six *Argonauta*-class submarines (*Argonauta*, *Fisalia*, *Jalea*, *Jantina*, *Medusa*, *Salpa*, and *Serpente*) displaced about 666 tons, had a maximum surface speed of 14 knots and 8 knots submerged, armament of four bow torpedo tubes and six aft tubes with 12 torpedoes, and a 4-inch deck gun.⁷⁹⁸

The only *Argonauta*-class submarine to survive until the Italian surrender was R. Sm.g. *Jalea*.



Figure 444: Italian “600”-class (*Argonauta* series) submarine *Jantina* (Spring 1941)⁷⁹⁹

The *Argonauta*-class submarine in GWX

The *Argonauta*-class submarine will appear in surface configuration anywhere in the Mediterranean Sea in GWX.



Figure 445: *Argonauta*-class submarine in GWX

⁷⁹⁸ Attilio Duilio Ranieri, “R. SMG. Argonauta,” http://www.regiamarina.net/subs/submarines/argonauta/argonauta_us.htm

⁷⁹⁹ Photo source: “R. Sm.g. *Jantina*,” <http://digilander.libero.it/carandin/jantina.htm>

Japan

***Ch 13*-class sub chaser**

Historical background

The Japanese commissioned 50 *CH-13* class sub chasers to escort small coastal convoys, but these ships ended up escorting ocean-going convoys when destroyers became scarce due to wartime losses.⁸⁰⁰

The *Ch 13* sub chaser in GWX

The *Ch 13*-class sub chaser in GWX sails individually, as a convoy escort, or defending and patrolling Japanese harbors. A *Ch 13*-class sub chaser will escort you through the harbor defenses of Japanese-controlled ports.



Figure 446: *Ch 13*-class sub chaser in GWX

⁸⁰⁰ Jentschura, Hansgeorg, Jung, Dieter, and Mickel, Peter. *Warships of the Imperial Japanese Navy*. Naval Institute Press: 1986.

Soviet Union

***Kirov*-class (Project 26) light cruiser**

Historical Background

The Soviet Union laid down the first *Proyekt 26* (Проект 26, “Project 26”) *kreyser* (крейсер, “cruiser”) in 1935. These ships displaced 7756 tons, with a maximum speed of about 36 knots. Their main armament consisted of 3 triple 180mm (7.1-inch) gun turrets that provided a measure of superiority over the six-inch guns carried by light cruisers of other countries; six to eight 100mm (3.9-inch) antiaircraft guns, and a number of 37mm antiaircraft guns and 12.7mm (0.50-caliber) machine guns; and two triple torpedo launchers.

There were two ships in this class: *Kirov* (“Киров”) and *Voroshilov* (“Ворошилов”), both of which survived the war. *Kirov* served in the Baltic Fleet and *Voroshilov* served in the Black Sea Fleet.⁸⁰¹



Figure 447: *Kirov*-class (Project 26) light cruiser *Kirov* (“Киров”)⁸⁰²

The *Kirov*-class (Project 26) light cruiser in GWX

The *Kirov*-class heavy cruisers will appear at random and as called for by the campaign scripting.



Figure 448: *Kirov*-class light cruiser in GWX

⁸⁰¹ “*Kirov*-class cruiser,” http://en.wikipedia.org/wiki/Kirov_class_cruiser

⁸⁰² Photo source: “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru>

***Maxim Gorky*-class (Project 26-bis) light cruiser**

Historical Background

The Soviet Union laid down the first *Proyekt 26-bis* (Проект 26-бис, “Project 26-bis”) *kreyser* (крейсер, “cruiser”) in 1938 as a “second edition” of the Project 26 light cruisers, displacing 8454 tons and having a maximum speed of about 36 knots. Their main armament consisted of 3 triple 180mm (7.1-inch) gun turrets; six to eight 100mm (3.9-inch) and a number of 85mm, 45mm, 37mm antiaircraft guns and 12.7mm machine guns; and two triple torpedo launchers.

The four ships in this class were *Maxim Gorky* (“Максим Горький”) in the Baltic Fleet, *Molotov* (“Молотов”) in the Black Sea Fleet, and *Kalinin* (“Калинин”) and *Kaganovich* (“Каганович”) in the Pacific Fleet. All of them survived the war, but in 1956 *Molotov* was renamed *Slava* (“Слава”) and *Kaganovich* was renamed *Petropavlovsk* (“Петропавловск”) when their namesakes (the Soviet foreign minister and one of Stalin’s old cronies, respectively) fell from favor after Stalin’s death.⁸⁰³

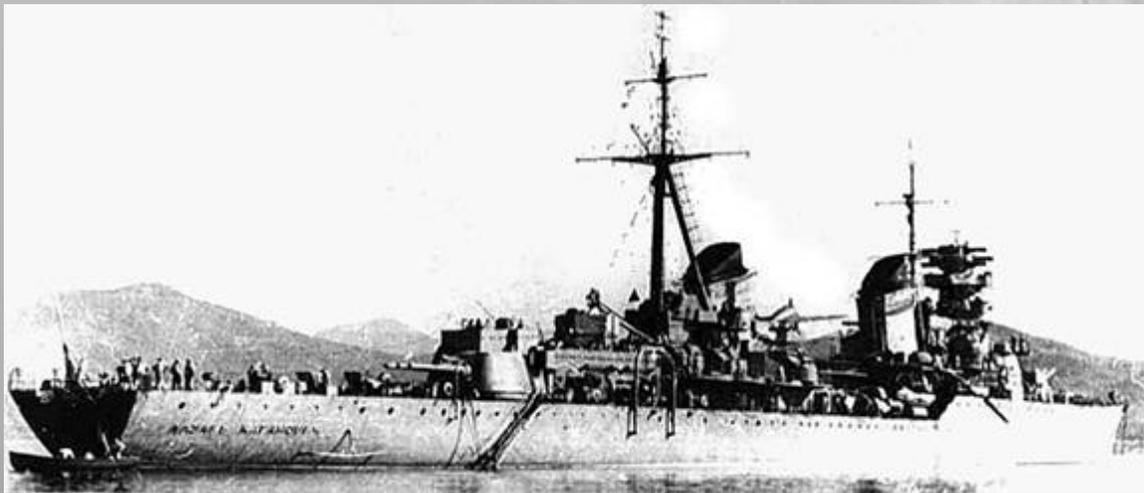


Figure 449: Project 26-bis light cruiser *Kaganovich* (“Лазарь Каганович”) in 1944⁸⁰⁴

The *Maxim Gorky*-class (Project 26-bis) heavy cruiser in GWX

The *Maxim Gorky*-class heavy cruisers will appear at random and as called by the campaign scripting.



Figure 450: *Maxim Gorky*-class light cruiser in GWX

⁸⁰³ “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru>

⁸⁰⁴ “Kaganovich,” <http://en.wikipedia.org/wiki/Kaganovich>

***Storozhevoy*-class (Project 7U) destroyer**

Historical background

The Soviets “improved” their *Proyekt 7* (Проект 7, “Project 7”) *eskadrenny minonostsy* (эскадренные миноносцы, “destroyers”) in mid-construction to correct a design flaw, deemed them *uluchshenny* (улучшенный, “improved”) and called them *Proyekt 7U* (Проект 7-У). They had four 130mm guns; 76mm, 37mm, and 12.7mm anti-aircraft guns; six torpedo tubes; two Y-guns and 30 depth charges.⁸⁰⁵ The lead ship, *Storozhevoy* (Сторожевой, “Vigilant”) commissioned in October 1940 followed by 17 more in either the Baltic or the Black Sea; the Soviets lost half of these, with *Soobrazitelny* (Сообразительный, “Sharp”) the only survivor of its class from the Black Sea Fleet.⁸⁰⁶

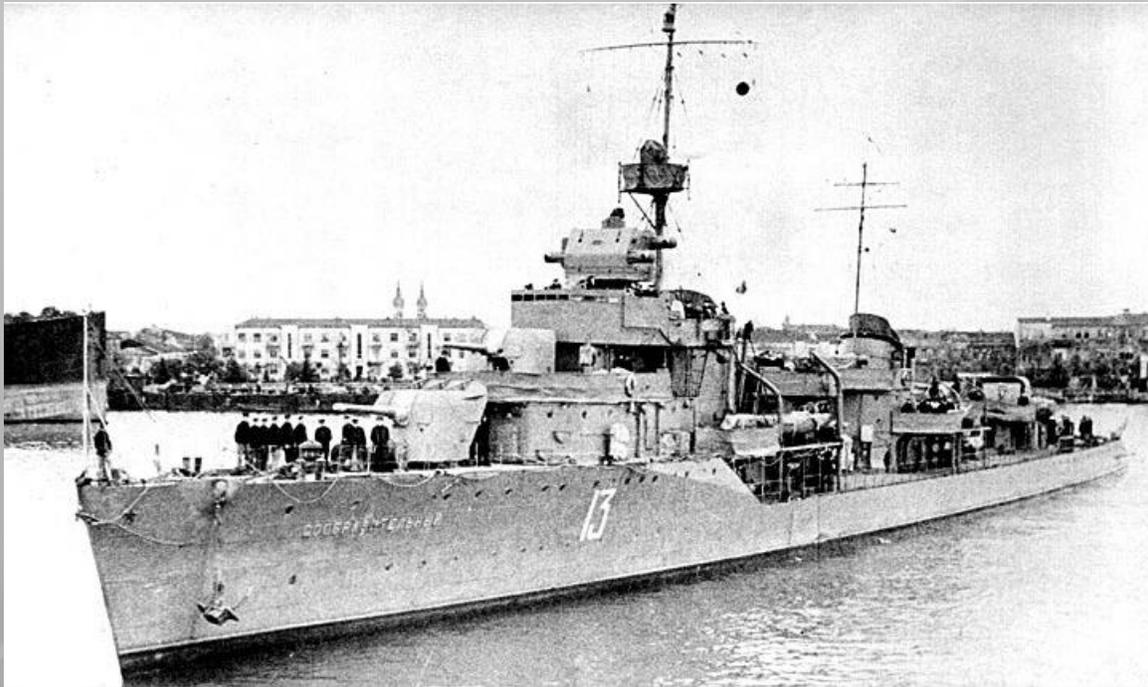


Figure 451: Soviet Project 7U destroyer *Soobrazitelny* (Сообразительный, “Sharp”)⁸⁰⁷

The *Storozhevoy*-class (Project 7U) destroyer in GWX

The *Storozhevoy*-class destroyer in GWX appears at random, on ASW patrol, and as scripted.



Figure 452: *Storozhevoy*-class (Project 7U) destroyer in GWX

⁸⁰⁵ “Soviet destroyer type 7 and 7-U,” http://eng.pt-boats.net/museum/museum_12.html

⁸⁰⁶ “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru> (site is in Russian)

⁸⁰⁷ Photo source: “Black Sea Fleet,” http://flot.sevastopol.info/photos/photo_esminets/soobrazitelny_01.htm

***Novik*-class destroyer**

Historical Background

Imperial Russia launched the first *Novik* (Новик)-class *eskadrenny minonostsy* (эскадренные миноносцы, “destroyers”) in 1912. They were the most advanced destroyers in the world at the time, with a speed of over 37 knots, but were obsolescent by the start of World War II. They displaced about 1,800 tons and had a maximum speed of 32 knots. Their armament included four 4-inch guns, one 76mm anti-aircraft gun, and three 45mm anti-aircraft guns.

The Soviet Navy gave all 17 of these ships “revolutionary” names starting in 1922: for example, *Novik* became *Yakov Sverdlov* (“Яков Свердлов”); eight of these ships were lost during the war.⁸⁰⁸



Figure 453: *Novik*-class destroyer *Novik* (Новик)⁸⁰⁹

The *Novik*-class destroyer in GWX

The *Novik*-class destroyer in GWX appears at random, on ASW patrol, and as scripted.



Figure 454: *Novik*-class destroyer in GWX

⁸⁰⁸ “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru>

⁸⁰⁹ Photo source: “*Voyenno-Morskoi Flot Rossii* (Военно-морской флот России, “The Navy of Russia”), <http://www.navy.ru/history/io5.htm>

***Uragan*-class destroyer escort**

Historical background

The *Uragan* (Ураган, “Hurricane”)-class *storozhevoy korabl’* (сторожевые корабль, “frigate” or “destroyer escort”)⁸¹⁰ was developed in the late 1920s. Its armament consisted of two 102mm (4-inch) guns, two 37mm to 45mm cannon, and three to five 12.7mm (0.50-caliber) machine guns; three torpedo tubes; and two depth charge racks and two Y-guns with 20 depth charges. It had a maximum speed of 29 knots.⁸¹¹ The lead ship of this class, *Uragan*, commissioned in December 1930; 18 frigates of this class served during World War II.



Figure 455: Soviet escort ship *Uragan*⁸¹²

The *Uragan*-class destroyer escort in GWX

The *Uragan*-class destroyer escort in GWX stands in for all Soviet frigates as called for in the campaign.



Figure 456: Soviet *Uragan*-class destroyer escort in GWX

⁸¹⁰ “Soviet and U.S. ship designations,”

http://www.armscontrol.ru/atmtc/Arms_systems/Navy/Ships_designation_compara_USSR_USA.htm

⁸¹¹ “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru> (site is in Russian)

⁸¹² Photo source: “Warships of World War II,” <http://www.warshipsw2.eu/>

Sub Chaser

Historical background

The Soviets produced several types of *malye ohotniki* (малые охотники, “small [submarine] hunters” or “sub chasers”) before and during World War II for use in shallow coastal waters where an enemy submarine could not dive deep to avoid depth charges. Overall production of these ships was in the hundreds.⁸¹³

The Sub Chaser in GWX

The sub chaser in GWX is a generic sub chaser that stands in for all the various types and variations of Soviet *malye ohotniki* during World War II.

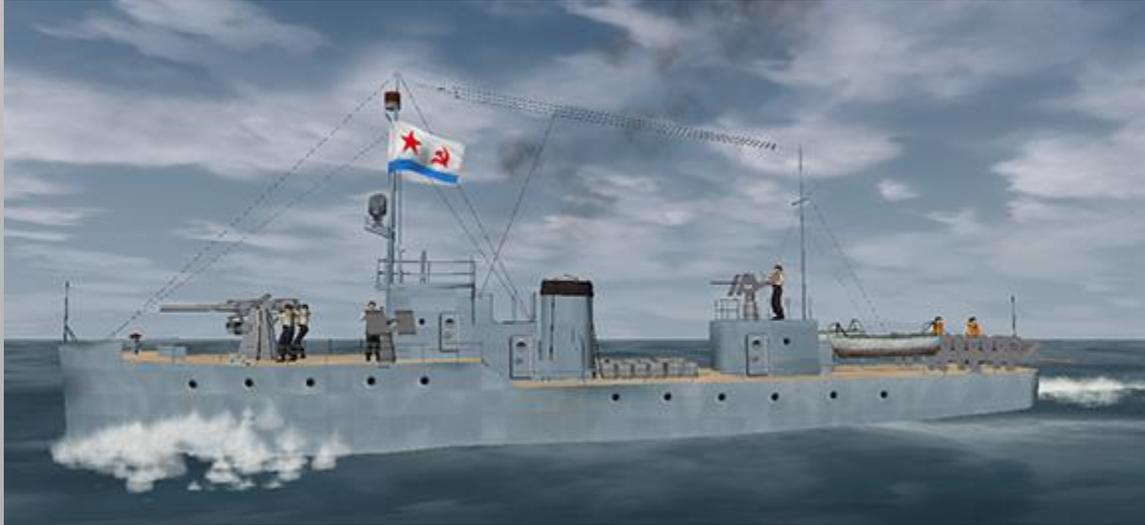


Figure 457: Sub chaser in GWX

⁸¹³ “Small hunters MO-4 and MO-D3,” http://eng.pt-boats.net/museum/museum_9.html

AI-controlled *Shchuka*-class submarine

Historical Background

The Soviet Union commissioned the *Shchuka*, (Щука, “Pike”) in 1930 as its first Щ (“Shch”)-class *podvodnaya lodka* (подводная лодка, “underwater boat,” or “submarine”): the class identification letter came from the first letter of the name of the first boat in the class. The Soviets built seven *serii* (серии, “series”) of *Shchuka*-class *srednikh* (средних, “medium”) submarines (III, V, V-bis, V-bis-2, X, and X-bis) with each series having minor improvements over its predecessor. Surface displacement ranged from about 600 tons (III series) to over 800 tons (X series), with a maximum speed of 13 knots and 6-8 knots submerged; four bow and two stern torpedo tubes with 10 torpedoes; and two 45mm guns.⁸¹⁴

The Soviet Union lost 40 percent of its *Shchuka*-class submarines during the war: over 70 percent of the 48 *Shchuka*-class submarines assigned to the Black Sea, Baltic, or Northern fleets were lost, but the Pacific Fleet lost only one submarine (Щ-321) out of 38, and that to an accident.⁸¹⁵



Figure 458: *Shchuka*-class submarine *Kumzha* (Кумжа, “Brown Trout”) (Щ-311)⁸¹⁶

The AI-controlled *Shchuka*-class submarine in GWX

The *Shchuka*-class submarine will appear in surface configuration anywhere in the Baltic, Black Sea, or Arctic waters



Figure 459: *Shchuka*-class submarine in GWX

⁸¹⁴ “*Rossiyskiy Podvodny Flot* (Российский Подводный Флот, “Russian Submarine Fleet”), <http://submarine.id.ru/sub.php?sh1>

⁸¹⁵ “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru/>

⁸¹⁶ Photo source: “Ships of the USSR Military Sea Fleet before and during World War II,” <http://sovnavy-ww2.by.ru/>

United States

***Essex*-class aircraft carrier**

Historical background

The U.S. Naval Construction Act of 1938 authorized the construction of 10 *Essex*-class aircraft carriers as part of the pre-war expansion of the United States Navy.* These ships formed the core of the Allied naval offensive against Japan starting in early 1943, each with an air group of 90 aircraft. Their gunnery armament included 12 dual-purpose 5-inch guns, 17 quad-40mm cannon, and 65 20mm cannon.

All 10 *Essex*-class carriers survived World War II, though two (USS *Bunker Hill* and USS *Franklin*) were heavily damaged by Japanese air attacks. Four of these ships are currently museums: USS *Hornet* in Alameda, California; USS *Yorktown* in Charleston, South Carolina; USS *Lexington* in Corpus Christi, Texas, and USS *Intrepid* in New York City, New York.⁸¹⁷



Figure 460: *Essex*-class aircraft carrier USS *Hornet* (CV-12)⁸¹⁸

The *Essex*-class aircraft carrier in GWX

An *Essex*-class aircraft carrier will appear whenever the campaign calls for a U.S. aircraft carrier, on training cruises off the East Coast of the U.S., and in transit to the Pacific Ocean *via* the Panama Canal.



Figure 461: The *Essex*-class aircraft carrier in GWX

* The U.S. Navy named *Essex*, *Intrepid*, and *Bon Homme Richard* after Continental Navy warships of the American Revolutionary War; *Franklin*, *Bunker Hill*, and *Bennington* after battles in American history; and *Yorktown*, *Hornet*, *Lexington*, and *Wasp* after U.S. aircraft carriers sunk in the first year of the war in the Pacific.

⁸¹⁷ "Dictionary of American Fighting Ships," <http://www.history.navy.mil/danfs/>

⁸¹⁸ U.S. Naval Historical Center #80-G-K-14466, <http://www.history.navy.mil>

***Iowa*-class battleship**

Historical background

The Naval Construction Act of 1938 authorized the design and construction of the *Iowa*-class battleships as part of a massive pre-war expansion of the United States Navy. These battleships were longer and faster than the previous *South Dakota*-class battleships, and were arguably the best battleships ever built. They had radar-controlled 16-inch guns and heavy anti-aircraft armament: 20 dual-purpose 5-inch guns, 20 quad-40mm cannon, and 49 20mm cannon, and could travel in excess of 30 knots. There were four *Iowa*-class battleships: *Iowa*, *New Jersey*, *Wisconsin*, and *Missouri*.

These ships were built on the U.S. east coast and spent time in the Atlantic before going to the Pacific

- USS *Iowa* served in the Atlantic from February 1943 until January 1944; she carried President Roosevelt to Casablanca on his way to the Teheran Conference in November 1943
- USS *New Jersey* was in the western Atlantic and the Caribbean from May 1943 until early 1944
- USS *Wisconsin* was in the Caribbean from April 1944, until late September 1944
- USS *Missouri* commissioned in November 1944 and went directly to the Pacific

The *Iowa*-class battleships survived World War II with little damage and now are memorials or museums: USS *Missouri* is at Pearl Harbor, Hawaii; USS *Wisconsin* is in Norfolk, Virginia; USS *New Jersey* is in Camden, New Jersey; while USS *Iowa* awaits its final deployment to Stockton, California.⁸¹⁹



Figure 462: *Iowa*-class battleship USS *Missouri* (BB-61), with USS *Alaska* (CB-1) in background (1944)⁸²⁰

The *Iowa*-class battleship in GWX

U-boat commanders can find an *Iowa*-class battleship during training cruises off the U.S. East Coast and other historical locations and activities when the campaign or a random event calls for a U.S. battleship.



Figure 463: The *Iowa*-class battleship in GWX

⁸¹⁹ "Dictionary of American Fighting Ships," <http://www.history.navy.mil/danfs/>;

"The Battleship Page," <http://www.battleship.org/>

⁸²⁰ U.S. Naval Historical Center #80-G-K-4523, <http://www.history.navy.mil>

***Nevada*-class battleship**

Historical background

The U.S. began building the *Nevada*-class battleships (USS *Nevada* and USS *Oklahoma*) in 1912 as part of an effort to match European battleship construction. Both battleships commissioned in 1916 and were the first U.S. battleships to use fuel oil *vice* coal, with a maximum speed of about 20 knots. They had 10 14-inch guns, 12 five-inch casemate guns, and 8 5-inch antiaircraft guns by 1940.⁸²¹

The Japanese sank both *Nevada*-class ships at Pearl Harbor. USS *Oklahoma* capsized 10 minutes into the attack, a total loss. USS *Nevada* beached while trying to escape the attack and recommissioned in December 1942 having undergone significant refit and modernization during her repairs. She deployed to Europe in April 1944 and provided bombardment support for Operation *Neptune* and Operation *Dragoon*, after which she returned to the Pacific.⁸²²

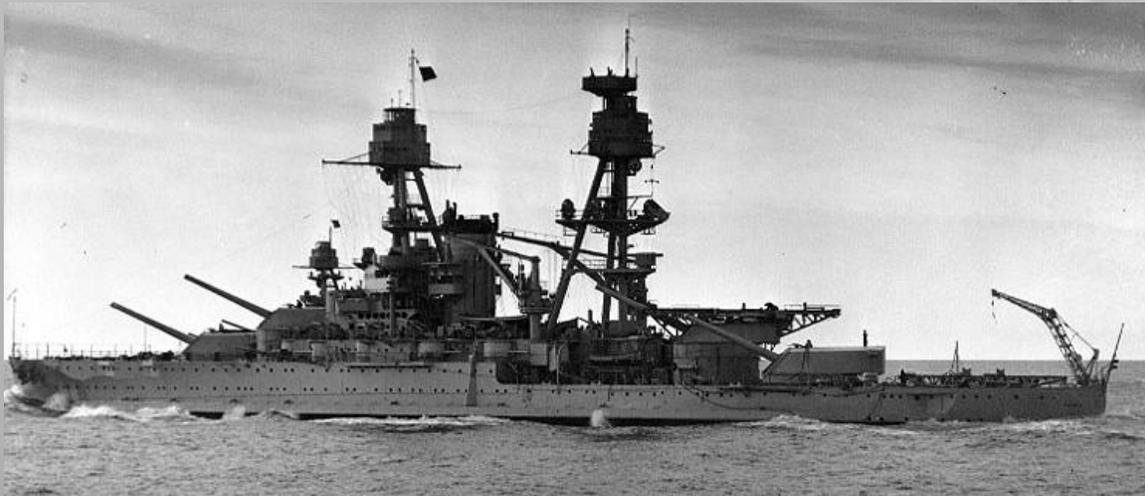


Figure 464: USS *Nevada* (BB-36) in the late 1930s (with another battleship beyond her)⁸²³

The *Nevada*-class battleship in GWX

A *Nevada*-class battleship can appear randomly and whenever the campaign calls for an older U.S. battleship. GWX models USS *Nevada* in her pre-war configuration.



Figure 465: *Nevada*-class battleship in GWX

⁸²¹ “*Nevada* class (BB-36 and BB-37), 1912 Building Program,” <http://www.history.navy.mil/photos/usnshtp/bb/bb36cl.htm>

⁸²² “USS *Nevada* (BB-36), 1916-1948,” <http://www.history.navy.mil/photos/sh-usn/usnsh-n/bb36.htm>

⁸²³ U.S. Naval Historical Center, #NH 97395, <http://www.history.navy.mil>

***New Orleans*-class heavy cruiser**

Historical background

The United States built 18 heavy cruisers in five classes under the terms of the Washington Naval Treaty of 1922; the *New Orleans* class comprised the seven ships of the fourth class: USS *New Orleans*, *Astoria*, *Minneapolis*, *Tuscaloosa*, *San Francisco*, *Quincy*, and *Vincennes*. These ships displaced just under 10,000 tons with a maximum speed of 32.5 knots, with three triple 8-inch gun turrets, eight single dual-purpose 5-inch guns, and numerous 40mm and 20mm anti-aircraft cannon.⁸²⁴



Figure 466: Heavy cruiser USS *New Orleans* (CA-32) after a mid-war repair and refit (1943)⁸²⁵

Six *New Orleans*-class heavy cruisers sank or suffered heavy damage in the Solomons Campaign in August–November 1942. USS *Astoria*, *Quincy*, and *Vincennes* were lost at the Battle of Savo Island on August 9, 1942. USS *San Francisco* suffered crippling damage fighting the Japanese battleship *Hiei* (比叡) in the naval battle of Guadalcanal (November 13), and USS *New Orleans* and *Minneapolis* had their bows blown off by Japanese destroyer torpedoes at the Battle of Tassafaronga (November 29), but all these three managed to withdraw and returned to action after lengthy repairs. USS *Tuscaloosa* served solely in the Atlantic and Mediterranean theaters until she joined the Pacific fleet in January 1945, and emerged from the war without having suffered serious damage.⁸²⁶

The *New Orleans*-class heavy cruiser in GWX

The *New Orleans*-class heavy cruiser in GWX stands in for all U.S. heavy cruisers during the war, appearing singly or in military convoys and operations.



Figure 467: *New Orleans*-class heavy cruiser in GWX

⁸²⁴ “*New Orleans*,” http://www.history.navy.mil/danfs/n4/new_orleans-ii.htm

⁸²⁵ Photo source: U.S. Naval Historical Center #NH 97848, <http://www.history.navy.mil/>

⁸²⁶ Kit Bonner, “Saga of the USS *San Francisco*, Part I,” *Sea Classics*, October 1994, http://findarticles.com/p/articles/mi_qa4442/is_200410/ai_n16065433

***Brooklyn*-class light cruiser**

Historical background

The London Naval Treaty of 1930 limited light cruisers to 6-inch guns, but did not limit how many they could carry.⁸²⁷ Most light cruisers carried six to nine six-inch guns, but the Japanese *Mogami*-class light cruisers carried 15 x six-inch guns in five triple turrets, so the *Brooklyn*-class light cruisers did likewise, with the result that these cruisers had the broadside weight of a U.S. heavy cruiser.⁸²⁸ The Japanese refitted the *Mogami*-class cruisers with 10 x 8-inch guns in five twin turrets, but the *Brooklyn* and her sister ships retained their six-inch gun armament.⁸²⁹

All of the *Brooklyn*-class light cruisers survived the war and the U.S. sold several to South American countries after the war. Argentina bought the Pearl Harbor survivor USS *Phoenix* and renamed her ARA *17 de Octubre* and, after the overthrow of Juan Peron, ARA *General Belgrano*; she was sunk by HMS *Conqueror* during the Falklands War (*Guerra de las Malvinas*) in 1982 and remains the only warship ever sunk in action by a nuclear-powered submarine.⁸³⁰



Figure 468: Light cruiser USS *Brooklyn* (CL-40) bombarding Anzio, Italy in January 1944⁸³¹

The *Brooklyn*-class light cruiser in GWX

Brooklyn-class light cruisers in GWX will appear randomly, in convoys, and whenever called for by campaign scripting.



Figure 469: *Brooklyn*-class light cruiser in GWX

⁸²⁷ "Light cruiser," http://en.wikipedia.org/wiki/Light_cruiser

⁸²⁸ "*Brooklyn*," <http://www.history.navy.mil/danfs/b9/brooklyn-iii.htm>

⁸²⁹ "Japan's Unlucky Ship, the cruiser *Mogami*," <http://www.avalancheprpress.com/LeyteMogami.php>

⁸³⁰ "ARA *General Belgrano*," http://en.wikipedia.org/wiki/ARA_General_Belgrano

⁸³¹ Photo source: U.S. Naval Historical Center # NH 97955, <http://www.history.navy.mil>

***Tacoma*-class frigate**

Historical background

The Allies' desperate need for ASW escorts led the U.S. to build the *Tacoma*-class frigates as close copies of the well-proven British [River-class frigates](#). The major differences were the use of 3-inch guns, heavier anti-aircraft armament, and a single pole mast in place of the 4-inch guns and tripod mast of the River-class frigates. The premium on rapid construction led the U.S. to build the *Tacoma*-class frigates using merchant marine shipyards and standards rather than naval shipyards, which allowed rapid construction of 96 *Tacoma*-class frigates.⁸³² None was lost during the war.

The U.S. Navy used 75 *Tacoma*-class frigates manned with U.S. Coast Guard crews, while the Royal Navy used the remaining 21 frigates under the (somewhat wry) designation of [“Colony”-class frigates](#).

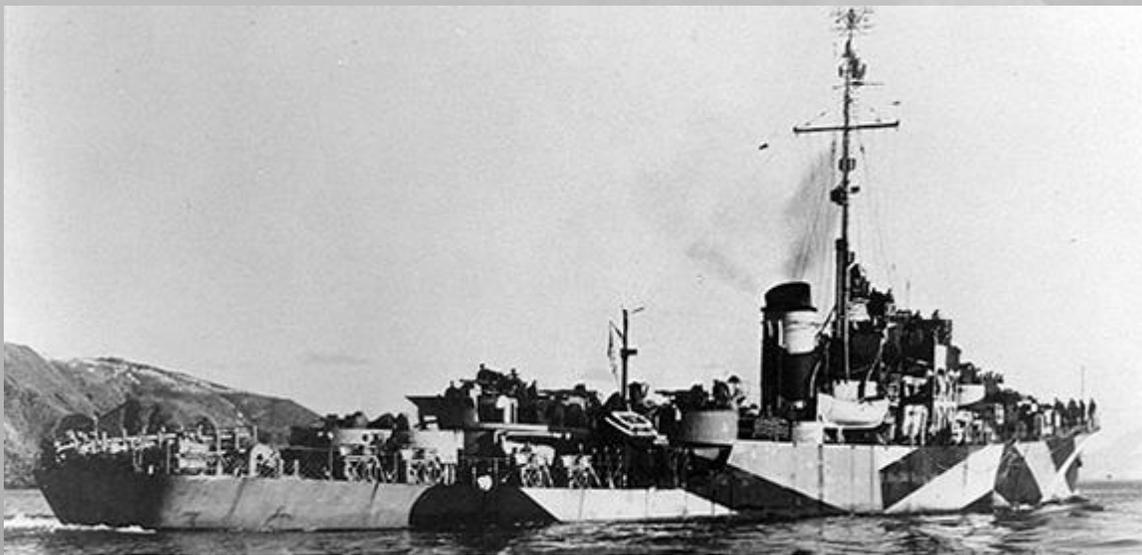


Figure 470: *Tacoma*-class frigate *USS Rockford* (PF-48) in January 1945⁸³³

The *Tacoma*-class frigate in GWX

The *Tacoma*-class frigate in GWX will appear randomly, in convoys, and whenever called for by campaign scripting.



Figure 471: *Tacoma*-class frigate in GWX

⁸³² “PF-1 *Tacoma*,” <http://www.globalsecurity.org/military/systems/ship/pf-1.htm>

⁸³³ Photo source: U.S. Naval Historical Center #NH 94146, <http://www.history.navy.mil>

AI-controlled submarines

AI-controlled *Gato*-class submarine

Historical background

The U.S. built the *Gato*-class fleet submarines to provide direct support to the battleships of the U.S. Pacific Fleet in the event of war with Japan. They could keep up with battleships maintaining 17 knots; cross the Pacific and return unrefueled (~22,000 km); had 10 torpedo tubes and carried 24 torpedoes; and had highly reliable engines and machinery. The loss of the Pacific Fleet battleship force at Pearl Harbor meant there would be no Jutland-style battleship engagement, so the U.S. used the *Gato*-class submarines' inherent attributes to wage a crippling *guerre de course* against Japan. They had a test-rated depth of 300 feet (~90 meters), and were similar in size to the Type IX U-boat.⁸³⁴



Figure 472: *Gato*-class submarine USS *Steelhead* (SS-280)⁸³⁵

Submarine Squadron (SUBRON) 50 used six of these submarines to support Operation *Torch* in North Africa, later patrolling the Bay of Biscay and the North Atlantic. By 1943, the lack of Axis targets led the U.S. to reassign SUBRON 50 personnel to Bermuda to train Allied ASW forces while its submarines went to the Pacific. Newly constructed *Gato*-class submarines could be found training and in pre-deployment workups prior along the U.S. east coast and the Gulf of Mexico, or in transit to the Pacific Ocean *via* the Panama Canal.

The *Gato*-class submarine in GWX

GWX models the *Gato*-class submarine to be on the surface at all times, since the *Silent Hunter III* game engine does not allow AI-controlled submarines to surface or dive. It cannot fire torpedoes but will report your position if it detects you, and use its deck and anti-aircraft guns against you if it detects your U-boat on the surface.



Figure 473: *Gato*-class submarine in GWX

⁸³⁴ Blair Jr., Clay. *Silent Victory: The U.S. Submarine War against Japan*. Naval Institute Press: 1975.

⁸³⁵ U.S. Naval Historical Center #NH 79766, <http://www.history.navy.mil>

AI-controlled *Balao*-class submarine

Historical background

The *Balao*-class submarines were an evolutionary improvement of the *Gato* class. Their primary improvement was the use of higher-grade steel that increased the test depth to 400 feet (~120 meters) from the *Gato*-class test depth of 300 feet. Newly constructed *Balao*-class submarines could be found training and in pre-deployment workups prior along the U.S. east coast and the Gulf of Mexico, or in transit to the Pacific Ocean *via* the Panama Canal.⁸³⁶



Figure 474: USS *Balao* (SS-285)⁸³⁷

The *Balao*-class submarine in GWX

GWX models the *Balao*-class submarine to be on the surface at all times, since the *Silent Hunter III* game engine does not allow AI-controlled submarines to surface or dive. It cannot fire torpedoes but will report your position if it detects you, and use its deck and anti-aircraft guns against you if it detects you on the surface.



Figure 475: *Balao*-class submarine in GWX

⁸³⁶ Blair Jr., Clay. *Silent Victory: The U.S. Submarine War against Japan*. Naval Institute Press: 1975.

⁸³⁷ U.S. Naval Historical Center #NH 98043, <http://www.history.navy.mil>

New Naval Auxiliaries

Summary Table

Table 20: Changes to stock *Silent Hunter III* naval auxiliary Order of Battle

Type	Class	Owning Nations
Fleet Replenishment Ships	Ammunition Ship	Australia Canada Free France Germany Great Britain United States
	Large Depot Ship	Germany Japan United States
	Small Depot Ship	Great Britain Greece Netherlands United States
	Dithmarschen-class Supply Ship	Germany
	Floating Dry Dock	Germany Great Britain United States
Troop Ships and Amphibious Assault Ships	Large Troop Ship	Australia Canada France Germany Great Britain Italy Norway Spain Sweden
	HMT Aquitania	Great Britain

Type	Class	Owning Nations
	Troop Ship	Argentina Australia Belgium Canada Colombia Croatia Denmark Finland France Free France Germany Great Britain Greece Hungary India Ireland Italy Japan Netherlands New Zealand Norway Panama Poland Portugal Romania RSI South Africa Soviet Union Spain Turkey United States Yugoslavia
	Chatham-type Troop Ship	Australia Canada Germany Great Britain Italy Japan Netherlands Norway Soviet Union Spain Sweden United States
	Naval Transport Barge	Germany
	Naval Artillery Barge	Bulgaria Germany Romania
	Higgins Boat	United States

Type	Class	Owning Nations
Miscellaneous Auxiliaries	Catapult-Armed Merchantman	Great Britain
	Armed Tugboat	Canada United States
	ASW Trawler	Australia Canada Great Britain India New Zealand South Africa Spain United States
	Armed Trawler	Argentina Brazil France Free France Greece Netherlands Norway Poland Soviet Union
	Vorpostenboot	Germany
	Small Vorpostenboot	Croatia Finland Germany Italy Romania RSI Yugoslavia
	Kriegsfischkutter	Germany Romania
	Lightship	Australia Canada Denmark Finland France Germany Great Britain Ireland Italy Netherlands New Zealand Portugal Spain Sweden United States

Fleet Replenishment Ships

Ammunition ship

Historical background

USS *Pyro* was the first of two *Pyro*-class ammunition ships launched in 1920. These ships were to transport large amounts of all types of ammunition safely to forward operating bases, and to replenish the ammunition of warships in areas where there were no shore-based naval ammunition depots or where they were impractical to build and secure. USS *Pyro* carried an armament of two 5-inch guns, four 3-inch guns, and four 40mm anti-aircraft cannon and displaced 7,025 GRT; she was at Pearl Harbor on December 7, 1941 where the Navy credited her with damaging a Japanese aircraft.⁸³⁸

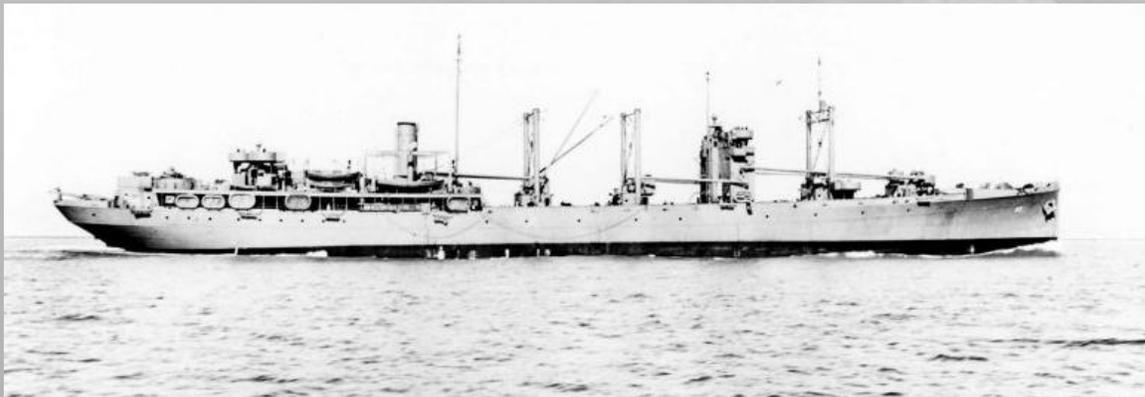


Figure 476: *Pyro*-class ammunition ship USS *Pyro* (AE-1)⁸³⁹

The Ammunition ship in GWX

These ships can appear randomly as single ships, in convoys, and as called for by scripted events. They stand in for fleet auxiliary ammunition ships of all applicable nations, and for ammunition-laden merchant ships.



Figure 477: *Pyro*-class ammunition ship in GWX

⁸³⁸ “*Pyro*,” <http://www.history.navy.mil/danfs/p13/pyro-i.htm>

⁸³⁹ Photo source: “AE-1 *Pyro*,” <http://www.navsource.org/archives/09/0501.htm>

Large Depot Ship

Historical background

Seaplanes and small warships such as patrol boats, destroyers, and submarines used depot ships or tenders as forward operating bases wherever shore facilities could not meet their specialized maintenance, repair, and resupply needs. Depot ships were a mix of purpose-designed ships, reconfigured merchant ships, and reconfigured small naval auxiliaries (e.g., minesweepers) with extra fuel, machine shops, ammunition magazines, specialty spare parts, and skilled maintenance personnel.

The U.S. Navy converted SS *Doctor Lykes* into the destroyer tender USS *Hamul* (AD-20) in January 1943, with a displacement of 8,560 GRT a maximum speed of 17 knots, and armed with one 5-inch gun and four 3-inch guns. She survived the war, serving on the U.S. east coast and Bermuda until 1945⁸⁴⁰



Figure 478: Destroyer tender (depot ship) USS *Hamul* (AD-20) in 1953⁸⁴¹

The Large Depot Ship in GWX

The large depot ships in GWX are located in some historical locations along with several of the type of ship they support (destroyers, submarines, torpedo boats, etc.) in close proximity.



Figure 479: Large depot ship in GWX

⁸⁴⁰ “*Hamul*,” <http://www.history.navy.mil/danfs/h2/hamul.htm>

⁸⁴¹ Photo credit: Stanley Svec, “Our Navy” magazine, December 1953 from “USS *Hamul*,” <http://www.usshamul.com/>

Small Depot Ship

Historical background

Seaplanes and small warships such as patrol boats, destroyers, and submarines needed depot ships or tenders to act as forward operating bases wherever shore facilities could not meet the small ships' specialized maintenance, repair, replacement, and resupply needs. Tenders could be purpose-designed depot ships, merchant ships, or small naval auxiliaries (*e.g.*, minesweepers) reconfigured with machine shops, ammunition magazines, speciality spare parts, and skilled maintenance and repair personnel.

The U.S. Navy converted SS *Edgewood* into the destroyer tender USS *Denebola* (AD-12) in November 1921, with a displacement of 6,250 GRT, a maximum speed of 10 knots, and armed with four 5-inch guns and four 3-inch guns. She serviced destroyers on the U.S. east coast and the Caribbean for most of the war, with service in the Mediterranean in 1944 and Pacific in 1945; she decommissioned in 1946.⁸⁴²



Figure 480: *Altair*-class destroyer tender USS *Denebola* (AD-12)⁸⁴³

The small depot ship in GWX

The small depot ships in GWX are located in some historical locations along with several of the type of ship they support (destroyers, submarines, torpedo boats, *etc.*) in close proximity.



Figure 481: Small depot ship in GWX

⁸⁴² “*Denebola*,” <http://www.history.navy.mil/danfs/d3/denebola-i.htm>

⁸⁴³ “AD-12 *Denebola*,” <http://www.navsource.org/archives/09/03/0312.htm>

***Dithmarschen*-class Supply Ship**

Historical background

The *Kriegsmarine* began building *Dithmarschen*-class *Troßschiffe* (“supply ships”) in the mid-1930s to supply wartime commerce raiders at sea. These ships looked like civil oil tankers and carried almost 8,000 tons of fuel oil, but also extra ammunition, supplies, and spare parts for surface raiders at sea. There were five ships in this class: *Dithmarschen*, *Nordmark*, *Altmark*, *Franken*, and *Ermland*.⁸⁴⁴

Signals intelligence eventually revealed the locations of these ships to the Allies: only *Nordmark* and *Dithmarschen* survived the war. The Royal Navy took *Nordmark* as HMS *Bulawayo* and scrapped her in 1955.⁸⁴⁵ The U.S. Navy took *Dithmarschen* as USS *Conecuh* (AOR-110) and experimented with her from 1952 to 1956 as a “one-stop shop” concept for existing U.S. underway replenishment capabilities, leading to the modern fast combat support ship (AOE) in use today by the U.S. Navy.⁸⁴⁶



Figure 482: *Dithmarschen*-class supply ship HMS *Bulawayo* (ex-*Nordmark*, ex-*Westerwald*)⁸⁴⁷

The *Dithmarschen*-class supply ship in GWX

The *Dithmarschen*-class supply ship in GWX appears randomly, in convoys, and as called for by scripted events.



Figure 483: *Dithmarschen*-class supply ship in GWX

⁸⁴⁴ “*Dithmarschen*,” <http://www.german-navy.de/kriegsmarine/ships/auxships/dithmarschen/history.html>

⁸⁴⁵ “Royal Fleet Auxiliary,” <http://www.merchantnavyofficers.com/rfa2.html>

⁸⁴⁶ “*Conecuh*,” <http://www.history.navy.mil/danfs/c12/conecuh.htm>

⁸⁴⁷ Photo source: “Royal Fleet Auxiliary,” <http://www.merchantnavyofficers.com/rfa2.html>

Floating Dry Dock

Historical Background

Drydocks are narrow basins, usually made of earthen berms and concrete, closed by gates or by a caisson, that allow a vessel to float in and then close the gates behind the vessel and then pump out the water, leaving the vessel high and dry but supported by wooden blocks instead of water. The first documented use of drydocks was in Ptolomeic Egypt by 200 BCE, and were used then as in modern times to give work crews access for inspection, repair, and/or replacement of all parts of a ship that are normally under water. A floating drydock allows a fleet to bring drydock capabilities to bases closer to the action rather than sending damaged ships back to homeports for significant repairs.⁸⁴⁸



Figure 484: USS *West Virginia* (BB-48) in floating drydock ABSD-1 near Espiritu Santo (1944)⁸⁴⁹

The Floating Dry Dock in GWX

Players can find floating dry docks in GWX at port facilities of major maritime powers. They are equipped with a [barrage balloon](#) for anti-aircraft defense.

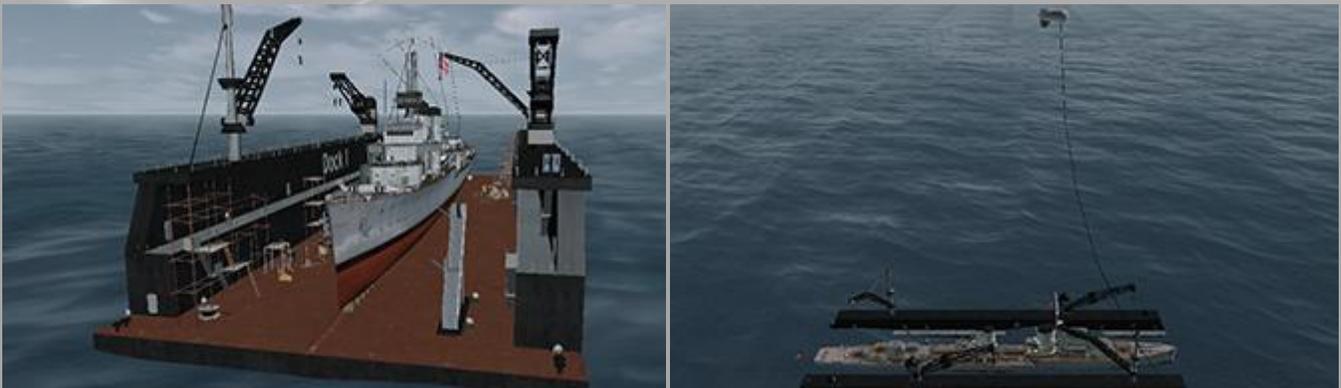


Figure 485: Floating drydocks: pumped out with workmen aboard (left) and flooded to accept or release a ship (right)

⁸⁴⁸ "Dry Dock," http://en.wikipedia.org/wiki/Dry_dock

⁸⁴⁹ Photo source: "ABFD-1 *Artisan*, ex-ABSD-1," <http://www.navsource.org/archives/09/28/2801.htm>

Troop Ships and Amphibious Assault Ships

Large Troop Ship

Historical Background

Navies often converted passenger liners to carry troops to overseas operational areas; they could rapidly move many people from port to port, but lacked specialized equipment for amphibious assaults. Converting a liner meant removing all amenities such *objets d'art* and deck chairs; renovating staterooms and dining rooms into bunkrooms; and adding minor defensive armament and camouflage.⁸⁵⁰

The Holland America Line accepted SS *Nieuw Amsterdam* in 1938; it displaced 36,387 GRT with a maximum speed of 22 knots and carrying 1,220 passengers and a crew of 694. The Netherlands government-in-exile loaned her to Great Britain, which converted her to a troop ship carrying up to 8,000 troops. She survived the war, sailing over 530,000 miles and carried over 378,000 troops.⁸⁵¹



Figure 486: SS *Nieuw Amsterdam* in its wartime troop ship configuration⁸⁵²

The Large Troop Ship in GWX

The large troop ship in GWX appears as a single vessel and as called for by the campaign scripting.



Figure 487: A large troop ship in GWX

⁸⁵⁰ “Troopship,” <http://en.wikipedia.org/wiki/Troopship>

⁸⁵¹ SS *Nieuw Amsterdam*,” from *Maritime World Online*, <http://www.ssmaritime.com/nieuwamsterdam-II.htm>

⁸⁵² Photo source: Robert Goosens’ *Maritime World Online*, <http://www.ssmaritime.com/nieuwamsterdam-II.htm>

HMT Aquitania

Historical Background

RMS *Aquitania* was the world's largest ocean liner (45,647 GRT) when delivered to the Cunard Line in April 1914. She was an armed merchant cruiser in 1914 and as a troop ship for the Gallipoli operation in 1915; decommissioned in 1916, served as a hospital ship in 1917 and as a troop transport in 1918-1919 to bring troops home from the war in Europe, returning to Cunard's transatlantic service in the 1920's.

RMS *Aquitania* became the troop ship HMT *Aquitania* in November 1939 and spent the next eight years conveying troops. She generally sailed alone, relying on Allied cryptographers to guide her around U-boats and on 23-knot zig-zag path to minimize the chance of a U-boat actually intercepting her; she remained untouched and traveled more than 500,000 miles carrying over 300,000 troops by 1946.⁸⁵³

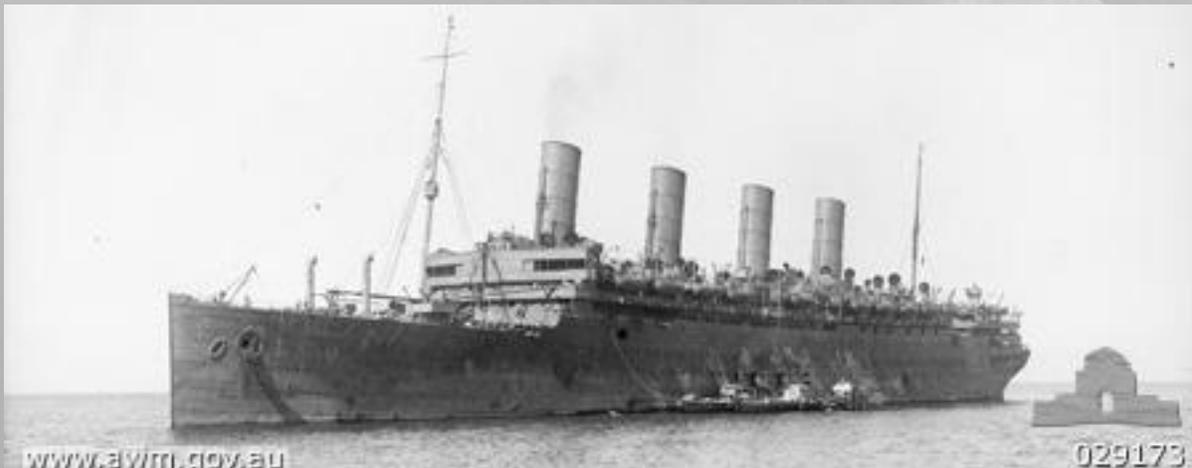


Figure 488: Cunard passenger liner HMT *Aquitania* on active service⁸⁵⁴

HMT *Aquitania* in GWX

HMT *Aquitania* is unique Large Troop Ship in GWX, appearing alone and per campaign scripting.



Figure 489: HMT *Aquitania* in GWX

⁸⁵³ "RMS *Aquitania*," http://en.wikipedia.org/wiki/RMS_Aquitania

⁸⁵⁴ Photo source: Australian War Memorial #029173, <http://www.awm.gov.au>

Troop Ship

Historical background

Navies often converted ocean liners to carry troops to overseas operational areas; they could rapidly move many people from port to port, but lacked specialized equipment for amphibious assaults. Converting a liner meant removing all amenities such *objets d'art* and deck chairs; renovating staterooms and dining rooms into bunkrooms; and adding minor defensive armament and camouflage.⁸⁵⁵

Vickers Ltd. delivered SS *Hobson's Bay* in 1922 to the Aberdeen & Commonwealth Line, Ltd., with displacement of 14,204 GRT and a top speed of 15 knots, providing one-class service between Britain and Australia. She became *Esperance Bay* in 1936 and HMT *Esperance Bay* in November 1941 after service as an armed merchant cruiser starting in 1939. She returned to passenger service in 1946.⁸⁵⁶



Figure 490: SS *Esperance Bay* delivers troops to Kure as part of the Occupation of Japan (1946)⁸⁵⁷

The Troop Ship in GWX

The Troop Ship in GWX appears as a single vessel, in convoys, and as scripted in the campaign.



Figure 491: The Troop Ship in GWX

⁸⁵⁵ "Troopship," <http://en.wikipedia.org/wiki/Troopship>

⁸⁵⁶ "Ship descriptions – E," <http://www.theshipslist.com/ships/descriptions/ShipsE.html>

⁸⁵⁷ Photo source: Australian War Memorial #126738, <http://www.awm.gov.au>

***Chatham*-type Troop Ship**

Historical background

SS *Chatham* was a 5,649 GRT steam passenger ship, launched in 1926 and owned by the Merchants and Miners Transportation Co. of Baltimore, USA. The U.S. armed her with one 4-inch gun, one 3-inch gun, and four 20mm cannon and used her as a troop transport until *U-517* (*Kapitänleutnant* Paul Härtwig) torpedoed and sank her on August 7, 1942 off Belle Isle in the Gulf of St. Lawrence. Fourteen of the 428 people on board SS *Chatham* died in the attack.⁸⁵⁸

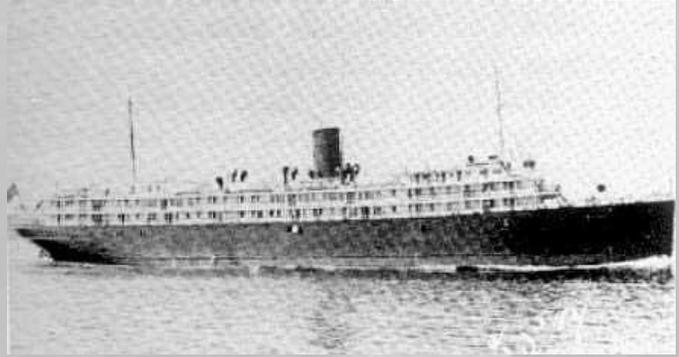


Figure 492: *Chatham*-type passenger ship SS *Dorchester*⁸⁵⁹

The *Chatham*-type Troop Ship in GWX

Chatham-type troop ship will appear randomly separately or in convoys, and as called for by the campaign scripting.

