Misc Tactical Notes and Related Info: SH2 release version

Compressed Air and Related Info:

Facts (in SIM- not sure of all historic info for all material) :

- Each crash dive order will use 10-15% of compressed air for the first order- diving from the surface. The subsequent dives, order given from depth of 70 or deeper, seem to use anywhere from 20-30% of compressed air on average.

- Each Blow Main Ballast order will use 50% of the compressed air.

- For each deeper depth setting (anything below the current depth) will use 1.0% of compressed air. **

- For each TWO higher depth settings (anything above the current depth) 0.5% (or 1/2 of 1%) will be used. **

** This only seems to occur at depths of 80+ meters- and seems to not consistently occur at higher time compression settings.

- When at depths of 140+ meters, running at Full or Flank, and the Blow Ballast order is given, an apparent increase of speed is attained- for example, as a Type IX boat nears the surface from these depths using this technique, it has reached speeds of 12 to 13 knots (or more). Whether all of this speed is only vertical speed (upward climbing speed only) I am not certain, but it does seem to give at least a limited increase to horizontal speed as you near the surface. I have had Type VIIC boats reach speeds of 16 to 17 knots nearing the surface using this technique. Sometimes it does not work at all in the Type IX boats. It is possible to issue 2 Blow Ballast orders in a row by ordering 'Surface' and then ordering 'Blow Ballast' again - this gives the biggest speed increase, but uses all air.

- Slight speed increase when crash dive order is given while submerged (1 to 2 knots). Seems to work mainly with the type VII boats - and not as well with the IX boats.

- The crash dive order is a great last resort evasive D-Charge manuever (when used at depths of 50 or more meters)- it should not be abused for the obvious loss of precious compressed air, but is the only drastic depth change other than blowing ballast available to the U-Boat while submerged. Even when speed is set to Full or Flank, depth changes are slow and gradual in evasive maneuvers without it. For evasive maneuvers against several escorts at one time, I recommend maintaining depths around 100 meters or so, leaving some room to turn hard and crash dive when you hear that the charges are in the water.

- Porpoising (submerged): It is possible to maintain a speed between one or two knots without any engine power by issuing depth variations (up then down then up then down, etc) preferably of twenty or more meters at a time. This can be used against Escorts using only passive sonar- as you will be making no engine noise whatsoever. Speeds increases according to the amount of depth change selected- for example, a 10 meter depth change may give you 0.8 knots, while a depth change of 20 meters may give you a speed of 1.2 knots, etc. Be warned - you will slowly be using compressed air using this technique.

Recharging notes: Running at Full with both diesels engaged,

Fuel Conservation and the Trans-Atlantic Voyage:

Run one diesel engine only (by clicking on one of the green diesel indicators at the Helm) when surfaced, and try to maintain a speed setting of 1/3 or less. By idling along using only one diesel, you should be using much less fuel than in any other configuration- I have not researched all the numbers, but in my experience crossing from the Eastern Seaboard back to Brest I have conserved fuel in this manner in a Type IX boat- and it seemed to work well.

Pulling a Tighter Turn - (Types VII & II are best for this - type IX the worst):

(Practice this in a non-combat situation first of course) Whether running surfaced or submerged (better utilized submerged), at Full or Flank speed, set rudder to Full left or right. Right in the middle of this hard turn, set speed to Back Emergency for several seconds- until your forward speed decreases to 3 or 4 knots- then set speed to ahead Full or Flank again. You may have to zoom fairly close in

to see any change - but you should see a tighter