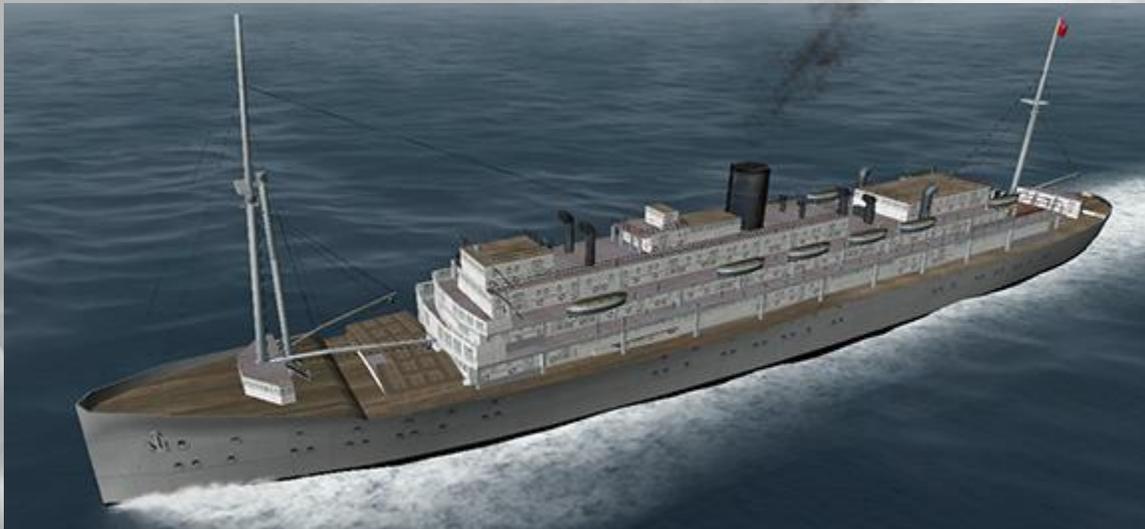


Figure 493: *Chatham*-type troop ship in GWX

⁸⁵⁸ "Chatham," <http://www.uboard.net/allies/merchants/2093.html>

⁸⁵⁹ Photo source: "Dorchester," <http://www.uboard.net/allies/merchants/2616.html>, courtesy of uboard.net

Naval Transport Barge

Historical background

Nations planning amphibious assault capabilities realized their forces going ashore would require the support of armored vehicles during the initial phase of any opposed landing. These countries developed special-purpose landing craft that could each deliver several tanks or other armored vehicles direct to an invasion beach, as well as engineer assault vehicles, bulldozers, trucks, and other types of motorized vehicles needed to clear obstacles and move supplies as soon as the troops began to move off the beach.



Figure 494: Landing Craft, Tank (LCT)-202 carrying a platoon of five M4 “Sherman” tanks⁸⁶⁰

The naval transport barge in GWX

The transport barge in GWX represents any number of small, lightly armed amphibious assault landing craft used to transport vehicles up to and including heavy tanks. For the Germans it represents any number of *Marinefährrähme* (MFP, “naval flat-bottomed ferries”) and armed barges assembled in preparation for the abortive invasion of Great Britain, Operation *Seelöwe* (“Sea Lion”), and in use on the Black Sea.



Figure 495: Naval transport barge carrying a SdKfz 234/1 and a 234/2 “Puma” armored cars in GWX

⁸⁶⁰ “LCT-202,” <http://www.navsource.org/archives/10/180202.htm>

Naval Artillery Barge

Historical background

Nations planning amphibious assault capabilities realized their forces going ashore would require large amounts of naval gunfire support. These countries developed special-purpose landing craft carrying various combinations of naval guns, antiaircraft guns, and artillery rockets to provide close-in gunfire support without risking the loss of larger warships running aground in shallow water.



Figure 496: Landing Ship, Medium (Rocket-armed) LSM(R)-527 *St. Joseph's River*⁸⁶¹

The naval artillery barge in GWX

The naval artillery barge represents any number of small, armed amphibious assault landing craft. For the Germans it represents any number of *Marine Artillerie Liechter* (“naval artillery lighter”) vessels readied for the aborted invasion of England in 1940 or in use on the Black Sea and Mediterranean Sea.



Figure 497: Naval artillery barge in GWX

⁸⁶¹ U.S. Navy photo #USN 1045571, <http://www.navsourc.org/archives/10/06/06527.htm>

Higgins Boat

Historical Background

Nations planning amphibious assault capabilities needed small boats to deliver complete small infantry units ashore with their specialized equipment in condition to fight as soon as they stepped (or splashed) ashore. These countries developed lightly armored special-purpose landing craft that could each deliver an entire infantry platoon (about 36 soldiers) and its equipment direct to an invasion beach.



Figure 498: Landing Craft, Vehicle, Personnel (LCVP) disembarking at Omaha Beach, June 1944⁸⁶²

The Higgins Boat in GWX

The Higgins Boat represents Allied amphibious assault craft such as the Landing Craft, Vehicle, Personnel (LCVP), aka the “Higgins Boat” used in Operation *Torch* and Operation *Neptune*.

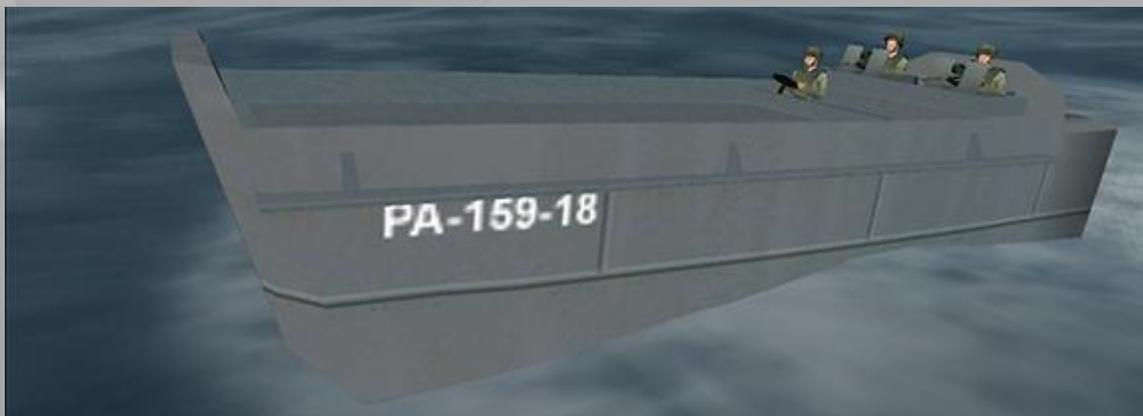


Figure 499: Higgins boat (LCVP) in GWX

⁸⁶² Photo source: “The U.S. Coast Guard at Normandy,” http://www.uscg.mil/history/h_normandy.html

Miscellaneous Auxiliaries

Catapult-Armed Merchantman (CAM)

Historical Background

The British developed the Fighter Catapult Ship (FCS), the Catapult Armed Merchantman (CAM), and later the Merchant Aircraft Carrier (MAC) to prevent France-based Luftwaffe Fw 200 “Kondor” reconnaissance aircraft from detecting and tracking Allied convoys on behalf of the U-boats.

- The *Pegasus*-class FCS was a Royal Navy-manned merchant ship that was equipped with a catapult and a Fairey Fulmar fighter aircraft. The five ships in this class were HMS *Pegasus*, *Ariguani*, *Maplin*, *Patia*, and *Springbank*, of which *Patia* and *Springbank* were lost.⁸⁶³
- The CAM was an FCS operated by a civilian crew, and carrying a Hawker Hurricane catapult fighter (“Sea Hurricane Ia,” or “Hurricat”) maintained and operated by a small RAF “air party.” The “Hurricat” ditched after completing its mission and the pilot waited for the convoy to rescue him. Britain converted 35 ships into CAM ships: U-boats sank nine of them; the *Luftwaffe* sank one.⁸⁶⁴
- The MAC was a large cargo ship or tanker with its superstructure removed and replaced by a flight deck. Civilian crews operated these ships, which carried three to four FAA Sea Hurricane II or Swordfish aircraft in addition to their normal cargoes of grain and oil. These aircraft recovered on the MAC flight deck instead of ditching at sea. All of the 20 MAC ships survived the war.⁸⁶⁵

The FCS and CAM ships were a desperate solution, and the British converted them back to normal merchant ships as soon as escort carriers became available starting in late 1942.

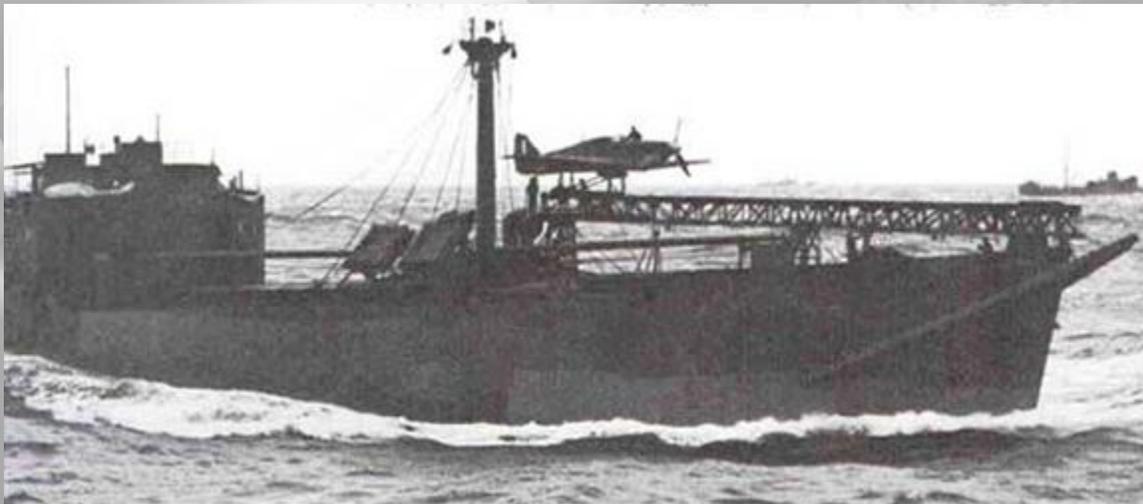


Figure 500: Unidentified Catapult-Armed Merchantman (CAM)⁸⁶⁶

⁸⁶³ Mackenzie J. Gregory, “The development of the Catapult Armed Merchantman (CAM ships),”

<http://ahoy.tk-jk.net/macslog/TheDevelopmentoftheCatapu.html>

⁸⁶⁴ Greg Goebel, “The Hawker Hurricane,” <http://www.vectorsite.net/avhurr.html>

⁸⁶⁵ “Aircraft Carriers including Fleet, Escort, CAM-ships, and Merchant Aircraft Carriers,”

<http://www.naval-history.net/WW2RN25-BritishShipsAircraftCarriers.htm>

⁸⁶⁶ Photo source: “The development of the Catapult Armed Merchantman (CAM ships),”

<http://ahoy.tk-jk.net/macslog/TheDevelopmentoftheCatapu.html>

The Catapult-Armed Merchantman in GWX

The Catapult-Armed Merchantman in GWX will appear randomly alone and within convoys.



Figure 501: Catapult-Armed Merchantman (CAM) in GWX



Armed Tugboat

Historical Background

Tugboats have provided towing and pushing services to larger ships since steam power overcame the winds and tides. Naval tugboats are support ships, but navies arm them to give a semblance of self-protective capability, with armament varying between tugboats; for example, the U.S. *Abnaki*-class tugboats had a single 3-inch gun, two twin-40mm cannon, and two 20mm cannon.⁸⁶⁷

The tugboat's value to the fleet was its ability to rescue crippled combatants (either friendly or captured) and tow them to friendly ports while keeping out of the line of fire. The U.S. Navy lost seven of 92 "fleet tugboats" in World War II;⁸⁶⁸ the Royal Navy lost 13 out of 142 "rescue tugboats" to hostile action or mines, and nine others to non-combat or unknown causes.⁸⁶⁹



Figure 502: Armed fleet tugboat USS *Abnaki* (ATF-96) tows the captured *U-505* (1944)⁸⁷⁰

The Armed Tugboat in GWX

These ships can appear randomly as single ships and as called for by scripted events.



Figure 503: Armed tugboat in GWX\

⁸⁶⁷ "Abnaki class," <http://www.uboat.net/allies/warships/class.html?ID=456>

⁸⁶⁸ "Fleet tugs," <http://www.uboat.net/allies/warships/types.html?navy=USS&type=Fleet+Tug>

⁸⁶⁹ "Rescue tugs," <http://uboat.net/allies/warships/types.html?navy=HMS&type=Rescue+Tug>

⁸⁷⁰ Photo source: U.S. Navy photo, <http://www.uboatarchive.net/U-505EnclG468.htm>

ASW Trawler

Historical Background

ASW trawlers were armed fishing boats and whalers that patrolled their local waters as a sort of seaborne militia. Their knowledge of the conditions and navigation hazards near their homes gave them an advantage against small enemy vessels and in conducting local minesweeping operations.

Great Britain maintained a small force of ASW trawlers in peacetime, with massive expansion in time of war to provide small, local minesweepers as well as local antisubmarine patrols. Britain moved several ASW trawlers to the east coast of the U.S. in early 1942 to assist the U.S. Navy as it tried to meet the needs of a two-ocean war with a one-ocean fleet.⁸⁷¹



Figure 504: ASW Trawler HMS Ayrshire⁸⁷²

The ASW Trawler in GWX

The ASW Trawler in GWX is a British or Commonwealth fishing boat armed and configured as a local patrol vessel. It is different from the [Armed Trawler](#) that other navies use.



Figure 505: ASW Trawler in GWX

⁸⁷¹ "A/S Trawlers," <http://www.uboa.net/allies/ships/trawlers.htm>

⁸⁷² Photo source: "Convoy PQ 17," <http://www.mikekemble.com/ww2/convoypq17.html>

Armed Trawler

Historical Background

Armed trawlers are fishing boats that a navy has armed and trained to act as a sea-going militia. Their knowledge of local conditions, hazards to navigation, and the seas near their homes gave them an advantage over enemy vessels reconnoitering a harbor's seaward defenses, and in conducting local minesweeping operations.

The Armed Trawler in GWX

The Armed Trawler in GWX is a generic fishing boat armed and configured as a local patrol vessel. It has a different appearance and configuration than the [ASW Trawler](#) used by the Royal Navy and the Commonwealth nations.



Figure 506: Armed trawler in GWX

***Vorpostenboot* (“Picket Boat”)**

Historical background

The *vorpostenboot* (lit. “picket boat”) was generally a heavily armed small commercial fishing or whaling vessel converted for use in harbor and coastal security, local escort duties, and submarine hunting. The size and type of armament varied widely depending on the boat’s size and stability: German versions could carry deck guns up to 88mm (the naval version, not the famous Army version); several anti-aircraft guns up to 37mm; and depth charges. They could fight with some hope against enemy motor gunboats and torpedo boats but could not challenge any enemy bigger than a small corvette.⁸⁷³



Figure 507: Unidentified large *vorpostenboot*

The *Vorpostenboot* in GWX

The *vorpostenboot* will appear as a randomly generated unit and as called for by the campaign. Germany and its Axis partners also use a “[small *vorpostenboot*](#)” in GWX to represent many small fishing boats converted to military use by many countries including Germany.



Figure 508: *Vorpostenboot* in GWX

⁸⁷³ “*Vorpostenboot*,” <http://www.german-navy.de/kriegsmarine/ships/misc/vorpostenboot/index.html>

Small *Vorpostenboot*

Historical background

The *vorpostenboot* (lit. “outpost boat”) was generally a heavily armed small commercial fishing or whaling vessel converted for use in harbor and coastal security, local escort duties, and submarine hunting. The size and type of armament varied widely depending on the boat’s size and stability: German versions could carry deck guns up to 88mm (the naval version, not the famous Army version), anti-aircraft guns up to 37mm, and depth charges. They could fight with some hope against enemy motor gunboats and torpedo boats but could not challenge any enemy bigger than a small corvette.⁸⁷⁴



Figure 509: Lightly armed *vorpostenboot* off Norway⁸⁷⁵

The Small *Vorpostenboot* in GWX

The small *vorpostenboot* in GWX stands in for any small fishing boat drafted into service as a naval auxiliary, and is a smaller counterpart of the German *vorpostenboot*. Players may encounter one or more *vorpostenboote* in any Axis-controlled or Axis-allied harbor, and in the coastal waters of Occupied Europe. These ships also represent converted civilian craft in Japanese-controlled waters in the Pacific. A *vorpostenboot* may escort your U-boat through the harbor defenses at your base.



Figure 510: Small *Vorpostenboot* in GWX

⁸⁷⁴ “Vorpostenboot,” <http://www.german-navy.de/kriegsmarine/ships/misc/vorpostenboot/index.html>

⁸⁷⁵ Photo source: “Chronik des Seekrieges 1939-1945,” <http://www.wlb-stuttgart.de/seekrieg/43-03.htm>

***Kriegsfischkutter*(KFK)**

Historical background

Germany built the first *Kriegsfischkutter* (“War trawler”) (KFK) in 1942 based on the design of the British “Baltic Trader” deep-sea trawler; they were similar to the existing *Reichsfischkutter G*, being 24 meters long and displacing 110 tons with a speed of 9 knots. These ships were armed with one 37mm and two 20mm anti-aircraft guns, and found use for coastal patrol and defense, escort, aircraft defense and surveillance, as minesweepers, for harbor protection, as submarine hunters (some were fitted with depth charges), for dropping off special agents and spies, as search and rescue vessels, and for transporting small cargoes.

Germany built 612 KFKs during the last three years of the war, of which 135 were lost. The Allies took 182 as war reparations, and Germany converted the rest to civilian use after the war, including a number of riverine and lake patrol ships of *Bundesgrenzschutz* (“Federal Border Guard”).⁸⁷⁶



Figure 511: *Kriegsfischkutter* (KFK) No. 61⁸⁷⁷

The *Kriegsfischkutter* in GWX

The *Kriegsfischkutter* will appear as a randomly generated unit and as called for by the campaign.



Figure 512: *Kriegsfischkutter* in GWX

⁸⁷⁶ Herwig Danner, *Kriegsfischkutter*. Hamburg: Mittler & Sohn. 2001, cited by “Sailing Schooner Dolphin,” http://www.schoonerdolphin.com/Dolphin_history.htm

⁸⁷⁷ Photo source: “Navy page,” <http://www.marinepage.de/marine010.htm>

Lightship

Historical background

Englishman Robert Hamblin built the first modern lightship in 1731 as a navigation aid in an area of shoal water in the Thames estuary. The lights were two oil lanterns on a cross arm of the ship's mast, but the assistance rendered to shipping in avoiding the Nore Sands proved invaluable and most seafaring nations copied the concept to mark shoal waters or to act as a landfall for transoceanic shipping. The United States built its first lightship in 1820, and the number steadily increased until 56 were in active service in 1909; however, lightships were expensive to maintain and so their numbers steadily declined as electrically powered ocean buoys replaced them so that by 1939 only 30 remained in U.S. waters. The last U.S. lightship, *Nantucket*, decommissioned in 1983.⁸⁷⁸

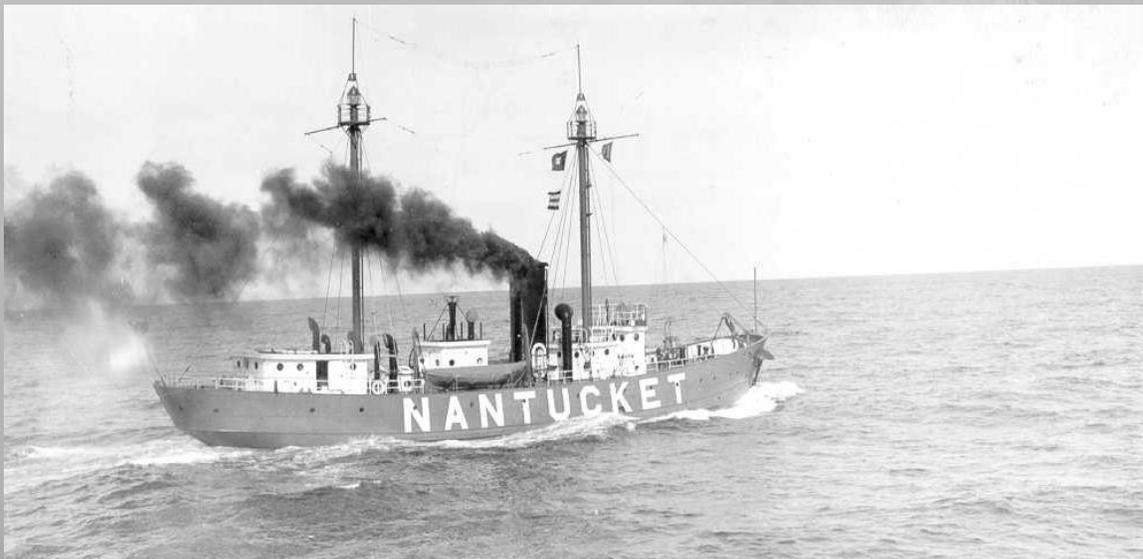


Figure 513: Lightship LV-112 "Nantucket" off Nantucket Shoals, Massachusetts, USA (1936)⁸⁷⁹

The Lightship in GWX

Lightships in GWX are encountered individually and as called for by campaign scripting. Note that lightships are naval auxiliaries and are an exception to the general rule that illuminated ships are always neutral: nations at war with Germany will have illuminated lightships, but they are worth little renown.



Figure 514: Lightship in GWX with lights in dim phase



Figure 515: Lightship in GWX with lights in bright phase

⁸⁷⁸ Willard Flint, "A History of U.S. Lightships," http://www.uscg.mil/history/h_lightships.html

⁸⁷⁹ Photo by George Stewart, U.S.L.H.S., http://www.uscg.mil/hq/g-cp/history/Lightship_Photo_Index.html

New Non-Combatant Ships

Order of Battle changes

Table 21: Changes to stock *Silent Hunter III* non-combatant Order of Battle

General type	Type of Ship	Owning Nations
The Red Cross	Hospital Ship	International Red Cross
Merchant Ships	Large Merchant Ship	Argentina Australia Belgium Brazil Canada Colombia Croatia Denmark Finland France Free France Germany Great Britain Greece Hungary India Ireland Italy Japan Netherlands New Zealand Norway Panama Poland Portugal Romania RSI South Africa Spain Sweden Turkey United States Yugoslavia
	Empire-type Freighter	Canada Great Britain
	Cyclops-type Collier	Canada

	Ore Carrier	Australia Canada Denmark Finland Germany Great Britain Italy Japan Netherlands Norway Soviet Union Sweden United States
	Granville-type Freighter	Canada Great Britain Netherlands United States
	Coal Freighter	Great Britain United States
	Small Freighter	All
	Coastal Freighter	Australia Belgium Canada Denmark Great Britain Greece Netherlands Norway United States
	Great Lakes Freighter	Canada United States
Passenger Ships	Ocean Liner	France Germany Ireland Portugal Red Cross Spain Sweden United States
	Ceramic-type Ocean Liner	Australia Canada Germany Great Britain United States
	Small Ocean Liner	Canada Germany Great Britain Italy United States

	Large Passenger/Cargo Ship	France Ireland Portugal Spain Sweden United States Uruguay Venezuela
	Passenger/Cargo Ship	All
Tankers	Converted Whale Factory Tanker	Canada Denmark Finland Great Britain Japan Latvia Netherlands Norway United States
	Medium Tanker	Australia Canada Denmark Great Britain Italy Japan Netherlands Norway Panama Soviet Union Sweden United States Uruguay
	Intermediate Tanker	Australia Belgium Canada Denmark Great Britain Greece Netherlands Norway Poland Romania Soviet Union Turkey United States

	<u>Nipiwán Park-type Tanker</u>	Australia Belgium Canada Denmark Great Britain Greece Netherlands Norway Poland Romania Russia Turkey United States
	<u>Coastal Tanker</u>	Australia Belgium Brazil Bulgaria Canada France Germany Great Britain Honduras Japan Netherlands Norway Panama Portugal Romania Soviet Union United States
<u>Small Vessels</u>	<u>Large Tugboat</u>	Australia Belgium Canada Denmark Germany Great Britain Italy Netherlands Norway Romania Spain Sweden United States
	<u>Small Coal Tender</u>	Germany Great Britain Norway Romania Soviet Union Spain

	Pelagic Trawler	Australia Brazil Canada Denmark Great Britain Greece Mexico Netherlands Norway Portugal Spain Sweden United States Turkey
	Large Trawler	Australia Canada Great Britain India Japan New Zealand Norway South Africa United States
Sailing Ships	Fishing Ketch	Egypt Greece Spain Turkey
	Small Fishing Boat	Albania Belgium Denmark Egypt Estonia Ireland Latvia Lithuania Norway Panama Sweden Turkey United States

	Schooner	Australia Brazil Canada Egypt Germany Great Britain Poland South Africa Soviet Union Spain United States
	Sailing Sloop	Australia Brazil Canada Egypt Germany Great Britain Poland South Africa Soviet Union Spain United States
	Medium Junk	Japan
	Small Junk	Japan

The International Committee of the Red Cross

Hospital Ship

Historical background

The International Committee of the Red Cross represents the permanent neutral status (under the Hague Conventions) of all properly marked and illuminated hospital ships of any nationality. The Hague Convention (Hague III) of 1899 brought maritime warfare into line with the laws of war outlined in the Geneva Convention of 1864 regarding the treatment and use of hospital ships in wartime.⁸⁸⁰ The Hague convention of 1907 further refined the principles that strictly protected hospital ships.⁸⁸¹



Figure 516: Hospital Ship USS *Haven* (AH-12)⁸⁸²

The hospital ship in GWX

Hospital ships in GWX have illumination and fly the flag of the International Committee of the Red Cross, a neutral “country,” although technically they are naval auxiliaries. Players will incur an enormous penalty in renown for sinking a hospital ship, which they can find on any ocean at any time.



Figure 517: Hospital ship in GWX

⁸⁸⁰ “Convention for the adaptation to maritime warfare of the principles of the Geneva Convention of August 22, 1864,” <http://www.yale.edu/lawweb/avalon/lawofwar/hague993.htm>

⁸⁸¹ “Convention for the adaptation to maritime warfare of the principles of the Geneva Convention,” <http://www.yale.edu/lawweb/avalon/lawofwar/hague10.htm>

⁸⁸² U.S. Naval Historical Center #NH 98791, <http://www.history.navy.mil>

Merchant Ships

Large Merchant Ship

Historical Background

Large merchant ships operate between the world's major ports where bigger ships bring more profit to their owners by regularly moving large amounts of high value cargoes. SS *Philoctetes* plied trade routes in the Pacific from 1922 until August 1940, when Great Britain requisitioned her as a small combatant tender and she became the destroyer depot ship (tender) HMS *Philoctetes*, known to her crew as the "Flock of fleas."⁸⁸³ The Royal Navy returned her in 1946 to her owners; they in turn scrapped her in 1948 as being no longer being economical to operate.



Figure 518: SS *Philoctetes*, Blue Funnel Line, 11,431 GRT⁸⁸⁴

The large merchant ship in GWX

The large merchant ship in GWX is a generic large merchant ship of the World War II era.



Figure 519: Large merchant ship in GWX

⁸⁸³ Geof Bewers, "From Dad's Army to the Royal Navy," *Harry Tate's Navy*, <http://www.harry-tates.org.uk/veteranstailes15.htm>

⁸⁸⁴ Photo source: The collection of Ms. G. Williams, "Blue Funnel Line," <http://www.rhiw.com/>. Used by permission.

***Empire*-type Freighter**

Historical Background

Britain gave almost every civilian ship built for or acquired by the MOS, the MOT, or the MOWT during World War II the name prefix “Empire.” M/S *Empire Fairbairn* was a freighter displacing 7046 GRT, launched by Barclay, Curle & Co. Ltd., Glasgow, Great Britain in 1942 but delivered instead to the Norwegian government as M/S *Kronprinsen* (“Crown Prince”).⁸⁸⁵

M/S *Kronprinsen* was on her maiden voyage when U-432 (*Kapitänleutnant* Heinz-Otto Schultze) hit her with two torpedoes on June 9, 1942. One torpedo flooded her bow cargo compartments and the other collapsed her stern and tore away her rudder and propellers, but three salvage tugs managed to tow *Kronprinsen* to Pubnico, Canada on June 15; she underwent emergency repairs at Halifax and reconstruction at Boston, and survived the war after returning to service in 1943.⁸⁸⁶



Figure 520: M/S *Kronprinsen* after U-432 torpedoed it (with corvette HMCS *Summerside*)⁸⁸⁷

The *Empire*-type freighter in GWX

The *Empire*-type freighter in GWX has the characteristics of several (but by no means all) *Empire* freighters; it appears alone, in convoy, or per scripting.



Figure 521: *Empire*-type freighter in GWX

⁸⁸⁵ “Empire – F,” <http://www.mariners-l.co.uk/EmpireF.html>

⁸⁸⁶ “M/S *Kronprinsen*,” <http://www.warsailors.com/singleships/kronprinsen.html>

⁸⁸⁷ U.S. Air Force photo, “M/S *Kronprinsen*,” <http://www.warsailors.com/singleships/kronprinsen2.html>

***Cyclops*-type Collier**

Historical Background

The U.S. Navy began launching three *Cyclops*-class (*Cyclops*, *Proteus*, and *Nereus*) colliers in 1910 to supply coal-fueled ships overseas; they displaced 10,500 tons (est.) and had a maximum speed of 15 knots.⁸⁸⁸

The U.S. disposed of its colliers after converting its ships to burn fuel oil during and after World War I:

- USS *Jupiter* (AC-3) became the U.S. Navy's first aircraft carrier, USS *Langley* (CV-1) and later a seaplane tender: a Japanese naval aircraft sank it in the Java Sea on February 27, 1942.
- USS *Cyclops* (AC-4) disappeared without a trace after departing Bermuda in October 1918
- USS *Proteus* (AC-9) decommissioned in 1923; renamed SS *Proteus* when sold in March 1941 to Saguenay Terminals, Ltd as an ore carrier; it disappeared without a trace in November 1941
- USS *Nereus* (AC-10) decommissioned in 1922; renamed SS *Nereus* when sold in February 1941 to Saguenay Terminals as an ore carrier, it disappeared without a trace in December 1941.⁸⁸⁹
- USS *Jason*, *Orion*, and *Neptune* decommissioned in the early 1920s and scrapped in the 1930s.

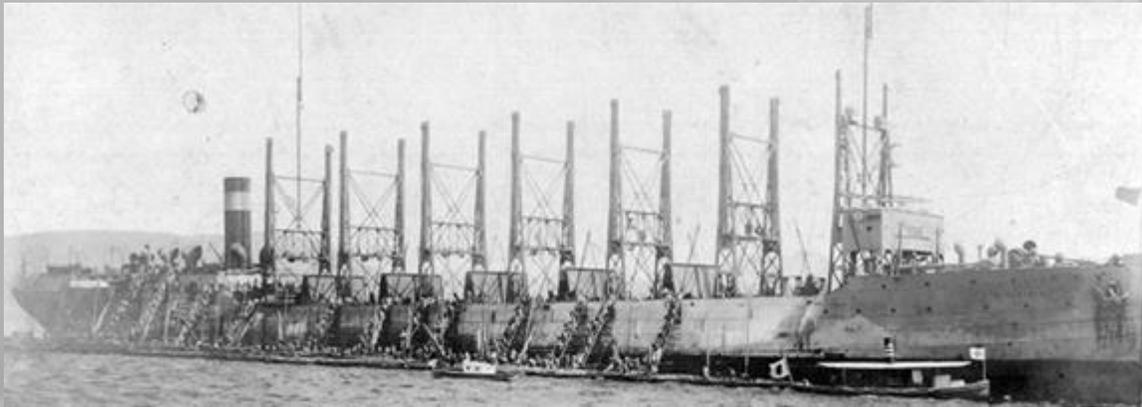


Figure 522: *Cyclops*-class collier USS *Nereus* (AC-10)⁸⁹⁰

The *Cyclops*-type collier in GWX

The *Cyclops*-type colliers represent retired naval colliers or large ore transport vessels in GWX.



Figure 523: *Cyclops*-type collier in GWX

⁸⁸⁸ "AC Collier," <http://www.globalsecurity.org/military/systems/ship/ac.htm>

⁸⁸⁹ Robert C. Fisher, "Canadian Merchant Ship Losses of the Second World War, 1939-1945,"

http://www.familyheritage.ca/Articles/merchant1.html#N_39

⁸⁹⁰ Photo source: "USS *Nereus* (AC-10)," *Navsource Online*, <http://www.navsource.org/archives/09/02/0210.htm>

Ore Carrier

Historical background

Ore carriers carry bulk cargo such as unrefined iron ore or other mined materials from mines to smelting and refining facilities.

The SS *Rose Castle* was a steam merchant ship of 7,803 GRT, launched in 1915 and owned by the Rose Castle Steamship Co., Ltd., of Sydney, Canada, that carried bulk iron ore from the mines on Bell Island, Newfoundland to the steel mill at Sydney, Nova Scotia.⁸⁹¹ U-518 (*Kapitänleutnant Friedrich-Wilhelm Wissmann*) torpedoed and sank her on November 2, 1942 in the anchorage off Bell Island, Newfoundland, Canada with the loss of over half her crew; today, the World War II wrecks in this area are scuba diving locations.



Figure 524: SS *Rose Castle*, 7803 GRT⁸⁹²

The Ore Carrier in GWX

The ore carrier in GWX is based on the SS *Rose Castle*, and will appear randomly as an “ore carrier” separately or in convoys, and as called for by the campaign scripting.



Figure 525: Ore carrier in GWX

⁸⁹¹ “Rose Castle,” <http://uboat.net/allies/merchants/2356.html>

⁸⁹² Photo courtesy of the Vatcher family website, <http://arthurjohn.vatcher-family.net>

***Granville*-type Freighter**

Historical Background

W. Gray & Co. built the SS *Tabarka* with coal-fired boilers in 1913, displacing 4,107 GRT with a maximum speed of 10 knots; the Finnish company Wihuri, Antti acquired her in 1932 and renamed her *Wipunen*. The U.S. seized *Wipunen* on December 27, 1941 under the terms of the Ship Requisition Act of 1941; Wessel, Duval & Co. managed her during the war under Panamanian registry with the name *Granville*.⁸⁹³ U-338 (*Kapitänleutnant* Manfred Kinzel) sank *Granville* on March 17, 1943 as she sailed as part of convoy SC 122; the convoy escort HMS *Lavender* rescued 34 of the 47 men aboard.⁸⁹⁴



Figure 526: SS *Granville*, Wessel, Duval & Co., 4071 GRT⁸⁹⁵

The *Granville*-type freighter in GWX

The *Granville*-type freighter in GWX appears alone, in convoy, or per scripting.



Figure 527: *Granville*-type frieghter in GWX

⁸⁹³ “Foreign passenger and cargo ships taken over by the U.S. Maritime Commission during World War II,” <http://www.usmm.org/foreign.html>

⁸⁹⁴ “Granville,” <http://www.uboaat.net/allies/merchants/2784.html>

⁸⁹⁵ Photo source: “Granville,” <http://www.uboaat.net/allies/merchants/2784.html>, courtesy of <http://www.uboaat.net>

Coal Freighter

Historical background

Coal exporting nations such as the Great Britain and the United States relied on freighters to carry coal overseas to foreign customers. SS *Cree* was a dedicated coal freighter, built by the Australian government as the fleet collier HMAS *Biloela*, decommissioned in 1927, and finally bought and renamed *Cree* by Muir, Young Steamship Company in 1937. U-123 (*Kapitänleutnant* Karl-Heinz Moehle) sank *Cree* on November 22, 1940: none of her 45 crewmembers survived.⁸⁹⁶

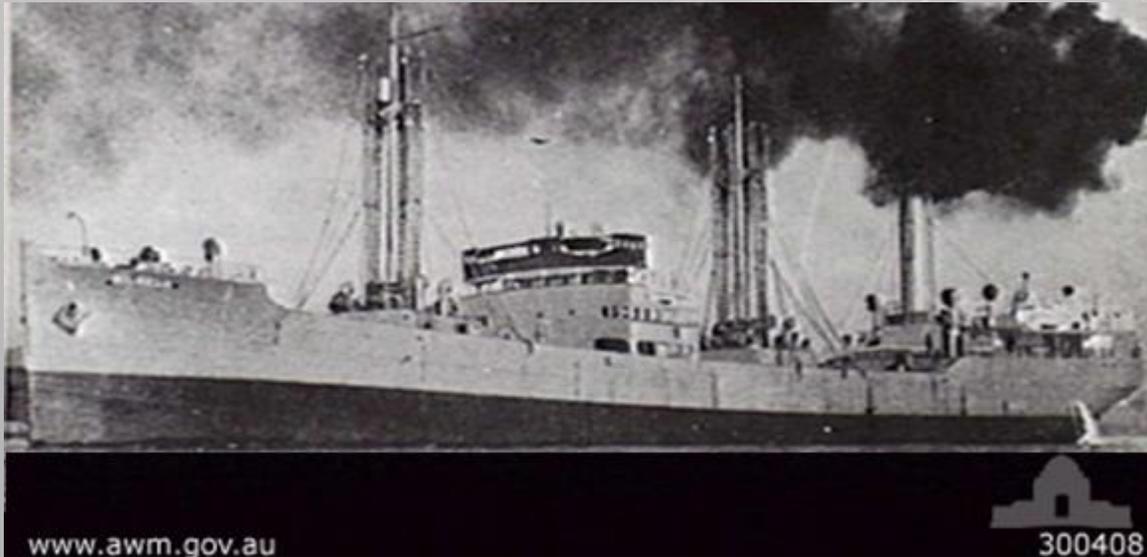


Figure 528: Collier HMAS *Biloela* (1920) later converted to the coal freighter SS *Cree*⁸⁹⁷

The Coal Freighter in GWX

The coal freighter in GWX appears alone, in convoy, or per scripting.



Figure 529: Coal Freighter in GWX

⁸⁹⁶ “Cree,” <http://www.uboot.net/allies/merchants/662.html>

⁸⁹⁷ Photo source: Australian War Memorial #300408, <http://www.awm.gov.au>

Small Freighter

Historical background

D/S *Belize* was a small freighter at 2,153 GRT, built in 1919 at the Manitowoc Shipbuilding Company, Manitowoc, USA and owned during World War II by Krogstads Shipping Agencies, A/S. U-754 (*Kapitänleutnant* Hans Oestermann) torpedoed and sank *Belize* on January 21, 1942 about 40 miles southeast of St. Johns, Newfoundland. None of the 24 men on board *Belize* survived.⁸⁹⁸



Figure 530: D/S *Belize* (formerly SS *Cornucopia*)⁸⁹⁹

The Small Freighter in GWX

The small freighter in GWX will appear randomly in convoys or separately, and as called for by the campaign scripting.



Figure 531: Small freighter in GWX

⁸⁹⁸ "Belize," <http://www.uboat.net/allies/merchants/1275.html>

⁸⁹⁹ Photo: Courtesy of Historical Collections of the Great Lakes, Bowling Green State University, <http://www.bgsu.edu/colleges/library/hcgl/>

Coastal Freighter

Historical Background

Coastal freighters served small settlements on islands and in coastal areas not easily accessible by road or rail. They brought heavy equipment, construction supplies, and automobiles, or anything else the residents needed that was too big or unwieldy to bring by horse-drawn or truck transport, and brought out the industrial and agricultural products of the local economy. These ships provided service where it would be uneconomical to use a larger ship due to the small number of people requiring cargo service.

The U.S. Coast Guard acquired the C1-M-AV1 Type coastal freighter USS *Colquitt* (AK-174) from the U.S. Navy in 1946, with displacement of 5650 GRT and a maximum speed of 10.6 knots. The Coast Guard used her to maintain the network of LORAN radionavigation stations in the Pacific from 1946 until the Government of the Philippines purchased her in 1972.⁹⁰⁰



Figure 532: Coastal freighter USCGC *Kukui* (WAK-186) (ex-USS *Colquitt*) in 1946⁹⁰¹

The Coastal Freighter in GWX

The coastal freighter in GWX is a small freighter transporting goods to and from small ports or isolated locations. They will spawn randomly as merchant traffic, and as called for in the campaign.



Figure 533: Coastal freighter in GWX

⁹⁰⁰ *Kukui*, 1946,” http://www.uscg.mil/History/WEBCUTTERS/Kukui_WAK186_1946.html

⁹⁰¹ Photo source: “*Kukui*, 1946,” http://www.uscg.mil/History/WEBCUTTERS/Kukui_WAK186_1946.html

Great Lakes Freighter

Historical background

Great Lakes freighters or “lakers” ranging from a 1,000 to over 10,000 GRT have hauled bulk cargo such as iron ore, lumber, limestone, grain, salt, coal, cement, sand, slag, and potash through the North American Great Lakes since the 19th century. These boats do not experience saltwater corrosion and can have careers spanning decades; however, several were lost during World War II after the British government requisitioned Canadian lakers to move bulk cargo on the high seas.

The *Chicago Tribune* newspaper used the MV *Chicago Tribune* to carry pulpwood from sawmills in the upper Lakes to an Ontario paper mill to make newsprint; the *Luftwaffe* sank her in the English Channel on June 18, 1940 while she was hauling Welsh coal to France.⁹⁰²

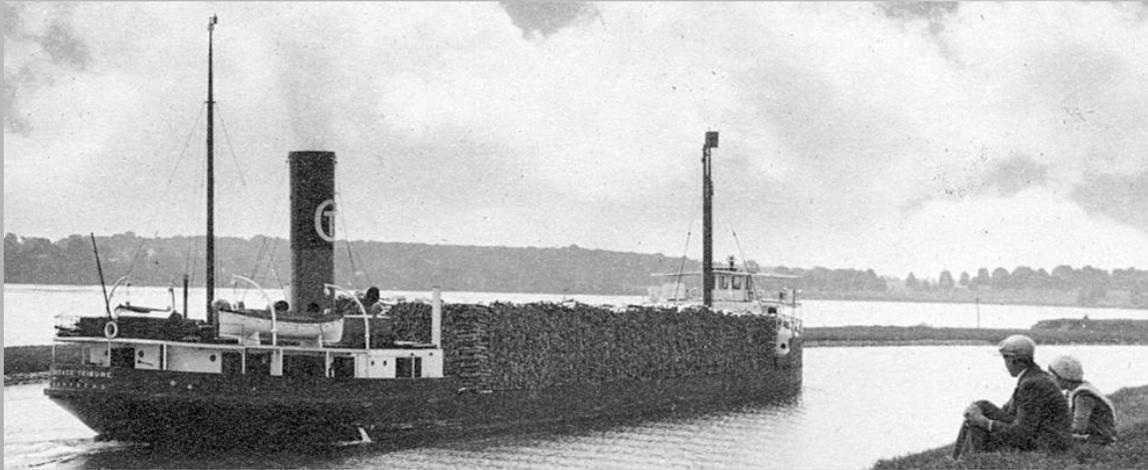


Figure 534: Great Lakes freighter M/V *Chicago Tribune* on the way to the Tribune’s paper mill (1930)⁹⁰³

The Great Lakes freighter in GWX

The Great Lakes freighter in GWX is a generic representation of the Great Lakes freighters called into service on the world’s oceans. It will randomly sailing alone and as called for by the campaign scripting.



Figure 535: Great Lakes freighter in GWX

⁹⁰² “The Quebec and Ontario Transportation Company, Ltd,” *The Scanner*, Vol III, No. 4, January 1971.
<http://www.hhpl.on.ca/GreatLakes/Documents/Scanner/03/04/default.asp?ID=c007>

⁹⁰³ Archives of Ontario # C 7-2-0-7-62, <http://www.archives.gov.on.ca/english/exhibits/paper/1900s.htm>

Passenger Ships

Ocean Liner

Historical Background

The major European shipping companies vied to have the fastest, most luxurious, and largest elite ocean liners serving the lucrative transatlantic passenger routes; RMS *Queen Elizabeth* was the largest ship afloat, displacing over 81,000 tons with routine speeds in excess of 30 knots.

The Holland America Line accepted SS *Nieuw Amsterdam* in 1938, displacing 36,387 GRT, a maximum speed of over 22 knots, providing three-class service to 1,220 passengers with 694 crewmembers. The Netherlands government-in-exile loaned her to Great Britain, which removed her art deco *décor* and converted her to a transport with a capacity of 8,000 troops. She survived the war, sailing more than 530,000 miles while carrying over 378,000 troops, and returned to transatlantic service in 1947.⁹⁰⁴



Figure 536: SS *Nieuw Amsterdam* of the Holland America Line before the war⁹⁰⁵

The Ocean Liner in GWX

GWX adds lighting to the stock *Silent Hunter III* Passenger Liner and restricts it to neutral countries.



Figure 537: Ocean Liner in GWX

⁹⁰⁴ SS *Nieuw Amsterdam*,” from *Maritime World Online*, <http://www.ssmaritime.com/nieuwamsterdam-II.htm>

⁹⁰⁵ Photo source: “SS *Nieuw Amsterdam*,” from *Maritime World Online*, <http://www.ssmaritime.com/nieuwamsterdam-II.htm>

***Ceramic*-type Ocean Liner**

Historical background

SS *Ceramic* was an 18,400 GRT White Star Liner built in 1913 to carry passengers between Great Britain and Australia; the Shaw, Savill, and Albion Line bought *Ceramic* in 1933.⁹⁰⁶ Kapitänleutnant Werner Henke (*U-515*) sank *Ceramic* west of the Azores on December 6, 1942; *U-515* picked up one prisoner of war, but the other 655 people on board were lost in a storm that swept the area soon after.



Figure 538: SS *Ceramic* (1914)⁹⁰⁷

The *Ceramic*-type ocean liner in GWX

Ceramic-type ocean liners in GWX appear as single ships, in convoy, and per scripting



Figure 539: SS *Ceramic*-type Ocean Liner in GWX

⁹⁰⁶ "Shaw, Savill, and Albion Line," <http://www.theshipslist.com/ships/lines/shaw.html>

⁹⁰⁷ Photo source: "Ceramic," <http://uboat.net/allies/merchants/ship/2496.html>, courtesy of uboat.net

Small Ocean Liner

Historical Background

Small ocean liners provided passenger and mail service to less-traveled areas of the world and to those unwilling to pay the price for passage on an elite ocean liner but unwilling to undergo the more Spartan conditions on cargo ships; some changed hands many times over their lifetimes. For example:

- The East Asiatic Company (Copenhagen) through its Russian American Line subsidiary ordered *Tsaritsa* (царіца, “Empress”) in 1915 as a troop transport of 6852 GRT with a maximum speed of 15 knots. She escaped to Britain during the Russian Revolution and was managed as a troop transport by the Cunard Line⁹⁰⁸
- The East Asiatic Company assigned her in 1921 to its new subsidiary, the Baltic-American Line, as the newly named ocean liner *SS Lituania*
- The Gdynia America Line bought her in 1930 and renamed her *SS Kościuszko*
- She escaped the fall of Poland and joined the Polish Navy in 1940 as the troop transport *Gdynia*
- The British used her as the transport *Empire Helford* starting in 1946, and scrapped her in 1950.

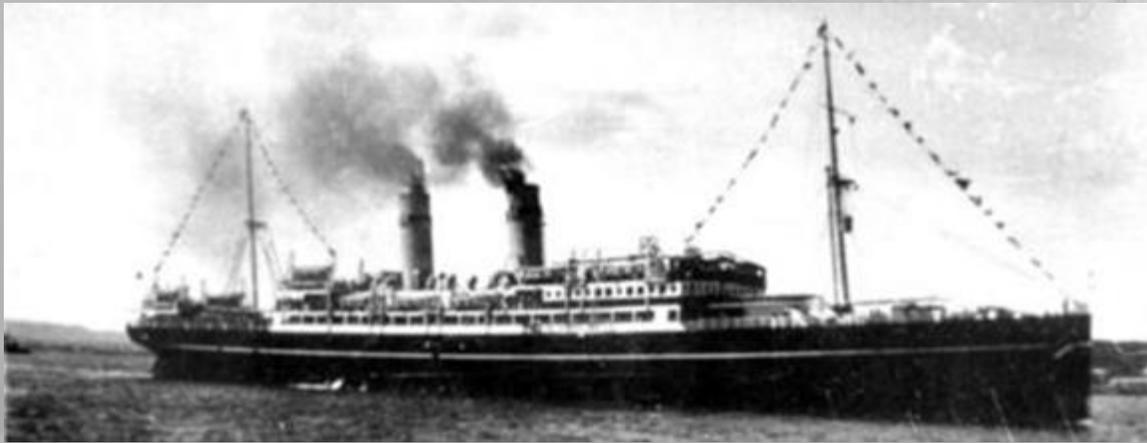


Figure 540: SS *Kościuszko*, Gdynia America Line, 6,852 GRT⁹⁰⁹

The small ocean liner in GWX

The small ocean liner in GWX represents passenger ships much smaller than the elite ocean liners.



Figure 541: Small ocean liner in GWX

⁹⁰⁸ “Ship Descriptions - K,” <http://www.theshipslist.com/ships/descriptions/ShipsK.html>

⁹⁰⁹ “Troopships,” http://www.britisharmedforces.org/ns/ns/nat_troopships.htm

Large Passenger/Cargo Ship

Historical Background

Vickers Ltd. delivered SS *Hobson's Bay* in 1922 to the Aberdeen & Commonwealth Line, Ltd., with displacement of 14,204 GRT and a top speed of 15 knots, providing one-class service between Britain and Australia; she became *Esperance Bay* in 1936. She became HMT *Esperance Bay* in November 1941 after service as an armed merchant cruiser starting in 1939. She returned to passenger service in 1946.⁹¹⁰

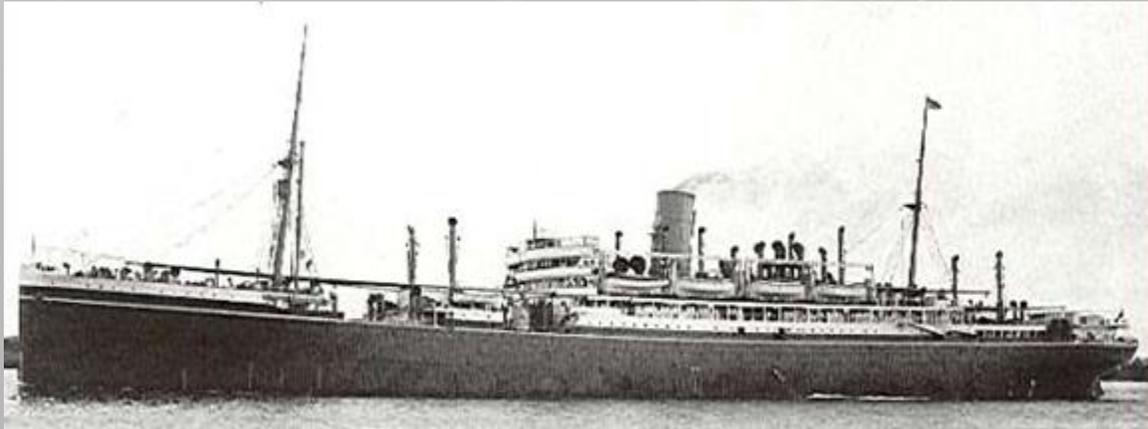


Figure 542: SS *Esperance Bay*, 14,204 GRT⁹¹¹

The Large Passenger/Cargo ship in GWX

The Large Passenger/Cargo ship in GWX is a disarmed, illuminated Armed Merchant Cruiser that is restricted to use by neutral countries. This is possible because the Armed Merchant Cruiser in stock *Silent Hunter III* is based on HMS *Jervis Bay*, a sister ship of the passenger ship SS *Esperance Bay*.



Figure 543: Large Passenger/Cargo Ship in GWX

⁹¹⁰ "Ship descriptions – E," <http://www.theshipslist.com/ships/descriptions/ShipsE.html>

⁹¹¹ Photo source: "Shaw, Savill & Albion," <http://www.merchantnavyofficers.com/ss3.html>

Passenger/Cargo Ship

Historical background

Most cargo ships carried passengers as a means of improving the ship's profitability, and provided Spartan but cheap accommodations to anyone willing to pay for food and passage.

The SS *Caribou* was a 2,222 GRT icebreaker-passenger ferry built in the Netherlands in 1925 for the Newfoundland Railway. The government of Newfoundland, Canada used her during World War II as a ferry between Port au Basques, Newfoundland, and North Sydney, Nova Scotia. U-69 (*Kapitänleutnant* Ulrich Gräf) torpedoed and sank SS *Caribou* in the Cabot Strait on the night of October 14, 1942, with the loss of 136 out of 237 passengers and crew.⁹¹²

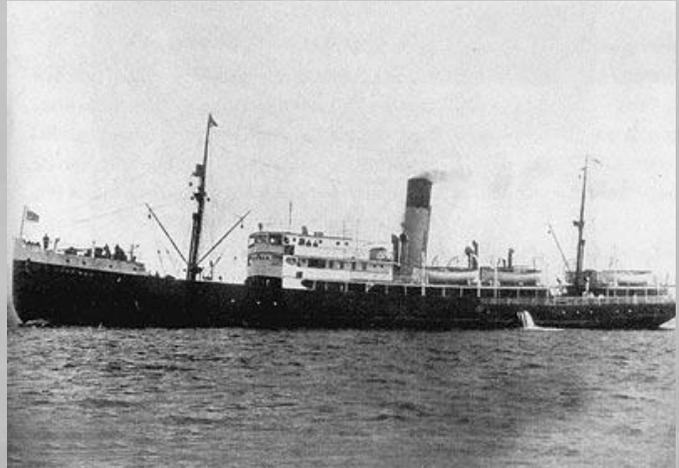


Figure 544: SS *Caribou*, 2222 GRT⁹¹³

The Passenger/Cargo ship in GWX

The Passenger/Cargo ship in GWX will appear randomly and as scripted in the campaign.



Figure 545: *Caribou*-type passenger/cargo ship in GWX

⁹¹² “*Caribou*,” <http://www.uboaat.net/allies/merchants/2270.html>

⁹¹³ Photo source: Royal Military College of Canada, http://www.journal.forces.gc.ca/frgraph/Vol7/no1/09-History2_f.asp

Tankers

Converted Whale Factory Tanker

Historical background

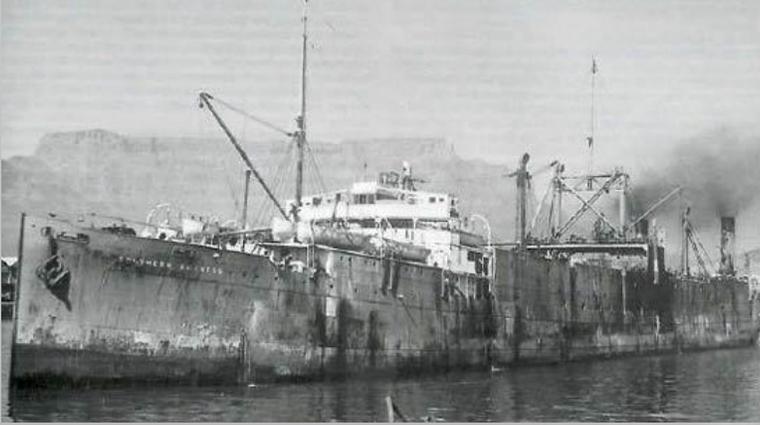


Figure 546: SS *Southern Empress* at work⁹¹⁵

Twentieth century whalers used “catcher” ships to service a “floating factory” ship that processed whale carcasses to obtain oil from whale blubber, with the first floating factories converted from oil tankers. For example, Southern Whaling and Sealing Company converted the tanker SS *San Jeronimo* (built in 1914) into the 12,398 GRT whale factory ship *Southern Empress* in 1928; *U-221* (*Kapitänleutnant Hans-Hartwig Trojer*) torpedoed and sank her on October 14, 1942.⁹¹⁴

It was generally infeasible to send large numbers of unescorted whaling ships into traditional whaling areas during World War II; for example, Norway used its whaling ships to provide revenue for its government-in-exile until the German merchant cruiser *Pinguin* captured them *en masse* off Antarctica on January 14, 1941. As a result, the whaling nations generally used their whale factory ships, whether converted or purpose-built as oil tankers for the duration of the war; these ships also carried bulky deck cargo such as amphibious landing craft.⁹¹⁶

The Converted Whale Factory tanker in GWX

GWX uses a generic converted whale factory tanker, which will appear at random while traveling singly, in convoys, and for scripted campaign events.



Figure 547: Converted Whaling Factory ship in GWX

⁹¹⁴ “Southern Empress,” <http://uboat.net/allies/merchants/ship.html?shipID=2276>

⁹¹⁵ Photo source: <http://uboat.net/allies/merchants/ship.html?shipID=2276>, courtesy of uboat.net

⁹¹⁶ “Norwegian victims of *Pinguin*: Capture of the whaling fleet,” <http://www.warsailors.com/raidervictims/pinguin2.html>

Medium Tanker

Historical background

The SS *Malay* was a typical medium-sized tanker, displacing 8,206 GRT and launched in 1921 by Northwest Bridge and Iron Company, Portland Oregon, USA.⁹¹⁷ U-123 (*Kapitänleutnant* Reinhard Hardegen) shelled and torpedoed *Malay* on January 19, 1942 about 16 miles North-northeast of Cape Hatteras, North Carolina, USA, with the loss of five men out of a crew of 34; the ship did not sink, but instead limped into Hampton Roads, Virginia later that day.⁹¹⁸

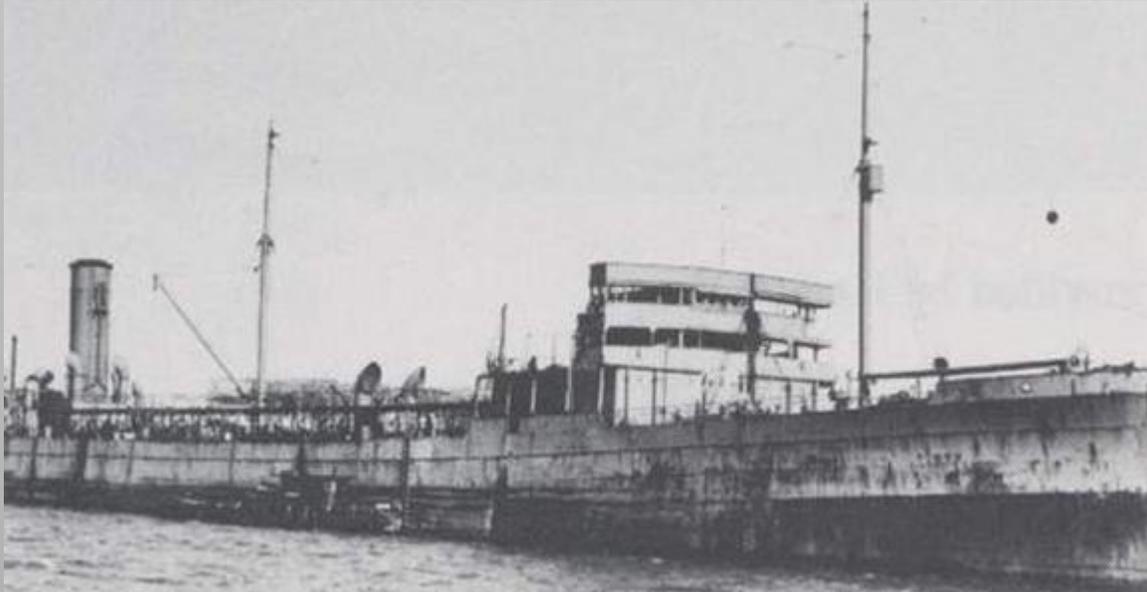


Figure 548: SS *Malay* after being attacked by U-123

The Medium Tanker in GWX

The medium tanker will appear in GWX while traveling singly, in convoys, and for campaign events.



Figure 549: Medium tanker in GWX

⁹¹⁷ “*Malay*,” <http://www.uboat.net/allies/merchants/1271.html>, courtesy of uboat.net

⁹¹⁸ “*Malay*,” <http://www.uboat.net/allies/merchants/1271.html>

Intermediate Tanker

Historical background

The intermediate tanker is a step between large general-purpose tankers and coastal tankers built to deliver petroleum products to areas where it was unprofitable for larger tankers to do so. The MV *Empire Crest* was an example of this type, displacing 3738 GRT. The British MOTW ordered her built in 1944; she served with Anglo Saxon Petroleum Ltd until 1955 and Shell Tankers Ltd. until her owners scrapped her in 1961.



Figure 550: MV *Bursa* (ex-*Empire Crest*), Anglo Saxon Petroleum Ltd., after the war⁹¹⁹

The Intermediate Tanker in GWX

The intermediate tanker in GWX is a generic representation of all tankers of this general size. These tankers will spawn randomly as merchant traffic, and as called for in the campaign.



Figure 551: Intermediate tanker in GWX

⁹¹⁹ Photo source: "Helderline Shell Tankers," <http://www.helderline.nl/>

***Nipiwán Park*-type Tanker**

Historical Background

M/V *Nipiwán Park* was a tanker displacing 2,373 GRT built by Collingwood Shipyards of Ontario, Canada, launched in 1943, and owned by Park Steamship Company. U-1232 (*Kapitän z. S.* Kurt Dobratz) hit her with a torpedo on January 4, 1945 off Halifax, Nova Scotia, blowing off her bow and killing two of her crew.⁹²⁰ The tug *Security* salvaged the stern section and towed it into Halifax the next day; she relaunched with a new, identical bow section as M/V *Irvinglake* in 1946. Note the name of the Canadian park that was the ship's namesake is actually "Nipawin Park" in Saskatchewan.⁹²¹



Figure 552: M/V *Nipiwán Park*⁹²²

The *Nipiwán Park*-type tanker in GWX

Nipiwán Park-type tankers in GWX appear as single ships, in convoy, and per scripting



Figure 553: *Nipiwán Park*-type tanker in GWX

⁹²⁰ "Nipiwán Park," <http://uboat.net/allies/merchants/3413.html>

⁹²¹ Robert C. Fisher, "Canadian Merchant Ship Losses of the Second World War, 1939-1945" http://www.familyheritage.ca/Articles/merchant1.html#N_44

⁹²² Photo source: University of Detroit Mercy, Fr. Edward J. Dowling S.J. Marine Historical Collection

Coastal Tanker

Historical background

The “coastal tanker” is based on two Japanese designs, the *Juyusen* class (906 GRT) and the *Suisen* class (233 GRT), constructed starting in the late 1930’s to transport fuel and water (respectively) between Japan and its forward bases; they were generally given numbers instead of individual names.⁹²³

Western nations had small coastal tankers but their appearance was somewhat different historically, with their deckhouse superstructure aft instead of forward or amidships as with the Japanese designs. Western tankers of this size delivered oil and petroleum products to small harbors and ports, and many now form intentional artificial reefs off the coast of the United States (as opposed to those sunk by U-boats).

The Coastal Tanker in GWX

The coastal tanker in GWX is a generic representation of all ships of this general type. Coastal tankers will spawn randomly as generic coastal traffic, and as called for in the campaign.



Figure 554: Coastal Tanker in GWX

⁹²³ Research by “Danilov,” <http://www.subsim.com/radioroom/showthread.php?t=98809>

Small Vessels

Large Tugboat

Historical Background

Port facilities have used tugboats to precisely position and maneuver large vessels since the first steam-powered vessels sailed in the 19th century. They are relatively small, highly maneuverable, and have powerful engines so they can push or tow vessels many times their own size.

USS *Wando* (YTB 123) was a typical large tugboat: laid down in 1915, she served in the Atlantic Fleet tending buoys, towing gunnery targets into position, assisting ships that had run aground, *etc.*, until decommissioned in 1922. She recommissioned in 1933 in San Francisco and resumed her duties in the Pacific until the end of her naval career, when a private tugboat company purchased her in 1947.⁹²⁴

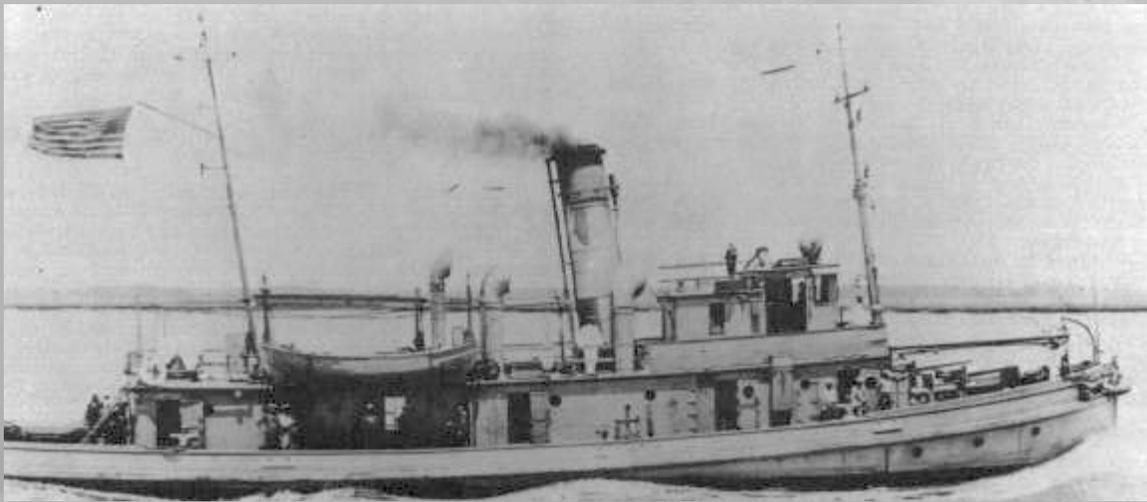


Figure 555: Large harbor tug USS *Wando* (YTB 123)⁹²⁵

The Large Tugboat in GWX

The larger harbor tug in GWX appears randomly and where scripted by the campaign.



Figure 556: Large tugboat in GWX

⁹²⁴ “Wando,” *Dictionary of American Naval Fighting Ships*, <http://www.history.navy.mil/danfs/w2/wando-ii.htm>

⁹²⁵ Photo source: *Dictionary of American Naval Fighting Ships*, <http://www.history.navy.mil/danfs/w2/wando-ii.htm>

Small Coal Tender

Historical Background

Seaports used small coal tenders to bring coal out to refuel large ships with coal-fired boilers starting in the mid-19th century; after the introduction of oil-fired boilers and diesel engines these tenders could still find use moving coal to small seaside villages and ports that still used coal for heating and cooking.

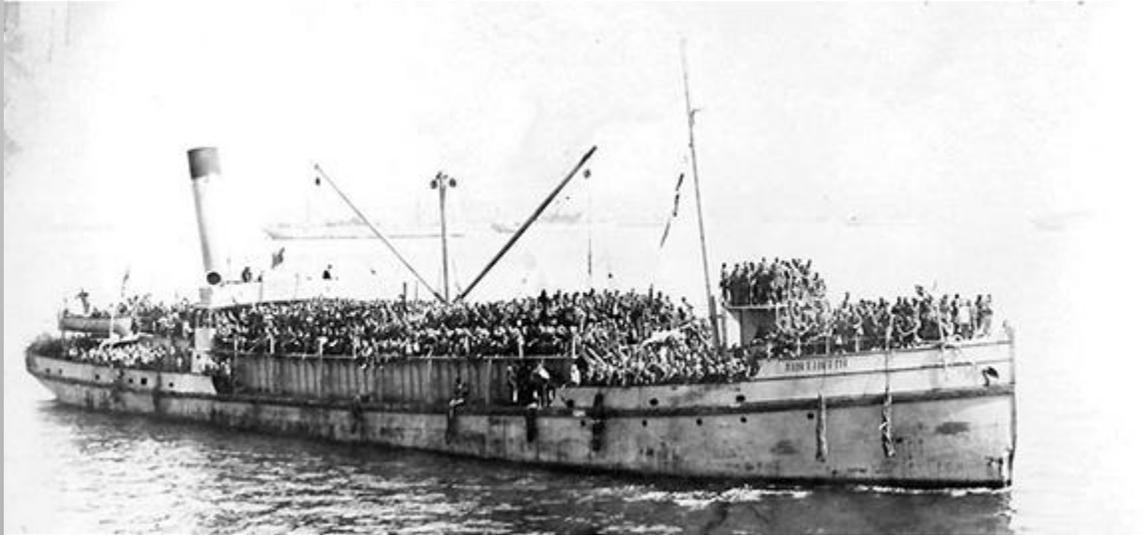


Figure 557: U.S. Navy lighter *Rin Tin Tin* (ex-coal barge *Renfrew*) in Brest Harbor (1919)⁹²⁶

The Small Coal Tender in GWX

The small coal tender in GWX appears alone or per scripting.



Figure 558: Small coal tender in GWX

⁹²⁶ Photo source: U.S. Naval Historical Center #NH 103693, <http://www.history.navy.mil>

Pelagic Trawler

Historical background

Pelagic (or “deep sea”) trawlers tow their nets at depths of several hundred meters, but not so deep as to drag the bottom. These are fishing “ships” rather than “boats” and will range up to 800 tons GRT.

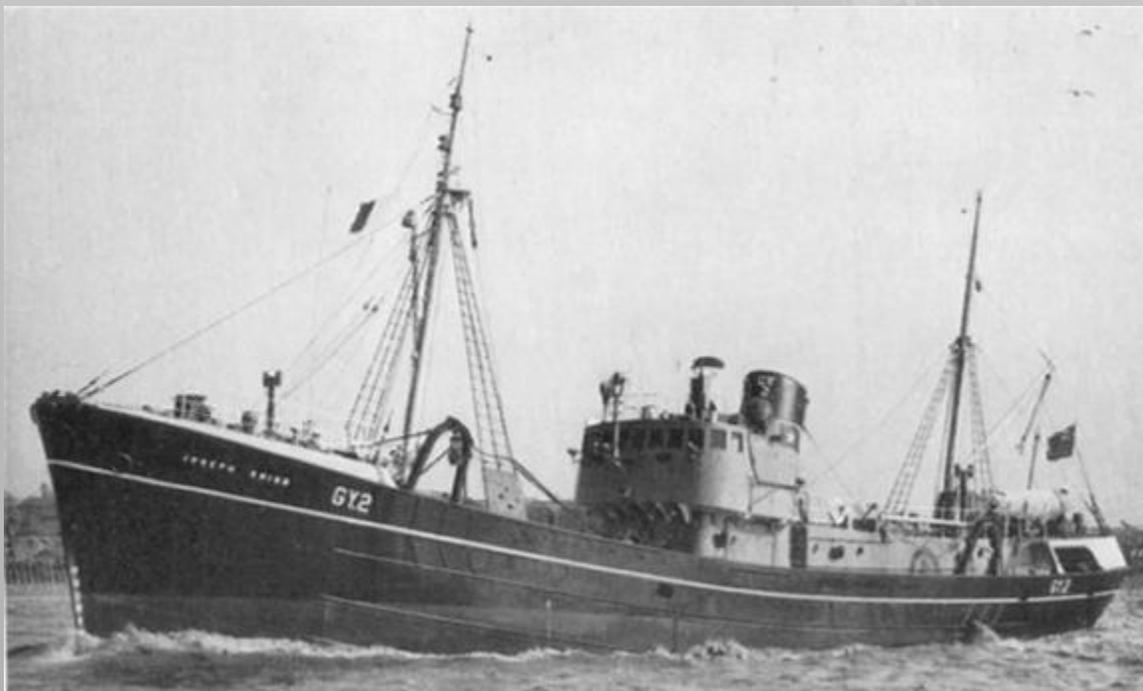


Figure 559: Pelagic trawler MV *Joseph Knibb* (c. 1955)⁹²⁷

The Pelagic Trawler in GWX

Pelagic trawlers in GWX appear randomly and as called for by the campaign.



Figure 560: Pelagic Trawler in GWX

⁹²⁷ Photo source: “K/NIBB/S One Name Study,” <http://freepages.genealogy.rootsweb.com/~knibbetc/page3c.htm>

Large Trawler

Historical background

Large trawlers tow their conical nets behind them at great depths or dragging the seabed for bottom feeding fish such as cod, flounder, halibut, and sole, and anything else near the bottom of the sea.



Figure 561: Large trawler *Portia* (1975)⁹²⁸

The Large Trawler in GWX

Large trawlers in GWX appear randomly and as called for by the campaign.



Figure 562: Large Trawler in GWX

⁹²⁸ Photo source: "Trawlers and Trawlermen," <http://www.hmsbacchante.co.uk/page2.htm>

Sailing Ships

Fishing Ketch

Historical background

Small sailing fishing boats have plied their trade since the dawn of civilization off every shore in Europe and Asia where people earn their livelihood from the sea. Modern sailing fishing boats are motorized, but having a suit of sails with which to catch the wind can be a blessing when operating under severe wartime fuel rationing.



Figure 563: Fishing boat under sail off Brest, France (2001)⁹²⁹

The Fishing Ketch in GWX

The fishing ketch in GWX appears randomly and where called for by the campaign scripting.



Figure 564: Fishing ketch in GWX

⁹²⁹ Image courtesy of and © <http://www.raingod.com/angus/>, Angus McIntyre 2001.

Small Fishing Boat

Historical background

Small fishing boats ply the coastal waters of all nations. Many fishing boats during the early- to mid-20th century were sail-powered with an auxiliary engine.



Figure 565: Fifie-type fishing boat *Reaper*⁹³⁰

The Small Fishing Boat in GWX

The small fishing boats in GWX appear randomly and as called for in the campaign. The boat in GWX is using its auxiliary engine rather than its sails.



Figure 566: Small fishing boat in GWX

⁹³⁰ "Fifie," <http://en.wikipedia.org/wiki/Fifie>

Schooner

Historical background

Schooners are small sailing vessel with two or more masts with fore-and-aft sail rigging. The name derives from the Scottish word “*scoon*,” meaning to skip or skim over the water, which was transliterated into Dutch as “*schoon*.” These ships have provided service as fishing boats and coastal transports from the 18th century onwards, especially on the North American Great Lakes.⁹³¹



Figure 567: French Navy schooner *L'Étoile* (“Star”) (1999)⁹³²

The schooner in GWX

Schooners appear in GWX at random in coastal areas, and as called for by campaign scripting.



Figure 568: A schooner in GWX

⁹³¹ “Schooner,” <http://en.wikipedia.org/wiki/Schooner>

⁹³² Photo credit: Guillaume Rueda, <http://www.netmarine.net> at <http://en.wikipedia.org/wiki/Schooner>

Sailing Sloop

Historical background

A sloop is a small vessel with a fore-and-aft sailing rig designed to optimize upwind sailing. Small sloop-like fishing vessels were the backbone of small coastal fishing industries for centuries, but people more recently began using them as recreational watercraft.⁹³³



Figure 569: Two sloops off Maine, USA (2003)⁹³⁴

Sailing sloops in GWX

The sailing sloop in GWX is found randomly in coastal areas, and as called for by scripted events.



Figure 570: A sailing sloop in GWX

⁹³³ "Sloop," <http://en.wikipedia.org/wiki/Sloop>

⁹³⁴ Photo source: "Schooner *Olad*," <https://www.maineschooners.com/>

Medium Junk

Historical background

The junk is a classic Chinese sailing vessel of ancient design dating back to at least the 2nd Century CE; the name derives from the Malaysian word *jong* (“ship”). People in Asia have and continue to use them for all manner of ocean going and river borne commerce in China and throughout Asia.⁹³⁵



Figure 571: Chinese Junk *Wing Sing* (2005)⁹³⁶

Medium junks in GWX

U-boat commanders may find medium junks at random throughout Asia in GWX, and as called for by the campaign scripting.



Figure 572: Medium sailing junk in GWX

⁹³⁵ “Junk (ship),” http://en.wikipedia.org/wiki/Junk_%28ship%29

⁹³⁶ Photo source: Hong Kong Tourism Board, <http://partnet.hktb.com/>

Small Junk

Historical background

The sampan (舢舨), literal Cantonese for “three planks,” is a small boat from 12 to 15 feet long used for commerce and transportation in Asian coastal waters and inland waterways.⁹³⁷



Figure 573: Fishing sampan with junk-rigged sails north of Java (1940's)⁹³⁸

Small junks in GWX

Small junks in GWX are sampans with junk-rigged sails. They are found anywhere in the coastal waters of Asia singly or in groups, appearing randomly and as called for in the campaign scripting.



Figure 574: Small junk in GWX

⁹³⁷ “Sampan,” <http://en.wikipedia.org/wiki/Sampan>

⁹³⁸ Photo source: <http://fr.wikipedia.org/wiki/Sampan>

Illuminated Ships

Historical background

Germany discussed treating well-lighted merchant ships as neutrals during its World War I unrestricted submarine warfare campaign,⁹³⁹ as belligerent merchant ships turned their lights off to avoid giving away their location, but this was only an informal convention. Neutral ships usually used red, green, and white navigation lights to reduce the danger of collisions at sea, but the masters of neutral merchant ships sailing alone during World War II would sail darkened if they felt U-boats would attack anyways.

Illuminated ships in GWX

Illuminated ships in GWX represent *some* (but not *all*) shipping of currently neutral countries; merchant ships from countries currently at war or allied with Germany will always sail under blackout conditions, while Red Cross hospital ships always sail under illumination. **Note: Illuminated ships of neutral that leave port before their nations join the war are legitimate targets once war begins, but will remain lit until they reach port.**



Figure 575: Illuminated ocean liner in GWX



Figure 576: Illuminated large passenger/cargo ship in GWX

⁹³⁹ Letter from Ambassador Count Johann von Bernsdorf to Robert Lansing, U.S. Secretary of State, January 17, 1917



Figure 577: Illuminated large tanker in GWX



Figure 578: Illuminated small tanker in GWX



Figure 579: Illuminated medium (C2) merchant ship in GWX



Figure 580: Illuminated small merchant ship in GWX



Figure 581: Illuminated tramp steamer in GWX



Figure 582: Illuminated motor vessel in GWX



Figure 583: Illuminated tugboat in GWX



Figure 584: Illuminated fishing ketch in GWX

New and Remodeled Aircraft

Order of Battle changes

Table 22: Changes to stock *Silent Hunter III* National Orders of Battle for aircraft

Nation	Added
Argentina	OS2U-3 Kingfisher observation/scout plane Catalina maritime patrol bomber
Australia	Anson Mk I maritime patrol bomber Beaufighter fighter-bomber Beaufort torpedo bomber Catalina maritime patrol bomber Liberator heavy bomber Liberator maritime patrol bomber Halifax Mk VI heavy bomber Hudson Mk III maritime patrol bomber Hurricane Mk IIC fighter-bomber Mosquito fighter-bomber P-38 Lightning fighter-bomber Sunderland Mk III maritime patrol bomber OS2U-3 Kingfisher observation/scout plane Wellington maritime patrol bomber
Belgium	Hurricane Mk IIC fighter-bomber (squadrons in the RAF)
Brazil	Catalina maritime patrol bomber Hudson A-28 maritime patrol bomber Liberator maritime patrol bomber S.M. 79 <i>Sparviero</i> medium bomber
Bulgaria	Ar 196 observation/scout plane Ju-87 <i>Stuka</i> dive bomber Ju 88 medium bomber Bf 109 fighter-bomber
Canada	Anson Mk I maritime patrol bomber Beaufighter fighter-bomber Beaufort torpedo bomber Fortress heavy bomber Halifax Mk VI heavy bomber Liberator heavy bomber Liberator maritime patrol bomber Hudson Mk III maritime patrol bomber Sunderland Mk III maritime patrol bomber Swordfish torpedo bomber Wellington maritime patrol bomber
Croatia	Ju-87 <i>Stuka</i> dive bomber Bf 109 fighter-bomber
Egypt	Anson Mk I maritime patrol bomber Hurricane Mk IIC fighter-bomber
Finland	Ar 196 observation/scout plane Anson Mk I maritime patrol bomber DB-3 medium bomber
Free France	Anson Mk I maritime patrol bomber Hurricane Mk IIC fighter-bomber

Nation	Added
France	Anson Mk I maritime patrol bomber (after October 1944)
Germany	Ar 196 observation/scout plane Fa 223 <i>Drache</i> helicopter Fi 103 <i>Vergeltungswaffe</i> (V-1) He 111 medium bomber Ju 88A medium bomber Ju 88C fighter-bomber
Great Britain	Anson Mk I maritime patrol bomber Beaufighter fighter-bomber Beaufort torpedo bomber Fortress maritime patrol bomber Liberator maritime patrol bomber Halifax GR 2 maritime patrol bomber Halifax Mk VI heavy bomber Hudson Mk III maritime patrol bomber Hurricane Mk IC fighter-bomber Martlet fighter-bomber Mosquito fighter-bomber Tsetse (Mosquito) fighter-bomber Whitley maritime patrol bomber OS2U-3 Kingfisher observation/scout plane
Greece	Anson Mk I maritime patrol bomber Hurricane Mk IIC fighter-bomber
Hungary	He 111 medium bomber Ju-87 <i>Stuka</i> dive bomber Ju 88 medium bomber Bf 109 fighter-bomber
India	Anson Mk I maritime patrol bomber Beaufighter fighter-bomber Hurricane Mk IIC fighter-bomber Hudson Mk III maritime patrol bomber
Ireland	Anson Mk I maritime patrol bomber Hurricane Mk IIC fighter-bomber
Italy	Ju 88 medium bomber
Japan	A6M2 "Zero" fighter-bomber A6M2-N "Rufe" fighter-bomber
Mexico	OS2U-3 Kingfisher observation/scout plane
Netherlands	Anson Mk I maritime patrol bomber Catalina maritime patrol bomber Hurricane Mk IIC Hudson Mk III maritime patrol bomber OS2U-3 Kingfisher observation/scout plane (1941)
New Zealand	Anson Mk I maritime patrol bomber Avenger torpedo bomber Beaufighter fighter-bomber Beaufort torpedo bomber Catalina maritime patrol bomber Hudson Mk III maritime patrol bomber Hurricane Mk IIC fighter-bomber Mosquito fighter-bomber Sunderland Mk III maritime patrol bomber Wellington maritime patrol bomber

Nation	Added
Norway	Catalina maritime patrol bomber (squadrons in RAF) Mosquito fighter-bomber (squadrons in RAF)
Poland	Anson Mk I maritime patrol bomber (squadrons in RAF) Beaufighter fighter-bomber (squadrons in RAF) Halifax Mk VI heavy bomber (squadrons in RAF)
Portugal	Hurricane Mk IIC fighter-bomber Hudson Mk III maritime patrol bomber P-38 Lightning fighter-bomber*
Romania	He 111 medium bomber S.M. 79 <i>Sparviero</i> medium bomber
RSI	Bf 109 fighter-bomber S.M. 79 <i>Sparviero</i> medium bomber
South Africa	Anson Mk I maritime patrol bomber Beaufighter fighter-bomber Beaufort torpedo bomber Catalina maritime patrol bomber Liberator heavy bomber Liberator maritime patrol bomber Hudson Mk III maritime patrol bomber Hurricane Mk IIC fighter-bomber Sunderland Mk III maritime patrol bomber Wellington maritime patrol bomber
Soviet Union	Catalina maritime patrol bomber DB-3 medium bomber Hurricane Mk IIC fighter-bomber Tu-2 medium bomber
Spain	Fw 200 <i>Condor</i> maritime patrol bomber* He 111 medium bomber (CASA 2-111) Ju 88 medium bomber Me 109 fighter-bomber SM 79 torpedo bomber
Turkey	Anson Mk I maritime patrol bomber He 111 medium bomber Hurricane Mk IIC fighter-bomber
United States	Beaufighter fighter-bomber PBO-1 Hudson maritime patrol bomber B-17 heavy bomber B-24 heavy bomber F4F-4 Wildcat fighter-bomber K-class airship OS2U-3 Kingfisher observation/scout plane PB4Y-1 Liberator maritime patrol bomber
Uruguay	OS2U-3 Kingfisher observation/scout plane
Yugoslavia	Hurricane Mk IIC fighter-bomber Bf 109 fighter-bomber S.M. 79 <i>Sparviero</i> medium bomber

* Represents aircraft interned during the war

Germany

Arado Ar 196 observation/scout plane

Historical background

The Arado *flugzeugwerke* GmbH Ar 196 was the standard German floatplane found in *Luftwaffe** *bordfliegerstaffeln* (“on-board aircraft squadrons”) and shore-based *seeaufklärungsstaffeln* (“maritime reconnaissance squadrons”).⁹⁴⁰ Bulgaria and Romania used them to patrol the Black Sea.⁹⁴¹ The most famous Ar 196 exploit was the capture of the submarine HMS *Seal* on May 5, 1940 by two Ar 196 floatplanes when a mine damaged the submarine, immobilizing it and forced it to the surface.⁹⁴²



Figure 585: Arado Ar 196 observation/scout plane of *Seeaufklärungsgruppe 125* in Norway⁹⁴³

The Arado Ar 196 observation/scout plane in GWX

The Ar 196 conducts air patrols from large German air bases, and from German capital ships.



Figure 586: Ar 196 observation/scout plane in GWX

* Hermann Göring insisted the *Luftwaffe* exercise control over all military aviation in Germany, including ship-based aircraft.

⁹⁴⁰ “Arado Ar 196,” http://en.wikipedia.org/wiki/Arado_Ar_196; “Aircraft,” <http://www.kbismarck.com/avioni.html>

⁹⁴¹ “Arado Ar 196A-5,” <http://www.nasm.si.edu/research/aero/aircraft/aradoar.htm>

⁹⁴² “UB,” <http://uboat.net/boats/ub.htm>

⁹⁴³ Photo source: <http://ja.wikipedia.org>

Fieseler Fi 103 “*Vergeltungswaffe 1*” (V-1)

Historical background

The Gerhard Fieseler *Werke* GmbH and Argus-Motoren GmbH proposed the idea of a pilotless flying bomb early in the war to the *Luftwaffe*, which showed no interest until the British mounted the first “1000-plane raids” against Köln and Essen on May 30 and June 2, 1942, and the *Luftwaffe* realized it had no way to retaliate in kind. Fieseler began work on the Fi 103, or “*Vergeltungswaffe 1*” (V-1) (“Retaliatory Weapon 1”) as the *Propagandaministerium* (“Propaganda Ministry”) called it, in June 1942 at Peenemünde, with the first test flights that December.⁹⁴⁴ It could not take off under its own power, and so it was air-launched from an He 111H bomber or launched from a ground base using a steam or chemical catapult to push it up a ramp to a launch speed of over 300 km/h.

Germany launched the first V-1s against Britain on June 13, 1944 from bases in northern France; over 2,000 were launched within two weeks, and starting the next month V-1s were air-launched from He 111H bombers over the North Sea. Its pulsejet engine fired at a rate of 40-50 pulses per second, pushing the Fi 103 at almost 400 knots while carrying an 850-kg warhead up to 250 km, giving the V-1 its distinctive engine noise that led the Allies to call it the “buzz bomb.” A manned version for suicide attack missions (the Fi 103R *Reichenberg* variant) was developed but never used, though the Fi 103R inspired the Japanese to develop the Yokosuka MXY-7 *Okha* (櫻花, “cherry blossom”), a short-ranged, air-launched, rocket-powered *kamikaze* with a 1,200 kg warhead.⁹⁴⁵

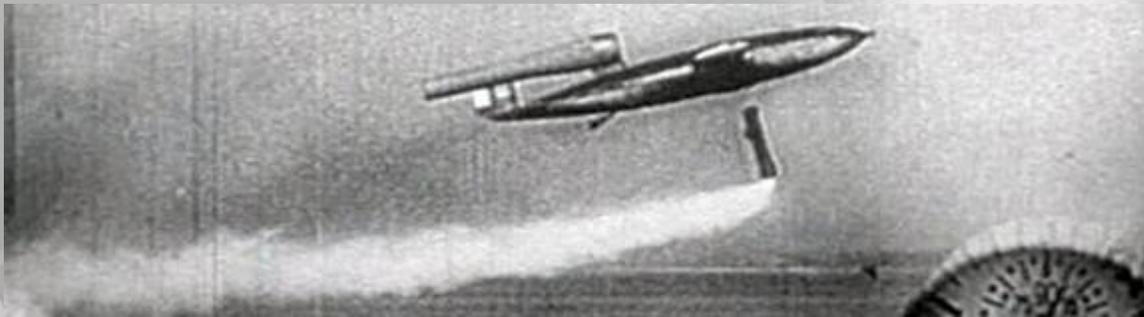


Figure 587: Fi 103 moments after launch with catapult launch piston shown falling away⁹⁴⁶

The Fi 103 *Vergeltungswaffe 1* in GWX

The Fi 103 *Vergeltungswaffe 1* in GWX appears solely as a scripted unit.

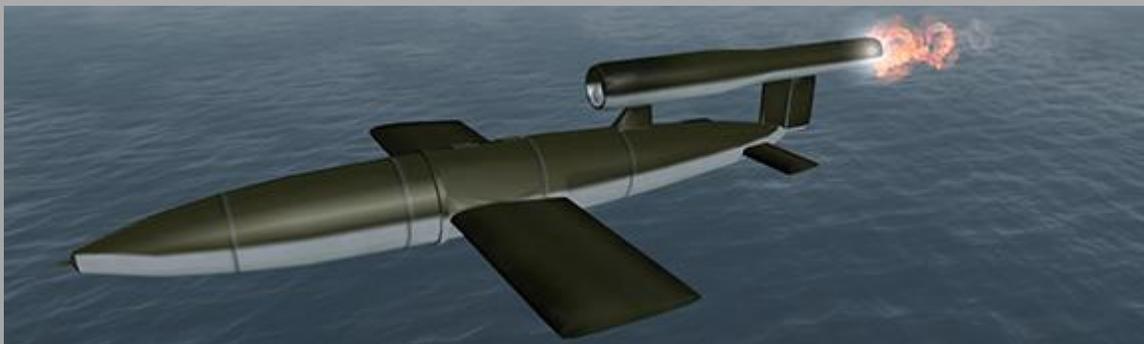


Figure 588: Fi 103 *Vergeltungswaffe 1* in GWX

⁹⁴⁴ “V-1 buzz bomb,” <http://www.fiddlersgreen.net/AC/aircraft/V1/info/info.php>

⁹⁴⁵ “V1 flying bomb,” http://en.wikipedia.org/wiki/V-1_flying_bomb

⁹⁴⁶ Photo source: “*Les bombes volantes V1*,” http://maridor.free.fr/francais/v1_f.htm

Focke-Achgelis Fa 223 “*Drache*” helicopter

Background

The Focke-Achgelis & Co. GmbH began developing the Fa 223 *Drache* (“Dragon”) in response to a 1938 request from the RLM to develop a helicopter that could lift and transport 700 kg of cargo. Focke-Achgelis completed the Fa 223 prototype in August 1939 but faced formidable development issues, and so the first production models were not available until early 1942. The *Luftwaffe* ordered 100 Fa 223s, but bombing and production problems limited total production to 20 units, of which only 10 flew before the end of the war; Great Britain and the U.S. captured the only two surviving units.⁹⁴⁷ The Fa 223 carried one machine gun in the nose, and was equipped with an electric winch to carry up to 1280 kg of cargo carried inside or suspended in a net below the helicopter.⁹⁴⁸



Figure 589: Fa 223 prototype V11 “*Drache*” undergoes testing at Travemünde⁹⁴⁹

The Focke-Achgelis Fa 223 “*Drache*” helicopter in GWX

The Focke-Achgelis Fa 223 “*Drache*” appears as scripted in the campaign.



Figure 590: Focke-Achgelis Fa 223 “*Drache*” in GWX

⁹⁴⁷ “Focke-Achgelis,” <http://www.hubschraubermuseum.de/archiv/hersteller/focke-achgelis#>

⁹⁴⁸ Greg Goebel, “European Helicopter Pioneers,” http://www.vectorsite.net/avheli_1.html

⁹⁴⁹ Photo source: Wikipedia Commons, http://commons.wikimedia.org/wiki/Image:Fa_223-1.JPG

Focke-Wulf Fw 200 “Kondor” maritime patrol bomber

Historical background

The Focke-Wulf *Flugzeugbau* AG developed the Fw 200 *Kondor* (“Condor”) in 1937. It entered service with *Deutsche Luft Hansa* (DLH) AG as a civilian airliner in 1938, where it was the first aircraft to fly non-stop from Berlin to New York. Japan asked for a militarized version for use as a maritime patrol bomber, but the *Luftwaffe* took control of it and used it as the basis for developing military Condors after Focke-Wulf was unable to deliver the prototype (Fw 200 V10) to the Japanese before the war began in 1939. The militarized versions included VIP transports for Adolf Hitler and Heinrich Himmler, but the Fw 200 fleet suffered many structural and landing gear failures since Focke-Wulf designed it to transport passengers, and it had difficulty withstanding the rigors of day-to-day military operations.

The Condor was effective against merchant shipping, but was limited to conducting convoy surveillance after April 1941 when Sea Hurricane fighters launched from [Catapult-Armed Merchantmen](#) (CAMs) began shooting down Condors that came too close to the convoys. Later versions of the Condor were equipped with surface search radar, and in late 1943 were equipped to carry a single Hs-293 anti-ship guided missile. *Note: GWX does not model anti-ship guided missiles.*⁹⁵⁰



Figure 591: Fw 200 “Kondor” maritime patrol bomber of KG40⁹⁵¹

The Focke-Wulf Fw 200 “Kondor” maritime patrol bomber in GWX

GWX replaces the Condor model from stock *Silent Hunter III*, but does not change the way it operates.



Figure 592: Fw 200 “Kondor” maritime patrol bomber in GWX

⁹⁵⁰ “Focke-Wulf Fw 200 ‘Condor’,” “*Jets45*” to Z list of jets and histories.

<http://tanks45.tripod.com/Jets45/Histories/Fw200/Fw200.htm>

⁹⁵¹ Photo source: http://en.wikipedia.org/wiki/Image:Focke_Wulf_Fw200.jpg

Heinkel He 111H medium bomber

Historical background

Heinkel *Flugzeugwerke* developed the He 111 in 1934. It entered service with DLH in 1935 as a civilian airliner and with the *Luftwaffe* as a bomber in 1936, with field-testing in the *Legión Condór* during the Spanish Civil War. The H model could carry 2,000kg of bombs and had a defensive armament of six machine guns and one 20mm cannon; one variant carried two torpedoes and another carried the Hs-293 anti-ship guided missile. *Note: GWX does not model aerial torpedoes or anti-ship guided missiles.*

He 111 bombers formed the backbone of the *Luftwaffe* bomber force at the start of the war, but were obsolescent by 1943; however, the *Reichsluftfahrtministerium* (RLH) failed to develop a suitable replacement so the He 111 remained in production until 1944 and served until the end of the war, though more frequently as a fast passenger transport and supply aircraft.⁹⁵² *Construcciones Aeronáuticas SA* produced 200 He 111 copies (CASA 2-111) in Spain under license from Heinkel starting in 1941; these aircraft served as air transports through 1965, after which a few were used as stunt aircraft in movies such as *Battle of Britain* and *Patton*. The U.S.-based Commemorative Air Force owned the last flying example: it crashed due to engine failure in 2003, killing both crewmembers.⁹⁵³



Figure 593: He 111H medium bomber of KG51 “*Edelweiß*”⁹⁵⁴

The Heinkel He 111H medium bomber in GWX

GWX uses the Heinkel He 111H to represent all He 111 medium bomber types used during the war.



Figure 594: He 111H medium bomber in GWX

⁹⁵² “Heinkel He 111,” http://en.wikipedia.org/wiki/Heinkel_He_111

⁹⁵³ “Commemorative Air Force,” <http://www.commemorativeairforce.org/news/2003/nr-03-0710.html>

⁹⁵⁴ Photo source: “T-bird,” at <http://kg51edelweiss.tripod.com/id220.htm>

Junkers Ju 87B “Stuka” dive bomber

Historical background

Junkers *Flugzeug- und Motorenwerke* AG developed the Ju 87 *sturzkampfflugzeug* (“dive bomber”) or “Stuka” in the mid-1930s to provide heavy “artillery” support for mobile ground units that had moved beyond the support of slow-moving artillery units during *blitzkrieg* operations. The Ju 87B (“Bertha”) came to symbolize the *blitzkrieg* and the Luftwaffe’s early war successes, as well as its failure in the Battle of Britain where the Stukas were withdrawn after suffering staggering losses against the RAF. The *Luftwaffe* thereafter restricted Stukas to areas where they faced little aerial opposition and they proved again successful in the Balkans, Crete, North Africa, and the Eastern Front until the Allies began to achieve overall air superiority in 1943.⁹⁵⁵



Figure 595: Junkers Ju 87B “Stuka” dive-bombers of 208° Squadriglie, 96° Gruppo Bombardieri⁹⁵⁶

The Junkers Ju 87B “Stuka” in GWX

GWX replaces the Ju 87 model from stock *Silent Hunter III* but does not change the way it operates. The Ju 87B represents all Ju 87 Stuka variants used during the war.



Figure 596: Ju 87B “Stuka” dive bomber in GWX

⁹⁵⁵ “Junkers Ju 87B “Bertha,” <http://www.warbirdsresourcegroup.org/LRG/ju87b.html>

⁹⁵⁶ Photo source: “Call of Duty Alliancze,” <http://www.cod.alliancze.org/12/2464/>

Junkers Ju 88A medium bomber

Historical background

Junkers *Flugzeug- und Motorenwerke* AG developed the Ju 88 in response to a 1936 Luftwaffe request for a *schnellbomber* (“fast bomber”), which the RLM required to act as a dive-bomber as well: Junkers did not correct the problems with the A-1 version until the A-4 version was available in mid-1940. The Ju 88 proved to be one of the most versatile aircraft of the war, with variants developed for roles as fighter-bombers, torpedo bombers, high-altitude reconnaissance aircraft, and night fighters.⁹⁵⁷



Figure 597: Ju 88A medium bombers of KG51 “Edelweiß”⁹⁵⁸

The Junkers Ju 88 medium bomber in GWX

GWX replaces the Ju 88 model from stock *Silent Hunter III*, and represents all Ju 88A bomber variants.



Figure 598: Ju 88A medium bomber in GWX

⁹⁵⁷ “Junkers Ju 88,” http://en.wikipedia.org/wiki/Junkers_Ju_88

⁹⁵⁸ Photo source: <http://www.tayyareci.com/digerucaklar/almanya/ww2/ju88.asp>

Junkers Ju 88C fighter-bomber

Historical background

Junkers *Flugzeug- und Motorenwerke* AG began developing in the Ju 88C *zerstörer* (“destroyer” or “heavy fighter”) in 1938 based on the Ju 88A *schnellbomber* (“fast bomber”). The Ju 88C had many variants, including fighter-bombers, *zerstörer*; and radar-equipped night fighters. The *zerstörer* had three 7.9mm machine guns and a 20mm cannon in the nose, two forward-firing 20mm cannon in the ventral gondola, and one defensive 7.9mm machine gun.

V *Gruppe*/KG 40 at Bordeaux, France began using Ju 88C-6a *zerstörer* in September 1942 to hunt Allied ASW aircraft and to provide long-range fighter escort for German vessels in the Bay of Biscay; one patrol mistakenly shot down a British DC-3 airliner carrying film actor Leslie Howard on June 1, 1943. The Allies countered with by giving their ASW aircraft Beaufighter and Mosquito escorts, which overmatched the Ju 88C and caused heavy casualties among them by April 1944; the surviving Ju 88Cs were expended in futile attacks against the Normandy invasion beaches.⁹⁵⁹



Figure 599: Ju 88C-6a *zerstörer* (heavy fighters) of KG40⁹⁶⁰

The Junkers Ju 88C fighter-bomber in GWX

GWX uses the Junkers Ju 88C-6a *zerstörer* to represent all Ju 88C *zerstörer*, fighter-bombers, and night-fighters used during the war.



Figure 600: Ju 88C *zerstörer* (heavy fighter) in GWX

⁹⁵⁹ “Junkers Ju 88 fighter variants,” http://www.aeroflight.co.uk/types/germany/junkers/ju_88/Ju_88_nf.htm

⁹⁶⁰ Photo source: <http://www.afwing.com/combat/luftwaffe/9.htm>

Messerschmitt Bf 109E “Emil” fighter-bomber

Historical background

Bayrische Flugzeugwerke (BFW) AG developed the first Bf 109 prototypes designed by Wilhelm E. “Willy” Messerschmitt in 1935. Messerschmitt became BFW’s managing director of BFW in 1938, whereupon the company changed its name to Messerschmitt AG, which resulted in the Bf 109 being commonly known as the Me 109. The Bf 109E was Germany’s premier fighter aircraft at the start of the war, with a maximum speed of 350 mph at altitude, but a range of only 355 nautical miles; its armament consisted of two 20mm cannon, two 7.9mm machine guns, and a 250kg bomb.⁹⁶¹ Subsequent Bf 109F, G, and K variants supplanted the Bf 109E as the Allies improved their own fighter designs.



Figure 601: Bf 109E of JG 27 “Afrika” in tropical configuration and desert camouflage⁹⁶²

The Messerschmitt Bf 109E fighter-bomber in GWX

GWX replaces the Bf 109 model from stock *Silent Hunter III* but does not change the way it operates. The Bf 109 stands in for all German single-engined fighters and fighter-bombers used during the war.



Figure 602: Messerschmitt Bf 109E fighter-bomber in GWX

⁹⁶¹ “BF-109E,” http://www.vectorsite.net/avbf109_1.html#m4

⁹⁶² Photo source: “Messerschmitt Bf 109,” <http://www.warbirds.be/web/content.php?article.85>

Great Britain

Armstrong Whitworth "Whitley" Mk VII maritime patrol bomber

Historical Background

The Sir W. G. Armstrong Whitworth Aircraft Company's "Whitley" medium bomber first flew in 1937 and was Britain's only heavy bomber at the start of World War II: early versions dropped their bombs through bomb bay doors held closed by bungee cords. The RAF began phasing out the Whitleys when four-engined heavy bombers became available in early 1941, and they were out of front-line service by April 1942. The Mk V had a range of 1,500 miles, carried 7,000 lbs. of bombs, and armament of five defensive machine guns. The Mk VII had extra fuel tanks to extend its range to about 3,000 miles with reduced bombload, and had ASV Mk II radar.⁹⁶³

The RAF transferred a squadron of Whitleys from Bomber Command to Coastal Command from October 1939 through January 1940;⁹⁶⁴ Coastal Command used its own Whitleys from October 1940 through 1944. The first U-boat sunk by a Whitley was *U-751* (*Kapitänleutnant* Gerhardt Bigalk) on July 17, 1942, with credit shared with a Lancaster heavy bomber.⁹⁶⁵



Figure 603: Armstrong-Whitworth "Whitley" Mk VII of No. 612 squadron (note ASV dipoles)⁹⁶⁶

The Armstrong-Whitworth "Whitley" medium bomber in GWX

The Armstrong-Whitworth "Whitley" Mk VII represents all Whitley bombers that flew maritime surveillance patrols.



Figure 604: Armstrong-Whitworth "Whitley" maritime patrol bomber in GWX

⁹⁶³ Rickard, J, "Armstrong Whitworth A.W. 38 Whitley," http://www.historyofwar.org/articles/weapons_whitley.html

⁹⁶⁴ "No. 58 Squadron," <http://www.raf.mod.uk/bombercommand/h58.html>

⁹⁶⁵ "Armstrong Whitworth Whitley," <http://uboat.net/allies/aircraft/whitley.htm>

⁹⁶⁶ Photo source: "Armstrong Whitworth Whitley," http://www.luchtoorlog.be/aww_f4.htm

Avro "Anson" Mk I maritime patrol bomber

Historical Background

A. V. Roe & Co. (Avro)* derived the "Anson" reconnaissance aircraft from its 1935 Model 652 passenger transport. It began service in 1936 and was the first RAF aircraft with retractable landing gear, but was obsolete by the beginning of World War II when it equipped 10 RAF Coastal Command squadrons for coastal and North Sea reconnaissance. It had a maximum range of 1,300 km and carried two 100-pound bombs with one forward-facing 7.7mm (0.303-caliber) machine gun and one in a manually operated dorsal turret.⁹⁶⁷

The Lockheed "Hudson" gradually replaced the "Anson" in frontline service, but the "Anson" found new life as a training aircraft during the war, and after the war returned to its role as a passenger aircraft.



Figure 605: Avro "Anson" Mk I configured as a training aircraft, December 27 1941⁹⁶⁸

The Avro "Anson" maritime patrol bomber in GWX

The Avro "Anson" Mk I is available at the start of the war and represents all Anson maritime patrol aircraft in British and Commonwealth service.



Figure 606: Avro "Anson" in GWX

* A subsidiary of Hawker-Siddely Aircraft Company

⁹⁶⁷ Emmanuel Gustin, "Avro Anson," <http://uboat.net/allies/aircraft/anson.htm>

⁹⁶⁸ Photo credit: U.S. National Archives #80-G-25134, <http://wwiarchives.net/servlet/gallery/1509>

Boeing “Fortress” maritime patrol bomber

Historical background

The Boeing Airplane Company developed the B-17 prototype in 1935. The prototype crashed due to pilot error during government evaluation, but its performance so impressed the USAAC that there were over 200 B-17s in service by the time the U.S. entered the war. The USAAC began accepting delivery of the B-17E model in September 1941 and the B-17F model in late May 1942. The B-17F had 12 defensive 0.50-caliber machine guns and could carry 6,000 lbs. of bombs within a radius of 1,300 miles.

The RAF achieved unsatisfactory results using early model B-17C bombers (nicknamed “Fortress” by the RAF) for daylight strategic bombing; subsequent B-17 models (B-17E/F as the “Fortress IIA” and “Fortress II” and the B-17G as the “Fortress III”) were relegated to use as maritime patrol bombers and electronic warfare support of nighttime bombing raids over Europe.⁹⁶⁹



Figure 607: RAF Fortress II (B-17F)⁹⁷⁰

The Boeing “Fortress” maritime patrol bomber in GWX

GWX uses the maritime patrol bomber version of the B-17F, the “Fortress II,” to represent all types of “Fortress” used by the RAF.



Figure 608: RAF Fortress in GWX

⁹⁶⁹ Emmanuel Gustin, “Boeing B-17,” <http://www.uboot.net/allies/aircraft/b17.htm>

⁹⁷⁰ Photo source: “Boeing B-17 Flying Fortress,” http://members.lycos.nl/carloslievens/b17_f5.htm

Bristol Type 156 “Beaufighter” Mk XC fighter-bomber

Historical Background

The Bristol Aeroplane Company developed the Type 156 “Beaufighter” from its [Type 152 “Beaufort”](#) torpedo bomber, with four 20mm cannon in the nose, six 7.7mm (0.303-caliber) machine guns in the wings, and a 7.7mm (0.303-caliber) machine gun in a dorsal mount. RAF Fighter Command began using a night fighter version (Mk IF) starting in September 1940; RAF Coastal Command used strike versions (Mk IC) starting in May 1941 with the wing guns replaced by fuel tanks for extended range.

The follow-on Mk VIC strike variant could carry either one torpedo, two 250 lb. bombs, or (starting in May 1943) eight 76.2mm rockets. The final main (Mk X) version had engines optimized for low-altitude work and some had airborne intercept radar optimized to function as surface search radar; late Mk X versions also had their wings strengthened to carry two 1000-lb bombs.⁹⁷¹



Figure 609: Beaufighter Mk X of No. 404 Squadron RCAF carrying armor-piercing rockets⁹⁷²

The Bristol “Beaufighter” Mk XC fighter-bomber in GWX

The Bristol “Beaufighter” Mk XC fighter-bomber stands in for all types of maritime strike Beaufighters.



Figure 610: Bristol “Beaufighter” Mk XC in GWX

⁹⁷¹ “Bristol Type 156 Beaufighter,” <http://www.compass.dircon.co.uk/Beaufighter.htm>

⁹⁷² Photo source: “Canada in World War II,” <http://www.junobeach.org>, National Defence Image Library PL 41049

Bristol Type 152 “Beaufort” torpedo bomber

Historical Background

The Bristol Aeroplane Company developed its Type 152 “Beaufort” torpedo bomber in 1938 but engine problems held up operational deployment until June 1940. The Beaufort carried up to seven defensive 0.303-caliber machine guns and could carry one torpedo or a bomb load of up to 1,500 lbs, but was relatively slow for an attack aircraft.

Beauforts had relatively few opportunities to torpedo German shipping in Western Europe, but found frequent use in the Mediterranean and in the Pacific. The Beaufighter began replacing the Beaufort as the primary RAF torpedo bomber in 1943.⁹⁷³



Figure 611: Bristol Beauforts of No. 217 Squadron, RAF Coastal Command⁹⁷⁴

The Bristol Beaufort light bomber in GWX

The Bristol Beaufort will appear in GWX as called for in the campaign, on random patrols, and in response to U-boat sightings.



Figure 612: Bristol "Beaufort" bomber in GWX

⁹⁷³ “Bristol Beaufort,” http://en.wikipedia.org/wiki/Bristol_Beaufort

⁹⁷⁴ Photo source: “Le Bristol Beaufort,” <http://perso.orange.fr/histoire-militaire/aviation/Bristolbeaufort.htm>

Consolidated B-24D “Liberator” maritime patrol bomber

Historical background

The Consolidated Aircraft Corporation* B-24D was a “second generation” heavy bomber with longer range and heavier bomb load better suited than the B-17 to the long over-water distances of the Pacific as well as long-range maritime surveillance. The USAAF used B-24s as strategic bombers in Europe and as long-range bombers in the Pacific; the U.S. Navy used the PB4Y-1 “Liberator” for maritime surveillance and antisubmarine patrols in both the Atlantic and the Pacific. The British gave the designation “Liberator GR Mk V” to their ASW version of the B-24D.



Figure 613: Consolidated RAF Liberator GR Mk V⁹⁷⁵

The Consolidated B-24D Liberator in GWX

GWX uses the B-24D to represent all types of B-24 maritime patrol bombers used by British and Commonwealth forces. These aircraft carry antisubmarine rockets, whereas U.S. “Liberator” maritime patrol aircraft do not.



Figure 614: RAF Liberator maritime patrol bomber in GWX. Note the ASW rocket armament.

* Consolidated Aircraft Corporation merged with Vultee Aircraft Company in 1943 to become Consolidated Vultee Aircraft Corporation, known as “Convair.”

⁹⁷⁵ Photo source: National Archives of Canada/PA-107907, “Veterans Affairs Canada,” http://www.vac-acc.gc.ca/general/sub.cfm?source=history/secondwar/fact_sheets/merchant

De Havilland FB “Mosquito” Mk VI fighter-bomber

Historical Background

The de Havilland Aircraft Company’s “Mosquito” was one of the fastest piston-engined aircraft of World War II; it was also made entirely of wood except for the engines and the brass wood screws that helped keep it together. The British used it primarily for photoreconnaissance, as a night fighter, as a pathfinder for nighttime bombing missions over Europe; RAF Coastal Command used the Mk VI fighter-bomber version starting in late 1943 to attack German shipping and U-boats that had just surfaced prior to returning to base in Occupied France. The Mosquito’s armament for maritime strike missions consisted of four 20mm cannon and four 7.7mm (0.303-caliber) machine guns carried in the nose, two 250 lb. bomb in the internal bomb bay, and two 250 lb. bombs under the wings; Mosquitoes carried eight 76.2mm rockets in place of the under wing bombs starting in early 1944.⁹⁷⁶

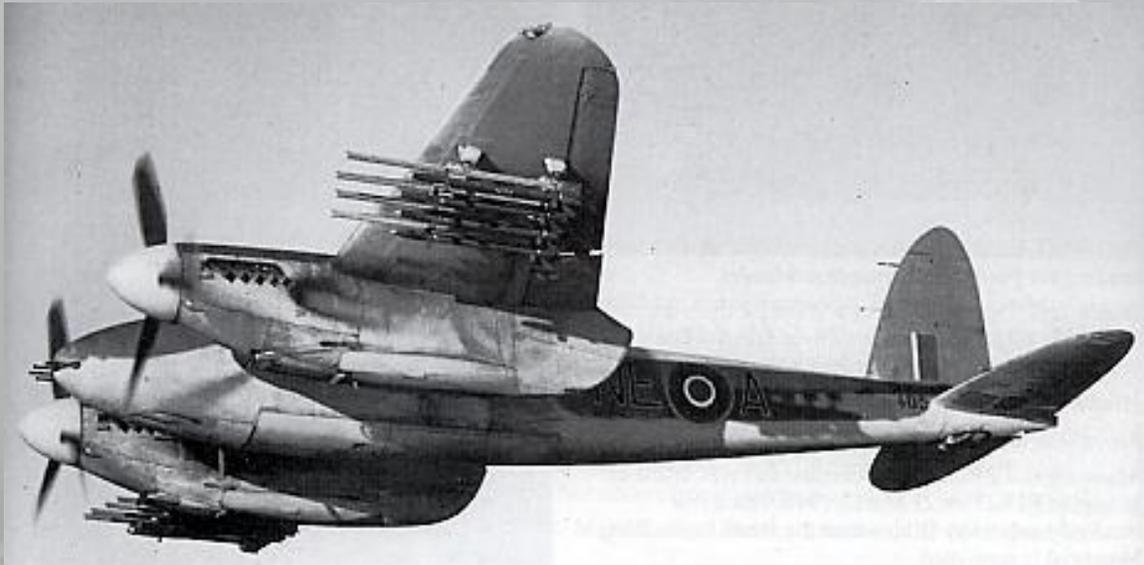


Figure 615: Mosquito Mk VI of No. 143 Squadron RAF Coastal Command⁹⁷⁷

The de Havilland FB “Mosquito” Mk VI fighter-bomber in GWX

The de Havilland Mosquito in GWX stands in for all Mosquito fighter-bombers, and will conduct maritime strike missions from British bases starting in mid-1941.



Figure 616: The de Havilland Mosquito Mk VI in GWX

⁹⁷⁶ “de Havilland Mosquito,” http://en.wikipedia.org/wiki/De_Havilland_Mosquito

⁹⁷⁷ Photo source: “Chronik des Seekrieges 1939-1945,” <http://www.wlb-stuttgart.de/seekrieg/45-01.htm>

De Havilland FB "Mosquito-Tsetse" Mk XVIII fighter-bomber

Historical Background

The De Havilland Aircraft Company's "Mosquito" was one of the fastest piston-engined aircraft of World War II; it was also made entirely of wood except for the engines and the brass wood screws that helped keep it together. The British used it primarily for photoreconnaissance, as a night fighter, and as a pathfinder for night bombing missions over Europe; RAF Coastal Command used the Mk XVIII "Tsetse" variant starting in mid-1944 to attack German shipping and U-boats throughout the North Sea.

The British named "Tsetse" after a fly that carries African trypanosomiasis ("sleeping sickness"); its armament consisted of a ventrally mounted 57mm high velocity anti-tank gun and two 7.7mm (0.303-caliber) machine guns used to estimate the trajectory of anti-tank shells to the target. The RAF originally intended it to attack German tanks, but the Hawker "Typhoon" fighter-bomber proved more effective.⁹⁷⁸



Figure 617: de Havilland FB Mosquito Mk XVIII, aka the "Tsetse"⁹⁷⁹



Figure 618: The Original Tsetse⁹⁸⁰

The de Havilland FB Mk XVIII "Mosquito-Tsetse" fighter-bomber in GWX

The de Havilland "Mosquito-Tsetse" in GWX represents the 27 Mosquito Mk VI fighter-bombers that carried the 57mm anti-tank gun and designated the FB Mk XVIII. It becomes available in mid-1944.



Figure 619: de Havilland FB Mosquito Mk XVIII "Tsetse" in GWX

⁹⁷⁸ "de Havilland Mosquito," http://en.wikipedia.org/wiki/De_Havilland_Mosquito

⁹⁷⁹ "de Havilland Mosquito," <http://uboat.net/allies/aircraft/mosquito.htm>

⁹⁸⁰ "Tsetse fly," http://en.wikipedia.org/wiki/Tsetse_fly

Fairey "Swordfish" torpedo bomber

Historical Background

The Fairey Aviation Company, Ltd developed the Swordfish in response to a 1933 Royal Navy specification for a torpedo-spotter-reconnaissance aircraft. Fairey delivered the prototype in April 1934 and the first production models in 1936, equipping 13 squadrons. The Swordfish proved highly successful, torpedoing several Italian capital ships at Taranto in 1940 and *Bismarck* in 1941, as well as receiving at least partial credit in the sinking of 21 U-boats.⁹⁸¹ There were three main types:

- The Swordfish Mk I could carry a torpedo or a variety of bombs or large depth charges
- The Swordfish Mk II could carry eight ASW rockets as well as bombs or depth charges.
- The Swordfish Mk III carried an ASV Mark XI centimetric radar and Leigh Light.⁹⁸²



Figure 620: Rocket-equipped Fairey Swordfish of No. 838 Squadron FAA (August 1944)⁹⁸³

The Fairey "Swordfish" torpedo bomber in GWX

GWX modifies the Fairey Swordfish model from stock *Silent Hunter III* but it operates the same way.



Figure 621: Fairey "Swordfish" in GWX

⁹⁸¹ "Fairey Swordfish," <http://www.uboat.net/allies/aircraft/swordfish.htm>

⁹⁸² J. Rickard, "Fairey Swordfish," http://www.historyofwar.org/articles/weapons_faurey_swordfish.html

⁹⁸³ Photo source: "Fairey Swordfish," http://commons.wikimedia.org/wiki/Fairey_Swordfish

Grumman “Martlet IV” fighter-bomber

Historical Background

The Grumman Aircraft Engineering Corporation’s “Martlet” was the Royal Navy’s first high performance monoplane fighter. France ordered 81 slightly modified Grumman F4F-3 fighters in early 1940. They were undelivered when France fell so the FAA took over the order and renamed them “Martlet I”s, which entered service in September 1940; 10 of these were lost when *U-46* (*Oberleutnant z. S. Engelbert Endraß*) sank *SS Ruperra*, the transport that was carrying them to Britain, with the loss of 31 of her 38 crewmembers.⁹⁸⁴ The F4F-3 formed the basis for the Martlet I, Martlet II, and Martlet III.⁹⁸⁵

The British asked for changes in the F4F-3 that Grumman implemented in the F4F-4, called the “Martlet IV” by the British, including folding wings, self-sealing gas tanks, pilot armor, and two more 12.7mm (0.50-caliber) machine guns for a total of six. General Motors produced FM-1 Wildcat (aka Martlet V) and later, FM-2 Wildcat (aka Martlet VI) fighters starting in 1943; the Martlet V and VI returned to using four 12.7mm (0.50-caliber) machine guns, but the Martlet VI also could carry six 76.2mm rockets.



Figure 622: "Martlet II" fighter-bomber (Oran, December 1942)⁹⁸⁶

The Grumman “Martlet” fighter-bomber in GWX

The Grumman “Martlet IV” fighter in GWX represents 1172 Martlets of all marks serving in the FAA.



Figure 623: "Martlet IV" in GWX

⁹⁸⁴ “*Ruperra*,” <http://www.uboa.net/allies/merchants/622.html>

⁹⁸⁵ “The Grumman F4F Wildcat,” <http://www.vectorsite.net/avwcat.html>

⁹⁸⁶ U.S. Naval Historical Center #SC 169214, <http://www.history.navy.mil>

Handley Page “Halifax” GR. II maritime patrol bomber

Historical Background

Handley Page, Limited designed its H.P. 56 prototype in response to a 1936 RAF specification, P13/36, for a twin-engine, long-range medium bomber; the available engines proved unsatisfactory so Handley Page revised the H.P. 56 to a four-engined design called the H.P.57. The RAF ordered two prototypes in September 1937, the first of which began test flights in October 1939 and the second in August 1940; the first Halifax squadron began operations on the night of March 10-11, 1941 over Le Havre, France.⁹⁸⁷ Its defensive armament consisted of two quadruple 0.303-caliber machine guns turrets, and one 0.303-caliber machine gun in the nose; the GR. II differed from the heavy bomber versions by virtue of additional fuel storage tanks, ASV radar, and a smaller load of eight 250-lb. depth charges.⁹⁸⁸

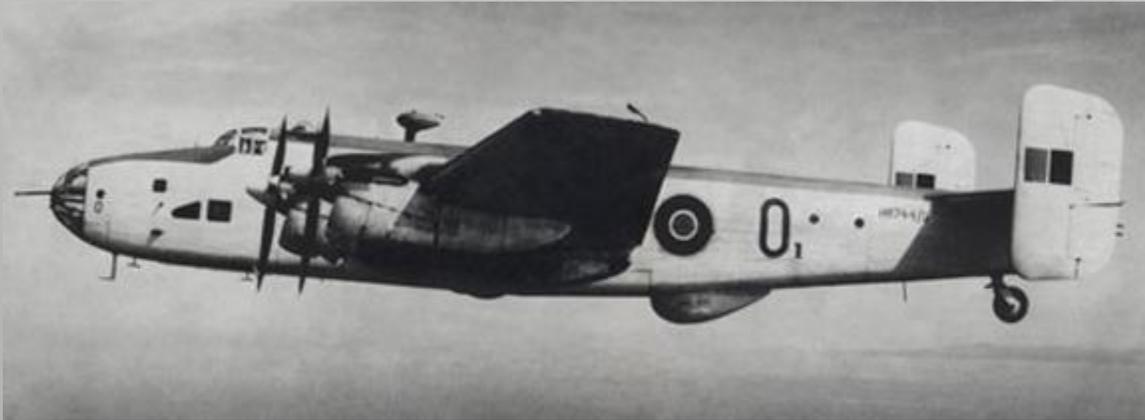


Figure 624: Halifax GR. II of RAF Coastal Command No. 58 Squadron (note radar bulge)⁹⁸⁹

The Handley Page “Halifax” GR. II maritime patrol bomber in GWX

The Handley Page “Halifax” GR. II maritime patrol bomber will appear randomly, on scripted patrols, and in response to U-boat sightings.



Figure 625: Halifax GR II maritime patrol bomber in GWX

⁹⁸⁷ “Handley Page Halifax,” <http://www.raf.mod.uk/bombercommand/halifax.html>

⁹⁸⁸ “Handley Page Halifax,” <http://uboat.net/allies/aircraft/halifax.htm>

⁹⁸⁹ Photo source: “Handley Page Halifax,” <http://uboat.net/allies/aircraft/halifax.htm>

Handley Page "Halifax" Mk. VI heavy bomber

Historical Background

Handley Page, Limited designed its H.P. 56 prototype in response to a 1936 RAF specification, P13/36, for a twin-engine, long-range medium bomber; the available engines proved unsatisfactory so Handley Page revised the H.P. 56 to a four-engined design called the H.P.57. The RAF ordered two prototypes in September 1937, the first of which began test flights in October 1939 and the second in August 1940; the first Halifax squadron began operations on the night of March 10-11, 1941 over Le Havre, France.⁹⁹⁰ The Halifax defensive armament consisted of two quadruple 0.303-caliber machine guns turrets, and one 0.303-caliber machine gun in the nose; it , and could carry a maximum of 12,000 lbs. of bombs, with a normal range of about 1,900 miles.



Figure 626: Handley Page "Halifax" Mk III in night bombing camouflage⁹⁹¹

The Handley Page "Halifax" Mk. VI heavy bomber in GWX

The Handley Page "Halifax" Mk. VI heavy bomber raids U-boat bases and bombs targets in harbors in GWX.



Figure 627: Handley Page "Halifax" Mk VI in GWX

⁹⁹⁰ "Handley Page Halifax," <http://www.raf.mod.uk/bombercommand/halifax.html>

⁹⁹¹ Photo source: "Handley Page Halifax," http://en.wikipedia.org/wiki/Handley_Page_Halifax

Hawker “Hurricane” Mk IIC fighter-bomber

Historical Background

The Hawker Aircraft Company* developed the “Hurricane” in response to a 1934 Air Ministry specification for a fighter aircraft built around the Rolls-Royce, Ltd. “Merlin” engine. Production began in 1936, and the RAF had over 500 Hurricanes in 18 squadrons by September 1939. The Hurricane Mk I aircraft used in the Battle of Britain (August-October 1940) carried eight 0.303-caliber machine guns; the Hurricane Mk II carried bombs starting in late 1940, and the Mk IIC, introduced in 1941, had armament increased to four 20mm cannon.

Hurricanes of various marks served in all theaters with Commonwealth forces; on the Eastern Front as lend-lease equipment; and Catapult-Armed Merchantmen, Merchant Aircraft Carriers, and fleet aircraft carriers carried “Sea Hurricanes.” Britain produced over 14,000 Hurricanes of all types by the end of production in September 1944.⁹⁹²



Figure 628: Hawker “Hurricane” IIC, Battle of Britain Memorial Flight (2007)⁹⁹³

The Hawker “Hurricane” Mk IIC fighter-bomber in GWX

GWX replaces the Hurricane model from stock *Silent Hunter III* but it operates the same way. The Hurricane Mk IIC represents all marks of Hurricane fighters in GWX.



Figure 629: Hurricane Mk IIC in GWX

* “Hawker Aircraft, Ltd. became Hawker Siddely Aircraft, Ltd. in 1935

⁹⁹² “Hawker Hurricane,” http://en.wikipedia.org/wiki/Hawker_Hurricane

⁹⁹³ Photo credit: Adrian Pingstone, “Hawker Hurricane,” http://en.wikipedia.org/wiki/Hawker_Hurricane

Short “Sunderland” maritime patrol bomber

Historical background

Short Brothers (Bedford and Rochester) Ltd. developed the Sunderland flying boat from its “Empire” passenger flying boat with the first flight in 1937 and the first RAF delivery in 1938; by the start of the war 40 Sunderland Mk I flying boats were in use by RAF Coastal Command. The Sunderland had a maximum speed of just over 200 mph and a range of 2,980 miles; it had eight defensive machine guns and up to four forward-firing machine guns to deal with U-boat flak gunners, and carried up to 4,960 lbs. of bombs although the normal load on ASW missions was eight depth charges.



Figure 630: Short Sunderland Mk III of No. 423 Squadron RCAF⁹⁹⁴

The Short “Sunderland” maritime patrol bomber in GWX

GEX replaces the Short “Sunderland” model from stock *Silent Hunter III* but does not change the way it operates.



Figure 631: Short "Sunderland" maritime patrol bomber in GWX

⁹⁹⁴ Photo source: “Canada in World War II,” <http://www.junobeach.org>, National Defence Image Library, PL 41101.

Vickers "Wellington" maritime patrol bomber

Historical background

Vickers-Armstrongs (Aircraft) Ltd. developed the "Wellington" bomber prototype in 1936; it was operational by 1939 and was Britain's main long-range bomber for the first two years of the war. The Wellington became obsolete as a strategic bomber by the Handley Page Halifax and Avro Lancaster but it remained in use in North Africa and the Mediterranean, the Middle East, and Asia in a variety of roles. The Wellington had a maximum speed of 235 miles per hour and a maximum range of about 1,800 miles; it could carry up to 4,500 lbs. of bombs and had eight defensive machine guns.⁹⁹⁵



Figure 632: Vickers Wellington GR Mk VIII maritime patrol bomber⁹⁹⁶

The Vickers Wellington in GWX

GWX replaces the Vickers Wellington model from stock *Silent Hunter III* but does not change the way it operates.



Figure 633: Vickers "Wellington" maritime patrol bomber in GWX

⁹⁹⁵ "Vickers Wellington," http://en.wikipedia.org/wiki/Vickers_Wellington

⁹⁹⁶ Photo source: "Polish Aviation History Page," <http://polavhist.wv2-aviation.net/>

Italy

Savoia-Marchetti S.M. 79 “Sparviero” medium bomber

Historical Background

The *Società Anonima Costruzioni Aeronautiche* (“Aeronautical Construction Company”) Savoia-Marchetti developed the S.M. 79 *Sparviero* (“Sparrowhawk”) prototype in 1934, with over 100 serving with the Italian *Aviación Legionaria* during the Spanish Civil War and over 600 in service by June 1940. The S.M. 79, informally known as *Il Gobbo Maledetto* (“the cursed hunchback”) due to its dorsal gun position, could carry up to 1200 kg of bombs or two torpedoes, with one forward-fixed 20mm cannon and four defensive 7.7mm machine guns. It served throughout the war as a medium bomber, but gained recognition as a torpedo bomber against Allied convoys trying to resupply Malta.

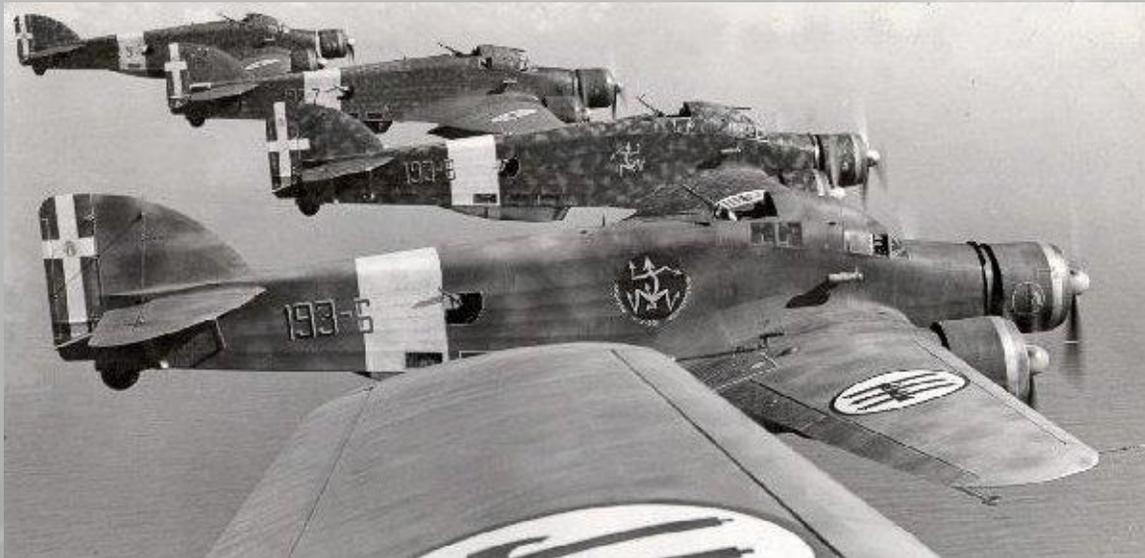


Figure 634: S.M. 79 medium bombers of 193^a *squadriglia*, 30^o Gruppo (aviation regiment)⁹⁹⁷

The SM. 79 “Sparviero” medium bomber in GWX

GWX replaces the S.M. 79 “Sparviero” model from stock *Silent Hunter III* but it operates the same way.



Figure 635: S.M. 79 “Sparviero” in GWX

⁹⁹⁷ Photo source: Andrea Nicola, “Le SM. 79 Sparviero,” <http://avions.legendaires.free.fr/sm79.php>

Japan

Mitsubishi A6M5 "Zero" fighter-bomber

Historical background

Mitsubishi *Jukogyo KK* (三菱重工業(株), "Mitsubishi Heavy Industries Company") began developing the *Rei shiki Kanjo sentoki* (零式艦上戦闘機, "Type 0 Carrier Fighter")* in 1937 in response to a request from the Japanese Navy for a new carrier-based fighter. Its official Allied codename was "Zeke" but it was known by both the Allies and the Japanese as the "Zero" (*Reisen* or *Zero-sen*) fighter. It had a sensational debut against Allied air forces in 1941 and 1942, but Allied air combat tactics had countered the Zero's maneuverability by late 1942, and superior Allied designs overcame the Zero by 1943. The mid-war version of the Zero had two 20mm cannon, two 7.7mm machine guns, and a bombload of 120 kg. It had a cruising speed of 230 mph and a maximum range of 1,194 miles.⁹⁹⁸



Figure 636: Mitsubishi A6M5 "Zero" fighter, Yasukuni Shrine, Yushukan, Tokyo (2005)⁹⁹⁹

The Mitsubishi A6M5 "Zero" fighter-bomber in GWX

The "Zero" in GWX will appear on scripted patrols in GWX.



Figure 637: Mitsubishi A6M5 "Zero" in GWX

* "Type 0" referred to the last two digits of the Japanese calendar year (2600) in which Japanese military accepted the item. The year 2600 of the Japanese calendar corresponds to the year 1940 CE of the Gregorian calendar.

⁹⁹⁸ "A6M Zero," http://en.wikipedia.org/wiki/A6M_Zero

⁹⁹⁹ Photo source: Paul Richter, http://en.wikipedia.org/wiki/A6M_Zero

Nakajima A6M2-N "Rufe" fighter-bomber

Historical background

The Nakajima *Kokuki* KK (中島飛行機(株), "Nakajima Aircraft Company") developed the A6M2-N (Allied codename: "Rufe") to provide interception and fighter-bomber support for offensive amphibious operations: it was a Mitsubishi A6M2 *Zero-sen* fighter-bomber equipped with floats, rather than an observation/scout plane pressed into combat duties, with only marginal loss of performance from the original Zero fighter-bomber configuration. The A6M2-N had two 20mm cannon and two 7.7mm machine guns, and carried up to 120 kg of bombs.¹⁰⁰⁰



Figure 638: Nakajima A6M2-N "Rufe"¹⁰⁰¹

The Nakajima A6N2N "Rufe" observation/scout plane in GWX

The "Rufe" in GWX will appear on scripted patrols in GWX.



Figure 639: Nakajima A6M2-N "Rufe" fighter-bomber in GWX

¹⁰⁰⁰ Elke C. Weale, *Combat Aircraft of World War II*.

¹⁰⁰¹ Photo source: "A6M2-N Type 2 Floatplane (Rufe)," <http://www.ijnafphotos.com/>

Soviet Union

Ilyushin DB-3 medium bomber

Historical background

The Ильюшин (Ильёшин) ОКВ (aka ОКВ-156) DB-3 (Дальний бомбардировщик - *Dalniy Bombardirovshchik* - "long-range bomber") was the main Soviet long-range bomber prior to 1941. The DB-3F (later known as the Ilyushin-4) replaced the DB-3B after the Winter War against Finland, and served as a torpedo bomber, tactical bomber, reconnaissance aircraft, and troop transport. It carried up to 2,500 kg of bombs (1,000 kg internally), or one torpedo; it had three machine guns for self-defense.¹⁰⁰²



Figure 640: Ilyushin DB-3B medium bomber at Molino, Russia (2005)¹⁰⁰³

The Ilyushin DB-3 in GWX

The Ilyushin DB-3 in GWX stands in for the Il-4 bomber later in the war. It appears on random patrols and as called for by scripted campaign events.



Figure 641: Ilyushin DB-3B medium bomber in GWX

¹⁰⁰² "Ilyushin DB-3," http://en.wikipedia.org/wiki/Ilyushin_DB-3; Weal, Elke C., *Combat Aircraft of World War II*.

¹⁰⁰³ Photo source: "Maks and Monino 2005 Photo and Info site," <http://www.monino.co.uk/Pages/monino.htm>

Tupolev Tu-2 medium bomber

Historical background

The Tupolev (Туполев) OKB, aka OKB-156 Tu-2S (NATO codename: “Bat”) was one of the best Soviet bomber designs of the war, with a maximum bomb load of 3,000 kg of bombs, two forward-firing 20mm cannon, and three 12.7mm (0.50-caliber) defensive machine guns. Three pre-production Tu-2 aircraft began operational trials in November 1942; full operational employment of the Tu-2S and its variants began in mid-1944 and continued into the Cold War era.¹⁰⁰⁴



Figure 642: Tu-2 medium bomber at Molino, Russia (2005)¹⁰⁰⁵

The Tupolev Tu-2 in GWX

The Tu-2 operates from Soviet air bases on the Black Sea and the Baltic Sea in GWX.



Figure 643: Tu-2 medium bomber in GWX

¹⁰⁰⁴ Weal, Elke C., *Combat Aircraft of World War II*;

“Tupolev Tu-2,” <http://avia.russian.ee/air/russia/tu-2.html>

¹⁰⁰⁵ Photo source: “Maks and Monino 2005 Photo and Info site,” <http://www.monino.co.uk/Pages/monino.htm>

United States

Boeing B-17F heavy bomber

Historical Background

The Boeing Airplane Company developed the B-17 prototype in 1935. The prototype crashed due to pilot error during government evaluation, but its performance so impressed the USAAC that there were over 200 B-17s in service by December 1941, with B-17E deliveries starting in September 1941 and the B-17F in late May 1942. The B-17F had 12 defensive 0.50-caliber machine guns and could carry 6,000 lbs. of bombs within a radius of 1,300 miles. The USAAF used B-17s (nicknamed the “Flying Fortress”) as strategic bombers in Europe and at times for maritime patrol off the U.S. east coast.¹⁰⁰⁶



Figure 644: USAAF B-17F *Memphis Belle* (91st Bomb Group, 324th Bombardment Squadron)¹⁰⁰⁷

The Boeing B-17F heavy bomber in GWX

GWX uses the B-17F to represent all types of the B-17 heavy bombers used during the war. The bomber version conducts bombing attacks from high altitude to emulate a B-17 strategic bomber.



Figure 645: B-17F heavy bomber in GWX

¹⁰⁰⁶ “Boeing B-17 Flying Fortress,” http://en.wikipedia.org/wiki/B-17_Flying_Fortress

¹⁰⁰⁷ Photo source: USAF photo, [http://en.wikipedia.org/wiki/Memphis_Belle_\(B-17\)](http://en.wikipedia.org/wiki/Memphis_Belle_(B-17))

Consolidated B-24J heavy bomber

Historical background

The Consolidated Aircraft Corporation* B-24J followed the earlier B-24D starting in 1943. It had the same general characteristics and employment of the B-24D but added two 0.50-caliber machine guns in a nose turret to counter head-on attacks by *Luftwaffe* fighters. The British designated their ASW B-24J aircraft “Liberator GR Mk VIII.”¹⁰⁰⁸



Figure 646: USAAF B-24J of 93rd Bomb Group, 328th Bombardment Squadron¹⁰⁰⁹

The Consolidated B-24 heavy bomber in GWX

Stock *Silent Hunter III* models the late-war B-24J as a maritime patrol bomber; GWX changes this to a heavy bomber for use in the GWX campaign, representing all B-24s used in this role.



Figure 647: B-24J heavy bomber in GWX

* Consolidated Aircraft Corporation merged with Vultee Aircraft Company in 1943, becoming Consolidated Vultee Aircraft Corporation, also known as “Convair.”

¹⁰⁰⁸ “B-24 Liberator,” http://en.wikipedia.org/wiki/B-24_Liberator

¹⁰⁰⁹ “B-24 Liberator,” http://en.wikipedia.org/wiki/B-24_Liberator

Consolidated PB4Y-1 “Liberator” maritime patrol bomber

Historical background

The Consolidated Aircraft Corporation B-24J followed the earlier B-24D starting in 1943. It had the same general characteristics and employment of the B-24D as a heavy and maritime patrol bomber but added two 0.50-caliber machine guns in a nose turret to counter head-on attacks by Luftwaffe fighters. The U.S. Navy designated their ASW B-24J as the PB4Y-1 “Liberator” and British designated their ASW B-24J aircraft as “Liberator GR Mk VIII.”¹⁰¹⁰



Figure 648: US Navy PB4Y-1 “Liberator” patrol bomber derived from the B-24J heavy bomber¹⁰¹¹

The Consolidated PB4Y-1 “Liberator” maritime patrol bomber in GWX

GWX modified the B-24J in stock *Silent Hunter III* to represent PB4Y-1 “Liberator” maritime patrol bombers based on the B-24D and the B-24J in use by the United States Navy and Marine Corps.



Figure 649: PB4Y-1 “Liberator” maritime patrol bomber in GWX

¹⁰¹⁰ “B-24 Liberator,” http://en.wikipedia.org/wiki/B-24_Liberator

¹⁰¹¹ Photo source: U.S. National Archives,

http://www.archives.gov/exhibits/a_people_at_war/war_in_europe/lt_joseph_kennedy_jr.html

Consolidated PB5-A "Catalina" maritime patrol bomber

Historical background

The Consolidated Aircraft Corporation* developed the PBYX seaplane prototype in 1936; by 1941 the U.S. had developed several evolutionary improvements and was producing a seaplane version (the PBY) and an amphibious version (the PB5-A) that could land on water or on land (the USAAF called its version the OA-10). It carried five defensive machine guns and could carry 4,000 lbs. of bombs, eight depth charges, or two torpedoes.¹⁰¹²

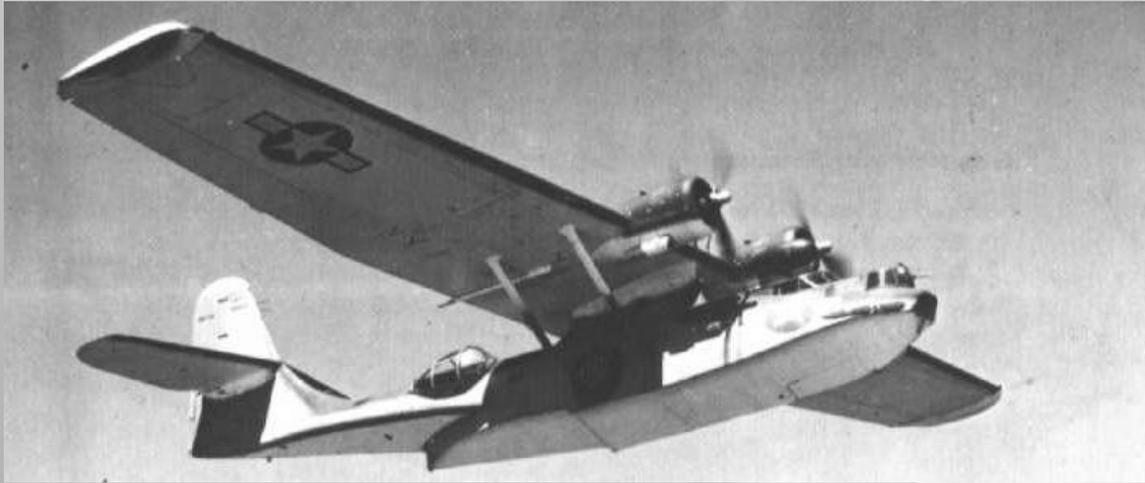


Figure 650: PB5-A "Catalina"¹⁰¹³

The Consolidated PB5-A "Catalina" maritime patrol bomber in GWX

GWX replaces the PB5-A "Catalina" model from stock *Silent Hunter III* but does not change the way it operates.



Figure 651: PB5-A "Catalina" in GWX

* Consolidated Aircraft Corporation merged with Vultee Aircraft Company in 1943 to become Consolidated Vultee Aircraft Corporation, known as "Convair."

¹⁰¹² "PBY Catalina," http://en.wikipedia.org/wiki/PBY_Catalina

¹⁰¹³ Photo source: "The Pacific War: The United States Navy," <http://www.microworks.net/PACIFIC/>

Goodyear K-class airship

Historical background

The Goodyear Aerospace Company and the Naval Aircraft Factory began producing the K-class airships (known as “blimps”) in 1931; six airships were available at the start of 1942. The airship had a maximum speed of 65 knots but could hover over a suspected U-boat and could operate for 24 hours before needing to refuel. Airships had radar, sonobuoys, and MAD equipment; armament consisted of four depth charges, ASW homing torpedoes, and a 0.50-caliber machine gun.¹⁰¹⁴

Airships patrolled the east and west coasts of the United States, and in the Mediterranean outside the range of Axis aircraft. U.S. Navy airship *K-74* was the only airship known to have attacked a surfaced U-boat: *U-134* (*Kapitänleutnant* Hans-Günther Brosin), which shot *K-74* down after its depth charges failed to release. *U-134* suffered only light damage in the attack, but an RAF Wellington bomber sank her off Vigo, Spain as she returned to base.¹⁰¹⁵



Figure 652: K-class airship patrolling over a convoy¹⁰¹⁶

The Goodyear K-class Airship in GWX

The K-19 airship will appear in GWX as scripted in the campaign and as called by random events.



Figure 653: K-class airship in GWX

¹⁰¹⁴ “K-class blimp,” http://en.wikipedia.org/wiki/K-Class_Blimp

¹⁰¹⁵ YNC Anthony Atwood, “The battle between the blimp and the sub,” <http://www.goldcoast-railroad.org/blimpsub.htm>

¹⁰¹⁶ U.S. Navy photo, from Nicholas Nirgiotis, “Blimps at War,” *Invention and Technology*, Summer 2006, Vol. 22, Issue 1, http://www.americanheritage.com/articles/magazine/it/2006/1/2006_1_12.shtml

Grumman F4F-4 “Wildcat” fighter-bomber

Historical background

The Grumman Aircraft Engineering Corporation F4F-4 “Wildcat” was a development of the F4F line of aircraft (the F4F-1 was a biplane) that began equipping U.S. aircraft carriers in early 1942. Grumman stopped building “Wildcat” fighters in late 1942 to concentrate on the more capable F6F “Hellcat,” but so many escort carriers needed Wildcats that the Navy had General Motors (GM) continue production.

GM’s first production model was the FM-1, which reduced the number of wing-mounted machine guns from six 12.7mm (0.50-caliber) machine guns to four in order to provide more ammunition per gun; the FM-2 added rails for six 5-inch HVAR.¹⁰¹⁷



Figure 654: F4F-4 “Wildcat” preparing to take off from USS *Suwannee* (CVE-27) in early 1943¹⁰¹⁸

The Grumman F4F-4 “Wildcat” fighter-bomber in GWX

The Grumman F4F-4 “Wildcat” represents all Wildcat types and variants that served in the U.S. Navy.



Figure 655: Grumman F4F-4 “Wildcat” in GWX

¹⁰¹⁷ “The Grumman F4F Wildcat,” <http://www.vectorsite.net/avwcat.html>

¹⁰¹⁸ U.S. Naval Historical Center # 80-G-K-15634, <http://www.history.navy.mil>

Grumman TBF “Avenger” torpedo bomber

Historical background

The Grumman Aircraft Engineering Corporation developed the prototype XTBF-1 in August 1941; the TBF’s first operational use was at the Battle of Midway in June 1942. The TBF (and the TBM, manufactured by General Motors) was the heaviest single-engine aircraft of World War II, carrying 2,000 lbs of bombs, four depth charges, or one torpedo. It had two 0.50-caliber and one 0.30-caliber forward-firing machine guns and two defensive machine guns (one 0.50-caliber in a dorsal turret, and one 0.30-caliber in a rear-facing ventral position).¹⁰¹⁹



Figure 656: Grumman TBF “Avenger” torpedo bomber¹⁰²⁰

The Grumman TBF “Avenger” torpedo bomber in GWX

GWX replaces the TBF “Avenger” model from stock *Silent Hunter III* but does not change its operation.



Figure 657: Grumman TBF Avenger torpedo bomber in GWX

¹⁰¹⁹ “TBF Avenger,” http://en.wikipedia.org/wiki/TBF_Avenger

¹⁰²⁰ Photo source: “TBF Avenger,” http://en.wikipedia.org/wiki/TBF_Avenger

Lockheed P-38J "Lightning" fighter-bomber

Historical Background

Lockheed Corporation designed the P-38 in response to a 1937 USAAC request for a high-altitude interceptor. The design proved such a challenge that the first combat-suitable version was not ready until October 1941 and the design was immature until the P-38J model became available in August 1943. The P-38J carried four 0.50-caliber (12.7mm) machine guns and one 20mm cannon, with a maximum speed of 420 mph, maximum altitude of 44,000 ft, and a range of over 2,260 nautical miles.¹⁰²¹

The P-38 saw much service in the Pacific, where the two top-scoring U.S. aces, Major Richard Bong and Major Thomas Maguire flew the P-38. In Europe, the P-38 patrolled against Fw 200 *Kondor* maritime patrol bombers, but the appearance of the P-51 relegated the P-38 to a ground attack role, where it could survive the loss of power in one of its twin engines.¹⁰²²

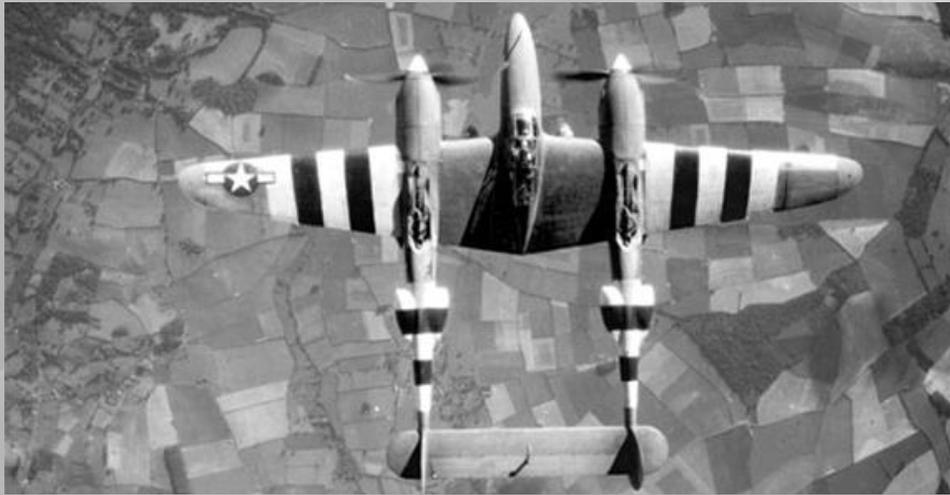


Figure 658: Lockheed P-38J "Lightning"¹⁰²³

The P-38J "Lightning" in GWX

GWX modifies the P-38 "Lightning" from stock *Silent Hunter III* but does not change its operations.



Figure 659: P-38J "Lightning" fighter-bomber in GWX

¹⁰²¹ "The Lockheed P-38 Lightning," <http://www.vectorsite.net/avp38.html>

¹⁰²² "The Lockheed P-38 Lightning," <http://www.vectorsite.net/avp38.html>

¹⁰²³ Photo source: U.S. Air Force Historical Research Agency, <http://afhra.maxwell.af.mil/>

Lockheed PBO-1 “Hudson” maritime patrol bomber

Historical background

The Lockheed Corporation created several versions of its “Hudson” patrol bombers, all based on the Lockheed Type 14 “Super Electra” 12-passenger civil airliner of the late 1930s. The U.S. Navy version (“PBO-1”) had a cruising speed of 191 mph and a maximum range of 1960 miles. It could carry 10 100-lb antisubmarine bombs or four 250-lb bombs, with two machine guns mounted in the nose, one on each side of the fuselage, one in a ventral hatch, and two in a twin machine gun dorsal turret.

A Hudson was responsible for the first RAF air-to-air kill of World War II (a Do-18D flying boat) as well as forcing the surrender of *U-570* (*Kapitänleutnant* Hans-Joachim Rahmlow) on April 15, 1941.¹⁰²⁴

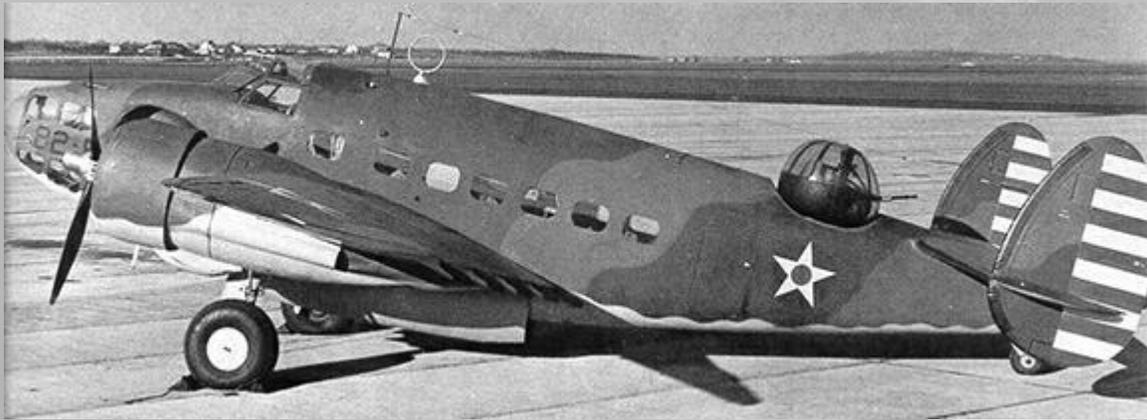


Figure 660: US Navy Lockheed PBO-1 “Hudson” maritime patrol bomber¹⁰²⁵

The Lockheed PBO-1 “Hudson” maritime patrol bomber in GWX

The Lockheed “Hudson” stands in for all Hudson maritime patrol bombers in Allied service.



Figure 661: Lockheed “Hudson” maritime patrol bomber in GWX

¹⁰²⁴ “The Lockheed Hudson Super Electra,” <http://www.xs4all.nl/~fbonne/warbirds/ww2htmls/lockhudson.html>

¹⁰²⁵ Photo source: “Lockheed PBO Hudson,” http://www.microworks.net/pacific/aviation/PBO_Hudson.htm

Vought-Sikorsky OS2U-3 "Kingfisher" observation/scout plane

Historical background



The Vought-Sikorsky Aircraft* OS2U-3 "Kingfisher" was the U.S. Navy's first catapult-launched monoplane observation aircraft, and was the standard ship-based observation and scouting aircraft for U.S. heavy cruisers and battleships for most of World War II. It had one forward facing and one defensive 7.7mm (0.30-caliber) machine gun, and could carry two depth charges. It had a cruising speed of 119 mph and a range of 805 miles. The Navy used OS2U-3's and the nearly identical OSN-1¹⁰²⁶ for scouting, observing the fall of shot from a ship's big guns, anti-submarine patrol, and air-sea rescue.¹⁰²⁷

Figure 662: OS2U-3 "Kingfisher" with a rescued pilot¹⁰²⁸

The Vought-Sikorsky OS2U-3 "Kingfisher" observation/scout plane in GWX

The Vought-Sikorsky OS2U-3 "Kingfisher" floatplane flies from U.S. bases, battleships, and cruisers in GWX.



Figure 663: OS2U-3 "Kingfisher" in GWX

* Vought-Sikorsky Aircraft was a corporate division of United Aircraft Company.

¹⁰²⁶ "Vought-Sikorsky and Chance Vought Aircraft," Connecticut Air and Space Center <http://ctairandspace.org/vought.html>

¹⁰²⁷ "Vought OS2U-3 Kingfisher," <http://www.daveswarbirds.com/usplanes/aircraft/kingfish.htm>

¹⁰²⁸ U.S. Naval Historical Center #80-G-218123, <http://www.history.navy.mil>. Return of LTJG George Blair after rescue from Truk lagoon by OS2U-3 Kingfisher (LTJG Denver Baxter) of USS *Baltimore* (CA-68), February 18, 1944.

New GWX Features

Summary of new game models for GWX

Note: The GWX Team modified some of the files comprising the original modifications to ensure compatibility with other modifications also present in GWX

Table 23: New ship models for GWX

Nation	Ship	Author(s) (<i>auteur</i>)
France	<i>Bourrasque</i> -class destroyer	Jack410 <i>with further work by</i> Privateer <i>and multiskin by</i> Privateer
Germany	Aircraft carrier <i>Graf Zeppelin</i>	Gerome73
	<i>Lützow</i> -class heavy cruiser (<i>panzerschiff</i>)	Gerome73
	<i>Königsberg</i> -class (K-class) light cruiser	Sergbuto, <i>model by</i> Greg Law <i>with adjustments by</i> Privateer
	Type 1924 torpedo boat	Sergbuto <i>model by</i> Greg Law
	Type 1935 torpedo boat	Sergbuto <i>model by</i> Greg Law
	Type 1935 minesweeper	Sergbuto <i>model by</i> Greg Law
	<i>Sperrbrecher</i> mine barrage breaker	Ichneumon <i>with further work by</i> AG124 Privateer
	<i>Minenräumboot</i> (R-boat)	Ichneumon <i>with further work by</i> Privateer
	<i>Vorpostenboot</i>	Ichneumon <i>with further work by</i> Privateer
	<i>Small vorpostenboot</i>	Ichneumon <i>with further work by</i> Privateer
	<i>Kriegsfischkutter</i>	Ichneumon <i>with further work by</i> Privateer

Nation	Ship	Author(s) (<i>auteur</i>)
	Type XIV AI-controlled U-boat tanker	JU88 <i>with further work by</i> Privateer Ichneumon
	Type XXIII AI-controlled U-boat	Flakmonkey <i>with further work by</i> SquareSteelBar Privateer
Great Britain	Battle cruiser HMS <i>Hood</i>	Warhunter <i>with multiskin by</i> Privateer
	Battle cruiser HMS <i>Repulse</i>	Warhunter
	Heavy cruiser HMS <i>Cumberland</i>	Gerome73 <i>with multiskin by</i> Privateer
	Heavy cruiser HMS <i>Devonshire</i>	Gerome73 <i>multiskin by</i> Privateer
	Heavy cruiser HMS <i>Norfolk</i>	Gerome73 <i>with multiskin by</i> Privateer
	A&B-class destroyer	bigboywooly, Privateer
	L-class anti-aircraft destroyer	Jack410 <i>with further work by</i> Privateer <i>with multiskin by</i> Privateer
	River-class frigate	Bigboywooly Privateer
	Colony-class frigate	Privateer
	Isles-class minesweeping trawler	bigboywooly
	Vosper Motor Torpedo Boat	Sergbuto
	Royal Air Force rescue launch	Sergbuto
	S-class submarine	JU88 Ref
T-class submarine	JU88 Ref	
Greece	Armored cruiser RHS <i>Georgios Averos</i>	VonDos, <i>with UVMapping by</i> Ref <i>and skins by</i> Boris
Italy	Battleship <i>Roma</i> (<i>Littorio</i> -class)	Gerome73

Nation	Ship	Author(s) (<i>auteur</i>)
	Heavy cruiser <i>Zara</i>	Ref
	Light cruiser <i>Duca degli Abruzzi</i> (<i>Condottieri</i> -class, 5 th series)	AG124 Ref
	Submarine <i>Argonauta</i> (600-class)	JU88 Ref
Japan	Ch-13 sub chaser	chomu
Soviet Union	<i>Kirov</i> -class (Type 26) heavy cruiser	Lilliput (.ru forums) Vaa (.ru forums) <i>with multiskin by Privateer</i>
	<i>Maxim Gorky</i> -class (Type 26bis) heavy cruiser	Lilliput (.ru forums) Vaa (.ru forums) <i>with multiskin by Privateer</i>
	" <i>Dserschinski</i> " (<i>Novik</i> -class) destroyer	Rowi58
	Type 7U destroyer	Lilliput (.ru forums) Vaa (.ru forums) <i>with multiskin by Ref</i>
	USSR ships mod - <i>Uragan</i> -class frigate - Sub chaser	Vaa <i>with fixes by Rowi 58 and Anvart with more fixes by The GWX Team</i>
	"Shch"-class (" <i>Shchuka</i> ") submarine	JU88 Ref
United States	Battleship <i>Iowa</i>	Gerome73
	Battleship <i>Nevada</i>	GWX Team
	<i>Brooklyn</i> -class light cruiser	AG124 Ref
	<i>Tacoma</i> -class frigate	Privateer
	S-class submarine (British P-class)	Sergbuto
	<i>Gato</i> -class submarine	Sergbuto
	<i>Balao</i> -class submarine	Sergbuto
Naval Auxiliaries	Catapult-Armed Merchantman	Iambecomelife <i>with further work by the GWX Team</i>
	HMT <i>Lusitania</i> ("Cunard Liner")	uboat234
	<i>Chatham</i> -type troop ship	AG124
	ASW Trawler	Privateer
	Armed trawler	Unknown (.ru forum) <i>with further work by bigboywooly</i>

Nation	Ship	Author(s) (<i>auteur</i>)
	<i>Pyro</i> -class ammunition ship	AG124
	<i>Dithmarschen</i> Supply Ship	Ichneumon Privateer
	Naval resupply ship	Rowi58
	Submarine Depot Ship	AG124
	Artillery barge	Warhunter
	Transport barge	Warhunter
	Floating Drydock	Rowi58
	Lightship	AG124 <i>with lights by Anvart and fixes by Rowi58</i>
Merchant Ships	Improved <i>Empire</i> -type (“Empire”) freighter	iambecomelife
	<i>Proteus</i> (<i>Cyclops</i> -type) collier	AG124
	<i>Rose Castle</i> ore carrier	AG124
	<i>Granville</i> -type freighter	AG124 <i>with additional work by Ichneumon</i>
	Coal Freighter	Rowi58
	<i>Belize</i> Small Freighter	AG124
	Coastal Freighter	Rowi58
	Great Lakes Freighter	AG124
Passenger Ships	Small ocean liner	Rowi58
	<i>Caribou</i> Passenger/Cargo Merchant	AG124
Tankers	Converted whale factory ship	AG124
	Medium (<i>Empire Celt</i>) tanker	AG124
	Intermediate Tanker	AG124 <i>with minor corrections by Privateer</i>
	<i>Nipiwana Park</i> -type tanker	AG124 <i>with minor corrections by Privateer</i>
	Coastal tanker	AG124
Small Vessels	Large Tugboat	Rowi58
	Small Coal Tender	Rowi58
	Pelagic Trawler	Ichneumon Privateer
	Large Trawler	Bigboywooly <i>with texture and skins by Ichneumon and Fubar</i>
Sailing Ships	Fishing Ketch	DivingDuck
	Small Fishing Boat	Ichneumon Privateer

Nation	Ship	Author(s) (<i>auteur</i>)
	Sailing sloop	Ref
	Schooner	Ref
	Junk	Ref
	Sampan	Ref
Illuminated Ships	Hospital ship	Anvart
	Ocean liner	Anvart
	Large Tanker	Anvart
	Small tanker	Anvart
	Transport	Anvart
	Medium merchant	Anvart
	Small merchant	Anvart
	Tramp steamer	Anvart
	Tugboat	Anvart
	Fishing boat (“motor vessel” in GWX)	Anvart
	Fishing ketch, including animated lantern	DivingDuck

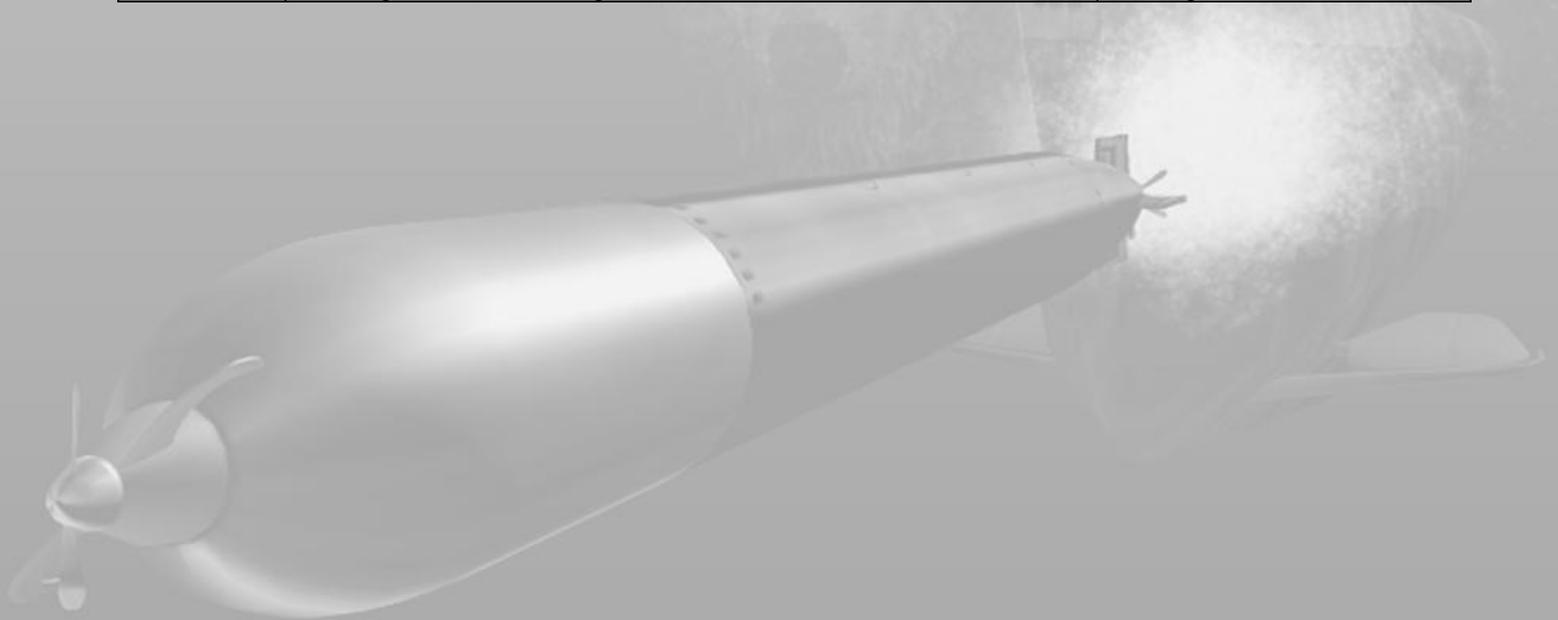


Table 24: New aircraft models for GWX

Nation	Aircraft	Author(s) (<i>auteur</i>)
Germany	Arado Ar 196 observation/scout plane	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Fi 103 <i>Vergeltungswaffe</i> “buzz bomb”	Privateer <i>with skin adjustments by</i> Danlisa Dowly
	Fa 223 “ <i>Drache</i> ” helicopter	Privateer
	Fw 200 “ <i>Kondor</i> ” maritime patrol bomber	<i>Remodeled by</i> JU88 <i>skin by</i> Dowly <i>and Silent Hunter III import by</i> Ref
	He 111 medium bomber	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Ju 87 “ <i>Stuka</i> ” dive bomber	<i>Remodeled by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Ju 88A medium bomber	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Ju 88C fighter-bomber	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
Messerschmitt Bf 109E fighter-bomber	<i>Model and skin by</i> JU88 <i>with new engine sound by</i> Dowly <i>hypnotic spinner by</i> Privateer <i>and Silent Hunter III import by</i> Ref	
Great Britain	Avro Anson	<i>Model and skin by</i> Psy06 <i>edited by</i> JU88 <i>and Silent Hunter III import by</i> Ref

Nation	Aircraft	Author(s) (<i>auteur</i>)
	Armstrong-Whitworth Whitley	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Bristol Beaufighter fighter-bomber	AvHistory 1% project <i>With polycount reduction by</i> Sergbuto <i>and Coastal Command skin by</i> C. Muir
	Bristol “Beaufort” torpedo bomber	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	De Havilland “Mosquito” fighter-bomber	Brunosk <i>with polycount reduction by</i> Sergbuto <i>and Coastal Command skin by</i> RobH
	De Havilland “Mosquito Tsetse” variant	Sergbuto <i>with skin by</i> Morten
	Fairey “Swordfish”	<i>Crew added by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Grumman “Martlet” fighter-bomber	Sergbuto <i>with skin by</i> Bub
	Halifax GR.2 maritime patrol bomber	Denis 469 <i>with modifications by</i> JU88 <i>and damage model updates by</i> Ref
	Halifax Mk. VIII level bomber	Denis 469 <i>with modifications by</i> JU88 <i>and damage model updates by</i> Ref
	Hawker “Hurricane” Mk IC (“Sea Hurricane”)	Mauro Giacomazzi <i>with UV remapping by</i> Sergbuto <i>“Hurricane IIC” skin</i> by JU88 <i>and new engine sound by</i> Kpt. Lehmann

Nation	Aircraft	Author(s) (<i>auteur</i>)
	Short "Sunderland" maritime patrol bomber	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Vickers-Armstrong "Wellington" bomber	Ubisoft <i>with 3d modeling by</i> JU88 <i>and Silent Hunter III import by</i> Ref
Italy	Savoia-Marchetti S.M. 79	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
Japan	A6M "Zero"	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	A6MN-2 "Rufe"	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
Soviet Union	Ilyushin DB-3 level bomber	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Tupolev Tu-2 level bomber	<i>Model by</i> JU88 <i>with reskin by</i> Dowly <i>and Silent Hunter III import by</i> Ref
United States	Boeing B-17F Flying Fortress Fortress Mk II (Coastal Command version)	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Consolidated B-24D "Liberator" maritime patrol bomber	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Consolidated B-24J "Liberator" heavy bomber	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref

Nation	Aircraft	Author(s) (<i>auteur</i>)
	Consolidated PBY5-A “Catalina” maritime patrol bomber	<i>Remodel by</i> JU88 <i>with reskin by</i> Dowly <i>and Silent Hunter III import by</i> Ref
	Goodyear K-class Airship	Privateer and JU88 <i>and Silent Hunter III import by</i> Ref
	Grumman F4F “Wildcat” fighter-bomber	Mauro Giacomazzi, <i>with UV remapping by</i> Sergbuto <i>with skin by</i> Bob Chicilo
	Grumman TBF “Avenger” torpedo bomber	<i>Remodel and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Lockheed PBO-1 (“Hudson”) maritime patrol bomber	<i>Model and skin by</i> Psy06 <i>edited by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Lockheed P-38J “Lightning”	<i>Model edited by</i> JU88 <i>and Silent Hunter III import by</i> Ref
	Vought OS2U “Kingfisher” observation/scout plane	<i>Model and skin by</i> JU88 <i>and Silent Hunter III import by</i> Ref

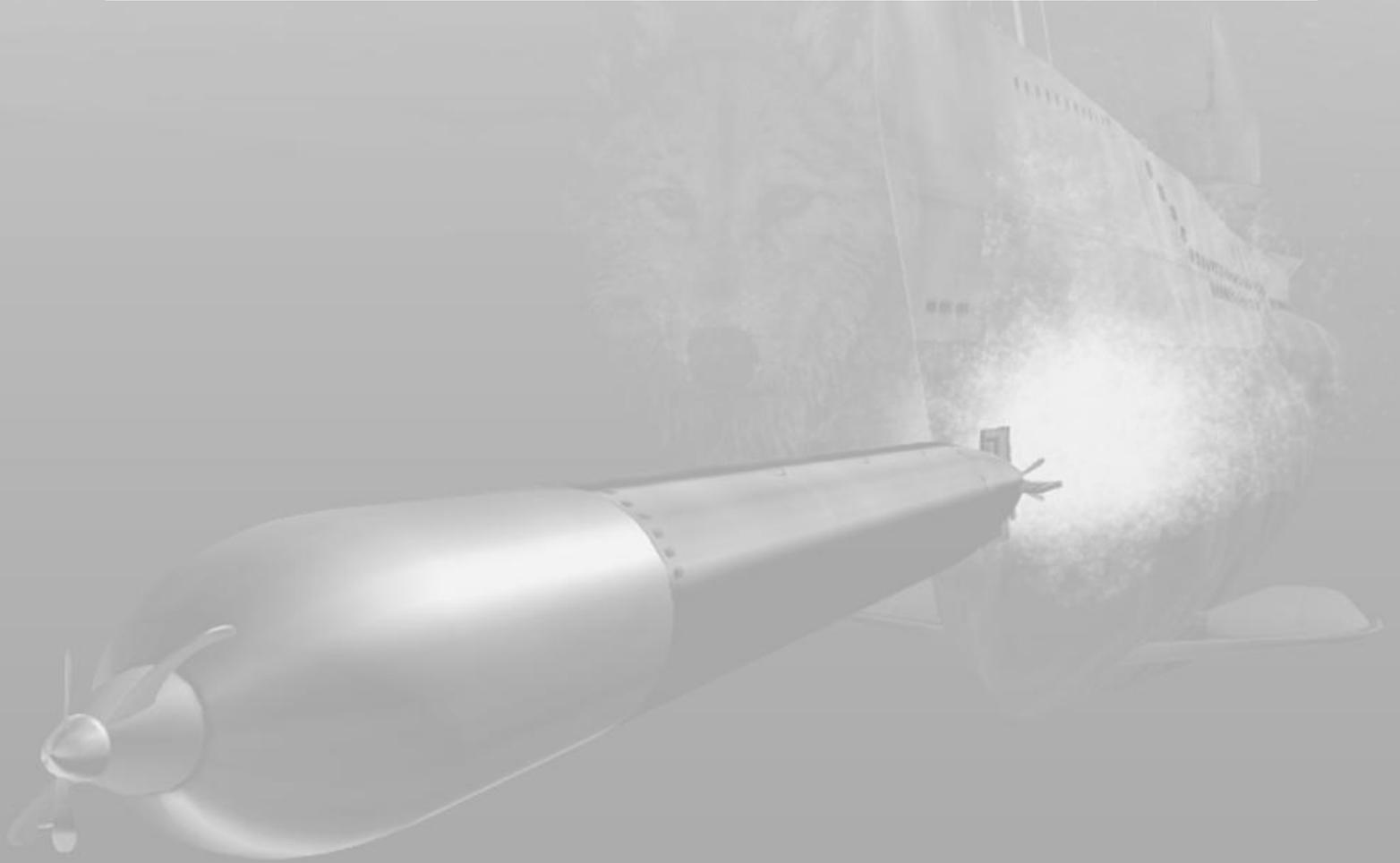
Table 25: New Weapons Systems in GWX

Nation	Weapon	Author(s) (<i>auteur</i>)
Allied	7.7mm (0.30-cal) and 12.7mm (0.50-cal) machine guns	Sergbuto
	57mm cannon (for Mosquito Tsetse)	Sergbuto
	3-inch and 5-inch air-to-ground rockets	Sergbuto
Soviet Union	Triple torpedo mount 12.7mm DShK 45mm AA gun 76mm AA gun 85mm AA gun 100mm AA gun 102mm gun 130mm gun 130mm single turret 180mm triple turret	Lilliput Vaa
Germany	Depth charge racks 20mm FlaK 37mm FlaK 88mm double FlaK 127mm single turret 150mm triple turret 280mm triple turret	Sergbuto
All	Additional bombs	Sergbuto
All	New mine racks	Rowi58
All	New minesweeping gear	Rowi58
All	New searchlight units	Ref
All	Additional searchlights	Vaa Lilliput
All	Barrage Balloon	Privateer

Table 26: Other New Objects in GWX

Nation	Weapon	Author(s) (auteur)
Britain	Maunsell Army Fort	JU88 Privateer <i>with modeling work by Ichneumon and campaign files by bigboywooly</i>
	Maunsell Navy Fort	Privateer and Ichneumon <i>with campaign files by bigboywooly</i>
Germany	Deck Cargo - Tank - Aircraft - Trucks	Rowi58
	Mölnort U-boat memorial	Ref
	Laboe Naval memorial	Rowi58 <i>with additional textures and lighting by Ref</i>
	Type II U-boat interiors	DivingDuck
	Type II U-boat observation periscope correction	DivingDuck
	Type VII U-boat interiors	DivingDuck
	Type VII U-boat attack periscope housing 3D model and textures	<i>3D model by FlakMonkey with GWX implementation by DivingDuck and Ref</i>
	Type VII U-boat observation periscope and periscope well relocation and reconstruction	DivingDuck
	Type IX U-boat interiors (dimmed light)	DivingDuck
	Type XXI U-boat interiors (dimmed lights)	DivingDuck
Soviet Union	Deck Cargo - Tank - Aircraft - Trucks	Dowly
United States	Deck Cargo - Infantry - Higgins Boat - Jeep - Small Crates - Small Drums	Ichneumon
General	New minelayer loadout (replaces depth charges)	Rowi58
	Buoys	<i>Models by Gary and Pontius with hex editing by DivingDuck, Ref, and Rubini and with sounds by Alex</i>

Nation	Weapon	Author(s) (<i>auteur</i>)
	Lighthouses	<i>Models by</i> Flakmonkey <i>with textures by</i> danlisa
	New terrain for Heligoland (<i>Helgoland</i>) Islands	TigerKatziTatzi
	Added crewmembers for ASW ship K-guns	Privateer
	Added animated sails to all sailing vessels	DivingDuck



Music and Video

Main screen video sequences includes excerpts from *The World at War: Wolfpack* and installments of *Die Deutsche Wochenschau* (“German newsreel”)

GWX removes all in-mission music from stock *Silent Hunter III*, and makes the following substitutions:

- Main menu: “Hanging” composed by Craig Armstrong from the soundtrack to *Plunkett and Macleane*
- Dockside band: “*Kadetten Marsch*,” composed by Josef Franz Wagner and performed by *I. Luftwaffenmusikkorps (Hauptmann Helmut Witten)*
- “Going down”: “Taking Stalingrad” from the *Call of Duty* soundtrack

Table 27: GWX Gramophone Music

OGG	Tune	Year	Artist(s)	Composer(s) / Lyricist
001	“All over the place” from <i>Sailors Three</i>	1940	Tommy Trinder	Noel Gay / Frank Eyton
002	“The Atholl Highlanders March”		Unknown	Unknown
003	“ <i>J’attendrai</i> ”	1939	Rina Ketty	Dino Olivieri / Louis Poterat
004	“One O’Clock Jump”	1937	William “Count” Basie & his Orchestra	“Count” Basie
005	“Blues in the Night” from <i>Blues in the Night</i>	1941	Jimmie Lunceford & his Orchestra	Harold Arlen / Johnny Mercer
006	“Take the ‘A’ Train”	1941	E. K. “Duke” Ellington & his Orchestra	Billy Strayhorn
007	“Stardust”	1937	Artie Shaw & his Orchestra	Hoagland “Hoagy” Carmichael
008	“A-tisket, a-tasket”	1938	Ella Fitzgerald w/Chick Webb & his Orchestra	Traditional
009	“Jumpin’ at the Woodside”	1938	William “Count” Basie & his Orchestra	“Count” Basie
010	“I L-I-love you so,” from <i>Black Valentines</i>	1941	Frances Day	Harry Jacobsen / Edward Heyman
011	“It’s a long way to Tipperary”	1915	Albert Farrington	Jack Judge / Harry Williams
012	“It’s foolish but it’s fun” from <i>Spring Parade</i>	1940	Deanna Durbin	Hans Salter / Gus Kahn
013	“ <i>Kriegsmarinemarsch</i> ”		Historical	Unknown
014	“Stormy Weather”	1933	Ethel Waters w/The Dorsey Brothers Orchestra	Harold Arlen / Ted Koehler
015	“My Heart and I” from <i>Old Chelsea</i>	1943	Richard Tauber	Richard Tauber
016	“I got it bad (and that ain’t good)”	1941	E. K. “Duke” Ellington & his Orchestra	Duke Ellington / Paul Webster
017	“ <i>Panzer rollen in Afrika vor</i> ,” from <i>Kampfgeschwader Lützow</i>	1941	Unknown	Norbert Schultze
018	“People will say we’re in love,” from <i>Oklahoma</i>	1943	Bing Crosby & Trudy Irwin	Richard Rogers / Oscar Hammerstein
019	“The Royal Anglian Regimental March”		The Band of the Coldstream Guards	Arr. by WO1 George Holben
020	“ <i>Lili Marlen</i> ”		Marlene Dietrich	Norbert Schultze / Hans Leip
021	“Siegfried’s Funeral Music,” from <i>Die Götterdämmerung</i>		Unknown	Richard Wagner
022	“In the mood”	1940	Glenn Miller & his Orchestra	Joe Garland & Andy Razaf / Joe “Wingy” Manone
023	“Take the world exactly as you find it,” from <i>Happidrome</i>	1943	Leslie “Hutch” Hutchinson	H. Parr Davies / P. Park
024	“ <i>Ich bin von Kopf bis Fuß auf Liebe eingestellt</i> ,” from <i>Die Blaue Engel</i>	1930	Marlene Dietrich	Friedrich Holländer
025	“ <i>Westerwaldlied</i> ”		Historical	Traditional
026	“Why don’t you do it right?”	1942	Peggy Lee w/Benny Goodman & his Orchestra	Benny Goodman
027	“Night and Day,” from <i>The Gay Divorcee</i>	1934	Fred Astaire	Cole Porter
028	“ <i>Auf der Reeperbahn nachts um halb eins</i> ,” from <i>Große Freiheit Nr. 7</i>	1944	Hans Albers	Ralph Arthur Roberts

GWX Modifications and Enhancements

Note: The GWX Team modified some of the files comprising the original modifications to ensure compatibility with other modifications also present in GWX

Table 28: GWX fixes of stock *Silent Hunter III* bugs

Change	Author(s) (<i>auteur</i>)
Icebergs now drift correctly along waypoint paths	Ref <i>implemented by</i> Cdre Gibs Rubini
Fix for P-38 altitude bug (min altitude was set to 5 meters; should be 55 meters)	GWX Team
Corrected torpedo layout and starting U-boat numbers in Flotilla.cfg	JScones
Corrected minor grid errors and other typos in Flotilla.cfg	Jscnes
Corrected displacement of the compass on Type VII & XXI conning towers	Ref
Corrected position of the FuMO-30, -61, and -64 Radars (to side of tower)	Ref
Corrected the RWR position on all conning towers	Ref
Moon reflections fix	Sergbuto
Added emblem capability to the Type XXI conning tower	Ref
Fixed stock <i>Silent Hunter III</i> “sonar destroyed” message on the Type IXD2	Ref
Fixed external camera bug that precluded the use of ground combat units	Rubini
Fixed “Barham” mission so sinking HMS <i>Valiant</i> meets primary objectives	Pablo
Fixed bearing.tga (periscope and UZO bearings were off by 3° in azimuth)	devnull
Gun platforms now have crewmembers	Privateer
Forward antenna for Type II Uboat now attaches properly to net cutter vice hull	ref
Fixed reversal of voices for “Ahead full” and “Ahead standard”	GWX Team
Type IX/3 conning tower damage model fix	Ref
Type IX/2 conning tower cable fix	Ref
Type VIIC/41 .zon file fix	Ref
Type VIIB torpedo loadout for 1942	Kpt. Lehmann
<i>Flak</i> and <i>Turm</i> availability for all playable U-boats	Penelope Grey
Corrected Type IXD2 wake	Privateer
Torpedo loadout corrections - Type II: deleted one torpedo (now 5 total) - Type IXB: added one torpedo (now 22 total) - Default external torpedoes are all G7a (“air-driven”) <i>vice</i> electric (TII / TIII)	Kpt. Lehmann Pablo
Fixed reflections in the .dat files for <u>all</u> sea units (stock <i>Silent Hunter III</i> and all imported models)	Privateer Ref Diving Duck
Enhanced Damage Effects mod fixes problems with catastrophic aircraft explosions, small fires, and depth charge detonations	Rubini
Aircraft can now drop depth charges if equipped with them	Ref
Reduced problem of ASW ships being sunk by their own depth charges	Kpt. Lehmann Pablo Ref Privateer

Change	Author(s) (<i>auteur</i>)
Real Weather Fix Mod	Stiebler SubType Zero

Table 29: GWX Campaign changes

Change	Author(s) (<i>auteur</i>)
Revised Operation <i>Cerberus</i>	bigboywooly
More ports above and beyond those in <i>Silent Hunter III</i> are now included, including Scapa Flow	Rubini, bigboywooly
Added Mediterranean invasion fleets (Operations <i>Torch</i> , <i>Husky</i> , <i>Avalanche</i> , <i>Slapstick</i> , and <i>Shingle</i>)	Scirè, Rubini
Added Operation <i>Neptune</i> (the Normandy landings)	Scirè, Rubini
New and corrected German language radio messages	Han2007
Alternative flotillas mod	Jscones
Captain's Log V0.03	JCWolf
Corrections to Type VII B U-boat weapons loadout (1942)	Kpt. Lehmann
Operation <i>Chariot</i> Atlantic Conference All movements of HMS <i>Hood</i> Added German covert tankers Added <i>Altmark</i> Incident	Ichneumon
Replaced static Gibraltar patrols with random ASW and minesweeping patrols Added random minesweeping missions in the English Channel Added random minelaying missions in the North Sea Added random minelaying on the French and Biscay coasts Added Neutrality Patrols Added Operations <i>Leader</i> , <i>FB</i> , I.E. 1, I.E. 2, ST 1, ST 2 Added German minelaying operations off Britain in late 1939 – early 1940 Added early PQ convoys in 1941 Added Russian traffic between Archangelsk and Murmansk Added Japanese shipping from Panama to US / Europe until October 1941 Added more neutral shipping for Belgium, Denmark, Norway, Spain, and Sweden Added convoys BC 6, WS21S, and TC 14 Added convoys between Methil and Bergen (during Operation <i>Weserübung</i>) Added “Triangular” convoys (St Johns – Halifax – Boston <i>or</i> New York) Randomized “Tanker Alley” Added ferry crossings and iron ore shipments in Nova Scotia, Canada Replaced all Campaign placeholders with new ships, as appropriate Added new ships to harbors, convoys, and patrols as appropriate Hunter-killer groups now spawn and return to ports, rather than in mid-ocean	bigboywooly
The RND layer has generic entries apart from those for which specific ships are called, e.g., lit ships or dark ships in neutral convoys	bigboywooly
Adjusted all national orders of battle to account for new / changed / removed ships and aircraft	bigboywooly
Many German language corrections, including the Navigation Map (F5)	Paco

Table 30: Historically based Single Player Missions with GWX adjustments

Mission	Location	Author(s) (<i>auteur</i>)
Bucket Brigade	Atlantic, North Sea, & Baltic	Based on “The Bucket Brigades” by “Wilhelm Schulz”
Cerberus		GWX Team
Convoy HX 228		Based on “HX 229” by gerhi4u@gmx.de
Convoy KS 502		based on “The First Convoys” by “Wilhelm Schulz”
Convoy SC 7		based on “SC 7” by “Wilhelm Schulz”
Convoy SC 94		GWX Team
Convoy SL 125		based on “The Decoy” by “Wilhelm Schulz”
Convoy TM 1		based on “Tankergeleit TM-1”; author unknown
Convoy TS 37		based on “Convoy TS 37” by “Wilhelm Schulz”
Force H		Author unknown
HMS Exmouth		Based on “RUM: 40-01-21” by “The Avon Lady”
HMS Malaya		Author unknown
U-515		Based on “U-515” by “Wilhelm Schulz”
U-1195		Author unknown
Convoy JW 55B	Arctic & Norway	“Pablo”
Convoy PQ 17		GWX Team
Narvik I		GWX Team
Narvik II		GWX Team
Tungsten		Author unknown
Finish Line	Mediterranean Sea	Adapted from stock <i>Silent Hunter III</i> “Malta”
HMS Barham		Adapted from stock <i>Silent Hunter III</i> “Barham”
HMS Eagle		Author unknown
Operation Gibbon		“Pablo”
Brake	Indian Ocean & Pacific	GWX Team
Convoy PA 69		author unknown
Force 63		GWX Team

German translations by DivingDuck

Table 31: Hypothetical Single Player Missions with GWX Team adjustments

Mission	Location	Author(s) (<i>auteur</i>)
Airship Escort	Atlantic, North Sea, & Baltic	“jimbuna”
April Fool		“jimbuna”
Curaçao		“jimbuna”
Drumbeat!		Author unknown
Early Christmas		“jimbuna”
Evacuation		Based on “Polish Evacuation” by “Wilhelm Schulz”
Freetown Convoy		Based on “Freetown Convoy” by “Wilhelm Schulz”
Iceland		Author unknown
Tiger’s Den		Author unknown
Tiger’s Jaws		Author unknown
Troopship		“jimbuna”
Ice Ice Baby 1	Arctic & Norway	“Aviar”
Ice Ice Baby 2		“Aviar”
Russian Convoy		“Wilhelm Schulz”
Scharnhorst		Author unknown
ALARM!	Mediterranean Sea	“Wilhelm Schulz”
Italia		Author unknown
Tiger’s Revenge		Author unknown
Tiger’s Tail		Author unknown
Far East Fleet	Indian Ocean & Pacific	GWX Team
Monsoon		Based on “Monsoon Group” by “Wilhelm Schulz”

German translations by DivingDuck

Table 32: Historically based GWX Multiplayer Missions, with adjustments by the GWX Team

Mission	Location	Author(s) (<i>auteur</i>)
Convoy SC 7	Atlantic, North Sea, & Baltic	Based on “SC 7” by “Wilhelm Schulz”
Convoy SC 94		Author unknown
Convoy SL 125		Based on “The Decoy” by “Wilhelm Schulz”
Convoy TM 1		Based on “Tankergeleit TM 1”; Author unknown
Convoy PQ 17	Arctic & Norway	Based on “PQ17”; author unknown
Tungsten		GWX Team
Brake	Indian Ocean & Pacific	GWX Team
Force 63		GWX Team

Table 33: Hypothetical GWX Multiplayer missions, with adjustments by the GWX Team

Mission	Location	Author(s) (<i>auteur</i>)
Atlantic Convoy	Atlantic, North Sea, & Baltic	Based on “Atlantik Konvoy” by “Wilhelm Schulz”
Bismarck Breakout		Based on “Hunting the <i>Bismarck</i> ”; author unknown
Florida ‘44		Based on “Florida 1944 (MP8)” by “Fadmiral”
Galveston		Author unknown
Georges Bank		Author unknown
Gibraltar-bound		Based on “England-Gibraltar Convoy” by “Wilhelm Schulz”
Iceland		Author unknown
Labrador’s Coast		Author unknown
Movie Moments		Author unknown
New York		Based on “New-York”; author unknown
Thomsen		Author unknown
Tiger’s Den		Author Unknown
Tiger’s Jaws		Author Unknown
Unescorted I		Based on “Unescorted I” by “Bbury”
West Approach 42		Based on “Western Approaches 1942” by “Wilhelm Schulz”
West Approach 44	Based on “Western Approaches 1944” by “Wilhelm Schulz”	
Arctic	Arctic & Norway	stfan4cjk@gmail.com
Arctic Meeting		Author unknown
Battleship Hunt		Based on “Hunt for <i>Tirpitz</i> and <i>Scharnhorst</i> ”; author unknown
Carrier Group		Based on “ <i>Trägerverband im Eismeer</i> ”; author unknown
Eisiger Wahnsinn		Based on “ <i>Eisiger Wahnsin</i> [sic]”; author unknown
Murmansk Run		Based on “Murmansk Run” by “Wilhelm Schulz”
Convoy to Egypt	Mediterranean Sea	Based on “Mediterranean Convoy” by “Wilhelm Schulz”
Gibraltar Harbor		Based on “Gibraltar [sic] Port” by “Wilhelm Schulz”
Tiger’s Revenge		Author unknown
Unescorted II		Based on “Unescorted 2” by “Bbury”
Red Sea	Indian Ocean & Pacific	Based on “ <i>Rotes Meer, vor Riad</i> ”; author unknown
South Pacific		Based on “Pacific” by bigboywooly

Table 34: GWX Modifications and Enhancements

Change	Author(s) (<i>auteur</i>)
Real World U-boat behavior	Kpt. Lehmann
Real World Gunnery	GWX Team
Flak emplacements added to U-boat pens	U-Snafu, <i>with tweaks by</i> Rubini Ref
External cargo for German ships	Rowi 58, <i>with tweaks by</i> Dowly
Ship and aircraft damage models	vonHelsching
<i>Schnorchel</i> radar warning receiver antennas ¹⁰²⁹	Ref, vonHelsching
Ship and aircraft Physics Model tweaks and corrections	vonHelsching
Retraction of radar antenna	Anvart, <i>adapted to GWX by</i> Ref
Radar antennas rotate when active	Ref
Deployment and rotation of radio direction-finding antenna	Ref, <i>with help from</i> Anvart
<i>Kristalldrehbasis</i> (KDB) 517reat hydrophones rotate in synch with display	Ref
Removed forward flag pole on the Type II U-boats	Ref
Integrated Orders	Chomu Jaxa
Additional Sound Effects	MRV
French translation	Alex
New armament schemes for the Elco and <i>Schnellboot</i>	Commander1980
Fix for German help file	Henri II
Dolphins	<i>Base model by</i> Ubisoft; <i>Discovery & 1st tweaks by</i> Sergbuto; <i>Campaign scripting by</i> Rubini; <i>Hi-resolution skin by</i> Tikigod; <i>New hydro behavior,</i> <i>waypoint following, and</i> <i>sound assignment by</i> Ref

¹⁰²⁹ Based on a concept used by Rowi58 to fix the FuMO-391 antenna, with special thanks to “Jaxa” and “JScones” for additional historical research and references

Change	Author(s) (<i>auteur</i>)
Multiple attack runs (bomb attack followed by multiple strafing attacks)	Ref <i>based on a concept by</i> Sergbuto
Corrected weapons loadouts for many ships	Ichneumon
Reduced positive buoyancy adjustments	Rubini
Jackstaff removed from Type II U-boats (player and AI versions)	Ref
Moving harbor cranes	Ref
No underwater flags on sunken ships	Ref
Engine order telegraph	Tikigod
Moving dockyard cranes with random movement	Ref
New “Bold” decoy orders and launch sound	Dowly
Static nomograph for “stock” GWX	Wazoo <i>adapted for GWX by</i> poorsailor
Removed “hard-painted” national aircraft markings from .tga files	Kpt. Lehmann
Fog weather report changed to visibility report	von Zelda
Updates on German K-class cruisers	Privateer
Removal of “dockyard graffiti”	danlisa
Gramophone updates to replace Nazi party songs	Pablo
French translations	Alex
German translations	Rowi58
Replaced external U-boat sounds with U.S. Navy wartime sonobuoy recordings during the destruction of HIJMS I-52	GWX Team
Enhanced Damage Effects	Rubini <i>including surface effects by</i> Gouldjg
Atmospheric horizon-related graphics corrections in GWX V2.1	DCB
Improvements in the GUI interface and ship recognition manual pages	Reece
Removal of numerous small (and not so small) errors in GWX V2.0	Skwasjer
Optional aircraft skins for the Mediterranean theater of operations	JU88
Replaced U-boat torpedo door open/close sounds with real life sounds	Alex
Corrections for descriptions of aircraft in the museum	Han2007
Put radio messages now in the format/syntax of stock <i>Silent Hunter III</i>	danurve
Updated upgrades and technology tree chart	danlisa Pablo

Table 35: GWX Graphics changes

Change	Author(s) (auteur)
New torpedo skins	TankerIV
New aircraft roundels and roundel placement	JScones SquareSteelBar
Aircraft glass .tga corrections on all aircraft	Danlisa Privateer
Aircraft specularly corrections on all aircraft	Privateer
Swallowtail naval ensigns	DivingDuck <i>adapted to GWX by Ref</i>
Corrected GUNS.DAT to properly display turret textures	Ichneumon
Added <i>leer</i> (“empty”) .tga file	JCWolf
Small sun halo graphic	Kriller
Seafloor mod	Vikinger
Improved wave textures	Dowly <i>as optimized by danlisa</i>
Smoke variant change	Sober
Improved Type VIIC player and AI U-boat conning tower and hull reflection improvements	Privateer
Crew uniform update	Fubar
Correction of textures used for the new hands of crewmen; watch officer skin	danlisa
All-grey contact lines on map displays	Poorsailor
New night-time map filters	Dowly
U-boat compass overlays	danlisa
In-game navigation map	danlisa
Mid-war U.S. carrier textures	Dowly
Enhanced slideout navigation compass	FLB sale 999 <i>with tweaks by the GWX Team</i>
New .sil files for all ships	danlisa
Improved moon graphics from photographs of the moon in all phases	Ichneumon
Optional mod to open the hatch between the control room and radio/sonar room	DivingDuck
GWX Camera Modification	Kpt.Lehmann Ref Sergbuto <i>with shaking and collision shock effects suggested by 13th41</i>
New 2D and 3D torpedo graphics	Pablo

FEATURES CARRIED OVER FROM *THE GREY WOLVES* V1.0/1.1

Note: The GWX Team modified some of the files comprising the original modifications to ensure compatibility with other modifications also present in GWX

Textures

Table 36: *The Grey Wolves* V1.0/1.1 Texture Credits

Modification	Author(s) (<i>auteur</i>)
New primary interface and loading screens	Marhkimov
New periscope background movie	Marhkimov
Transparent torpedo loading screen	FLB Sale U-999
Player and AI U-boat skins	Fubar
Better looking bananas	Tikigod
Pinup girls	Tikigod, Kpt. Lehmann
New surface ship skins	Marhkimov, Iambecomelife, Type-941, Sergbuto, Pascal
Military and Merchant mods	Juju
Multiple Ship Skin mod	Sergbuto
Additional .dat files for use with the Multiple ship skin mod	uboat234
Aircraft skins	Brando, Macstu23
U-boat emblems	Church, Evil Jester
Wakes and Bow Spray	Ail
“Supersmoke”	Marhkimov
Improved skins for nurses and other dockside personnel	Pascal
Damage textures	EFileTahi-A, Marhkimov
Depth Charge explosions	Pascal
Crew textures	Totenkopf, Marhkimov
High resolution flags for all countries; new countries added	Pablo, Marhkimov, Sergbuto
Bordinstrumente mod	OakGroove <i>with tweaks by</i> Jonz, Marhkimov
New <i>Bismarck</i> skin	Rubini

Player Interface

Table 37: *The Grey Wolves* V1.0/1.1 Player Interface Credits

Modification	Author(s) (<i>auteur</i>)
New primary interface and loading screens	Marhkimov
New periscope background movie	Marhkimov
New primary interface and loading screens	Marhkimov
New periscope background movie	Marhkimov
Transparent torpedo loading screen	FLB Sale U-999
Binocular crosshairs removed	Marhkimov
Portions of Konrad Krumm's Color Office	Konrad Krumm, Knox
Navigation map mod	FLB Sale9999
Moveable chronometer	Jonz
F1 Help Screen	Rubini, <i>with tweaks by</i> Kpt. Lehmann, Marhkimov
Camera modifications	Marhkimov
Slide-out Chief Engineer's readouts w/Bordinstrumente .tga graphics	Vierkant, OakGroove, Marhkimov
Sub Upgrades Chart / Technical Tree Screen	Ail
Changes to 1024.cfg for players with color blindness	Rubini, Marhkimov
Low contrast recognition book pages	Marhkimov, Kpt. Lehmann
Instrument and gauge fixes	Captain America
New German translation of in-game content	Nippelspanner
German radio messages and translations	JGS4PIPS, Nippelspanner
de_menu.txt corrections	Nippelspanner
English radio messages	Irishred, Sniper1, Rubini, Sansal
All-grey map contacts	Kpt. Lehmann
Attack periscope magnification increased to x10	Kpt. Lehmann
Rewrote and added missing year descriptions in career flotilla choice menu	Kpt. Lehmann
Renamed all non-hard coded crewmember names for more variety	Kpt. Lehmann
The Watch Officer now gives the weather report when your U-boat is surfaced	Timetraveller, Heretic, Marhkimov

Environmental Modifications

Table 38: *The Grey Wolves* V1.0/1.1 Environmental Modification Credits

Modification	Author(s) (<i>auteur</i>)
The Eight Kilometer (Default) Atmosphere Visibility Mod (Kpt. Lehmann) <ul style="list-style-type: none"> - Adjustments to daytime, night, and fog visual ranges (Rulle34) - Underwater sea colors (Marhkimov) - Night time sky and sea textures (Rubini, Marhkimov) - Enhanced sun reflections, and various sky/sea textures (Marhkimov) - Maximum visual distance alteration (Rulle34, Manuel Ortega) - Player U-boat's Radar Warning Receiver range changes (Jungman) - New Clouds (Ailantd) - New Moon (Ailantd) - Removed the "sky vortex effect" above the U-boat (Seeadler) - Added missing reflections for Type IIA, IID, XXI U-boat hulls; Type IXB, IXC, and IXD2 conning towers; Type IIA/D, Type VIIB/C, and XXI periscopes; and added reflections and wakes for all <i>Schnorchel</i> (Sergbuto) 	Many and varied, <i>with thanks to</i> Jungman, Pablo, Redwine, Sergbuto, and Timetraveller
Maximum visual distance and sky dome increased to 16 km (optional)	Rulle34, Manuel Ortega
Sunken Blockships	Ref <i>with thanks to</i> Rubini, Der Teddy Bär
Wave attenuation factor changed for more realistic waves	CB
Player U-boat may run with decks awash	Payoff <i>with GWX conversion by</i> Rulle34
Added Kiel Canal and related scenery	Ref, CCIP
Added Panama Canal, Suez Canal, and eastern entries to Scapa Flow	Ref
Additional Lighthouses	Sergbuto
Added town of Møltenort and five lighthouses in Kiel Bay (U-boat memorial site)	Kpt. Lehmann

Campaign and Career Modifications

Table 39: *The Grey Wolves V1.0/1.1 Campaign and Career Modifications*

Modification	Author(s) (<i>auteur</i>)
Modified player rank and medal requirements	Kpt. Lehmann
Argentina “joins” the Axis on May 12, 1945 (to allow U-boats to flee there)	Rubini <i>from an idea by Stiebler</i>
Changed number of days in base to prevent reassignment to same map grid	Kpt. Lehmann
Improved Convoys	Jason885 <i>with small tweaks by Kpt. Lehmann, Rubini</i>
Added Milk Cows (Type XIV U-tankers)	Sansal, Rubini
Additional countries (now 43 in all), with flags	Sergbuto, Rubini
Added extensive anti-submarine minefields in the English channel and around the British Isles; option for no minefields	Der Teddy Bär <i>with tweaks by Rubini</i>
Incorporated all content from Harbor Traffic mod V1.47	Rubini, Scirè
Added missions for German battleship <i>Tirpitz</i> , battleships <i>Scharnhorst</i> and <i>Gneisenau</i> , and Type 36A destroyer; removed sub pens from Kiel (they were not installed until mid-war)	Rubini
Integrated all new ship and aircraft models into the campaign	Rubini
Adjustments to availability and political alignment dates for the Azores, Iceland, and various Mediterranean and Black Sea ports.	Rubini
Added six German airbases and four Allied air bases	Rubini
Increase probability of spawning ships in the South Atlantic, Africa, the Eastern Seaboard of the U.S., and the Gulf of Mexico. This will allow more productive Operation <i>Paukenschlag</i> (“Drumbeat”) and operations against convoys off West Africa.	Rubini
Added Operation <i>Berlin</i> (convoy raid by <i>Scharnhorst</i> and <i>Gneisenau</i>)	Rubini
Added a new MAS torpedo boat (by Noline)	Rubini
Added many historical Mediterranean convoys (Allied and Axis); new convoy routes, including random/variable components; warship patrols; does not include specific warship engagements (<i>e.g.</i> , Matapan, <i>etc.</i>)	Charlie901
Added Canadian <i>Fiji</i> -class light cruiser <i>Swiftsure</i>	MacStu23

Sound Effects

Table 40: *The Grey Wolves V1.0/1.1 Sound Effects Credits*

Modification	Author(s) (<i>auteur</i>)
We added about 200 new sound effects in .wav and .ogg format. Thanks for all your hard work, people. We cannot list every single sound here, but you have certainly added richness to our <i>Silent Hunter III</i> experience.	<i>Largely compiled by</i> Nippelspanner, <i>compiled from work by</i> Anzac-Mick, Clive Bradbury, Finiteless, Hoshi, Incognito Soundworks, KptLt. Erich Karl, Kpt. Lehmann, Marhkimov, Morhoon, Nippelspanner, Rulle34, Sailor Steve, Vix
Reassigned voice ID numbers for all officers (no “Hulk” or “Mickey Mouse” voices)	Kpt. Lehmann
Crew cheers enabled	Unknown modder(s)
“Subnet screech” removed	Unknown modder(s)
Morse code message received	Vix, Unknown modder(s)
SDL file	Kpt. Lehmann, <i>based on work by</i> Fangschuss, NoLine
Various speech files	Rulle34, Sailor Steve, Hoshi
Corrected broken “Submarine blowing ballast”	DocAguirre
Destroyer propeller revolutions (speed) discernable through hydrophones	Kpt. Lehmann
Engine sounds no longer emanate from the bows of ships	Vapor Siaj, <i>adapted by</i> Nippelspanner
Added slower destroyer propeller sounds	Kpt. Lehmann

Models

Table 41: The Grey Wolves V1.0/1.1 Model Credits

Modification	Author(s) (auteur)
German battleship <i>Scharnhorst</i>	Gerome_73
German battleship <i>Tirpitz</i>	Model – GW Team Skin – Type941
German Type 1936A (M) Destroyer	Model – GW Team Multiskin - based on Sergbuto's work
<i>Flottenbegleiter</i> (German Destroyer Escort)	Commander1980
Hospital Ship	Iambecomelife, Sergbuto
Aircraft carrier USS <i>Essex</i>	GW Team
British <i>Southampton</i> -class Light Cruiser	Sergbuto
Large Passenger/Cargo aka Transport	Sergbuto
Large Merchant Ship	Sergbuto
U-flak and other AI U-boats	Model – Sergbuto, Skins – Fubar, Scripting – Rubini
Italian <i>motoscafi armati silurante</i> (MAS) Motor Torpedo Boat	Noline
Large Old Ocean Liner (based on SS <i>Ceramic</i>)	Chris 911
Added (missing) depth charge racks to British "C"-class destroyer	Sergbuto
Added British "Walrus" and German "Arado" seaplanes	Sergbuto, Rubini
Added "Leigh Lights" to all eligible Allied aircraft	CCIP, CB, Col7777
Fix for <i>King George V</i> -class gun turrets	GW Team
Jackstaff removed from the bow of the Type VIIB U-boat	Flakwalker
Antenna fixes for player and AI U-boats	Flakwalker

Game Play

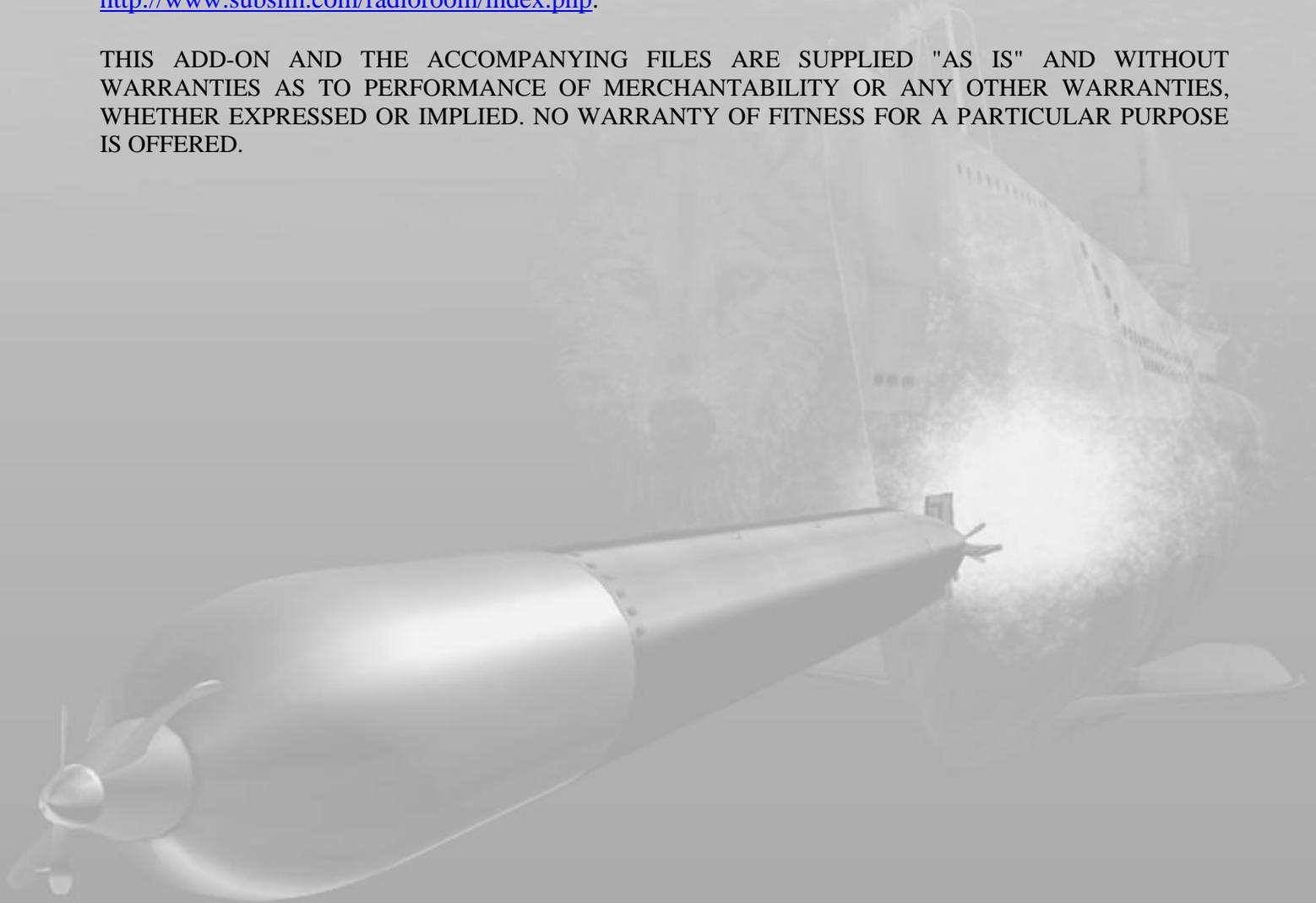
Table 42: *The Grey Wolves* V1.0/1.1 Game Play Credits

Modification	Author(s) (<i>auteur</i>)
“Real Battery Life” mod (aka “Advanced NASA Battery Fix”)	VonHelsching
Navigation Map data sheet mod	KptLt Erich Karl
Improved Ship Recognition Book	JonZ
Changed <i>Schnorchel</i> depth	Kpt. Lehmann, <i>based on research by</i> Syxx-Killer
Destroyer pinpoint DC drop fix and destroyer aggression mod (changed 75% of “Elite” destroyers and destroyer escorts to “Veteran” units)	Marhkimov, Kpt. Lehmann <i>based on work by</i> Gouldjg, Redwine, CB, Caspofungin
Deck gun and <i>flak</i> stability changes	GWX Team
Reduced deck-gun damage potential and reload rates	Marhkimov, Kpt. Lehmann
Flak reload rates to 5 seconds per barrel	Kpt. Lehmann
Airpower mod	Marhkimov, Kpt. Lehmann, <i>based on work by</i> Jace11
All aircraft carry bombs instead of depth charges because aircraft carrying depth charges didn’t always drop them; Hurricane II now carries <i>small</i> bombs	Marhkimov
Type XXI U-boat radar and sonar fix	GWX Team
Eight-hour fatigue (default) and 24-hour (optional) fatigue models	Gouldjg, <i>w/minor tweaks by</i> Kpt. Lehmann, Marhkimov
Crush depth changes (no spoilers here)	Marhkimov, Kpt. Lehmann
Added missing Type VII torpedo	GWX Team
Fixed all known torpedo loadout problems	Marhkimov
Modified U-boat damage model amalgamating “Hollywood” (Gouldjg) and “Die Hard” (Jungman) damage modifications	Marhkimov
<CTRL><ENTER> is used to fire torpedoes	Unknown
Fix for incorrect T.II (electric) torpedo range (increased to just over 5km)	Clive Bradbury
“Type IXD2 torpedo and range” fix (increased surfaced range to 22000km)	VonHelsching
“Type XXI flak and battery fix”	VonHelsching <i>based on an idea by</i> Ducimus

TECHNICAL SUPPORT AND WARRANTY

You may find the answers to general questions by viewing the GWX FAQ at the GWX site (<http://www.thegreywolves.com>). If that does not answer your questions, feel free to ask for help at <http://www.subsim.com/radioroom/index.php>.

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CREDITS

The GWX team includes members from all over the world, and incorporates many modifications and ideas drawn from the Subsim.com modding community in addition to the team’s own creations. All development and playtest credits are in alphabetical order.

GWX Development Team for V2.0 / V2.1

Table 43: GWX Development Team for V2.0 / V2.1

Pseudonym	Position
“Kpt Lehmann”	Project Manager
“AG124”	Shipping and ship skinning
“Alex”	French language translation; graphics
“bigboywooly”	Chief of Campaigns, shipping, and mod file compilation
“BlueZulu”	Programming and installer instructions
“danlisa”	Lead Graphic Artist, web artist
“DivingDuck”	3D modeling, hex editing, and object importation; German language translations
“Dowly”	Graphic Artist, aircraft skinning, environmentals
“ichneumon”	Graphic Artist, shipping, lead ship skinner
“JU88”	Aircraft 3D modeling and lead aircraft skinner
“Pablo”	Chief of R&D (Research and Documentation); mission editing; “The Music Man”
“Privateer”	3D modeling, hex editing, and object importation
“Ref”	Chief of 3D Modeling, hex editing, and object importation
“Rubini”	Environmental effects; damage model special effects

Table 44: Honored former members of the GWX Development Team

Pseudonym	Position
“Boris”	Lead Graphic Artist; German Translations
“Cdre Gibs”	Chief of Shipping, 3D Modeling, Hydrodynamic Physics, and Sensors Coding
“Ducimus”	Expanded flotillas
“fubar”	Graphic Artist
“gouldjg”	Effects Modeling; Damage and Sensors research
“JCWolf”	Graphic Artist
“JScones”	Chief Architect of Expanded Flotillas; Campaign Research; Quality Control; Documentation; Installer
“Nippelspanner”	German Translations; Sound
“Pants”	Chief Researcher
“Scirè”	Campaign Scripting
“Syxx Killer”	Quality Control
“VonHelsching”	Chief of Damage Modeling

Unless stated otherwise the GWX team members developed all features, modifications, and enhancements outlined in this manual.

GWX Beta Testers

Table 45: Testing Crew Leads for GWX V2.0 / V2.1

Pseudonym	Position
“Jimbuna” Chief of the Boat	Lead testing and forum moderation; development team liaison; communications
“Penelope_Grey” Navigator	Lead testing, forum manager, and development team liaison

Table 46: GWX Test Crew for V2.0

“ Seth ”	“Kpt. Munson”
“Alex”	“Mancuso24 (24 th Flotilla)”
“Beltza (24 th Flotilla)”	“Melnibonean”
“Caminante (24 th Flotilla)”	“Owner”
“Etna”	“Packerton”
“FIREWALL”	“PaulH513”
“GoldenRivet”	“Poorsailor”
“Growler66”	“RealJambo”
“Hanomag”	“Rebel”
“Irish1958”	“Richi (24 th Flotilla)”
“Jaxa”	“Tarjak”
“Joea”	“VikingGrandad”
“KeptinCranky”	“Wreford-Brown”

Table 47: Honored former GWX Test Crew members

“Dancanovas”	“Kylania”
“Danlisa”	“MobyGrape”
“Deep Six”	“mountainmanUK”
“ecm747x”	“Mr Chris”
“Etna”	“P-Funk”
“Fredbass”	“respenus”
“GT182”	“Stabiz”
“HunterICX”	“U-snafu”
“Jaxa”	“Venatore”
“KapitanFred”	

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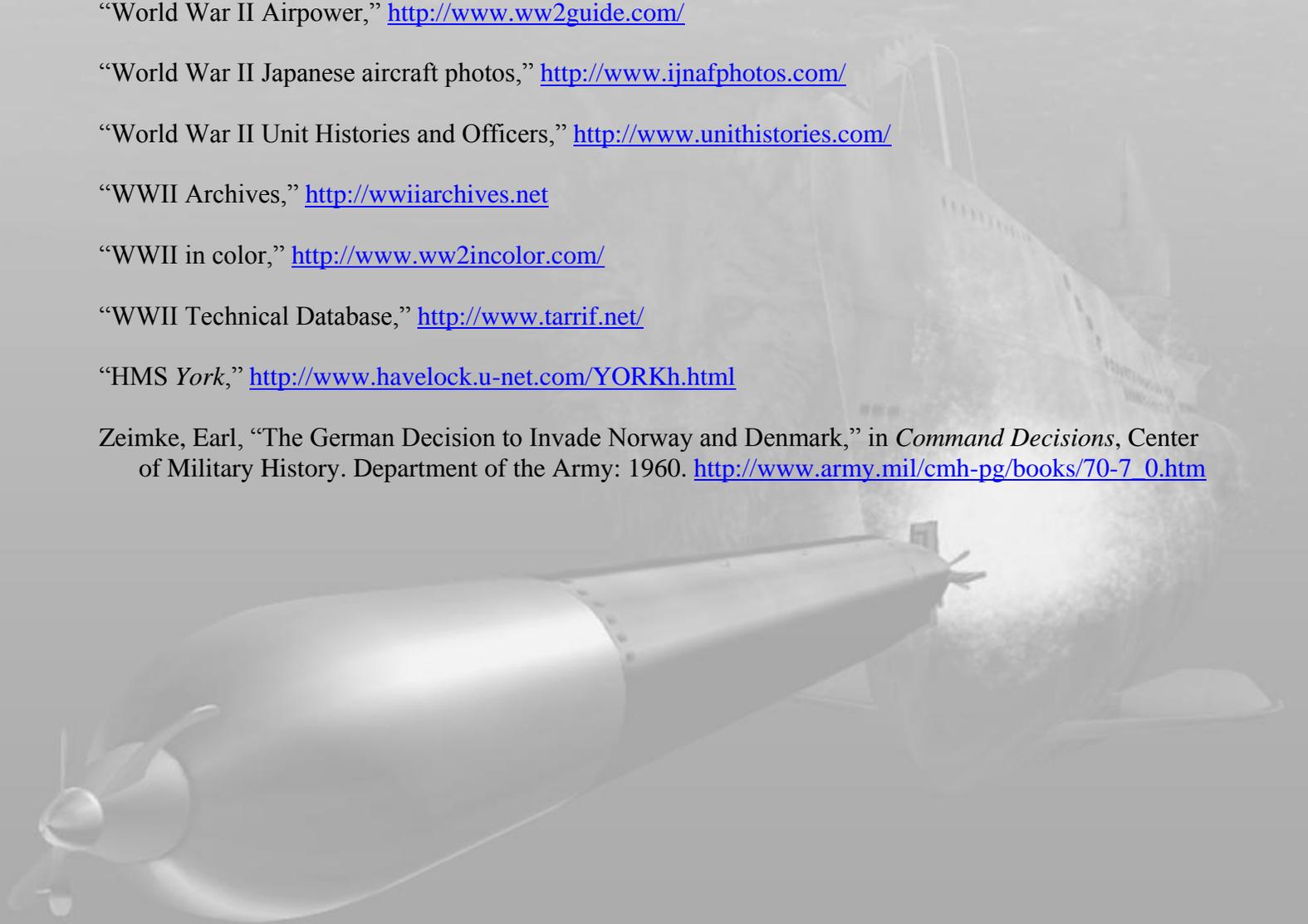
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Appendix A: Electronic Warfare

Based on original research by “Jaxa” and “Catfish,” with special thanks to “Txema” for pointing out new information, photos, and proofreading

Table A-1: Allied Radar Systems

Designation	Wavelength	Frequency	Used From	Used Until
VHF Radar	~ 1 to 1.5 meters	~200 - 300 MHz	1940	1945
S-band Radar	~ 10 cm	~3000 MHz (3 GHz)	1943	1945
X-band radar	~ 3 cm	~10000 MHz (10 GHz)	1944	1945

Table A-2: Selected U-boat Radar Warning Receivers

Designation	Name	Detects	Used From	Used Until
FuMB-1	<i>Metox</i>	VHF	August 1942	August 1943
FuMB-4	<i>Samos</i>	VHF	November 1943	June 1944
FuMB-7	<i>Naxos</i>	S-band	November 1943	September 1944
FuMB-8	<i>Zybern I / Wanze G1</i>	VHF	August 1943	November 1943
FuMB-9	<i>Zybern II / Wanze G2</i>	VHF	November 1943	May 1945
FuMB-10	<i>Borkum</i>	VHF	November 1943	May 1945
FuMB-26	<i>Tunis (Naxos II)</i>	S-band, X-band	June 1944	May 1945
FuMB-35	<i>Athos</i>	S-band, X-band	January 1945	May 1945
FuMB-37	<i>Leros</i>	S-band, X-band	Early 1945	May 1945

Table A-3: Selected U-boat Radar Warning Receiver Antennas

Designation	Name	Used with these RWR receivers
FuMB Antenna 2	<i>Honduras / “Biskayakreuz”</i>	FuMB-1
FuMB Antenna 3	<i>Bali / “Häschen”</i>	FuMB-1, -4, -7, -8, -9, -10, and -37
FuMB Antenna 5	<i>Samoa</i>	FuMB-4
FuMB Antenna 6	<i>Palau</i>	FuMB-7, -8, -9, -10
FuMB Antenna 24	<i>Cuba I / “Fliege”</i>	FuMB-7, -26
FuMB Antenna 25	<i>Cuba II / “Mücke”</i>	FuMB-26
ZA 290	<i>“Umlaut”</i>	FuMB-28, 35, 37

Table A-4: Selected U-boat Radar Systems

Designation	Wavelength	Frequency	Used From	Used Until
FuMO-29 Seetakt	~0.82 m	~366 MHz	1940	1942
FuMO-30	~0.78 m	~385 MHz	1942	1945
FuMO-61 Hohentwiel U	~0.5 m	~600 MHz	1944	1945
FuMO-65 Hohentwiel U1	~0.5 m	~600 MHz	1945	1945

Allied Radar Systems

U-boats early in the war relied on the cover of darkness to travel to and from their operating areas at relatively high speed on the surface, but airborne radar systems deprived them of this shield and allowed aircraft to surprise U-boats on the surface until the Germans developed radar warning receiver systems. The Allies used three basic types of Allied airborne radars used to hunt U-boats: Very High Frequency (VHF) radars, S-band “centimetric” radars, and X-band radars.

VHF Radar

VHF radar operates at a frequency of about 200-600 MHz with a wavelength of about 0.5 to 1.5 meters; it could spot ships and give the range and rough bearing to the target, but could not provide enough angular resolution for use as fire control radars. The British ASV (Airborne Surface Vessel, or maritime search) Mk I and II, and the U.S. ASA were examples of VHF radars; the Germans developed the FuMB-1 *Metox* RWR to detect them. The British installed ASV Mk II radar in aircraft starting in November 1940, when a radar-equipped Sunderland detected a U-boat (either *U-47* or *U-100*) as it approached Convoy HX 84, but airborne radars were relatively uncommon until early 1942.

Airborne VHF radars could usually detect a surfaced U-boat at a range of about 5 miles, but would lose the signal in sea clutter (caused by radar reflections off wave action on the ocean’s surface) at a range of about one mile. A U-boat at that range was visible in daylight, but at night aircraft had to drop flares on a first pass over the U-boat and then return to attack the now-illuminated target, by which time the U-boat had dived. Powerful searchlights known as Leigh Lights were mounted on ASW aircraft starting in July 1942 to allow them to illuminate the U-boat for an attack on the first run at the target.

The shipborne counterpart of the ASV VHF radars was the British Type 286. It was in operation at the beginning of 1941, and could detect surfaced U-boats; however, it proved of limited use because the low height of its antenna (when compared to that of airborne radars) made it more susceptible to the effects of sea clutter, so its effective range for detecting surfaced U-boats was only about 1 mile.

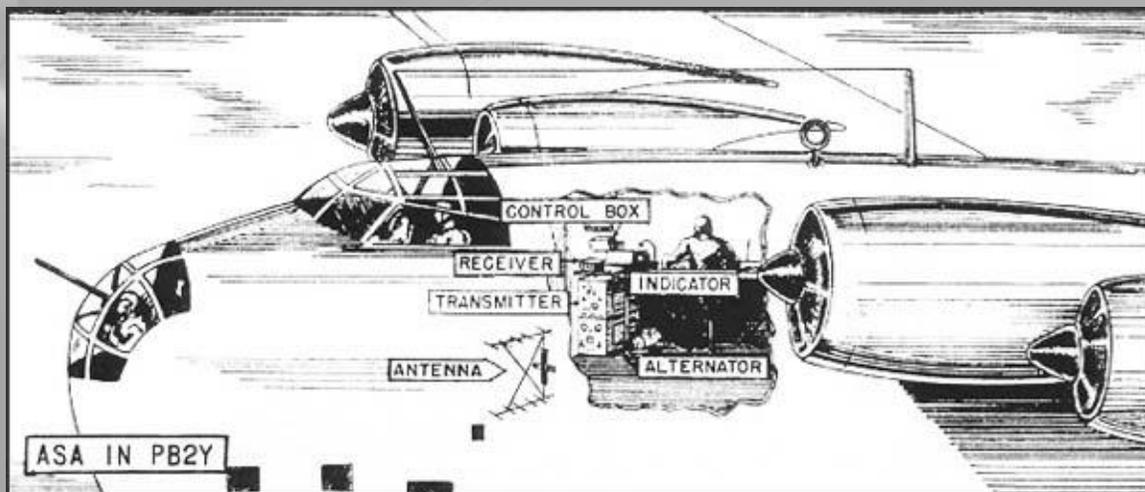


Figure A-1: Illustration of a ASA-type VHF search radar in a U.S. PB2Y “Coronado” flying boat¹⁰³⁰

¹⁰³⁰ U.S. Radar: Operational characteristics of Radar classified by application. FTP 217, August 1, 1943, <http://www.history.navy.mil/library/online/radar-10.htm>

S-band Radar

Microwave (S-band) radars operate at frequencies of about 2-4 GHz with a wavelength of about 10 cm that gave them sufficient angular resolution for use in fire control systems as well as target detection. The British made a technology breakthrough, the cavity magnetron*, which led to their deployment on surface ships and strategic bombers starting in 1941; 25 corvettes were equipped with the S-band Type 271 radar by July of that year, and deployment on ASW aircraft started in March 1943.

The British ASV Mk III and the U.S. AN/APS-3 were airborne examples of this type of radar; the Germans developed the FuMB-7 *Naxos* RWR to detect them as early RWR sets like *Metox* could not. The ASV Mk III could detect a surfaced U-boat at a range of about 15 km, and a U-boat's exposed periscope at closer ranges in calm seas; its shipborne counterpart (the British Type 271 radar), could detect a surfaced submarine at around 5 km and an exposed periscope within about 1 km.

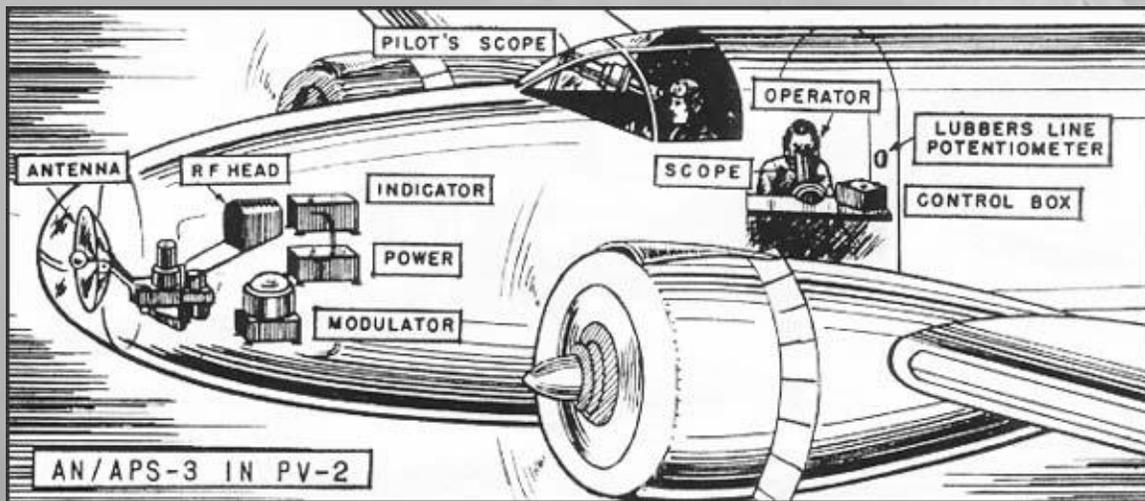


Figure A-2: Illustration of AN/APS-3 S-band radar in a PV-2 “Harpoon” patrol bomber¹⁰³¹

* A cavity magnetron is at the heart of that modern kitchen convenience, the microwave oven.

¹⁰³¹ U.S. Radar, FTP 217, August 1, 1943, <http://www.history.navy.mil/library/online/radar-10.htm>

X-band Radar

X-band radars operate at frequencies between 8-12 GHz with a wavelength of about 3 cm. The Allies developed X-band radars and began deploying them in 1944 in anticipation of the Germans developing submarine countermeasures for Allied S-band (10cm) radars, with the added advantage that they could reliably detect small targets such as the exposed *schnorchel* of a submerged U-boat in relatively calm seas, thereby eliminating the U-boats' last tactical advantages.

Ships and U.S. aircraft had X-band radars (e.g., the AN/APS-15), but RAF Bomber Command took control of all British versions (e.g., the ASV Mk VII) to use them as radar bombsights for strategic bombing, so none were available for use by RAF Coastal Command against U-boats. The Germans developed the FuMB-26 *Tunis* (aka *Naxos II*) RWR to detect X-band radars as previous *Metox* and earlier *Naxos* RWR sets could not.

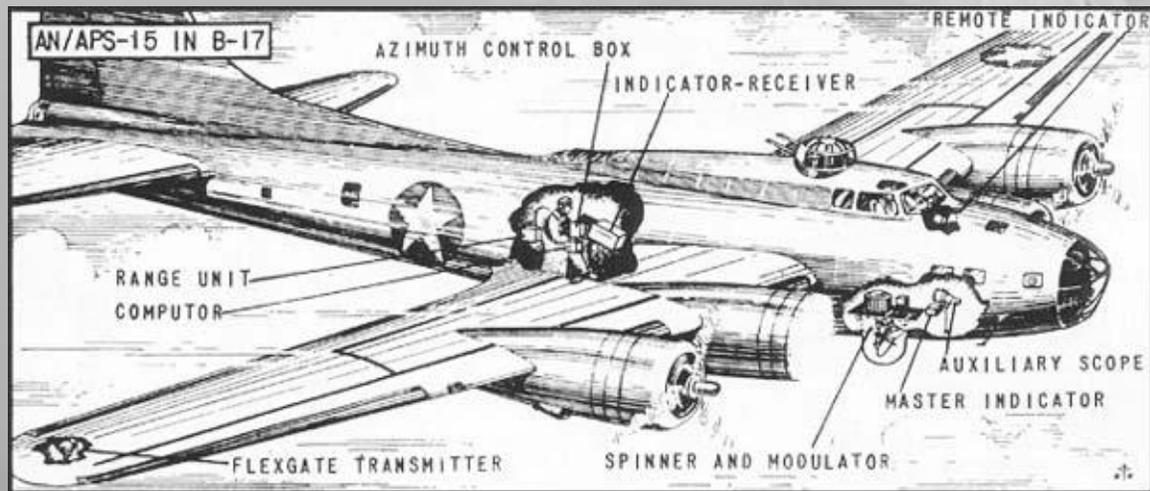


Figure A-3: Illustration of AN/APS-15 X-band radar installed in a B-17 “Flying Fortress” bomber¹⁰³²

¹⁰³² U.S. Radar. FTP 217, August 1, 1943. <http://www.history.navy.mil/library/online/radar-11.htm>

U-boat Radar Warning Receivers

FuMB-1 R 600A *Metox*

The French firms Metox and Gardin built over a thousand R 600A radar-warning receiver (RWR) sets, nicknamed *Metox*, after its initial development by the German *Nachrichten-Versuchsanstalt der Kriegsmarine* (NVK, “Naval Communications Research Institute”) in 1940. It detected VHF radars operating on wavelengths from 1.25 to 2.60 m (~115 to 260 MHz) and could detect British naval Type 286 and airborne ASV Mk I and Mk II radars at distances of from 11 km to 30 km, generating a warning sound whenever it detected radio energy in those wavelengths. The radio operator scanned the radar frequencies manually by tuning a dial on the face of the *Metox* RWR. This put a lot of burden on the radio operator to search constantly through the entire range of Metox-covered frequencies.

German surface ships began using *Metox* with a variety of antennas in 1940; U-boats began using the *Metox* in August 1942 with the [FuMB-2 “Honduras” RWR antenna](#), a wooden cruciform antenna known to U-boat crews as the *Biskayakreuz* (“Biscay cross”). A crewmember manually rotated the antenna to check for radars in different directions, and had to take the antenna inside when the U-boat submerged.

The Germans were puzzled in mid-1943 when aircraft began attacking U-boats at night without *Metox* warnings, and ordered U-boats to stop using *Metox* in August 1943 after a captured Allied pilot helped deceive the Germans into thinking that Allied aircraft were homing in on the *Metox* system’s own weak radio emissions. Abandoning *Metox* did not save any U-boats since the Germans’ real problem was that the Allies had introduced new radar systems operating at wavelengths of ~10 cm (3000 MHz or 3 GHz), that *Metox* could not detect. A British [Halifax](#) bomber carrying the new radar crashed near Rotterdam in early February, 1943 and finally proved to the Germans that the British had built S-band radars, but the Germans did not deploy their first RWR systems that could detect S-band radars until late 1943.



Figure A-4: FuMB-1 *Metox* R600A receiver¹⁰³³

¹⁰³³ Photo source: “Radar Warning Receivers,” <http://www.uboataces.com/radar-warning.shtml>

FuMB-4 Samos

Rohde & Schwarz OHG developed and built the FuMB-4 *Samos* RWR, which replaced *Metox* on U-boats equipped with the FuMO-30 radar antenna in late 1943. It operated at wavelengths of 0.64 – 3.3 m (~91 - 468 MHz) using the [FuMB-5 Samoa RWR antenna](#) mounted behind the FuMO-30 antenna. It was no more effective at saving U-boats from nighttime air attack than the *Metox*: the *Samoa* antenna allowed the *Samos* to estimate the direction from which VHF radars were broadcasting, but *Samos* could not detect S-band radars at all.

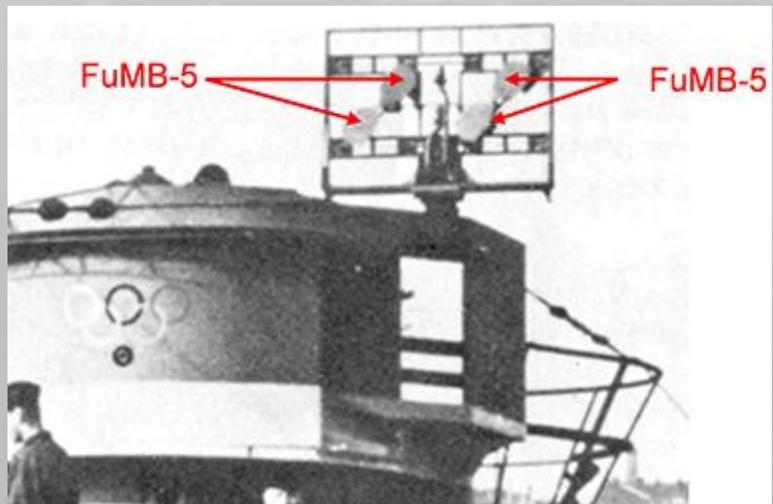


Figure A-5: FuMB-5 Samoa RWR on FuMO-30 radar antenna¹⁰³⁴

FuMB-7 Naxos

NVK/Telefunken developed and built the FuMB-7 *Funk-Gerät* (FuG) 350 *Naxos* RWR, introduced in September-November 1943. It initially operated at wavelengths of 3-12 cm (2.5 – 10 GHz) using the FuMB-11 *Korfu* RWR antenna, and could detect and show the direction of S-band aircraft radars at ranges of 8 km, but *Korfu* needed a crewmember to manually rotate the antenna and take it in when the U-boat submerged. This set was very simple and had no tuning capability, but as U-boats encountered very few friendly S-band radars this was not really an issue. Later *Naxos* versions, including the FuMB-23 RWR and FuMB-28 RWR, used a variety of antenna, including the [FuMB-6 Palau RWR antenna](#) in radar-equipped U-boats and the [FuMB-3 Bali RWR antenna](#) in U-boats without radar.

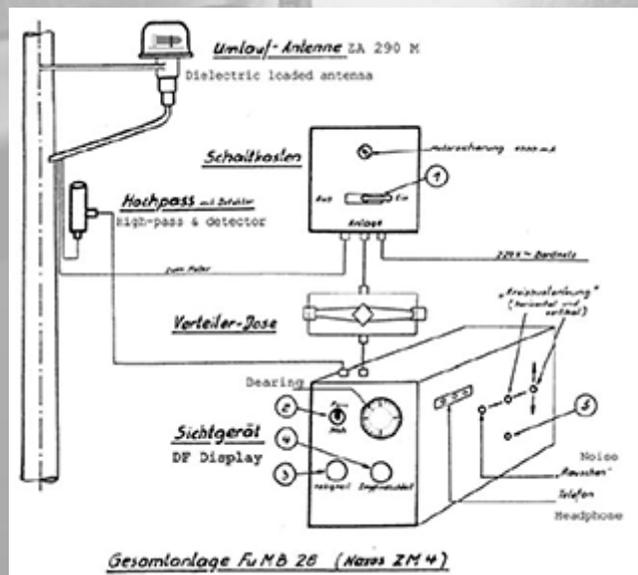


Figure A-6: FuMB-28 Naxos RWR set ZM 4b¹⁰³⁵

¹⁰³⁴ Photo source: http://www.wv2technik.de/dsub_vert.htm

¹⁰³⁵ Arthur O. Bauer, "Naxos, the history of a German mobile radar direction finder 1943-1945," <http://www.xs4all.nl/~aobauer/Naxos95nw.pdf>

FuMB-8 *Wanze*G1 *Zyperm I* and FuMB-9 *Wanze*G2 *Zyperm II*

U-boats began using the FuMB-8 *Wellenanzeiger* (*Wanze*, or “bug”) G1 *Zyperm I* (“Cyprus I”) RWR, called *Wanze* G1 by the U-boat crews, in August / September 1943 to replace *Metox*. They were developed and built by the German firm Hagenuk (*Hanseatische Apparatebau-Gesellschaft Neufeldt und Kuhnke*) GmbH and operated at wavelengths of 1.20 – 1.80 m (~166 - 250 MHz) using the [FuMB-3 *Bali* RWR antenna](#). They featured automatic frequency scanning, covering the entire frequency range 24 times per second, and stopping whenever it found a contact.

The *Wanze* G1 RWR emitted much less energy than *Metox* with a detection range of up to 50 km, but it did not work against S-band radars, either. BdU therefore concluded that the Allies were detecting the limited energy of the *Wanze* G1 and ordered U-boats to stop using it on November 5, 1943. The Hagenuk *Wanze* G2 replaced the *Wanze* G1. It emitted no radio energy and used the [FuMB-3 *Bali* antenna](#), or the [FuMB-6 *Palau* RWR antenna](#) on U-boats equipped with the new FuMO-30 radar antenna; however, it could not detect S-band radars and was thus no better than the *Wanze* G1 at saving U-boats from nighttime air attack.

FuMB-10 *Borkum*

NVK/Telefunken developed and built the FuMB-10 *Borkum* RWR, which was introduced in November 1943 as a quick *Wanze* G1 replacement. It operated at wavelengths of 0.20 – 3 m (100 - 1500 MHz) using the [FuMB-6 *Palau* RWR antenna](#) on U-boats with the FuMO-30 radar antenna, or the [FuMB-3 *Bali* RWR antenna](#) on U-boats without radar. This set monitored all its frequencies at the same time, but was very simple and had no tuning capability, so the radio operator was unable to determine the frequency and thereby identify whether the radar was friendly or enemy. In any case, it could not detect S-band radars, but U-boats still used them to detect older Allied radars.

FuMB-26 *Tunis* (Naxos IA)

NVK/Telefunken developed and built the FuMB-26 *Tunis* (Naxos II) RWR that entered service in June 1944 to detect the new Allied X-band radars such as the U.S. AN/APS-15 airborne radar. It was a dual-frequency/dual-antenna RWR system that could detect S-band radars with wavelengths of 8-23 cm (~1.3 GHz – 3.75 GHz) using the [FuMB-24 *Cuba I* \(Fliege, or “bowtie”\) RWR antenna](#), and X-band radars with wavelengths of 2-4 cm (7.5 GHz to 15 GHz) using the [FuMB-25 *Cuba II* \(Mücke, or “mosquito”\) RWR antenna](#). The FuMB 25 was above the FuMB 24 on a pole or on the RDF antenna and aimed in the opposite direction. These were directional antennas, so a crewmember had to turn the antenna by rotating the pole or the RDF antenna (depending on the FuMB 26 mounting) to check for radars in all directions, and had to take the antenna inside when the U-boat submerged. This combination RWR was highly effective in detecting the latest Allied radars and used until the end of the war.



Figure A-7: FuMB-24 and FuMB-25 antennas¹⁰³⁶

Note: Stock *Silent Hunter III* does not depict correctly the antennas used by the *Tunis* RWR; GWX does not change the stock depiction.

FuMB-35 *Athos*



Figure A-8: FuMB-35 *Athos* on the surrendered U-249¹⁰³⁷

The Germans introduced the FuMB-35 *Athos* RWR in early 1945. It improved upon the FuMB-26 *Tunis* and could detect Allied S-band and X-band radars at a range of 50 km. It had more sophisticated and sensitive electronics, a cathode-ray tube display for the operator, and a water- and pressure-proof antenna mounted on a fixed mast on the conning tower. The antenna spun rapidly within its enclosure ensuring full coverage around the U-boat and relieving crewmembers of the necessity of turning it manually. It was the last RWR system introduced on U-boats during the war. Several Type XXI U-boats carried the FuMB-35 but only one Type VIIC U-boat, U-249.

¹⁰³⁶ Photo source: “Type IXC/40 Uboot in 1/350 scale,” <http://www.paolopizzi.com/paolopizzi/reviews/typeix/typeix.htm>

¹⁰³⁷ Photo source: http://www.wv2technik.de/dsub_vert.htm

FuMB-37 *Leros*

The Germans introduced the FuMB-37 *Leros* RWR in early 1945 for use on the Type XXI and Type XXIII U-boats. It consisted of a FuMB-35 *Athos* RWR set and a [FuMB-3 *Bali* RWR antenna](#) mounted on the *schnorchel*, and detected all wavelengths of radar in use by the Allies.



U-boat Radar Warning Receiver Antennas

FuMB-2 *Honduras* antenna

U-boats used the FuMB-2 *Honduras* antenna with the FuMB-1 *Metox* RWR starting in August 1942. The FuMB-2 had a vertical and a horizontal dipole antenna mounted on a wooden cruciform frame that the U-boat crews knew as the *Biskayakreuz* (“Biscay cross”). A crewmember had to mount and plug in the antenna when the U-boat surfaced; rotate the antenna manually to check for radars in different directions while on the surface; and unplug the antenna and take it inside the U-boat before the U-boat submerged.

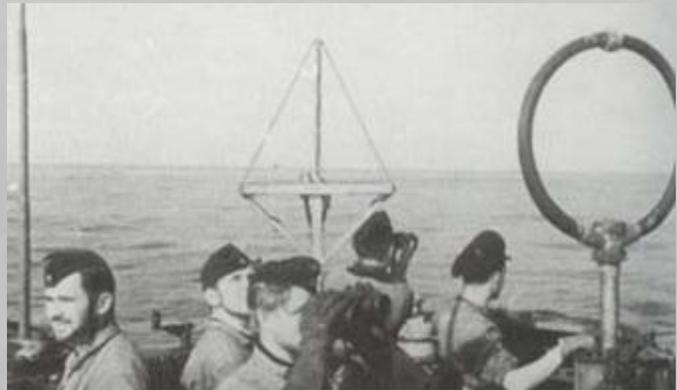


Figure A-9: FuMB-2 *Honduras* antenna¹⁰³⁸

FuMB-3 *Bali* antenna

The U-boats replaced the *Biskayakreuz* with the *runddipol* (“circular dipole”) FuMB-3 *Bali* RWR antenna, aka the *Häschen* (“bunny”) starting in February 1943. This antenna had a permanent water- and pressure-proof mounting atop the conning tower, and could detect radar in all directions at once but could not discern the direction from which the radar was coming. The U-boats upgraded the *Metox* receiver at the same time with a narrower operating wavelength of 1.37 – 1.66 m (~180 - 218 MHz).



Figure A-10: FuMB-3 *Bali* RWR antenna¹⁰³⁹

FuMB-5 *Samoa* antenna / FuMB-6 *Palau* antenna

The FuMB-3 *Bali* antenna blocked the new FuMO 30 radar, so the Germans developed the FuMB-5 *Samoa* RWR to be mounted on the reverse side of the FuMO 30’s mattress antenna. It was useful for detecting VHF radars but useless against S-band radars. The FuMB-6 *Palau* was almost identical but was sensitive to slightly different radar frequencies.

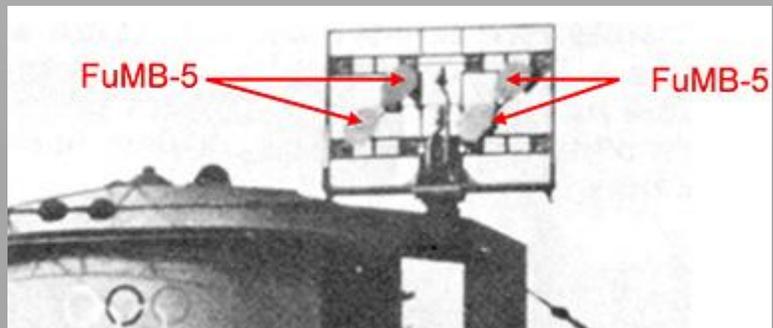


Figure A-11: FuMO-30 radar with FuMB-5 RWR antenna¹⁰⁴⁰

¹⁰³⁸ Photo source: Electronic Warfare Consulting Services, <http://www.ewcs.ca/>

¹⁰³⁹ Photo source: http://www.wv2technik.de/dsub_vert.htm

¹⁰⁴⁰ Photo source: http://www.wv2technik.de/dsub_vert.htm

FuMB-24 *Cuba I* (*Fliege*) antenna

The FuMB-24 *Cuba I* (*Fliege*, or “bowtie”) antenna allowed the FuMB-26 *Naxos* RWR system to detect radars operating on wavelengths of 8-23 cm (~1.3 GHz – 3.75 GHz).

U-boats mounted the FuMB 24 on a pole or on the RDF antenna. The antenna was directional so a crewmember had to turn the antenna by either rotating the pole or the RDF antenna to scan for enemy radars in all directions. The antenna was not waterproof and the crew had to take the antenna inside when the U-boat submerged. This RWR antenna was highly effective in detecting S-band radars and remained in use until the end of the war to ensure U-boats could still detect enemy ships not yet equipped with X-band radar.

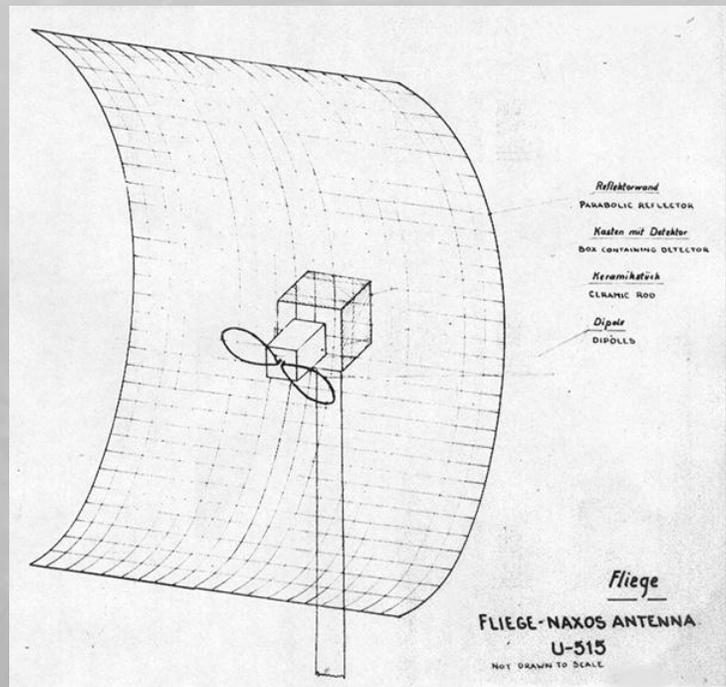


Figure A-12: FuMB-24 drawn by a POW from *U-515*¹⁰⁴¹

FuMB-25 *Cuba II* (*M ccke*) antenna

The FuMB-25 *Cuba II* (*M ccke*, or “mosquito”) antenna allowed the FuMB-26 *Naxos* RWR system to detect radars on wavelengths of 2-4 cm (7.5 – 15 GHz).

U-boats mounted the FuMB-25 along with the FuMB-24 antenna. The antenna was directional and faced in the opposite direction of the FuMB-24, and had the same operating requirements as the FuMB-24. This RWR antenna was highly effective in detecting X-band radars and remained in use until the end of the war.

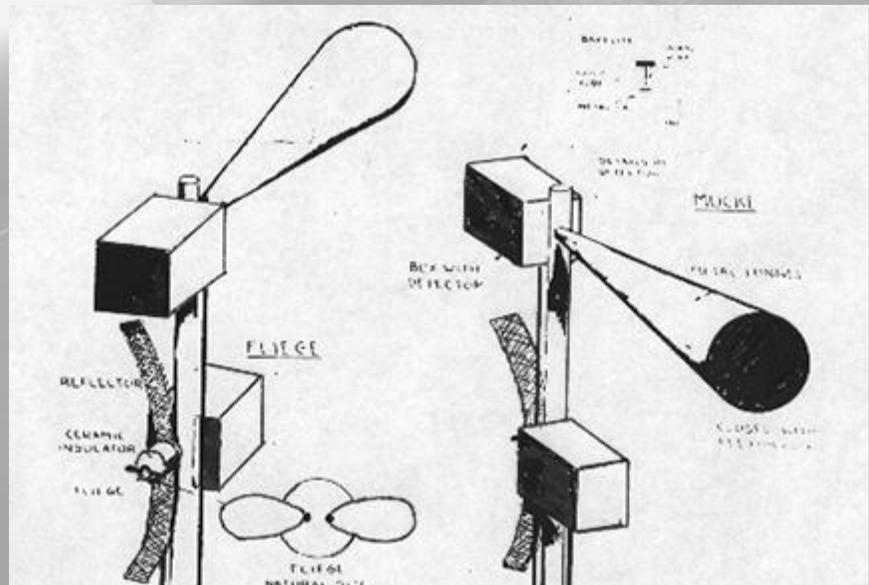


Figure A-13: FuMB-25 above FuMB-24, drawn by a POW from *U-1229*¹⁰⁴²

¹⁰⁴¹ Image source: U.S. Navy, “*Fliege-Naxos* Antenna,” *Report on the Interrogation of Survivors from U-515 sunk 9 April 1944 and U-68 sunk 10 April 1944*. <http://www.uboatarchive.net/U-515Fliege.htm>

¹⁰⁴² Image source: U.S. Navy, “Sketch of *Tunis* antenna,” *Report on the Interrogation of Survivors from U-1228 sunk 20 August 1944*. <http://www.uboatarchive.net/U-1229INT.htm>

ZA 290 antenna

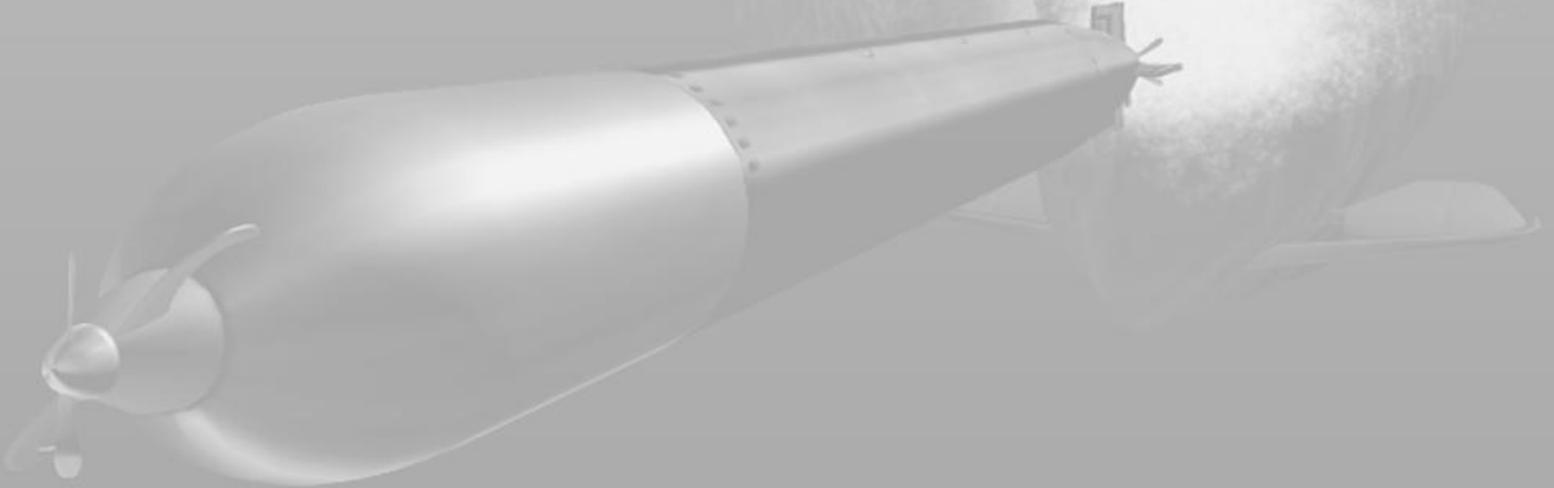
Germany began deploying the ZA-290 antenna for the *Naxos* RWR starting in August 1944, with an operating wavelength of 8-12 cm (2.5 – 3.5 GHz) and an electric motor that rotated it at high speed (1300 – 2000 RPM) to allow it to report instantly the presence and direction of Allied radars in its frequency band. The Germans referred to it as the “*umlaut* antenna” for the similarity of its two polymer dipoles to the *umlaut* (double dot) diacritic mark in German language text.

The FuMB 28 *Naxos* ZM4, FuMB 35 *Athos*, and FuMB 37 *Leros* RWR systems used this antenna.



Figure A-14: ZA 290 antenna for FuMB 28 *Naxos* antenna¹⁰⁴³

[Go to “Late War Sensors: *Schnorchel*-mounted Radar Warning Receiver Antennas”](#)



¹⁰⁴³ Bauer, Arthur O. “Naxos, the history of a German mobile radar direction finder 1943-1945,” <http://www.xs4all.nl/~aobauer/Naxos95nw.pdf>

U-boat Radar Systems

With special thanks to “Txema” for historical research

U-boats did not generally use radar successfully since the commanders suspected the Allies could home in on the signals, and because the detection ranges were extremely short. The radar display generally consisted of an oscilloscope display (called an “A-scope”) showing the range and an indicator of the radar antenna’s current azimuth. Late war radars used a Plan Position Indicator (PPI) to display the azimuth and range to the target in an intuitive fashion, in addition to showing all targets and objects around the U-boat at the same time instead of only one azimuth.

Only the FuMO-65 *Hohentwiel* U1 used a PPI display out of all the radars available to German U-boats, and only Type XXI U-boats used this type of radar.

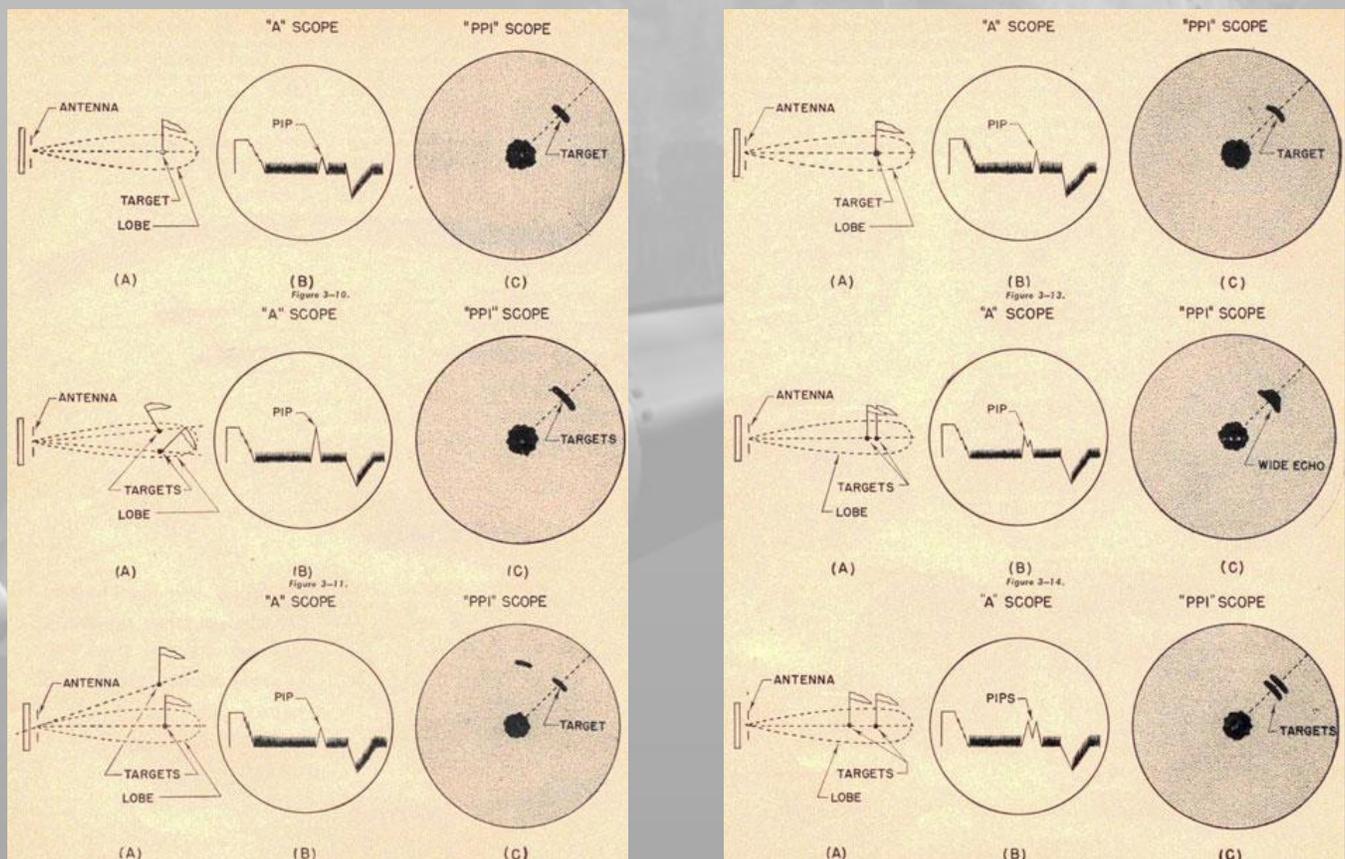


Figure A-15: Resolving targets in azimuth (left side) and range (right side) using A-Scope and PPI radar displays¹⁰⁴⁴

¹⁰⁴⁴ *RADAR OPERATOR'S MANUAL, RADAR BULLETIN NO. 3, (RADTHREE), Navy Department. April 1945.*
<http://www.hnsa.org/doc/radar/part3.htm#pg3>

FuMO-29 *Seetakt*

The FuMO-29 *Seetakt* (*Seetaktisches*, “sea tactical”) radar was a U-boat version of the earlier FuMO-28 *Seetakt* VHF radar manufactured by GEMA and installed on German capital ships in the late 1930’s. The radar was a 2 x 6-dipole design operating at a wavelength of 82 cm (~365 MHz); it could estimate range but its uncertainty in estimating azimuth precluded its use for controlling gunfire or aiming torpedoes.

The FuMO-29 mounted on a curved plate on the front of the U-boat’s conning tower, so it could detect targets only if they were within about 30° azimuth of the bow; all-around search required the U-boat to turn in circles. The detection range was only 7.5 km since the radar antenna’s position, only a few feet above the water, limited its horizon. Test installations on *U-39* and *U-41* in the summer of 1939 were unsuccessful, but a few U-boats were fitted with FuMO-29 starting in mid-1940.



Figure A-16: FuMO-29 antenna¹⁰⁴⁵

FuMO-30

The FuMO-30 was a GEMA 2x4-dipole array VHF radar mounted on a rotatable mast set above the conning tower instead of affixed to the front of the conning tower. It operated at a wavelength of about 78 cm (382 MHz). A wheel in the radio room rotated the antenna manually; the bridge watch had to manually set the antenna up upon surfacing and stow it prior to diving. Its range was slightly greater (~8 km) than that of the FuMO-29 because it was mounted higher on the conning tower than the FuMO-29. It had a range of about 10 km and was especially useful in detecting aircraft. It was in use through March 1944, and replaced by Hohentwiel.

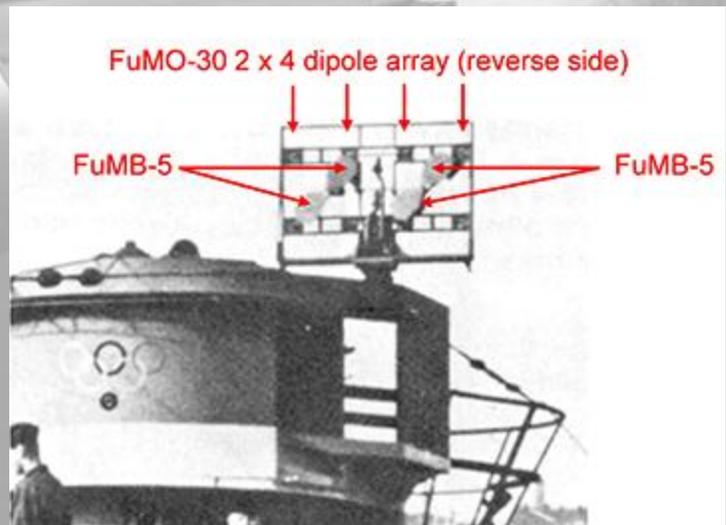


Figure A-21: FuMO-17 with FuMB-5 Samoa RWR antenna¹⁰⁴⁶

¹⁰⁴⁵ Photo source: Emmanuel Gustin, “U-boat radars,” <http://uboat.net/technical/radar.htm>

¹⁰⁴⁶ Photo source: http://www.wv2technik.de/dsub_vert.htm; text highlights by GWX Team

FuMO-61 Hohentwiel U

The C. Lorenz AG developed the FuMO-61 from the FuMG-200 Hohentwiel* VHF surface search radar used by Fw 200 and other patrol aircraft. It operated at a slightly shorter wavelength (~50cm, or 556 MHz) than the FuMO-30, and used the FuMG-200 4x6-dipole array *vice* a 2x4-dipole array. Its range was about 10 km and it could detect aircraft. The U-boats began using this radar starting in March 1944.



Figure A-18: FuMG-200 antenna on the nose of an Fw 200C-6¹⁰⁴⁷



Figure A-19: FuMO-61 Hohentwiel antenna aboard a Type IXC U-boat¹⁰⁴⁸

FuMO-65 Hohentwiel Drauf

This system replaced the “A-scope” oscilloscopes of previous radars with a PPI. The system was otherwise identical to the FuMO-61. Type XXI U-boats used it.¹⁰⁴⁹

* The *Luftwaffe* named its various radar apparatus after cities; the *Kriegsmarine* named theirs after islands

¹⁰⁴⁷ Photo source: “Focke-Wulf Fw 200 Condor,” <http://www.panzertruppen.org/luftwaffe/transporte/fw200.html>

¹⁰⁴⁸ Paolo Pizzi, “Type IXC/40 U-boat in 1/350 scale,” <http://www.paolopizzi.com/paolopizzi/reviews/typeix/typeix.htm>

¹⁰⁴⁹ Eberhard Rössler, *The U-boat*.

Appendix B: U-boat Warfare in GWX

Convoy Attack Guide

Principal Author: “Penelope Grey”

Disclaimer: The following is just a guide to help players develop themselves as convoy attackers and to progress in their own unique way. In the world of a real U-Boat captain, there were no hard and fast rules, so what worked today may fail tomorrow.

Overview

A convoy attack is an exercise in patience and timing. A successful convoy attack in GWX requires stealth: you must first observe the convoy without the convoy or its escorts having observed you, followed by a stealthy approach to your firing point and then an unobserved withdrawal to evade the nearly inevitable counterattack by the convoy’s escort. This guide discusses basic tactics that members of the GWX Team have found helpful in executing this type of attack.

Approach

Your first order of business, before anything else, is to make sure the convoy or its escorts do not detect you before you can attack. This takes precedence over everything, since being detected means losing the element of surprise, and that makes attacking a lot harder than it needs to be. Remember:

- Take note what year of the war it is. Will enemy warships have radar? Do you have a radar detector?
- Check your position! What is your heading? What is the convoy’s heading? What are the weather conditions (chiefly, visibility)? Is the water deep enough for you to evade a counterattack?
- What kind of torpedoes do you have are in each of your torpedo tubes? Have you set your detonators (impact/magnetic) the way you want them? Hint: you should use only impact detonators in rough seas.
- Is your battery fully or nearly fully charged, and your air supplies (compressed and breathing air) fully or nearly fully replenished?

The above is just plain common sense, but quite necessary for emergencies when you no longer have time to think about all these things.

The Weather

Weather is either your friend or your worst enemy. The best conditions for a surface attack are partial cloud cover, a calm yet not perfectly flat sea, and a scattering of light fog, or “moderate visibility” as it appears in your weather report; however, weather is something that you have no control over so you will have to take it as it comes. Weather conditions with overcast skies with 15 m/s winds and moderate visibility favors the U-Boat immensely where clear skies with no wind and unlimited visibility benefits the escorts. The moral of the story: factor the weather into your attack plans carefully. The better the weather, the fewer mistakes you can make, and the slower you must go to avoid detection.

Reconnaissance

The first step in a convoy attack is to find the convoy’s base course and speed; the number, location, and patrol patterns of the convoy’s escort vessels; the convoy’s formation, and the location of warships and/or desirable targets, such as battleships or tankers, within the convoy formation.

- Find the convoy’s course and speed by estimating the location of one of the ships in the convoy at an interval of 3 minutes, 15 seconds. (See Appendix D for an example of how to do this). If the visibility conditions are good enough that you think the convoy or its escorts may detect you within that time, just get a quick, approximate idea of the convoy’s course and speed; for example, “north-northeast at slow speed.” Use your navigation tools to mark the convoy’s projected course on your navigation map to ease the task of [getting into position](#).
- Rely on your lookouts and your own observations to identify any escorting vessels patrolling around the convoy formation. A radar detector can alert you to the presence of warships since only warships carry radar. Playing with the map update feature enabled will make this much more convenient.
- Determine the rough outline of the convoy’s formation (the number of rows and columns, and the distances between rows and between columns). Your lookouts will generally be able to spot all ships in range and let you know the general type of each ship (*e.g.*, “Cargo,” “Coastal Vessel,” “Destroyer,” *etc.*) of ship give you a good idea of what each kind of ship. Most convoys in GWX generally sail in a block of about four rows with the merchant ships in the middle and usually an average 4 to 6 escort vessels dotted about the perimeter, as shown in Figure B-1.

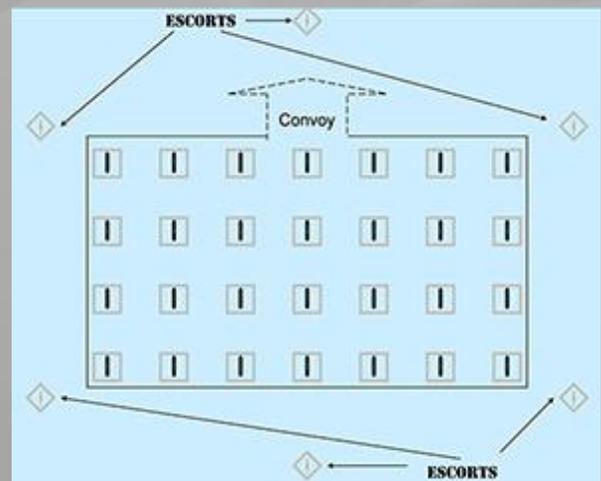


Figure B-1: Sample convoy formation

WORD OF WARNING! Convoys *may* have a warship in its midst: anything from a merchant cruiser to a battleship. One of these warships will rip your U-boat to shreds with its main gun battery should it catch you on the surface, so be cautious and be prepared.

Surfaced Attack

One of the most enjoyable aspects of GWX is the night surface attack. Many players experience problems when attempting to perform such a feat; however, there are steps you can take to improve your ability to pull off a surface attack. Even the most experienced players will experience problems from time to time with surface attacks: some days are harder than others are, but it is never impossible. Why do it? Surface attacking provides the player with greater attack flexibility; on the surface, you are faster and more agile than a submerged U-Boat, which means you are more effective in combat.

Getting Into Position

This ease of getting into position depends primarily on the effect of factors that affect the convoy's ability to detect you relative to their effect on your ability to detect and track the convoy. If it is daylight, with good visibility and relatively flat seas, or if you think (or know) that the convoy escorts have radar, you will want to look at the convoy just long enough to get an idea of its general course and speed, and then quickly consider your main options:

1. Track the convoy on the surface at extreme visual range, keeping your speed just above that of the convoy. This method is certainly easier, but brings with it the chance the convoy or its escort will detect you. We recommend this method if you are using the optional "GWX - 16km Atmosphere" mod, since the mod allows you to see convoys more easily than they can see you or detect you on radar *in some conditions*.
2. If you know the convoy's approximate course and speed, move away from the convoy and run on a roughly parallel course to try to get ahead of it. You should dive once every half hour or so, if you are not using the "GWX - 16km Atmosphere" mod and if you do not have a radar detector, so that you can use your hydrophones to check the convoy's bearing. This will allow you to turn in towards the convoy's track whenever you are ready to begin your attack.

Whichever option you select, try to keep your speed just above that of the convoy: dashing about at flank speed makes you much more noticeable to the convoy escorts and uses more fuel than a slow but steady race. Here are some things to remember when getting into position, as illustrated in Figure B-2:

- You must stay out of visual range of the convoy, and beyond the range at which radar-equipped convoy escorts can detect you. Lighting conditions, weather, and sea state determine the visual range, so there are no fixed rules on how far away you must be.
- Stay further away in conditions that give better visibility, such as clear weather and/or calm seas.
- You do not need to see an entire convoy to track it: you know where the convoy is as long as you can see just one of its ships, and you can track and plot the course of an entire convoy by observing just one of its ships steadily (and stealthily).
- Decide ahead of time whether you want to attack in daylight or after dark, and plan your approach so that you are in position to attack at the hour of your own choosing. You can conduct a submerged attack at any time, but you should only conduct surface attacks at night.
- **ALWAYS** be on the lookout for the convoy to change course, and be ready to react accordingly.

- Do not rush things.

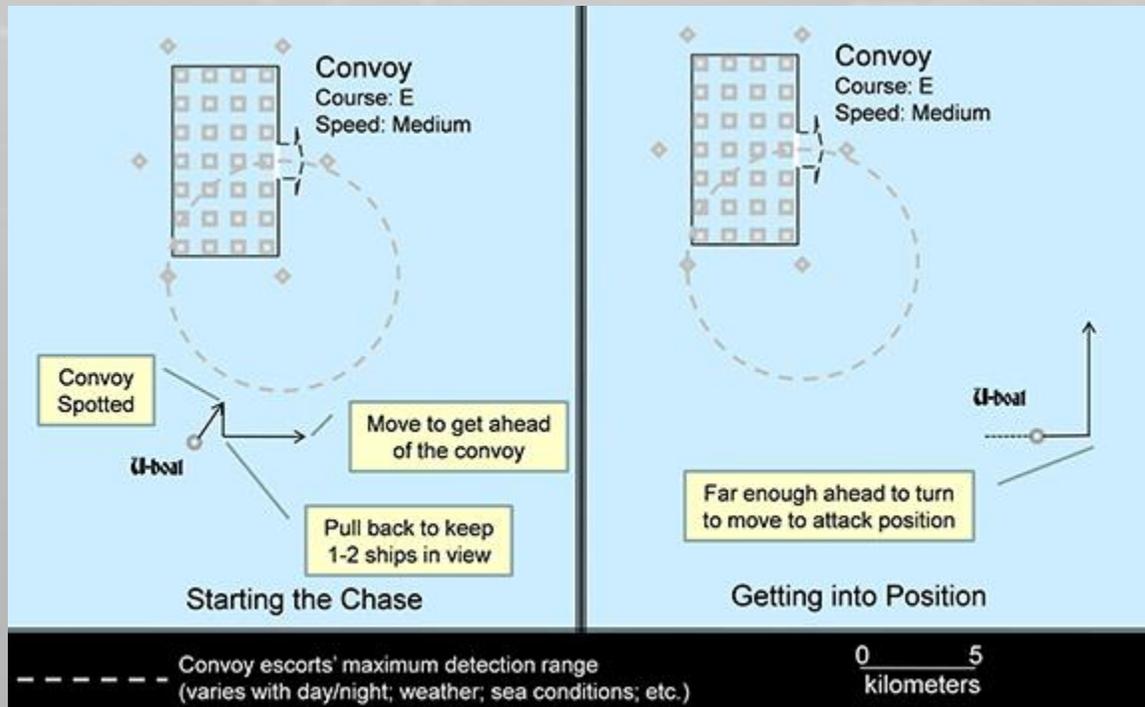


Figure B-2: Getting into Position

This next part is sadly not an accurate science; all that we can give you are a few general pointers.

1. You will have to be cautious of the escort(s) on the near side of the convoy, so you should first observe and determine their movements and their patrol routine. They may be close to the merchants, or they may be a fair way out - you will have to see for yourself.
2. You may not get to attack straight away, and you might have to pull back and then try again if an escort looks to be too close for comfort. Remember: stealth requires patience.
3. Avoid moving too fast at all costs (does this sound familiar?) – no *Das Boot* “*wahnsinnige Fahrt voraus*” wannabes here, please! You should probably run with your engines no faster than “ahead one-third” when you are on the surface and stalking or escaping from a convoy at close range.
4. Try putting your decks awash by selecting a depth of 6-7 meters. The boat will not totally submerge and you will still have the maneuverability provided by your diesels (the diesels’ air intake is just underneath the flak guns on the Type VII U-boats). Your maximum engine setting should be no more than “ahead standard” when your decks are awash, and possibly slower if visibility is good. Running with your decks awash is almost mandatory for a successful attack when the sea is very calm and visibility is good.
5. Remember that it is better to hit what you can and come back later, than to take bad risks.

Attack Procedures

Feel free to congratulate yourself on a job well done if you have come this far without a hitch, but do not get complacent, because this is where the fun starts. **Remember to keep an eye on the escorts on the side of the convoy nearest you at all times!**

For a night surface attack, it is advisable to do the following:

1. Use your bow tubes and point your bow at a 90-degree angle to the convoy's course.
2. Sneak in at slow speed and observe the convoy so you can select the best targets; these are usually found in the middle and front of a convoy. You can also approach with your decks awash, if need be. *Remember to take the weather and distance into account as regards to speed!*
3. Try to reach a position about 1,500 to 2,500 meters off the track of your intended targets: you do not need to be much closer, but you may miss if you are too far away.
4. Be prepared to stop your U-boat at the planned firing point. This is perfectly acceptable, as this greatly reduces the convoy's ability to see you as well as helping to reduce observation errors if you are using manual targeting.

Once you have selected your targets, achieve maximum surprise by timing your torpedo launches so they hit all targets at about the same time. For example, assume the desired targets are a Large Tanker and a Large Merchant, as shown in **Error! Reference source not found.B-3**, and that you want to hit each ship with two torpedoes to guarantee yourself the sinking. To achieve maximum surprise potential, fire a double shot at the Large Tanker first, count 30 seconds on your stopwatch before firing the next double shot at the closer Large Merchant. All torpedoes, assuming everything is going to plan, will hit at around the same time.

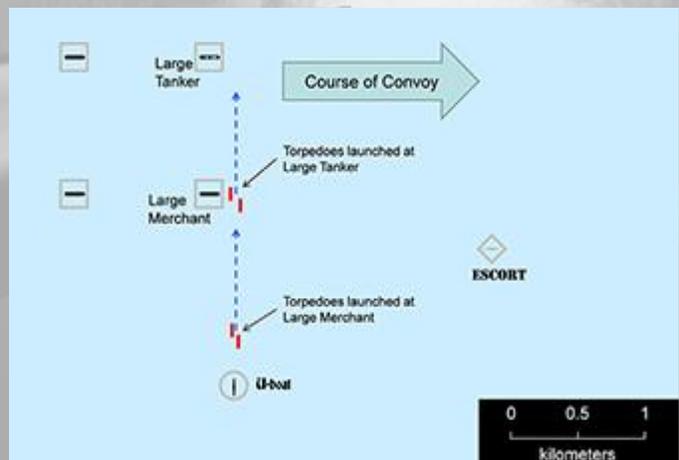


Figure B-3: Attack timed for maximum surprise

It is not always possible to do this, but it is something to consider when attacking, whether or not you use manual targeting. Leaving too much time after the first attack and the next puts you at a disadvantage because:

1. The escorts are now actively searching for you
2. All ships in the convoy will start zigzagging as soon as a ship detects the first torpedo, whether by seeing the torpedo or if the torpedo hits it.

Evading after a Surfaced Attack

Evasion can be as exhilarating as the actual attack; with a successful evasion, the escorts will not catch you, and you will escape in relatively undamaged condition. We stress that this too, like in real life, is not an exact science and many things could go wrong. You generally have two choices early in the war, but whichever choice you have made, you should execute it as soon as the last torpedo has left the tube: do ***not*** wait about to gawk at the results of your clever handiwork. Your choices are:

1. dive as soon as the bow tubes are empty
2. turn around and escape on the surface, but Allied radar removes this as an option later in the war

Escaping Submerged

If you choose to dive following the torpedo attack, it is advisable to start your dive the moment the last torpedo has left the tubes by hitting the “D” key. You must go down slowly and quietly, which means you must enable silent running and leave your speed at a maximum of 2 knots. From then on, it is a case of submerged evasion; please see the section on “Evasion Tactics” for further details.

Escaping on the Surface

Be warned! Escaping on the surface can be very rewarding, but it is also very risky even before the appearance of Allied radar later in the war. It is rewarding because can reload your torpedo tubes, keep pace with the convoy, and attack it again within the hour, which is not possible if you submerge. It is risky because, when your torpedoes hit, the convoy and its escorts will use searchlights and fire star shells to try to reveal your location: if the convoy detects you, you will be a target for every gun in the convoy. On average, the escape strategies and route illustrated in Figure B-4 will work well:

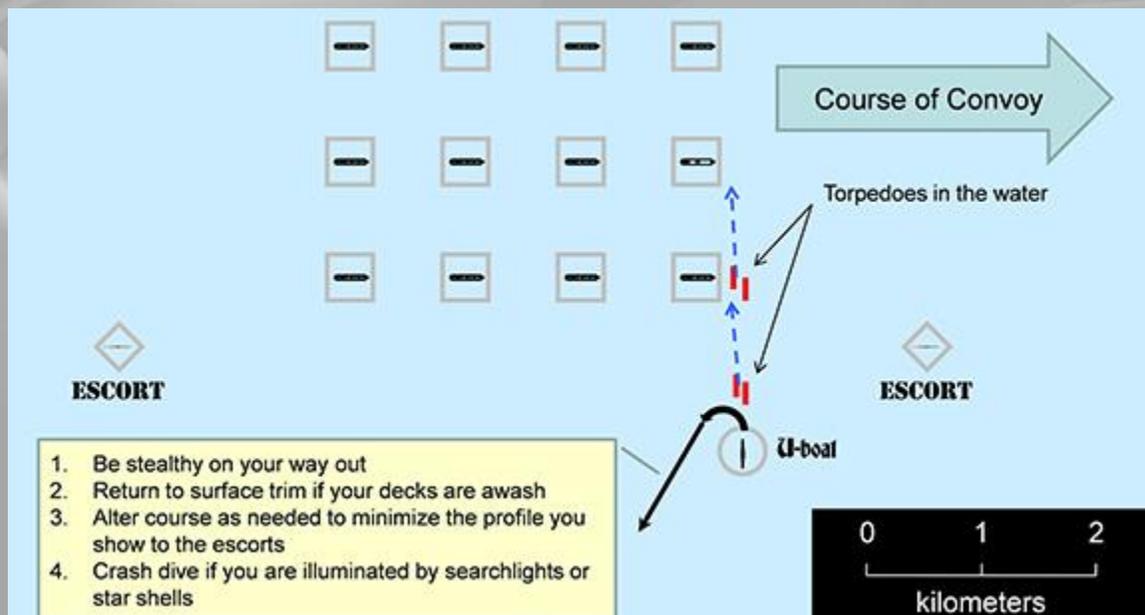


Figure B-4: Evasion after a night surface attack

Escaping in a diagonal direction presents as small a profile as possible to the merchants in the convoy and the escorts about the convoy. Here are a few things to remember:

1. Be stealthy on your way out. Your torpedoes are still on the way to the target, so do not do anything sudden to alert the escorts to your presence! You will have to move reasonably quickly but not so fast that you alert them before the torpedoes hit, so try to avoid making more of a ruckus going than you made coming in, and certainly avoid using flank speed until you are at a very great distance.
2. Once your U-boat is heading in the right direction, it is a good time to bring the U-Boat back to full surface trim for an additional speed boost, provided you have already checked to make sure there are no escorts close enough to detect you as soon as you have fully surfaced.
3. Do not firmly hold course: nearby escorts and convoy vessels will be moving, so you will have to monitor the situation constantly and make small course changes to ensure your U-boat continues to present a small profile to them.
4. Crash dive at once, if any ships in the convoy detect you, and follow the evasion procedures outlined in the section on “Evasion Tactics.”

Start reloading your torpedo tubes when you are at a safe distance and you can see that the escorts are not coming in your direction. It helps to have an efficient crew here as they can reload all four tubes in about half an hour. The convoy will stop zigzagging about an hour after their last contact with you, and then you can attack again.



Submerged Attack

This is the main attack method utilized by most players during the daytime and, when Allied warships have radar later in the war, in daytime and nighttime. Conducting a submerged attack is different from conducting a surfaced attack in several ways:

1. Stealth is primarily a matter of paying attention to how quiet you are, and less a matter of how visible you are
2. A submerged attack also allows you to get up close to the merchant ships without fear of having the convoy spot you, and to penetrate the convoy formation.
3. The price for superior stealth is reduced speed and agility.

In most respects, getting into position to attack the convoy when submerged uses the same principles as “Getting into Position” highlighted in the Surface Attacking section, unless you are lucky and are already ahead of the convoy in a good position.

The Periscope

This is your primary tool for aiming torpedoes in a submerged attack. The problem with the periscope is that the AI can observe anything that sticks up out of the water and thus alert your target(s) to your presence, so there are a few things you should do to help keep that from happening:

1. Keep your speed down to 1-2 knots when the periscope is above the water, since the periscope creates a spray of water (the “feather”) and a wake that the AI can detect.
2. Keep your periscope as low as possible – no more than a meter or so above the surface.
3. Try not to keep your periscope raised for long periods, and try not to keep it raised to admire your handiwork with the torpedo: that is just inviting trouble since one of the first things the AI will do when a torpedo explodes is try to find the periscope of the attacking submarine.

Positioning For Attack

Positioning determines the level of success achieved by a submerged attack. You are less agile underwater, and likely slower than the convoy, even with your engines set to “ahead flank,” so your positioning must be accurate as you literally only have one chance at it, with no room for error. There are three general types of approach, as illustrated in Figure , that lead to good positioning for an attack: the head-on approach, the diagonal approach, and the side approach. The choice is up to you.

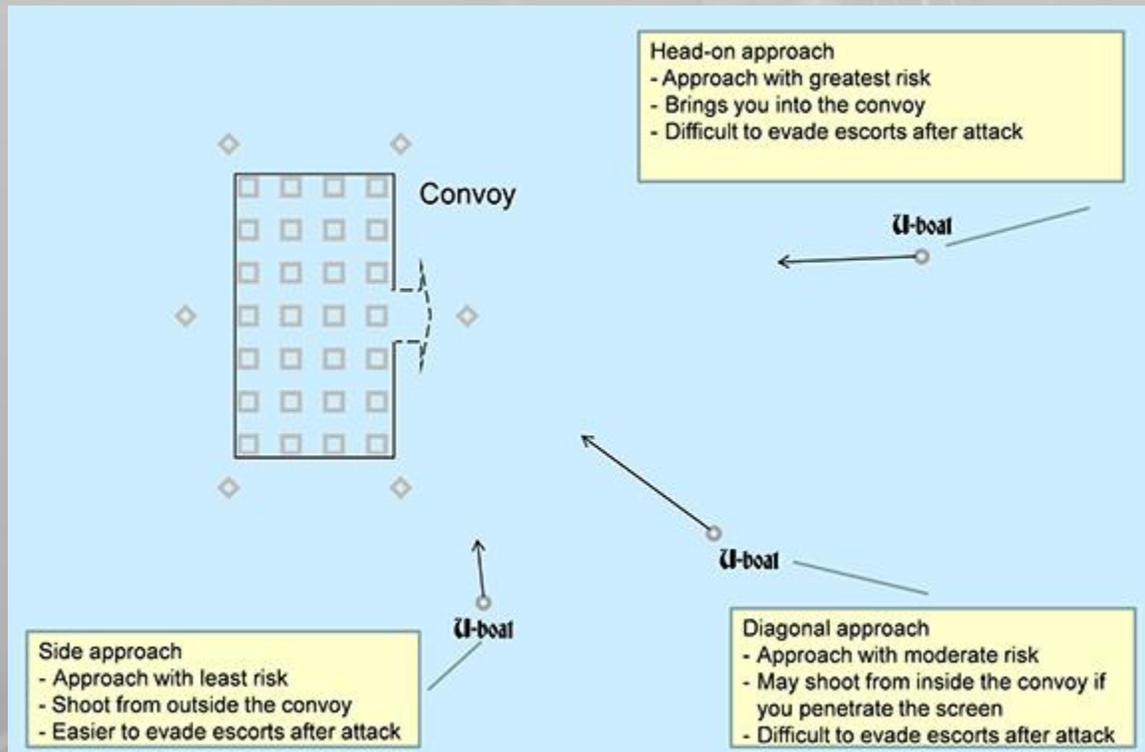


Figure B-5: Submerged attack options

A head-on approach runs the risk of the escorts detecting you before you launch a single torpedo, unless you go deep and silent to avoid ASDIC/SONAR and then use your compressed air to rise back to periscope depth once the lead escort has passed over you. A successful approach will bring you inside the convoy, and you can then shoot at ships in all directions, as well as being able to bring your stern tube(s) into play if you are using a Type VII or Type IX U-boat. You will need to dive deep as soon as you have fired your torpedoes since you the escort vessels start out by having you surrounded.

A diagonal approach to a convoy is a good way of getting near to attack and makes use of the convoy's movement towards you to help you close the distance more quickly. You can slip by the lead and side escorts this way if you are careful, particularly in early war. You will need to dive deep as soon as you have fired your torpedoes since, as with the head-on approach, the escort vessels start out having you surrounded.

Approaching from the side at a 90-degree angle to the convoy's path is probably the safest way to approach a convoy. You can avoid the lead escort and launch your torpedoes from 1500 to 2000 meters away as though you were on the surface, and then have the best prospects for evasion following your attack, since the convoy escort does not surround you.



Getting into position for your selected approach in the first place is much the same as how you would do it for a surface attack, with the difference being that you must get far ahead of the convoy quickly, submerge, and then begin to creep into position. If you are conducting a submerged attack, you may as well do so during daylight hours as this will be of help to you in seeing clearly everything available to attack through the periscope. Just remember to use the periscope sparingly.

Attacking

You should do this as efficiently as possible. As with a surface attack, try to time your torpedo launches so impacts happen nearly simultaneously. Choose your targets carefully, and remember to select targets that you can hit with enough torpedoes to guarantee a sinking.

You will have greater attacking power if you have chosen to penetrate the convoy, since you will be able to shoot from both bow and stern tubes without having to turn your U-boat around. If you chose to shoot in from the sides of the convoy, you will be using either your bow tubes or your stern tube(s).

Evasion

Once you have launched your torpedoes, your best chance to evade is to hit the “D” key and dive as deep as you can and slip away, preferably away from the convoy’s direction. See the section on “Evasion Tactics” for guidance.

Late War Attacks

Attacking a late war convoy in GWX is not easy, just as it was not in real life. What follows is a little advice, rather than a recipe, as attacking in late war is usually an exercise in trial and error.

Escorts have radar, which makes approaching the convoy very difficult. Ideally, you should have a radar-warning receiver installed on your U-Boat to help you plan your approach and get ahead of the convoy as well as an anti-radar coating (if available); however, even at maximum distance they could still detect you. Once they detect you, they will then be on alert and will start actively searching both the surface and underwater. You must submerge for an attack on escorted ships, as the surface attack is no longer a viable option. Since late war is so challenging, it helps to hone your skills first in early war or by playing some of the included GWX Single Missions. Then take what you have learned, and your skills, and then apply it to the late war campaign.

Do not reproach yourself or your playing ability if your attack fails. The aim of GWX is to try to simulate real events to an extent: failed attacks were quite normal in the latter part of the war, and many U-boats went to a watery grave before they had fired a single torpedo or were still on their first patrol. If you do fail in your attack, do not become disheartened, and remember that your primary objective is survival: play to survive, escape, and fight again. There will always be a lone, vulnerable merchant somewhere out there: that is also part of GWX!

Good luck, *Kaleuns!*

Anti-Submarine Warfare

Contributed by the GWX Development Team

The Allied antisubmarine warfare (ASW) campaign against the U-boats had several major elements:

- Strategic bombing attacks against U-boat bases and manufacturing facilities
- Using signals intelligence to learn the disposition, plans, and status of the U-boat force
- Deploying hunter-killer groups hunting down U-boats detected through signals intelligence and convoy reports
- Aerial patrols along U-boat routes in and out of their bases, such as the Bay of Biscay
- Laying defensive minefields to shield merchant ships and to interdict U-boats moving to and from their operating areas
- Escorting convoys with aircraft carriers (escort carriers)
- Point defense of convoys by their ASW escorts

Bombing of U-boat bases and construction yards

The Allies used strategic bombing attacks against U-boat bases and construction yards to try to eliminate U-boats at their source in addition to hunting them in the open ocean. Stock *Silent Hunter III* did not include these attacks as they are really beyond the scope of a tactical U-boat simulation, and air attacks against U-boat pens were usually ineffective; however, GWX has added heavy bomber raids against U-boat bases to keep add some excitement to what could be a routine portion of a U-boat patrol. The best option to avoid a bombing raid is to get out of port quickly at the start of a patrol and to use the “Return to Base” option rather than maneuvering the U-boat into dock; however, if you want the opportunity to watch the attack and possibly help defend your base then feel free to do so.



Figure B-6: B-17s departing Lorient (March 1944)¹⁰⁵⁰

¹⁰⁵⁰ U.S. Air Force photo, <http://www.britannica.com/ebc/art-40272/B-17-bombers-attacking-a-German-U-boat-base>

Signals intelligence

Stock *Silent Hunter III* increases the possibility that the Allies will locate your U-boat when you transmit information via radio; your best option is to observe strict radio silence during your patrol unless you are reporting a convoy that is within range of the *Luftwaffe*. Keeping radio silence is not historical since BdU required U-boats to report in frequently, which in turn helped the Allies to keep track of them as well learning their intentions through RDF and decryption. If you report a convoy, you will not receive any credit for ships sunk or damaged by the *Luftwaffe* but you will get to watch the attack and may be able to pick off a damaged ship or two.



Figure B-7: U.S. bombe that decrypted U-boat radio traffic¹⁰⁵¹

The GWX Team encourages players to maintain complete radio frequency emission silence (no radio broadcasts and radar shut down) because:

1. Players suffer no penalty for failing to report in to BdU on a regular basis
2. The Allies can detect radar; use it only if you must surface in poor visibility/night situations
3. Radio silence can help you avoid the attention of aircraft and ASW hunter-killer groups

ASW hunter-killer groups

ASW hunter-killer groups were comprised of an escort carrier and five to six frigates or destroyer escorts that would pursue and sink U-boats reported by convoy escorts or by signals intelligence. The preferred method was for radar-equipped aircraft to catch the U-boat on the surface and sink it before the ships of the task force were in visual range. If the aircraft failed to sink the U-boat, the carrier would maintain an air patrol to keep the U-boat submerged as the escorts closed in. A submerged U-boat moving at 2-5 knots could not easily escape aircraft patrolling periodically overhead, while at the same time it depleted its oxygen supply and its battery power if it were not equipped with a *schnorchel*.

Hunter-killer escorts would hound a U-boat until the U-boat sank, or until it surfaced in order for the crew to abandon ship. This was different from convoy escorts, which would sink a U-boat if possible but were satisfied with forcing the U-boat to dive so the convoy could sail away. The GWX Team recommends avoiding ASW hunter-killer groups: their aircraft and escorts are highly experienced.

¹⁰⁵¹ National Security Agency photo, <http://www.nsa.gov/gallery/photo/photo00013.jpg>

Maritime patrol aircraft

Germany demonstrated the value of aerial maritime reconnaissance and patrol using rigid-bodied Zeppelin airships during World War I. The United States followed suit in the 1920's and 1930's with the Zeppelin-type airships USS *Shenandoah*, *Los Angeles*, *Akron*, and *Macon*; the latter two were aerial aircraft carriers carrying three fighters for launch and recovery during flight. The US Navy abandoned rigid airships in the 1930's after all of them except USS *Los Angeles* crashed.

By the start of World War II, all the major combatants relied on large seaplanes (called "flying boats") for maritime reconnaissance, including multiple German types developed by Dornier and Blohm und Voss; the British [Short "Sunderland,"](#) the U.S. [PBY5 "Catalina,"](#) and the Japanese Kawanishi Type 97 H6K, known as "Mavis" to the Allies. The Allies developed new seaplanes (such as the U.S. Martin PBM-3 "Mariner" and Consolidated PB2Y-2 "Coronado") but also relied heavily on long-range strategic bombers, such as the U.S. [PB4Y-1 "Liberator,"](#) the British [Handley Page Halifax](#), and British Lend-Lease [Consolidated "Liberator,"](#) pressed into service as ASW patrollers.

Maritime patrol aircraft are more dangerous than in stock *Silent Hunter III*. Your best option upon detecting aircraft (or their radar emissions) at long range is to dive: if an aircraft catches you on the surface and you cannot dive in time to avoid an attack then go to maximum speed and execute a sharp turn towards the enemy aircraft as it closes in. This will often cause the aircraft's bombs to overshoot: dive once the bombs have hit the water and make your way submerged for a while until the aircraft have departed. If you must remain on the surface then man your anti-aircraft guns and fight.

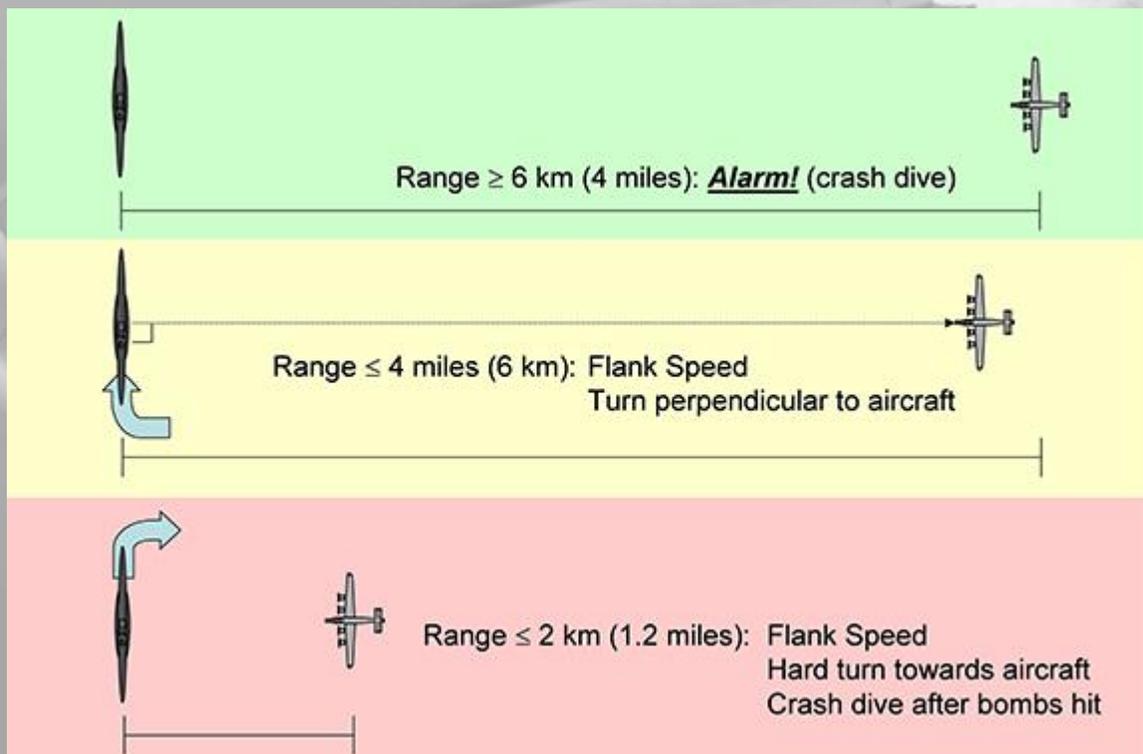


Figure B-8: Suggestions by "Ducimus" to survive aircraft attacks¹⁰⁵²

¹⁰⁵² Method suggested by "Ducimus," <http://www.subsim.com/radiroom/showpost.php?p=383008&postcount=5>

Coastal defenses and minefields

A combination of antisubmarine nets, minefields, and surface patrols generally protect enemy ports from U-boat attack in GWX. Britain publicly announced minefields early in the war called the Eastern Barrage to guard the east coast of Great Britain from Kinnaird Head on the northern tip of Scotland to Dover at the entrance to the English Channel. The barrage was from 30 to 40 miles wide with a channel clear of mines running within eight miles of the shoreline. All merchant shipping along the east coast of Great Britain traveled within this clear channel between the convoy assembly and termination points of Moray Firth and Dover; however, there were secret gaps in the minefields to allow the Royal Navy to sortie into the North Sea.¹⁰⁵³ GWX emulates the Eastern Barrage with a series of similar minefields.



Figure B-9: The Eastern Barrage in GWX¹⁰⁵⁴

GWX does not include minefields laid by the Axis in the approaches to Allied ports or in shallow defensive barrages: the only Axis minefields are those [defending U-boat bases](#).

Fair warning: GWX includes Allied minefields outside the Eastern Barrage, including minefields at depths where they will not affect surface ships but will affect U-boats at or below periscope depth.

¹⁰⁵³ “Ambitious Answer,” *Time*, Vol. XXXV, No. 2, January 8, 1940.
<http://www.time.com/time/magazine/article/0,9171,763166,00.html>

¹⁰⁵⁴ Map developed using Google Earth ®

Convoy defenses

Escort Carriers

Escort carriers will occasionally sail as part of a convoy to provide ASW aircraft patrols as well as air cover against the *Luftwaffe*. They provide the possibility that an aircraft will appear within the range of any aircraft stationed on the aircraft carrier: they will not “launch” aircraft in response to an attack on the convoy, but may result in the appearance of an ASW aircraft if the Allies detect your U-boat.

Shipborne ASW Sensors

ASW ships are a convoy’s final line of defense. They have hydrophones to listen for the sounds activities such as loading torpedoes and damage repair, or the cavitation of a U-boat’s propellers, and at least one type of “ASDIC” or sonar to send sound pulses and listen for their echoes off a U-boat’s hull. ASW hydrophones cover a large arc around ASW ships, but the basic, early war ASDIC/sonar covers only the area towards the ship’s bow. The areas where the ASW sensors cannot reach is referred to as a ship’s “baffles”; stock *Silent Hunter III* uses the baffles as well to represent the effects of depth charges exploding in a ship’s wake on the ability of a ship’s ASW sensors to detect a U-boat.

Early war ASDIC and sonar are also limited in their underwater search area. Crews called these “searchlight” sonars because of their narrow sonar beam; U-boat crewmembers could hear them since the sonar broadcast at ≥ 14 kHz was at the upper end of the range of human hearing. They could detect submarines at a distance of one to two kilometers but would lose contact as they approached to attack the U-boat. U-boat commanders were aware of these limitations: they would radically change their course, depth, and speed when an ASW ship lost contact as it closed in. The relatively small damage radius for early war depth charges would often shake the U-boat but not cause severe damage.

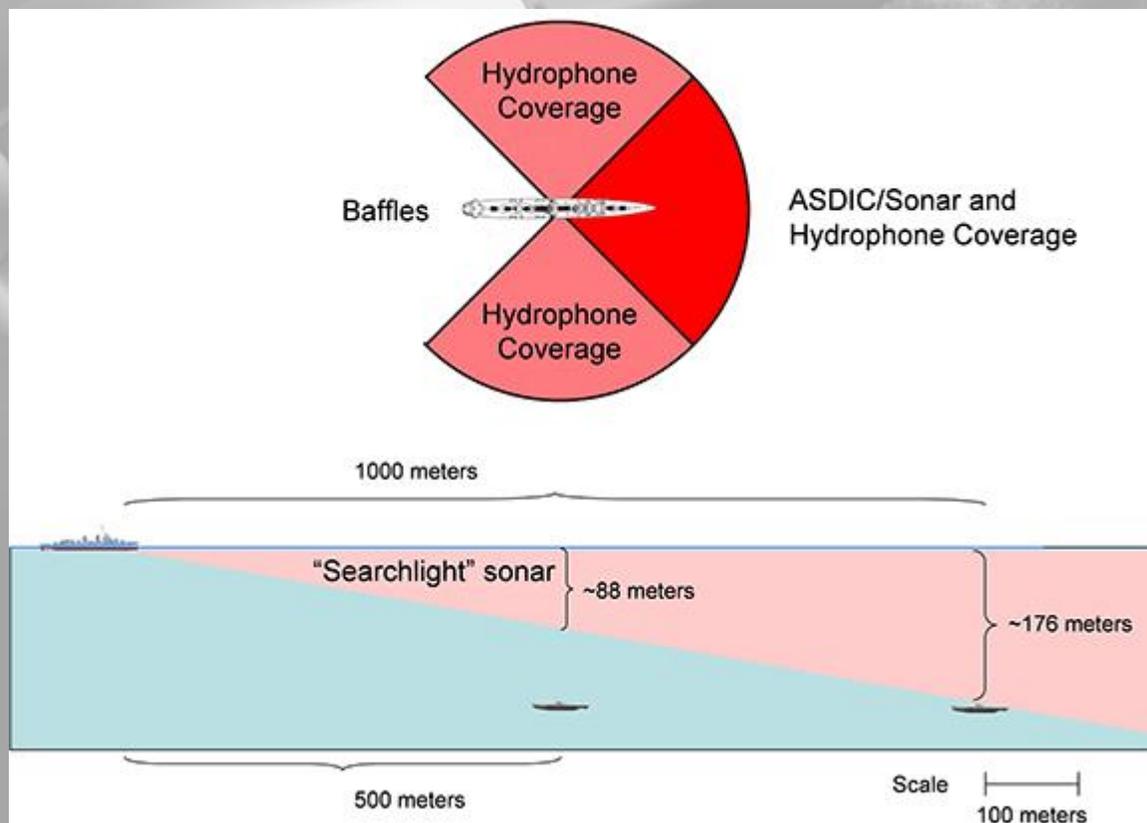


Figure B-10: Early war ASW hydrophone and sonar coverage

Late war ASW ASDIC/sonar suites were more sophisticated, with the ability to look down at a much steeper angle that allowed ASW ships to continue tracking U-boats until the ships were almost upon them, giving the U-boat very little time to throw off the destroyer's aim. The integration sonar into the fire control systems of weapons such as "Hedgehog" and "Squid" allowed ASW ships to aim their fire where they before had "guesstimated" the U-boat's location. The new sonars were ultrasonic (above the range of human hearing), but U-boat crews could hear the ASDIC/sonar pulse rattle the U-boat's hull as the beam passed across it. **Note: GWX does not model the "Squid" ahead-throwing weapon.**

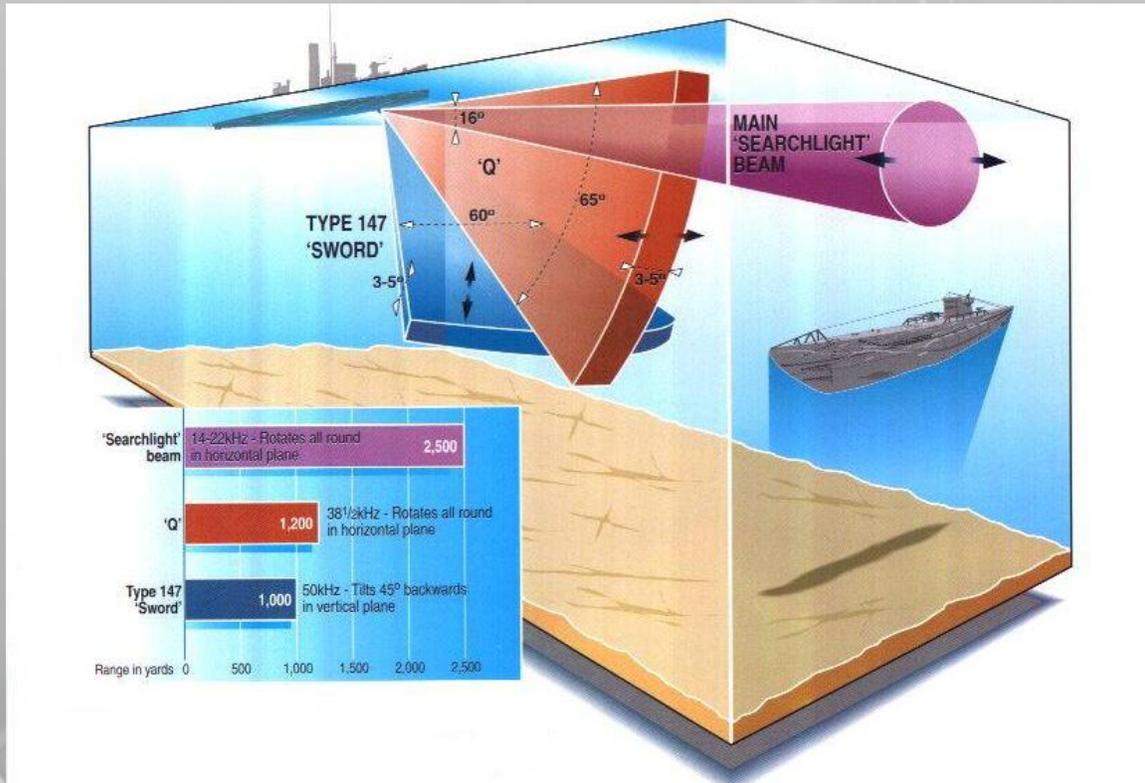


Figure B-11: Late war sonar coverage patterns¹⁰⁵⁵

In general, U-boat commanders should do the following when engaging enemy ASW vessels:

- Avoid leaving your periscope up to stare at your target or to await pretty explosions
- Move slowly (≤ 2 knots) near ASW vessels
- Minimize noise (no reloading of torpedoes) while under ASW attack, but make repairs if necessary
- Be prepared to let a target go rather than lose your U-boat trying to sink a target at all costs
- Be very patient while conducting escape and evasion maneuvers after attacking a convoy
- Dive deeply as soon as possible after firing your torpedoes. Depth and silence can keep you alive.
- **Install a *Bold* sonar decoy on your U-boat as soon *Bold* becomes available.** *Bold* (short for "Kobold," a small goblin of German folklore) was a 15-cm diameter metal canister containing calcium hydride (CaH_2), which reacts vigorously with water to form hydrogen gas (H_2).¹⁰⁵⁶ U-boats used a *pillenwerfer* ("pill caster") to deploy the canister into the water creating a dense cloud of hydrogen bubbles, called a "Submarine Bubble Target" by the Allies, which an active ASDIC/sonar operator could easily mistake for a U-boat when the sound pulse bounced off the bubble cloud.¹⁰⁵⁷

¹⁰⁵⁵ Artwork source: Destroyer Escort Central, <http://www.de220.com>. Used by permission.

¹⁰⁵⁶ "Calcium Hydride," http://en.wikipedia.org/wiki/Calcium_hydride

¹⁰⁵⁷ "U-boat-related Equipment," <http://www.uboatwar.net/equipment.htm#Bold%20Decoy>;

"Sonar decoys," <http://www.uboataces.com/sonar-decoys.shtml>

Approach tactics

Consider the environmental conditions before deciding to attack: ASW hydrophones work better in calm water. A convoy's escorts will likely detect you if you lie in wait in front of a convoy, so observe the behavior of the convoy's escorts and their patrol patterns from a distance while establishing baseline courses for potential targets. Select the two best targets on the *far* side of the convoy and establish a baseline course and speed for each target, and possibly one more on the side of the convoy nearest you.

Look for gaps in the screen where you can sneak through the screen into the convoy, and time your approach so that the escorts are somewhere else when you close in for an attack. Note that convoy escorts will occasionally speed up and execute an ASW search pattern even though they have not yet detected you, just to be less predictable. Once you are inside the screen, make a final range and bearing check of your first selected target on the *far* side of the convoy and shoot two torpedoes at it, and then *quickly* repeat this for the second target. Set your course parallel to the convoy, set your depth *deep*, and then launch a *Bold* decoy (if you have one) just before the expected impact of the first pair of torpedoes.

When your first torpedoes hit, the escorts on the far side of the convoy (where you initially aimed and, hopefully, hit your targets) will search on the far side of the convoy; any escorts on your side of the convoy should head for the *Bold* decoy. You must now decide whether to press your attack or quietly slip away. If you decide to attack, travel underneath the convoy and return to periscope depth on the far side in an area currently clear of convoy escorts. Repeat the firing point procedures (select a distant target, shoot torpedoes, deploy a *Bold*) and then leave the area. Do not try to reload torpedoes until you are clear of the convoy and its escorts. You may (or may not) have sunk any ships – any damaged ships can be picked off after the convoy and its escorts leave – but you will likely survive to fight another day.



Figure B-12: USCGC *Spencer* caught *U-175* as it tried to penetrate the screen of convoy HX 233¹⁰⁵⁸

¹⁰⁵⁸ Photo source: U.S. Coast Guard, <http://www.uscg.mil/history/webcutters/spencervsu175.asp>

Evasion Tactics

ASW ships in *Silent Hunter III* will either listen passively with hydrophones or actively search with ASDIC/sonar while your U-boat tries to avoid detection. Avoiding detection by hydrophones is usually a matter of running silently a reasonable distance from the ASW ship, but evading ASDIC/sonar requires geometry. There are four basic ways of reducing the chance of ASDIC/sonar detecting your U-boat, or of increasing the chance of breaking free of a sonar lock-on once an ASW ship is tracking you:

1. Get out of the way of the beam by diving deep and trying to get inside the ASW ship's baffles
2. Get far enough away that the ASW ship cannot detect the return echo from its sonar ping.
3. Making yourself "look smaller" when you are in the sonar beam.
4. Deploy decoys.

Getting out of the way of the beam is much easier early in the war than later in the war. Use historical U-boat tactics: dive deep and make radical course, depth, and speed changes as the escort loses sonar contact on its attack run. These will usually allow you to evade attacks, but remember: three great U-boat aces (*Korvettenkapitän* Otto Kretschmer in *U-99*, *Kapitänleutnant* Joachim Schepke in *U-100*, and *Kapitänleutnant* Engelbert Endraß in *U-567*) were lost to "early war" ASW ships. Once you are deep, try to "dash" in the opposite direction of the destroyer's path as it passes overhead so that you can put some distance between yourself and the escort while you are in its baffles. It will assume you have not changed course from the last time it detected you, so by the time it can circle back and resume detection attempts you may be too far away for it to detect with its hydrophones. Two or more ASW ships operating as a team will always have one ship moving slowly to maximize its hydrophone and sonar capabilities.

The aspect angle is the key to minimizing your sonar cross-section, making your U-boat seem "smaller" (and therefore more distant) if you are within detection range. Your U-boat returns a much stronger echo when you expose more of its surface area to the sonar pulse, so keeping the aspect angle close to 0° or 180° makes it easier to avoid detection when caught by ASDIC/sonar. Pointing away from an ASW ship reduces your aspect angle and increases the real distance: this can help you evade or break detection. This is more difficult when facing multiple ASW ships, but try in this situation to minimize your aspect angle to the nearest ASW ship.

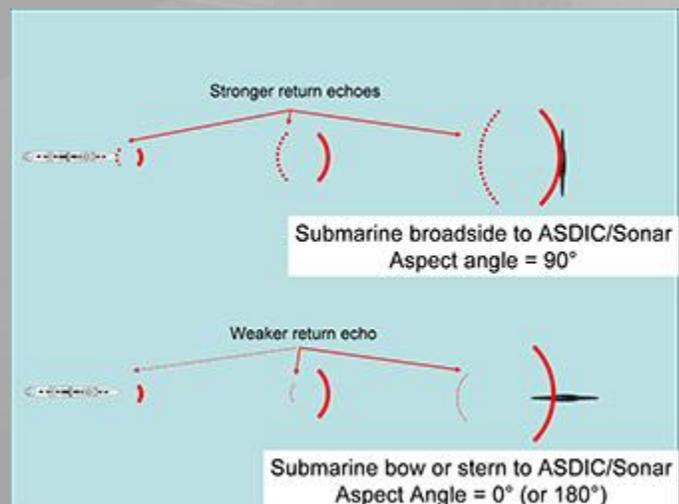


Figure B-13: The effect of submarine-to-sonar aspect angle

Evading ASDIC/sonar is more difficult later in the war, but *Bold* can buy time to get away. One approach is to go straight at an attacking ASW ship and crash dive when the range is about 300 meters, setting your desired depth as deep as possible. Deploy *Bold*, go to flank speed, and turn hard to port or starboard as the ship passes overhead and you enter its baffles. Go to silent running (speed ≤ 2 knots) and put your rudder amidships when you think you are about to leave the ship's baffles (it will be circling back to reacquire and attack). The ship should attack the decoy if you correctly guessed which way the ship would turn. If so, keep your stern pointed at the ASW ship and stealthily crawl away.

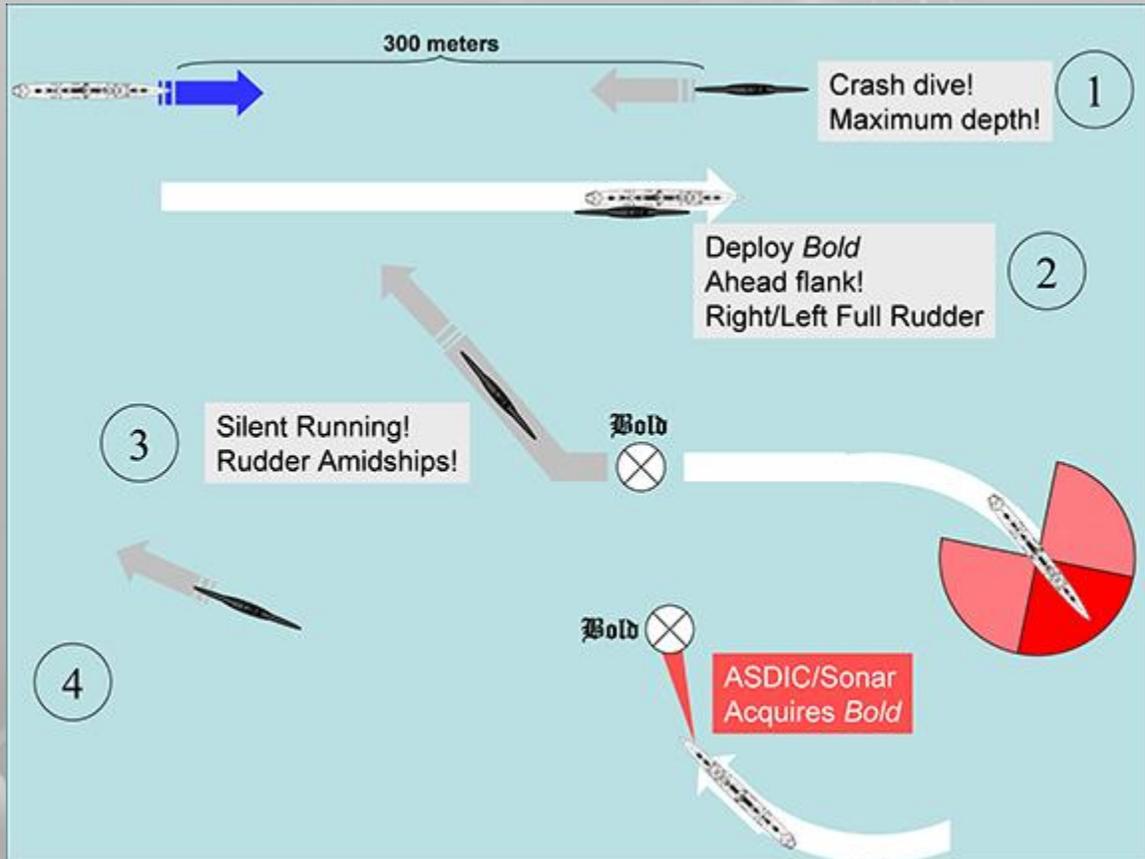


Figure B-14: An ASW evasion technique when *Bold* is available

If you do not have *Bold* then you must keep noise to an absolute minimum, keeping your stern towards the ASW ship, and taking advantage of the ASW ship's baffles to make high-speed maneuvers. For example, assume a situation where an ASW ship has detected you at periscope depth during your approach to a convoy and is charging you at flank speed.¹⁰⁵⁹

1. Dive as quickly as possible to your maximum safe depth
2. Engage silent running and turn to either the left or the right as the ASW ship approaches within about 1000 meters.
3. The ASW ship will now begin circling over your location, so go to flank speed and dash further away from the circle as the destroyer passes overhead. Keep your stern pointed at the nearest ASW ship, but do not go to flank speed now since you will just let the other escorts find you.

¹⁰⁵⁹ "GT182" contributed this approach discussed below

4. Cut back to silent running again as the ASW ship turns and you begin to leave its baffles.
5. Stop your engines and drift as the ASW ship begins to close in on your previous location. If depth charges are still damaging or shaking your U-boat then repeat steps 3 and 4; otherwise, the ASW ship has lost its lock on your position and you need now only wait for the ASW ship to leave, though this may take 45 minutes to one hour. Note that the ASW ship has not necessarily found you even if your crew says, “They are pinging us, Sir.”

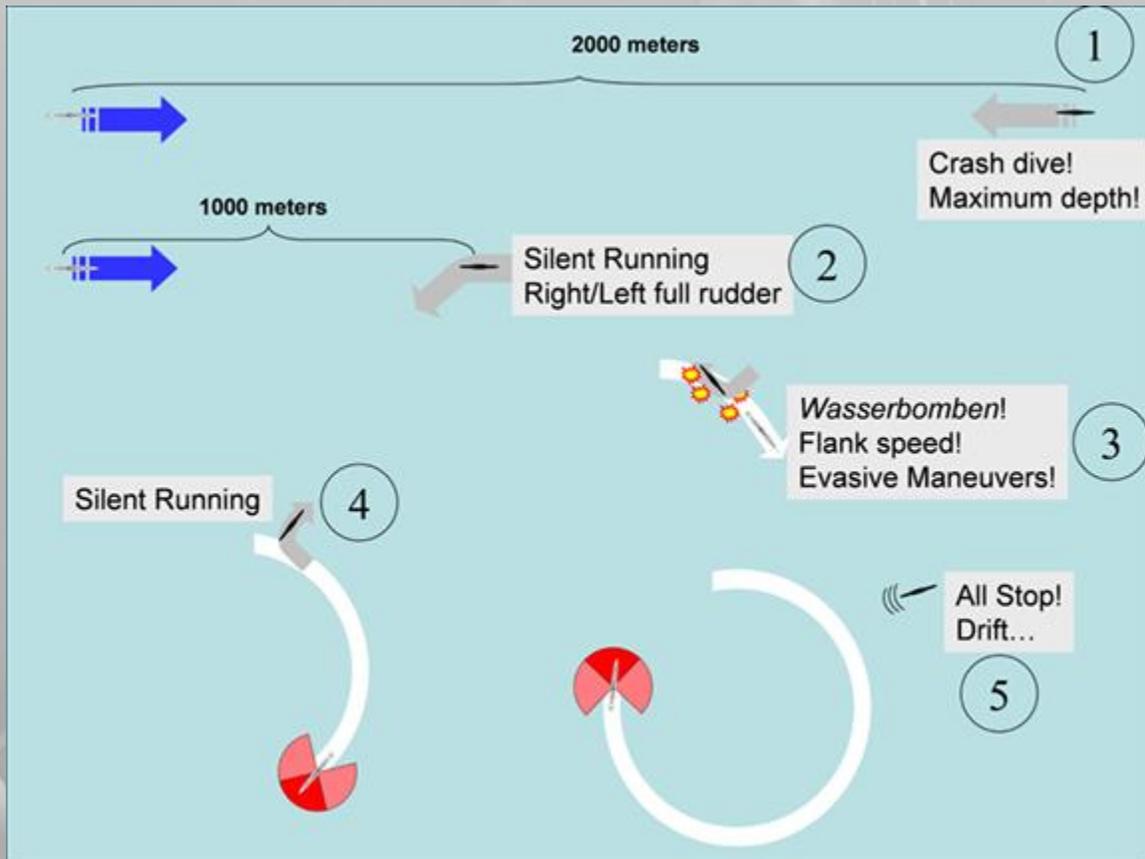


Figure B-15: An ASW evasion technique when Bold is not available

A final note: trying to hide from ASW vessels by descending to the bottom of the sea (called “bottoming the boat”) in water shallower than your crush depth does not help you to hide from ASW vessels in *Silent Hunter III*. GWX allows you to bottom your boat, but the game engine ignores your proximity to the ocean bottom when determining whether an ASW vessel can detect you or not. The GWX Team recommends that you keep moving and evading.

Appendix C: Manual Targeting

Manual targeting can be a considerable challenge, especially in bad weather or visibility. For the best results, the GWX Team recommends launching torpedoes within 1 km of your target to reduce the effects of any errors in collecting targeting information...and practice, practice, practice. U-boat commanders spent many hours training to be able to do this.

Hitting a ship with a torpedo is an exercise in solving a mathematical word problem:

A target (“T”) on course “C” at speed “S” is at range “R” on bearing “B” from a U-boat (“U”). At what time and bearing must the U-boat launch a torpedo at speed “T” to intercept the Target if the bearing of the torpedo launch must be within a) five degrees or b) 15 degrees of the U-boat’s course when the torpedo is launched?

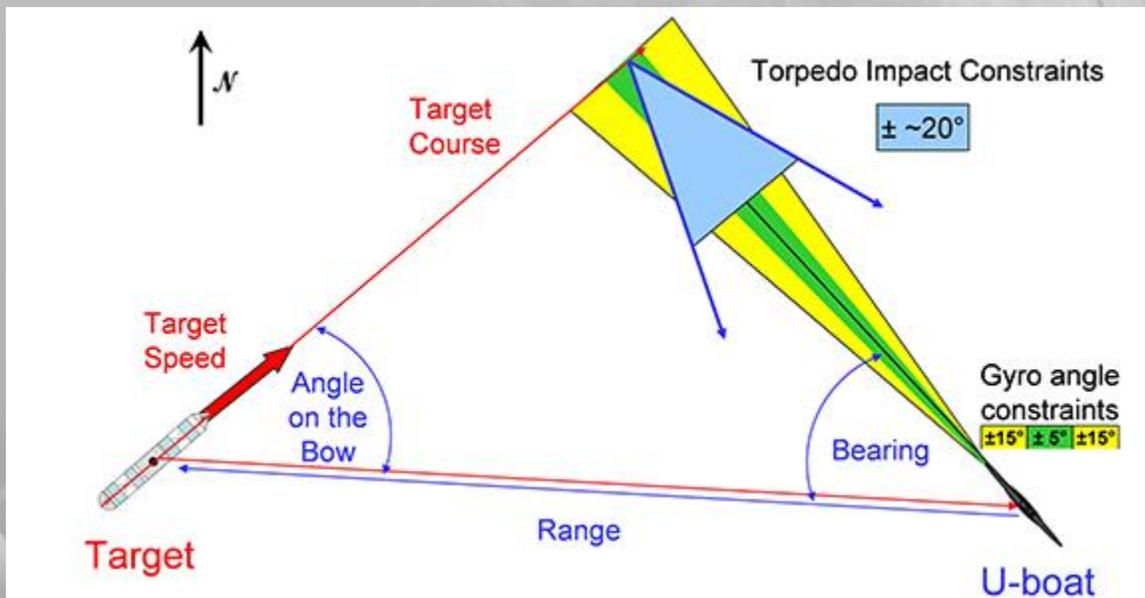


Figure C-1: Simplified overview illustration of the torpedo aiming problem

Students (or former students) of geometry will recognize that the angle between the Target’s course and the U-boat (AOB), the angle between the U-boat’s course and the Target (Bearing), and the distance between the Target and the U-boat (Range) together define a triangle. This means that once the U-boat has the information it can readily calculate the lengths of the each side of the triangle and deduce:

1. The distance from the Target’s current location to an acceptable intercept point, and the time at which the Target will arrive at that point
2. The distance from the U-boat’s current location to the same intercept point, and the time at which the U-boat must launch a Torpedo that travels at speed “T” to arrive at the intercept point at the same time as the Target

Manual Targeting is all about accurately estimating the information that will allow the U-boat to define accurately the triangle that it can use to compute torpedo launch parameters to intercept the Target.

Realism Options

Stock *Silent Hunter III* allows players to approximate the method used by U-boat commanders to track, target, and torpedo enemy ships. There several different ways to do this, including one method using only the bearings of a ships engines as detected by a U-boat’s hydrophones, but this appendix describes one of these methods, the “Notepad” method which is method used by most of the players (that we know of) that use full manual targeting. This method requires you to set two difficulty settings that affect the aiming of torpedoes: “Manual targeting system” and “No weapon officer assistance.” This presentation assumes you are using full manual targeting.

- Selecting “Manual targeting system” requires the player to estimate the correct targeting data, namely the range to the target, the Angle on the Bow (AOB), and the target speed, into the *Vorthaltrechner*, or Torpedo Data Computer.
- Selecting “No weapon officer assistance” stops your weapons officer from identifying the ship in the crosshairs for you, and from entering targeting data into the *Vorthaltrechner* on your behalf.

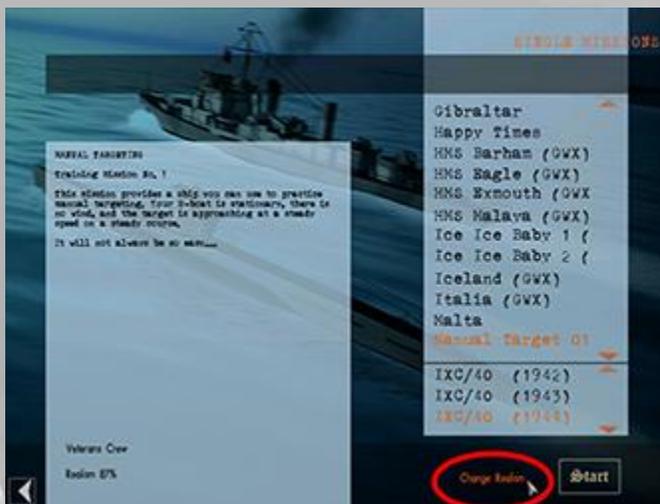


Figure C-2: Change realism from mission selection screen



Figure C-3: Select manual targeting options

Data Notepad Method

The Data Notepad Method uses the Navigation Map (F5 key) and the Attack Map (F6 key), as well several on-screen tools available on the UZO, attack periscope, and observation periscope displays

1. The data notepad tool available at the upper right corner of the UZO and periscope displays
2. The *Erkennungsbuch* (“Recognition Manual”) via the “N” key or left clicking the “ESB”
3. The *Schiffsflaggen* (“Ship’s flags”) tool,



Figure C-4: Key elements required for manual targeting

In general, have your U-boat stationary or moving slow ahead, with the rudder centered, when using manual targeting as the effects of movement or changing course while making observations can cause significant inaccuracy in your range and bearing measurements. Try to “lock” onto the target using the “lock” button or “L” key when observing targets, as it will make it a bit easier to enter all your other commands if you do not have to re-orient back to the target as it moves along.

The Notepad method consists of four steps:

1. [Identify the target](#)
2. [Estimate the range to the target using the Range Notepad](#)
3. [Estimate the target’s angle on the bow using the AOB Notepad](#)
4. [Estimate the target’s speed using the Speed Notepad](#)
5. Enter data into the *Vorhaltrechner* (Torpedo Data Computer)

Note: stock *Silent Hunter III* limitations prevent you from targeting ships more than 8 km away.

Identify the Target

Your hydrophone operator (if submerged) or lookouts (if surfaced) will tell you the target type (warship or cargo), relative bearing, speed (fast / slow), and whether it is approaching or not. Raise your periscope or orient the UZO, as appropriate, on the reported relative bearing, set it to the desired magnification, and lock onto the target. Use the *Flaggen* if necessary to identify the target's nationality: stop the attack if you are sure it is friendly or neutral, but continue if it hostile or you are unsure. Keep trying to identify the target as you continue preparations; in general, do not attack unidentified targets.

If it is a cargo ship, open the *Handelsschiffe* ("Merchant ships") section of the *Erkennungshandbuch* and find the ship that matches the appearance of the ship you are observing. If it is a warship, you may have to guess the type and pick a ship that is "close enough" so you can begin preliminary targeting. Move the crosshair over the target, lock onto it, and then left-click on the box on the *Erkennungshandbuch* page.

Note: The game will not correct you if misidentify the type of ship. This can significantly affect your torpedo targeting since your upcoming range estimate depends on correctly identifying the target



Figure C-5: Identification of target ship as "Victory Cargo" with periscope locked on the target

Estimate the Range

Silent Hunter III automatically estimates range to the target (R) based on your estimate of the angle (θ) from the surface of the sea to the height of the target's tallest mast (M), given that you already know the height of the mast based on your identification of the target. The range equation is:

$$R = \frac{M}{\tan\theta}$$

Opening the Range Notepad

First, click on the "RANGE:" text on the notepad to open the Range Notepad.



Figure C-6: Select "Range" to open the Range Notepad

Estimating the Angle of the Mast Height

Second, click on the Range Notepad stadimeter icon, which will create a moveable mast height line in your periscope or UZO display. Adjust the moveable mast height line to match the highest point on your target while the fixed horizon line (the line painted horizontally across your UZO or periscope optics) is on the horizon.

- This may require patience if you are hunting in rough seas or poor lighting conditions.
- The mouse controls the movement of the mast height line, so use the keyboard arrow keys if you need to adjust the UZO or periscope view up or down, with “<CTRL>-arrow” for fine adjustments.



Figure C-7: Find and enter the angular height of the masthead

Hint: in single player games, the GWX Team suggests you pause the game when the horizon line is at the horizon, and then adjusting the mast height line at your leisure. This may help reduce frustration considerably when trying to estimate the angle in stormy seas.

Completing the Range Measurement

Third and finally, when you are satisfied that the masthead line and the horizon line are the correct distance apart, left click the mouse and the Notepad will display the estimated range based on the mast height of the ship class as you have identified it, and the angular difference between the horizon line and the mast height line.

Click on the check mark to transfer the range value to the Notepad for further computation, and to return to the Notepad to create the next entry. **Note:** this only enters data into the Notepad, and does *not* update the *Vorhaltrechner*.



Figure C-8: Range value reflects mast height and angle

Estimate the Angle on the Bow (AOB)

There are two methods of estimating the Angle on the Bow (AOB). The first method relies on the U-boat commander's judgment to estimate the AOB visually by using the Erkennungshandbuch pictures to gauge the AOB "by eye." The second method requires the U-boat commander to first estimate the target's course and then calculate the AOB from the target's estimated course, the U-boat's current course, and the bearing of the Target from the U-boat.

The first method is faster but subject to greater error; the second works well for convoys or other situations where a number of ships are on the same course, or where there is time to estimate the distance a target has traveled and thereby deduce its course and speed simultaneously.

Estimating the AOB "by eye"

To estimate a ship's course by eye, click on the "Angle on Bow" text in the Notepad display to bring up the AOB input icon provided you have successfully entered "Range" into the Notepad.



Figure C-9: Select "Angle on the Bow" to begin entering that value

Once you see the “Angle on Bow” display, look at the image of the ship in your UZO or periscope, compare it to the picture in the *Erkennungsbuch* below, and then enter an estimated AOB by clicking on the small purple circle in the AOB notepad and dragging it to the estimated AOB.

Click on the check box in the AOB notepad to enter the AOB value in the main notepad. **Note:** this only enters data into the Notepad, and does not update the *Vorhaltrechner*.



Figure C-10: The player estimates the AOB to be 10 degrees to starboard ("10Stb")

Calculating the AOB

You first must determine the target's course to calculate the AOB. To do this, you plot the target's current location by left clicking on the check box in the Data Notepad. This will also send the information to the *Vorhaltrechner*, but the *Vorhaltrechner* will not yet have a proper torpedo launching solution since it does not yet have all the data it needs to derive a solution.



Figure C-11: Enter target location on Navigation map

Now, quickly go to the Navigation Map and mark the location of the target ship on the map. This will show as "Mark 1" (or whichever mark you are up to) and will form the basis for calculating the course and speed of the target.



Figure C-12: Record initial target location

Return to the UZO or periscope display and click on the stopwatch. Wait about three minutes and then prepare to make a range observation when the stopwatch reaches three minutes and 15 seconds (**3:15**).



Figure C-13: Start the clock and wait 3 min., 15 seconds

After making your 3:15 observation, **unlock the UZO/Periscope from the target**, then go to the Navigation map (F5), mark the target's new location on the map ("Mark 2"), and then draw a line from Mark 1 extending through and beyond Mark 2.



Figure C-14: Target course from Mark 1 - Mark 2

Click on the "Tool Helper" and then the "Compass" tool) and move the resulting compass rose onto the line drawn between "Mark 1" and "Mark 2." The point on the compass rose closest to "Mark 1" is the target's course. In this case, the target's course is 90°



Figure C-15: The compass rose tool indicates the target's course

Use the following equation to calculate the AOB:

$$AOB_{INITIAL} = \text{true bearing} - \text{course}$$

If $AOB_{INITIAL} < -180^\circ$ then $AOB_{FINAL} = AOB_{INITIAL} + 180^\circ$

If $AOB_{INITIAL} > 180^\circ$ then $AOB_{FINAL} = AOB_{INITIAL} - 180^\circ$

If $AOB_{FINAL} \geq 0^\circ$ then AOB is to starboard

If $AOB_{FINAL} < 0^\circ$ then AOB is to port

In this case, your U-boat is already heading due north, so relative bearing from your U-boat = the true bearing. The UZO/Periscope has not moved since you collected Mark 2 because you unlocked the view, so it retains the bearing at the time you measured the range. This is evident from the fact that the target has moved off-center from the display.

$$AOB_{INITIAL} = 284^\circ - 90^\circ = 194^\circ$$

$$AOB_{FINAL} = 194^\circ - 180^\circ = 14^\circ, \text{ so AOB} = 14 \text{ Starboard.}$$

Enter the value "14Stb" via the AOB Notepad and left click on the check mark to transfer this data to the Data Notepad. You can continue adjusting the AOB using this straightforward calculation until the target or your U-boat change course.



Figure C-16: Select the AOB based on calculations

Estimating target speed

There are two methods of estimating the target speed. The first method uses the Speed Notepad and relies on the estimated range and AOB. The second method takes advantage of the calculation method for determining the AOB. The first method is faster but is subject to greater error, especially when the AOB is small, and is almost useless when a target is heading directly towards you. The second method works well provided you have enough time to record the target's estimated location at known time intervals so you can calculate its speed between the data points.

Using the Speed Notepad

Click on "SPEED:" in the Data Notepad to bring up the Speed Notepad, assuming you have already estimated the target's range and AOB. Lock your UZO/periscope on the target and then click on the Speed Notepad's stopwatch **icon** (**not** the UZO/Periscope stopwatch). The notepad will display the number of seconds elapsed since you started estimating the target's speed.



Figure C-17: Using the Speed Notepad to estimate speed

Wait until about 15 seconds have elapsed, and then click the stopwatch icon again. The Speed Notepad should display the number of elapsed seconds and the estimated speed. Click on the check mark to send the estimated speed to the Data Notepad. Measurements made at small AOB angles are generally suspect. The GWX Team suggests repeated measurements as the AOB increases to improve speed accuracy estimates.



Figure C-18: Sending speed to Data Notepad

Using time interval location estimates

Take a range measurement on the target and mark the location on the Navigation Map (“Mark 1”), wait three minutes, 15 seconds (3:15), take another range measurement and mark the new location on the chart (“Mark 2”). The distance between Mark 1 and Mark 2 (in kilometers) x 10 \cong the speed in knots.

The math works out as follows: one nautical mile = 1852 meters, so

$$1 \text{ knot} = \frac{1852 \text{ meters}}{3600 \text{ seconds}} = 0.5144 \frac{m}{s}$$

The time needed to travel 100 meters at a speed of 1 knot is:

$$\text{Time} = \frac{100 \text{ meters}}{0.5144 \frac{m}{s}} = 194.4 \text{ seconds} = 3:14.4 \cong 3:15$$



Figure C-19: Use the distance travelled in 3 minutes, 15 seconds to find speed in knots

If you calculated the AOB using the method described in this manual then you have already collected two target locations at a 3:15 interval: just measure the distance between the two marks that you have already collected.

You cannot enter data gathered in this way into the Data Notepad: you must use the *Vorhaltrechner* to enter the data directly.

Enter data into the *Vorhaltrechner* (Torpedo Data Computer)

There are two methods of loading torpedo aiming solution data into the *Vorhaltrechner*. The first is to enter the data directly from the Data Notepad. The second is to enter the data manually at one of the *Vorhaltrechner* displays. The GWX Team recommends using the Attack Map (F6) for manual data entry.

Entry via the Data Notepad

The Data Notepad displays all the information required by the *Vorhaltrechner* for a torpedo aiming solution. Left click the check box at any time to upload the latest information on the Data Notepad into the *Vorhaltrechner*.

NOTE: you must perform this step **every time** you have updated the target range, AOB, or speed on the Data Notepad, otherwise the *Vorhaltrechner* will not use the latest information unless you enter it manually.



Figure C-20: Loading the *Vorhaltrechner* from the Data Notepad

Manual Data Entry via the *Vorhaltrechner*

The Data Notepad will not have all the information needed to update the *Vorhaltrechner* if you have computed it independently of the Data Notepad; for example, computing the speed by leveraging time interval location estimates. Perform the following steps to enter this data

- 1) Ensure all data available from the Data Notepad has been loaded into the *Vorhaltrechner*.
- 2) In the *Vorhaltrechner* display, temporarily disable automatic *Vorhaltrechner* updates by clicking on the “Manual input on/off” button (so the button switches to the red “0.”)
- 3) Left-click on the data you wish to modify manually: in this case, you will enter the speed you calculated on the Navigation Map. Click on the “SPEED” dial (that says “Vg sm / Std”) and drag the speed indicator to the calculated speed. You will see the *Vorhaltrechner* update all relevant settings, and the Attack Map will show an updated projected torpedo track.
- 4) Reset the “Manual input on/off” button (so it switches to the white “1”)



Figure C-21: Manually loading the *Vorhaltrechner* target speed setting

Launch torpedoes!

You should have begun torpedo preparations during the quiet time between your targeting observations.

1. Select the number and type of torpedoes, the tube(s) from which you will launch them, the pistol type (impact or magnetic), their depth settings, and the separation angle (if launching a salvo).
2. Turn your U-boat so its course is as close as possible to being perpendicular to the target's course. This will minimize the torpedo impact angle as well as minimizing the torpedo gyro angle.
 - A. The torpedo dud rate increases if the torpedo impact angle is more than about 20° , though this does not apply if you are using magnetic torpedoes set to run below the ship's hull *and* the torpedoes do not accidentally hit the ship.

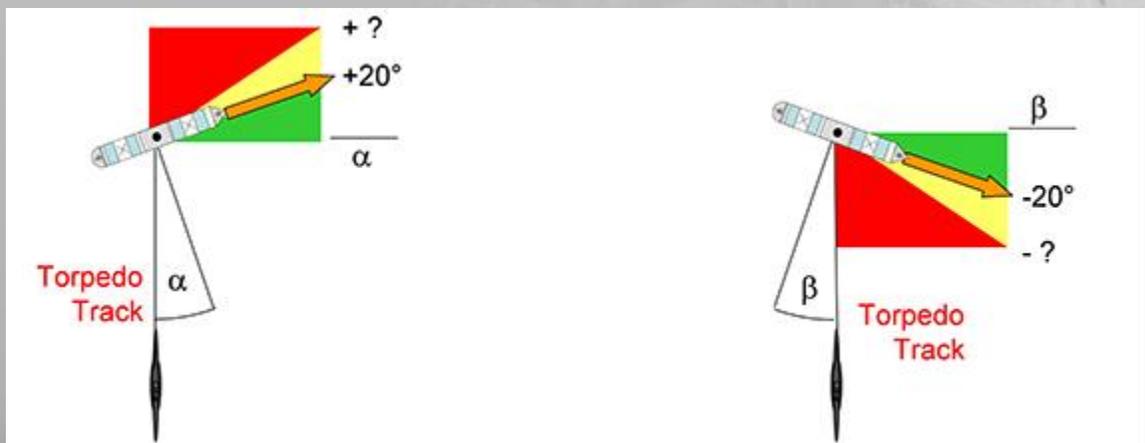


Figure C-22: Illustration of the effect of impact angle on torpedo dud rates

- B. Keeping the gyro angle as close to 0° will improve your accuracy: it is best to keep it between 355° and 5° ($0^\circ \pm 5^\circ$), and no worse than 345° and 15° ($0^\circ \pm 15^\circ$).

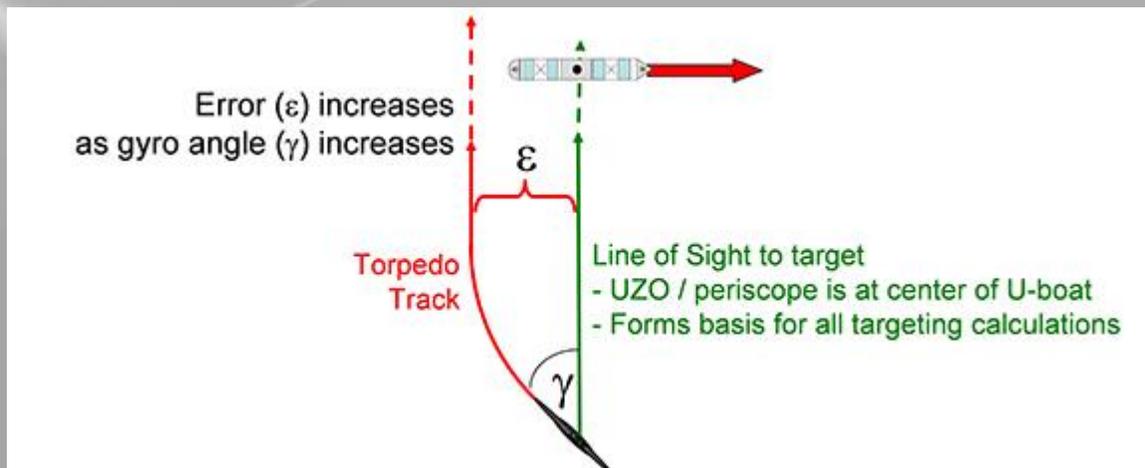


Figure C-23: Illustration of the effect of increasing gyro angle on torpedo aiming accuracy

3. Open your torpedo tube doors using the “Q” key after all other preparations are complete. This will significantly reduce the time it takes for the torpedoes to launch once you give the order.
4. Once you have finished your targeting observations, lock the UZO/periscope view on the target and wait until the gyro angle is in the desired range; alternatively, turn the UZO/periscope so that the desired gyro angle appears in the readout, and wait for the ship to appear in the crosshairs.
5. Recheck the flag of the ship you are about to attack and verify that country is currently at war with Germany. The [schiffsflaggen](#) quick reference sheet is available as a pull-down on the UZO / Periscope displays with all dates at which nations were neutral, hostile, or allied with Germany – some of them switched several times, so check the date to make sure.



Figure C-24: Final view before launching a salvo of two torpedoes. Is everything ready?

Other resources

There are several excellent on-line resources to assist you with the theory and mechanics of manual targeting. These include:

“Manual Targeting,” *Silent Hunter III Community Manual*,
[http://www.mysh3.info/shiii/index.php?title=Manual Targeting](http://www.mysh3.info/shiii/index.php?title=Manual_Targeting)

Paul Wasserman, “Wazoo’s Charting and Targeting Tutorial (V2.3),”
<http://www.paulwasserman.net/SHIII/>



Appendix D: Gameplay Hints

Surviving Passage through the Strait of Dover

Principal author: “KeptinCranky”

The GWX Team recommends players avoid the Strait of Dover (aka Dover Strait, *Straße von Dover*, or *Pas de Calais*) as GWX adds many minefields and ASW patrols to make the Strait much more difficult: BdU historically forbade U-boats from using the Dover Strait due to losses early in the war. If you insist on running the Dover Strait then you should use tactics to improve your chances, but do not try this after the Battle of Britain begins and more British ships and aircraft are equipped with radar.

1. Only attempt the Dover Strait if you command a Type VII or Type IX U-boat.
2. Do not dive in the Dover Strait unless you are stopping to perform a hydrophone check, as some (but by no means all) of these minefields are set at a depth to catch a submerged U-boat rather than a surface ship. If you do dive, dive at your lowest speed and stop as soon as possible to reduce the chance of hitting a mine. You may easily hit a mine anyways – if you do, see point “8” below.
3. Use periodic submerged hydrophone checks to detect enemy patrollers, and then monitor the hydrophone station to determine their movements. Perform the hydrophone checks yourself rather than relying on your hydrophone operator.
4. Do not fire on anything unless first fired upon, since this will give away your position and your target ***will*** call for help (the old “SSS” radio message). If you feel compelled to attack just make sure the target is worth the loss of your boat.
5. Run the Strait at night in complete darkness in clear weather or light fog, as this will usually allow you to see enemy ships before they see you, and enemy aircraft without radar will not spot you. Do not exceed 64x TC as going faster may put you in front of a destroyer before you can react.
6. If you spot a warship, above all *do not panic*. Try to reduce the size of your profile as well as maximize the distance between you; also, reduce speed (< 12 knots) to reduce the amount of spray and commotion you are causing in the water. Try to keep hostiles at a range of about 4 km, with an absolute minimum range of 1.5 km. If it is a torpedo boat, hope that it charges right by, or you can stop and submerge until it goes on its merry way.
7. If you are spotted and manage to evade, execute a course change of at least 10 degrees once you are no longer in sight. The spotting ship or aircraft will report your last known course and speed and the Royal Navy will send ships and aircraft to intercept accordingly.
8. If you do hit a mine and it does not kill your U-boat right away, sink to the bottom (it’s not that deep) and try to repair what you can. Blow ballast when you are finished with repairs (you have already hit the mine directly overhead) and pop straight to the surface. If you have suffered significant damage (periscopes, hydrophones, or radio destroyed, *etc.*) then head for the nearest exit to the Strait; otherwise, press on.

Harbor Infiltration

Principal author: “Tarjak”

The GWX Team recommends players stay out of enemy harbors: to our knowledge, only *U-47* (*Kapitänleutnant* Günther Prien) ever tried it, and then only after careful study of *Luftwaffe* reconnaissance photos by BdU revealed the gaps in the defenses of Scapa Flow. That being said, we are sure some players will want to try this anyways, so the GWX Team has assembled a few tips and hints to help you avoid a trip to a POW camp if you are lucky, or an iron coffin if you are not so lucky.

Homework

Review your topographical map at high resolution before going near the harbor to plot your course. Where are the choke points where minefields and nets may be expected? Where is the deep water?

Approach

Now that you have planned your approach course, it is time to get going.

1. The key word is *infiltrate*. Go quietly, slowly, and out of sight: a daylight assault on the surface straight into a defended harbor with all guns blazing is a fast ticket to a new career. Darkness and poor weather are your friends, but make sure you have enough visibility to see potential targets far enough away that your torpedoes will arm before hitting them.
2. Limit TC to 64x or less: higher TC levels will give AI-controlled aircraft and ASW vessels a long head start on detecting and/or attacking you, which is a bad thing when you are in the shallow water of a harbor.
3. Lower your profile by running with your decks awash (*i.e.*, set your depth to six or seven meters). This will allow you to use your diesels while giving you a slight head start on diving to periscope depth in an emergency. *Do not crash dive* in a harbor: your engines will go to full power and your U-boat will try to dive 80 meters deep into the mud on the harbor bottom.
4. Check the hydrophones at least once per hour for the sound of patrolling ASW vessels so you can assess their patrol areas and patterns.
5. Be prepared to abandon your approach and try again later if the Allies detect you. You can try to evade the ASW forces that detect you, but those evasive maneuvers tend to use up oxygen and battery power that you will need to maneuver inside the harbor as well as make a getaway after your attack.
6. Mark your path on the map as you approach so you can avoid any obstacles on your way out.

Harbor Defenses: Nets and Minefields

If you have arrived at the harbor entrance without being detected you are now ready for the next, much more delicate penetration of the harbor defenses.

1. Set your TC to 1x and ***slow down***. You will probably run into something in the harbor and the faster you can back off, the faster the damage will stop.
2. Stay away from minefields. Unfortunately, the only way you will find these is when you run into them (thus our advice to stay away from enemy harbors) and hear an explosion followed by damage reports or a “mission over” message. Count yourself lucky if you survive hitting a mine.
3. Do not ram antisubmarine nets. As with minefields, the only way you will find these is when you hear the screeching metallic sound of a collision; however, antisubmarine nets are far more forgiving than minefields, so the reaction to hitting an antisubmarine net is:
 - a. ***Do not panic***, and be thankful it was not a minefield.
 - b. Reverse course (no rudder changes) until you no longer hear the screeching noise

You now have several options.

- a. Consider trying to run *above* the antisubmarine net (at a depth of 9 meters or so). This will expose your conning tower, so this can work only if there are no surface ships or shore batteries defending the net. It will also require calm water, as the action of large waves will bring you repeatedly crashing down on top of the net as you try to cross over.
- b. Try to go around the net. This may require repeatedly running into the net at different locations until you find you are no longer running into it.

Attacking in Enemy Harbors

Once you have penetrated the harbor defenses, you can start identifying targets and preparing to shoot.

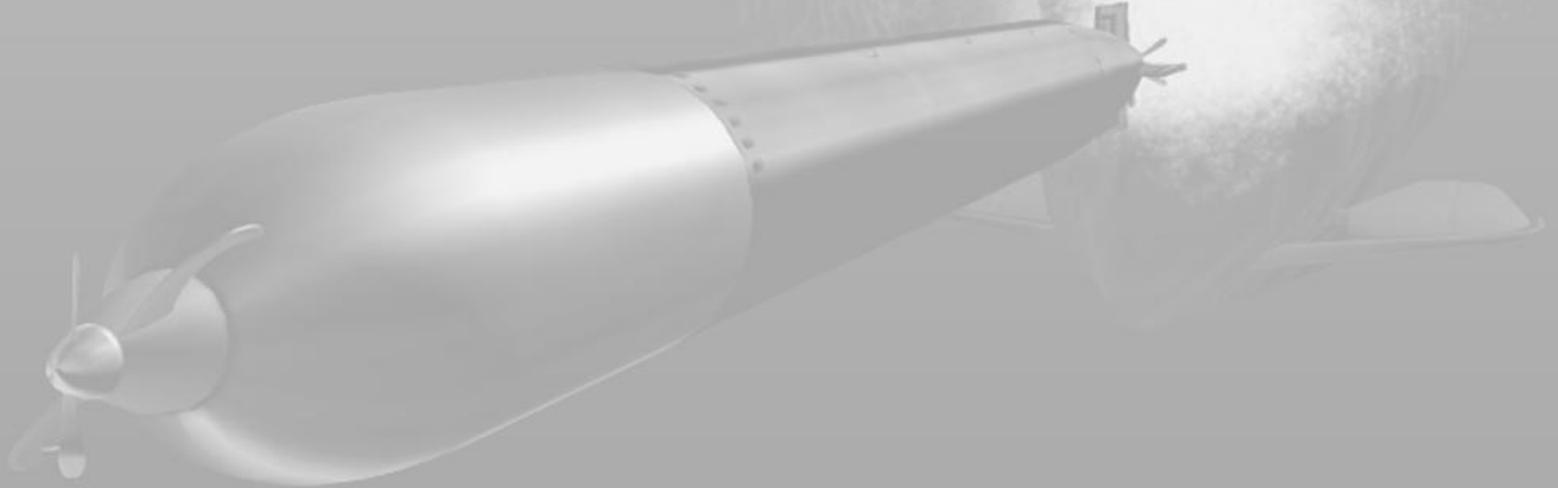
1. Remember you are in the enemy’s house: keep hidden and quiet, exposing only a minimal amount of periscope as you find and identify targets.
2. Find the most valuable target and maneuver your U-boat to give the best possible shooting geometry to hit and sink the target and then (hopefully) have a clear path out of the harbor

The harbor defenses will generally wake up when your torpedoes start exploding, and then they will come looking for you. You should head for the harbor exit if you are out of torpedoes, but if you still have some you should reload, either to stick around and give the ships in the harbor another volley or as a means of clearing ASW ships out of your way as you make your escape. Torpedo loading makes noise, so you want to find a corner of the harbor away from ASW patrols as you reload.

Escaping the Harbor

If the enemy has not located your U-boat and you have reloaded your torpedo tubes then you can give the defenders another volley or escape. When you are ready to escape,

1. Try to go out the way you came in (which you marked on your navigation map, remember?). This will help you avoid the aggravation of hitting the same obstacles again on the way out.
2. Remain slow and stealthy, using your hydrophones to alert you to enemy warships, and minimize the amount of periscope above water when you do need to look around.
3. Use torpedoes to sink ASW patrols only as a last resort as each sinking gives your enemies a fresh location datum as they hunt for you
4. Remember that patrolling vessels will come from miles away to investigate torpedo explosions, so there may be more ships blocking you on the way out than there were on the way in.



Dealing with Crew Fatigue

Principal author: “Tarjak”

Here are a few suggestions for dealing with crew fatigue

1. Just use the “No Fatigue” model available with *SH3 Commander* if you really do not want to bother with fatigue
2. If you can deal with tired, whinging, Sims-like crewmembers who will stay at their stations until they drop, then stick with the GWX standard, as it is as balanced as anything that is available
 - A. Keep your eye on the clock and be careful where you put your excess crewmembers
 - About seven hours into a “shift” start looking for “slackers” who cannot hack the pace and swap them out for a fresh crewmember; ensure everyone has cycled out by the eighth hour of the shift
 - Make room for tired crewmembers in the crew compartments by putting fully rested crewmembers in the diesel engine compartment when submerged and in the electric motor compartment when on the surface
 - B. Get as many officers as you can (hopefully with Repair qualifications) to spread the workload around
 - C. Use promotions and medals to reduce fatigue effects and increase endurance. This can be especially helpful in the radio and hydrophone operators’ shack, which has no officers and only two crewmembers
 - D. If you are using any fatigue model except “No fatigue” and want to minimize the amount of time you spend managing fatigue, make sure that you
 - use time compression (TC) set to 64x or higher as much as possible
 - Reset TC to 64x or higher after entering the crew management screen (F7), since entering this screen resets TC to 32x unless you have specifically modified this value using *SH3 Commander*

Appendix E: GWX Change Log

GWX December 2008 Update (Version 3.0 “Gold”)

New GWX Options

- The Open Hatch mod now opens the hatch for Type VII, IX, and XXI U-boats, as well as updating the interior of the Type II and Type VII, and some small fixes by “Diving Duck” using the “S3D” tool by “Skwasjer”

Individual Ships and Aircraft

- Added replacement *Georgios Averof* armored cruiser by “vonDos”

Environment Improvements

- Added Environment 2.4.3 mod by “onelifecrisis”, with the following small fixes and adjustments by “Ref” and “Kpt. Lehmann”
 - Restored moon reflections
 - Set water opacity to GWX default
 - Added moon by “Ichneumon”
 - Retained original wave textures from GWX

The GWX Team gives special thanks to “onelifecrisis” for his assistance with the integration and adjustment of his environmental modifications to ensure the correction of the horizon demarcation issue present in GWX and other available 16-kilometer visibility mods prior to his involvement.

GWX Users may visit with and view other modifications by OLC here:

<http://www.subsim.com/radioroom/showthread.php?t=134186>

- Interiors now slant according to dive angle, based on original work by “Anvart” and enhanced by “Vickers03”
- Real depth charge sounds added by “Privateer”
- Added “Lehmann International News” by “Wreford-Brown”
- U-boat distress radio messages by “von Hally” and “Danurve”

Bug Fixes

- Incorporated small hotfixes to GWX V2.1 by “bigboywooly”
 - Fixed missing second Calais harbor showing on map
 - Moved Calais gun emplacements
 - Fixed bug where Type VIIC/42 radar was destroyed upon starting game
 - Fixed 7th flotilla entry/exit dates from Königsberg causing opposing base change messages
 - Fixed error in ge_menu.txt where Memel was listed instead of Königsberg
 - Added silhouette fixes by Reece
 - Adjusted draft of the Schute_M2 to remove sinking ship bug
- VIIC/*Turm 2* reflection fix by Reece with adjustments by “Privateer”
- Type XIV U-boat (“*milchkuh*”) caustics corrections by “Privateer”
- Corrected location of Brunsbüttel and Holtenau by “bigboywooly”
- Museum text adjustments by “bigboywooly” for:
 - *Brooklyn*-class light cruiser
 - *Buckley*-class destroyer escort
 - River class frigate
 - Small depot ship
 - Armed Tugboat
 - *Ceramic*-type ocean liner
 - Large passenger/cargo ship
 - Large troopship
 - Troopship
- Adjusted radio message dates for *U-488* resupply U-boat and Operation *Cerberus*.

GWX April 2008 Update (Version 2.1)

New GWX Options

- Added option to use aircraft skins specific to the Mediterranean theater
- Added option to open the hatch between the Control Room and the Engine
- Added more messages to the *Fix Français pour GWX*.

Individual Ships and Aircraft

- Added Focke-Achgelis Fa 223 *Drache* (“Dragon”) helicopter
- Added a lighted Fishing Ketch
- Added animated sails for all sailing vessels

Environment Improvements

- Incorporated Real Weather Fix Mod by “Stiebler” and “Sub Type Zero”
- Added the Laboe Naval Memorial (Laboe *Marine-Ehrenmal*) by Rowi58

Graphics Improvements

- Improved moon images (from actual photos of the moon in different phases)
- Corrections to small merchants
- Updated torpedo graphics
- More improvements to smoke
- The sky and sea in the Mediterranean are now the same color as they are in the Atlantic Ocean.
- Reduced the frequency of oil fires in the Enhanced Damage mod
- Improved S.M. 79 “Sparviero” skin
- Updated U-boat upgrades chart

Sound Improvements

- The sound of torpedo doors opening is now that of the opening of real torpedo doors

Bug fixes

- Fixed PCTrawler self-destruction by depth charge and a resulting CTD error

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- Improved the damage model for depth charge racks
 - Reduced the rate of descent for Mk 6 “ashcan” depth charges to historical values
 - Corrected the location of the anchor on the Type IID U-boat
 - Fixed the maximum elevation of the German 37mm flak
 - Fixed errors in “Caribbean Convoy” and “*Bismarck* Breakout” multiplayer missions
 - Updated German-language single player missions
 - Removed the black triangle artifacts that appeared near the horizon
 - Fixed numerous .sil files
 - Increased rate of fire for 3.7cm SK /C30 (the *really* slow 37mm flak gun)
 - Fixed draft of A&B-class destroyers
 - Updated the alternative flotillas menus to match new menus in GWX V2.0
 - Fixed some reflection issues with Type VIIC U-boat conning towers
 - Added fixes for the British Auxiliary Cruiser and the ASW Trawler
 - Removed bearing indicator from binocular view
 - Fixes to *Norfolk* and *Devonshire*-class heavy cruisers, Vosper, and RAF high speed launch
 - Updated AI sub damage models, configuration, and other fixes
 - Updated museum air texts
 - Fixed bomb loadout of heavy bombers
 - Corrected masthead heights and museum text for all units that needed it
 - Various small and sundry fixes and corrections

Campaign fixes

- The campaign now begins in August 1939 so that players will have enough time to reach their patrol areas before war begins.
- Adjusted air cover in the Bay of Biscay
- Completely removed all renown awards for reaching an assigned area and patrolling it for 24 hours

- New ports and traffic added at
 - Blyth, Harwich, and Rosyth in the UK
 - Kemi, Finland; with more local traffic between Kemi/Oulu and Helsinki
 - Oranienbaum and Kronstadt, Soviet Union
- The “Lerwick Submarine Base” is now just “Lerwick”
- More barricade ships added to some ports as the war continues
- The *Hipper* is now in its historical locations in 1942-45: Kiel, Pillau, and Gotenhafen
- Added the German evacuation of Pomerania in April 1945 (the *Wilhelm Gustloff*, *Steuben*, *Goya*, and *Admiral Hipper* depart Gotenhafen for Kiel)
- Added movement of the Finnish 11th Infantry Regiment
- Eliminated any BdU radio reports of
 - US and Canadian local shipping
 - German naval and shipping movement in the Baltic
 - Any single or two-ship groups starting in late 1943
- All inshore convoys now have merchant ships as the lead unit so they are not reported as task forces
- Added new units to the campaigns
- Radio traffic
 - Deleted reports of German U-boats being sunk
 - Added notification when German destroyers are laying mines off the coast of Britain
 - Adjusted report times for Operation *Weserübung*, and for historical British task forces

GWX December 2007 Update (Version 2.0)

Individual Ships and Aircraft

- Added HMS *Repulse* model from “Warhunter”
- Added British heavy cruisers by “Gerome73”
- Added *Lützow panzerschiff*/heavy cruiser by “Gerome73”
- Added Soviet cruisers by Liliput & Va (.ru forums)
- Added K-class light cruiser by “Sergbuto”
- Added French *Bourrasque*-class destroyer
- Added British A&B-class destroyer
- Added British L-class anti-aircraft destroyer
- Replaced Soviet Type 7y (*Storozhevoy*) destroyer
- Added Soviet *Novik*-class destroyer
- Replaced DERiver with FFRiver
- Added *Tacoma*-class frigate
- Added *Colony*-class frigate
- Added German torpedo boats (TB1924 and TB1937) by “Sergbuto”
- Added minesweepers
 - Added a minesweeper (MS1935) by “Sergbuto”
 - Added *Räumboot* (NMSR) and *Sperrbrecher* (NMSS) minesweepers
- Changes to *Vorpostenboote*
 - Replaced the *Vorpostenboot* model with a much larger ship (NHPB)
 - Added Small *Vorpostenboot* (NPTV)
 - There is a new, very small *Kriegsfischkutter* (NPTV_KFK)
- Added Higgins Boat amphibious assault craft
- Added new AI submarines
 - Added British “S” and “T”-class submarines
 - Added German Type IXB U-boat
 - Added German Type XIV “*Milchkuh*”
 - Added German Type XXIII U-boat
 - Added Soviet “Shch”-class (“*Shchuka*”) submarines
 - Added Italian Type 600 (“*Argonauta*”) submarines

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- Removed U.S. “S-class” submarine
 - Added new auxiliaries
 - *Dithmarschen*-class supply ship
 - The stock *Silent Hunter III* PCTrawler model is replaced by the Isles-class minesweeper
 - Added a new ASW Trawler from an unknown modder on the .ru forums
 - Added new merchant ships
 - Added Catapult Armed Merchant (CAM) by “Iambecomelife”
 - Revised “Empire Freighter” by “Iambecomelife”
 - Added a Small Ocean Liner
 - Added *Granville*-type freighter
 - Added a Coal Freighter by “Rowi58”
 - Added a Small Coal Tender by “Rowi58”
 - Added a *Nipiwan Park*-type tanker
 - Added a *Cyclops*-type collier
 - Added an Intermediate Tanker
 - Added an illuminated small tanker
 - Added a small merchant
 - Added a pelagic trawler
 - Added a small fishing boat
 - Aircraft
 - Australia
 - Deleted Australian “Beaufighter” (will share UK model)
 - Germany
 - Updated Ar 196 observation/scout plane
 - Added Fi 103 *Vergeltungswaffe I* “buzz bomb”
 - Updated Fw 200 “Kondor” maritime patrol bomber
 - Added He 111 medium bomber
 - Updated Ju 87 *Stuka* dive bomber
 - Updated Ju 88A medium bomber
 - Deleted “Ju 88M” medium bomber (Mediterranean camouflage)
 - Added Ju 88C heavy fighter
 - Updated Bf 109 fighter-bomber, including new engine sounds
 - Great Britain
 - Added Armstrong Whitworth “Whitley” maritime patrol bomber
 - Updated Avro Anson maritime patrol bomber
 - Added Boeing “Fortress” (RAF B-17)
 - Updated Bristol “Beaufighter” fighter-bomber
 - Added Bristol “Beaufort” torpedo bomber
 - Added Consolidated “Liberator” (RAF B-24)
 - Updated de Havilland “Mosquito”

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- Updated de Havilland “TseTse”
 - Updated Fairey “Swordfish”
 - Updated Grumman Martlet (FAA “Wildcat”)
 - Added Handley Page “Halifax” heavy bomber
 - Added Handley Page “Halifax” maritime patrol bomber
 - Deleted Hawker “Hurricane” Mk IIC fighter-bomber (stock *Silent Hunter III*)
 - Updated Hawker “Hurricane” Mk IIC fighter-bomber
 - Deleted Lockheed “Hudson” Mk 2 (will share Hudson Mk III / PVO Hudson)
 - Updated Short “Sunderland” maritime patrol bomber
 - Deleted Supermarine “Walrus” observation/scout plane
 - Updated Vickers “Wellington” maritime patrol bomber
- Italy
 - Updated S.M. 79
 - Japan
 - Deleted Aichi “Jake” observation/scout plane
 - Deleted dedicated Ar 196 with Japanese markings (will share German model)
 - Deleted Mitsubishi “Emily” maritime patrol bomber
 - Added Mitsubishi A6M5 “Zero” fighter-bomber
 - Added Nakajima A6M2-N “Rufe” fighter-bomber
 - Soviet Union
 - Updated DB-3 medium bomber
 - Updated Tu-2 medium bomber
 - United States
 - Added Boeing B-17 heavy bomber
 - Updated Consolidated B-24 heavy bomber
 - Updated Consolidated PB4Y-1 “Liberator” maritime patrol bomber (US Navy B-24)
 - Updated Consolidated PBY5-A “Catalina” maritime patrol bomber
 - Added Goodyear K-class airship
 - Updated Grumman F4F-4 “Wildcat” fighter-bomber
 - Updated Grumman TBF “Avenger” torpedo bomber
 - Deleted Lockheed A-28 “Hudson” maritime patrol bomber
 - Updated Lockheed P-38J “Lightning” fighter-bomber
 - Updated Lockheed PBO-1 “Hudson” patrol bomber
 - Updated Vought-Sikorsky OS2U-3 “Kingfisher” observation/scout plane
- New moving harbor cranes
 - New lighthouse
 - Added barrage balloons
 - Added floating drydocks
 - Added navigational buoys

- Added Maunsel Sea Fort
- Added Maunsel Army Fort
- Removed jackstaff from Type II U-boats (player-controlled and AI)
- Added searchlights
- Added new mine racks (can replace depth charge racks on destroyers)
- New minesweeping gear

Bug fixes

- Fixed bug with the Type 3 *Turm* for the Type IX U-boats that killed all watch personnel when a U-boat surfaced with a damaged tower, resulting in “mass suicide” as the Game AI kept replacing the dead crewmembers with more living crewmembers from inside the boat, only to kill them, too.
- Fixed Type II AI U-boat cables
- Fixed Type IX *Turm 2*
- Fixed Type VIIC/41 .zon file
- Corrections to the Type VIIB weapons loadout for 1942
- Corrections to *Flak* and *Turm* availability
- Flags on sunken ships disappear after they are underwater
- Corrected torpedo loadouts
 - Type II reduced from six to five torpedoes
 - Type VIIB torpedo loadout (1942)
 - Type IXB increased from 21 to 22 torpedoes
 - Only air-driven (G7a) torpedoes available by default in upper deck containers
- Type VIIC *schnorchel* depth set to 12 meters
- Corrected the wake of the Type IXD2 U-boat

Campaign

- HMS *Hood* is no longer available after *Bismarck* sank it historically
- Replaced all placeholders for HMS *Repulse* and *Renown* with the new *Repulse* model
- Replaced all placeholders for British heavy cruisers with new heavy cruisers
- Replaced all placeholders for German light cruisers (K-class, *Leipzig*, *Nürnberg*, and *Emden*) with K-class cruiser models
- Increased the speed of all submerged German AI U-boats
- Added scripted Atlantic events for *New Orleans*-class heavy cruiser
- Added Neutrality patrols from Hampton Roads and Bermuda
- Added Operation *Leader*
- Added Operation FB
- Added the early PQ convoys in 1941
- Added Russian traffic between Archangel and Murmansk
- Added chance of Cam ship in PQ convoys
- Added Japanese shipping from Panama to US\Africa and Europe till Oct 41
- Added additional neutral shipping for Denmark\Belgium\Norway\Spain and Sweden
- Added WS 21S convoy
- Added TC 14 troop convoy
- Added Bermuda base to map
- Added Bergen to Methil convoys HN6\7\8\9A\9B\10\10B\11\12\15\16 and 17
- Added Methil to Bergen convoys ON1\2\3\4\5\6\7\8\9\10\11\12\15\16\17 and 18
- Added Convoy BC.6
- Added British minelaying Operation IE.1 and IE.2 off Heligoland
- Added mine clearance operations ST 1 and ST 2
- Added Operation *Chariot*
- Replaced static Gibraltar patrols with random minesweeping and ASW patrols

- Added minesweeping in the English Channel
- Added minelaying operations in the North Sea
- Added minelaying on the French and Biscay coasts
- Added German minelaying off the British coast in late 1939 / early 1940
- Added “Triangular” convoys (St. Johns – Halifax – New York *or* Boston)
- Added ferry crossings and iron ore shipments off Nova Scotia
- Randomized “Tanker Alley” convoys
- Hunter-killer groups now start and end in ports, instead of in the open ocean
- Replaced all placeholder entries with new ships modeled in GWX
- Increased speed of U-flak escorts
- Increased speed of submerged AI U-boats
- Type IXB AI U-boats now appear off the U.S. coast during Operation *Paukensschlag*
- Renamed Klaipeda to “Memel” (which is what the Germans called it) and is German-controlled.

Historically based Single Player Missions (has some overlap with multiplayer missions)

<u>Mission</u>	<u>Author (auteur), with revisions by the GWX Team</u>
"Brake"	GWX Team
"Bucket Brigades"	based on "The Bucket Brigades" by "Wilhelm Schulz"
"Cerberus"	GWX Team
"Convoy HX 228"	based on "HX 229" by gerhi4u@gmx.de
"Convoy JW 55B"	"Pablo"
"Convoy KS 502"	based on "The First Convoys-KS-502" by "Wilhelm Schulz"
"Convoy PA 69"	author unknown
"Convoy PQ 17"	GWX Team
"Convoy SC 7"	based on "SC 7" by "Wilhelm Schulz"
"Convoy SC 94"	GWX Team
"Convoy SL 125"	based on "The Decoy" by "Wilhelm Schulz"
"Convoy TM 1"	based on " <i>Tankergeleit</i> TM 1"; author unknown
"Convoy TS 37"	based on "Convoy TS-37" by "Wilhelm Schulz"
"Finish Line"	Adapted from stock <i>Silent Hunter III</i> "Malta" by "Pablo"
"Force 63"	GWX Team
"Force H"	author unknown
"HMS <i>Barham</i> "	Revised from stock <i>Silent Hunter III</i> " <i>Barham</i> " by "Pablo"
"HMS <i>Eagle</i> "	author unknown
"HMS <i>Exmouth</i> "	based on "RUM: 40-01-21" by "The Avon Lady"
"HMS <i>Malaya</i> "	author unknown
"Narvik I"	GWX Team
"Narvik II"	GWX Team
"Operation <i>Gibbon</i> "	"Pablo"
" <i>Tungsten</i> "	GWX Team
"U-515"	based on "U-515" by "Wilhelm Schulz"
"U-1195"	author unknown

Hypothetical Single Player Missions (some overlap with multiplayer missions)

<u>Mission</u>	<u>Author (auteur), with revisions by the GWX Team</u>
"Airship Escort"	"jimbuna"
"April Fool"	"jimbuna"
"ALARM!"	"Wilhelm Schulz"
"Curaçao"	"jimbuna"
"Drumbeat!"	author unknown
"Early Christmas"	"jimbuna"
"Evacuation"	based on "Polish Evacuation" by "Wilhelm Schulz"
"Far East Fleet"	GWX Team
"Freetown Convoy"	"Wilhelm Schulz"
"Ice Ice Baby 1"	"Aviar"
"Ice Ice Baby 2"	"Aviar"
"Iceland"	author unknown
" <i>Italia</i> "	author unknown
"Monsoon"	based on "Monsoon Group" by "Wilhelm Schulz"
"Russian Convoy"	"Wilhelm Schulz"
" <i>Scharnhorst</i> "	author unknown
"Tiger's Den"	author unknown
"Tiger's Jaws"	author unknown
"Tiger's Revenge"	author unknown
"Tiger's Tail"	author unknown
"Troopship"	"jimbuna"

Historically based Multiplayer Missions (some overlap with single player missions)

<u>Mission</u>	<u>Author (auteur)</u>
"Brake"	GWX Team
"Convoy PQ 17"	based on "PQ17"; author unknown
"Convoy SC 7"	based on "SC 7" by "Wilhelm Schulz"
"Convoy SC 94"	author unknown
"Convoy SL 125"	based on "The Decoy" by "Wilhelm Schulz"
"Convoy TM 1"	based on " <i>Tankergeleit</i> TM 1"; author unknown
"Tungsten"	GWX Team

Hypothetical Multiplayer Missions (some overlap with single player missions)

<u>Mission</u>	<u>Author (auteur)</u>
"Arctic"	stfan4cjk@gmail.com
"Arctic meeting"	author unknown
"Atlantic convoy"	based on "Atlantik Konvoy" by "Wilhelm Schulz"
"Battleship Hunt"	based on "Hunt for <i>Tirpitz</i> and <i>Scharnhorst</i> "; author unknown
" <i>Bismarck</i> breakout"	from "Hunting the <i>Bismarck</i> "; author unknown
"Caribbean Convoy"	from "ONS57" by an unknown author
"Carrier Group"	From " <i>Trägerverband im Eismeer</i> "; author unknown
"Convoy to Egypt"	based on "Mediterranean Convoy" by "Wilhelm Schulz"
" <i>Eisiger wahn</i> sinn"	based on " <i>Eisiger wahn</i> zin [sic]"; author unknown
"Florida 44"	based on "Florida 1944 (MP8)" by "FAdmiral"
"Force 63"	based on "Force 69" by the GWX Team
"Galveston"	author unknown
"Georges Bank"	author unknown
"Gibraltar-bound"	based on "England-Gibraltar convoy" by "Wilhelm Schulz"
"Gibraltar Harbor"	based on "Gibralter [sic] Port" by "Wilhelm Schulz"
"Iceland"	author unknown
"Labrador's Coast"	author unknown
"Monsoon Group"	"Wilhelm Schulz"
"Movie moments"	author unknown
"Murmansk Run"	"Wilhelm Schulz"
"New York"	based on "New-York [sic]"; author unknown
"Red Sea"	based on " <i>Rotes Meer, vor Riad</i> "; author unknown
"South Pacific"	based on "Pacific" by "bigboywooly"
"Thomsen"	author unknown
"Tiger's Den"	author unknown
"Tiger's Jaws"	author unknown
"Tiger's Revenge"	author unknown
"Tiger's Tail"	author unknown
"Unescorted 1"	based on "UnEscorted I" by "BBury"
"Unescorted 2"	based on "UnEscorted 2" by "BBury"
"West Approach 1942"	based on "Western Approaches 1942" by "Wilhelm Schulz"
"West Approach 1944"	based on "Western Approaches 1944" by "Wilhelm Schulz"

Order of Battle

- Added Naval Artillery Lighter (LCMAL) to Bulgaria
- All “DERiver” replaced (with FFRiver for Britain, Australia, Canada, Free France, and the Netherlands) or deleted (United States)
- Japanese PCTrawler, NHPB, and all “Type 0” entries changed to HDSUBCT13
- *Vorpostenboot* (NHPB) changed to NPTV for Finland, Italy, the RSI, Yugoslavia, Bulgaria, and Poland; NHPB removed from Albania, Croatia, Estonia, Lithuania, and Romania
- The following substitutions were made because the “PCTrawler” is now the Isles-class minesweeper that is used solely by the Britain and Commonwealth countries
 - PCTrawler changed to PBTrawler for Albania, Argentina, Belgium, Brazil, Colombia, Egypt, Greece, Free France, Greece, Latvia, Lithuania, Mexico, Netherlands, Norway, Poland, Romania, Sweden, Turkey, Uruguay, and Venezuela
 - PCTrawler changed to FFBlackSwan for India
 - PCTrawler changed to MTBVos for Ireland
 - PCTrawler changed to Smallhunter for Soviet Union
- The following changes were made to the Armed Tug (ATug)
 - ATug changed to PBTrawler for Albania, Estonia, Latvia, Norway, Turkey, and Uruguay
 - ATug changed to NPTV for Bulgaria, Croatia, and Finland
 - ATug changed to PCTrawler for India and South Africa (to reflect Isles-class minesweeper)
 - ATug deleted for Yugoslavia
- PTSchnellboot changed to PBTrawler for Norway
- Irish “Walrus” aircraft replaced by “Hurricane”
- Whale Factory Ship is now NOTCW
- “Ge MTB” replaced by TB1937 torpedo boats and “Wolf Ge MTB” by TB1924 torpedo boats
- All current named German minesweepers replaced by the *MS1935*
- MS1935, NMSR, and NMSS will escort U-boats in and out of port rather than *flottenbegleiter*
- Changed UJ (*U-bootjäger*) campaign entries to NPTV
- Renamed MFP (*marinefährrahm*) entries to LCMAL (armed lighter)
- All “Rb” minesweepers replaced by *Räumboot* minesweepers
- Changes to *vorpostenboot* entries
 - The *Vorpostenboot* is now a much larger ship (NHPB)
 - The UJ (*U-bootjäger*) is now called a “small *vorpostenboot*” (NPTV)
 - There is a new, very small *Kriegsfischkutter* (NPTV_KFK)

- The MFP is renamed to the LCMAL
- The “Raumboot” and RB entries are now standardized as “NMSR” (“Raeumboot class”)
- The Hurricane fighter-bomber is unavailable to Britain until 1940

Enhancements

- “French Fix” revised by “Alex” with translations for all new radio messages as well as all new units
- “Fog” weather report changed to “visibility”
- In-game map updated
- Added terrain contours to Heligoland
- Added gun crews for K-guns

Miscellaneous Graphics

- All contact lines on various maps are now grey
- Corrections to watch officer skin
- Added Wazoo’s static nomograph for default GWX
- Removed various markings from aircraft .TGA files
- Cleaned up dockside graffiti
- Smaller sun halo
- Wave mod textures
- U-boat compass overlays
- Slide-out compass
- Modified Type II, VII, IX, and XXI U-boat interiors
- Modified Type VII U-boat attack and observation periscopes
- New night map filter

Sound Effects

- Replaced “Bold” decoy orders and launch sounds
- Replaced underwater U-boat sounds with U.S. Navy sonobuoy recordings of a U-boat
- Replaced Hurricane and Beaufighter engine sounds
- Added engine order telegraph

Gramophone

- Made the following Gramophone replacements:
 - (028.ogg) “*Auf der Reeperbahn nachts um halb eins*” (shifted from 003.ogg)
 - (004.ogg) “One O’Clock Jump” replaced “*Badenweilermarsch*”
 - (006.ogg) “Take the ‘A’ Train” replaced “*Die Fahne hoch* (aka “*Horst Wessel Lied*”)
 - (007.ogg) “Stardust” replaced “*Die Welt gehört den Führenden*”
 - (008.ogg) “A-tisket, a-tasket” replaced “*Durch deutsches Land marschieren wir*”
 - (009.ogg) “Jumpin’ at the Woodside” replaced “*Horst Wessel gedenkmarsch*”
 - (014.ogg) “Stormy Weather” replaced “Luftwaffe March” from *Battle of Britain*
 - (016.ogg) “I got it bad (and that ain’t good)” replaced “*Panzerlied*”
 - (022.ogg) “In the mood” replaced “Song of the High Seas” from *Victory At Sea*
 - (024.ogg) ““*Ich bin von Kopf bis Fuß auf Liebe eingestellt*” for “This is the Army, Mr. Jones”
- Made the following Gramophone additions:
 - (003.ogg) “*J’attendrai*”
 - (027.ogg) “Night and Day”

GWX March 2007 Update (V1.03)

Campaign

- Corrected Allied/Axis alignment dates for numerous countries and adjusted campaign files accordingly
- Added port defenses for Dunkirk, Cherbourg, and Calais in France
- Increased the port defenses of Scapa Flow, Great Britain and Freetown, South Africa
- Added the port of Tallinn, Estonia with traffic and harbor defenses
- Added the ports of Oslo and Stavanger in Norway with harbor traffic
- Added Soviet traffic to/from Latvian, Lithuanian, and Estonian ports when under Soviet occupation and German traffic to/from these ports when they are under German occupation
- Added German traffic to Finland when they are co-belligerent with Germany
- Rewrote Operation *Weserübung* to include all six German invasion task forces (*Kriegsschiffstaffeln*), three transports groups with reinforcing ground troops (*Seetransportstaffeln*), the refueling tankers (*Tankerstaffel*), and the covert *Ausfuhrstaffel* (“export squadron”) carrying cargo and supplies for the invasion force
- Added German air patrols over the German coastline and the North Sea
- Added the First and Second Naval Battles of Narvik, including Luftwaffe attacks on the British battleship HMS *Rodney*
- Some French ships will now be illuminated when France is neutral (before September 3, 1939 and during the Vichy regime)
- Added airbases to close the Allied air cover gap in the Atlantic starting in 1943 (when Portugal started allowing Allied ASW aircraft to use the Azores)
- Added airbase in Wales to complete Allied air coverage of the Irish Sea, and moved Belfast and Cornwall air bases consistent with change in the operational radius of Hurricane fighter-bombers.
- Added AI U-boats patrolling in historically realistic areas

Individual Ships and Aircraft

- Returned missing bow cannon to *Schnellboot*
- Corrected appearance dates on Hunt I, Flower, KM *Gneisenau*, KM *Scharnhorst*, KM *Blücher*, small warship tender (depot ship), Liberty ships, and Victory ships
- Reduced maximum radius for Hurricane fighters so they would not appear far out at sea

- Corrected AI VIIC with VIIC/4 tower object problem
- Replaced separate Australian and British Beaufighters with one model.
- Made minor corrections to P-38, Arado, Walrus, Hudson A-28, Hudson Mk III, and Wellington models
- Added Leigh light to the Kingfisher and corrected the Leigh light position on the Catalina
- Increased the size of all B-24 and Liberator roundels; the heavy bomber now has its own markings
- Added generic roundel fix for Anson, Beaufighter, and Kingfisher
- Corrected the Type IXC U-boat roster file

Graphics

- Corrected several flags; added the Belgian naval ensign
- Added swallowtail naval ensigns for Denmark, Estonia, Finland, Norway, Poland, and Sweden
- Corrected and updated recognition manual and in-game *schiffsflaggen* display
- Removed recognition manual covers for Czechia and Slovakia and updated all covers to reflect new flags
- Updated Japanese aircraft roundel

Modeling and Simulation

- Fixed “sinking ships” phenomenon – you should no longer return from patrol to a port full of sinking ships
- Added Optional modification: “Reduced Positive Buoyancy” - player U-boats now exhibit ascending and descending behavior closer to stock *Silent Hunter III* but with a very slight positive buoyancy. GWX surface physics are maintained

Order of Battle

- There is now only one Hurricane aircraft in a “squadron” in 1939, and reduced the number of air attacks against submarines (especially in 1939)
- Added Anson maritime patrol bomber to Egypt, Finland, Free France (and France after 1944), Greece, Ireland, the Netherlands, Poland, and Turkey
- Added Beaufighter fighter-bomber to United States
- Added OS2U-3 Kingfisher observation/scout plane to Argentina, Australia, Great Britain, Mexico, Netherlands, and Uruguay

- Adjusted roster files of Estonia, Latvia, Lithuania, and Venezuela for new Axis/Allied alignment
- Added illuminated ships to the French roster

Miscellaneous

- New and corrected German language radio messages
- Modified certain ship descriptions to ensure correct display in Museum
- Corrected the German Help file display
- Corrected typo in “knots to kilometers/hour” conversion table sheet - 188.53 is now 118.53



GWX February 2007 Update (V1.02)

Campaign

- Added random ASW patrols near Dunkirk, France; Longyearby, Spitsbergen; Poti (Поти) and Sukhumi (Сухуми), USSR; and the Panama Canal
- Moved naval bases to allow starts from all friendly bases
- Added submerged AI U-boats around the British coast
- Updated Ammunition Ships (*e.g.*, USS *Pyro*) to UnitType=100 so they won't spawn in convoys
- Added a large airbase for Finland, small airbases for Brazil and Bulgaria, and a very small airbase for Egypt
- Corrected availability dates for *King George V* battleships
- Corrected Lorient control, harbor defenses, and patrols to reflect its surrender on May 10, 1945
- Added British small warship tenders
- Added Convoy SC 94
- Removed homing torpedoes from default weapons loadout for Type VIIC/42
- Added aircraft patrols for Ireland, Portugal, and Spain
- Added the nations of Egypt and Honduras (with the port of Puerto Castilla), with appropriate shipping routes, stationary ships, defensive ASW patrols, *etc.*
- Increased air patrols in the Bay of Biscay starting in 1943
- Reinstated the ports of Helsinki, Calais, and Cherbourg with docked ships and random patrols
- Added the port of Holtenau, Germany and adjusted Kiel Canal waypoints accordingly; the existing ports of Rendsburg, Gotenhafen, and the second dock area of Kiel will now appear in the game.

Single Missions

- Modified some starting depths
- Added Convoy SC 94 single player and multi-player missions

Individual Ships and Aircraft

- Resolved problems with weapons “floating in air” on some merchant ships
- Corrected the starting dates on the *King George V*-class battleships

- The German Type 36A destroyer is now available starting January 11, 1940
- The Flower-class corvette is now available starting April 5, 1940
- The Hunt I-class destroyer is now available starting March 13, 1940
- The Q-class destroyer is now available starting October 6, 1941
- The S-class destroyer is now available starting August 26, 1942
- The armament of the Elco and *Schnellboot* will increase as the war goes on
- Reduced likelihood of “one-hit” bow and stern sinkings
- The [Shift]-R key now raises and lowers the radar antennas using “Anvart’s” method
- Radio Direction Finding (RDF) antennas are now raised and rotate while the U-boat is surfaced
- Corrected the position of the *balkongerät* (hydrophones) on the Type IX U-boat
- Corrected position of the NE watchman on the Type IX/3 tower (was hovering 30 cm over the deck)
- Corrected the position of the U-boat’s emblem on the Type IX/1 tower
- Corrected the “hydrophone destroyed” message on the Type XXI U-boat
- Hurricane fighter-bombers no longer show bombs before 1941 to differentiate between the initial Hurricane Mk I *fighter* and the later Mk II *fighter-bomber*
- Removed homing torpedoes from default torpedo loadout for Type VIIC/42
- Added British small combatant tenders (“depot ships”) at historical locations and dates
- Type XXI U-boat exit date changed to December 31, 1945

Graphics

- Added JCW *Flaggenbuch* modification to menu folder with all new and modified flags
- Added graphics provided by “SSB” to fix aircraft roundel issues
- Updated Recognition Manual
- Corrected Venezuelan, Uruguayan, Finnish, and other flags
- Corrected placement of badge of rank on the sleeves of U-boat crewmembers
- Corrections to optional Integrated Orders optional modification

- Fixed aircraft insignia for P-38, Ar 196, Walrus, Hudson A-28, Hudson Mk III, and Wellington
- Improved aircraft markings for America, Britain, Brazil, Canada, Germany, Ireland, South Africa and Yugoslavia
- Removed fin flash from generic Hurricane fighter-bomber
- Corrected funnels-smoke alignment for several small ships
- Corrected spelling of sign on the harbor master's office

Order of Battle

- Australia: Replaced Hudson Mk II with Hudson Mk III patrol bomber; added Mosquito fighter-bomber, ore carrier, and medium tanker
- Brazil: Added Hudson Mk III patrol bomber
- Bulgaria: added Ar 196 observation/scout plane
- Finland: Added DB-3 medium bomber and Arado observation/scout plane
- Hungary: deleted Fw 200 patrol bomber, armed trawler, and *vorpostenboot* (Hungary had no navy)
- Ireland: Added Walrus observation/scout plane
- Italy: Added ore carrier and medium tanker
- Japan: Added trawler
- Netherlands: Added Hudson Mk III patrol bomber
- Portugal: Added Hudson Mk III patrol bomber and P-38 Lightning fighter-bomber
- Soviet Union: Added *Chatham*-class passenger liner, ore carrier, armed tugboat, and medium tanker
- United States: Added ore carrier

Miscellaneous

- Corrected and updated French and German-language translations
- Replaced duplicate "*Westerwaldlied*" with "Lili Marlen"

GWX Hot Fix Release (V1.01) - December 23, 2006

Campaign

- Deleted three playable Type VIIC U-boats in the Mediterranean as they were causing problems.
- Operation Cerberus:
 - Adjusted the distances between ships on the German main group
 - Reduced minefield densities in some areas
 - Replaced Bf 109 fighter-bombers with Stuka dive bombers in the fictional single mission
- Removed barricade ship blocking player egress at Penang and a burning hospital ship in Alexandria
- Adjusted a convoy that was showing as a naval task force
- LCMAL.cfg for the US and Britain now appears after 1943 so it doesn't appear as a patrol boat
- Adjusted light harbor traffic optional mod

Terrain

- Changed spelling of "Longyearbyen" to "Longyearby" as recommended by "Safe-Keeper"
- Moved Lerwick (Shetland Islands) so town no longer sits in the water

Simulation

- Guns.dat correction by Ref to correct a CTD issue
- "Silent Running" speed of player U-boats reduced to 2 knots to improve "silence" characteristics
- Texture fix by Ref for AI-controlled U-boats causing missing textures on player U-boats.
- Corrected.CAM files for AI-controlled U-boats that were causing problems with player U-boats.
- Fix for German keyboard configuration (did not affect other keyboard configurations)
- Added correct textures for some ships

Initial GWX Release (V1.00) 16 December 2006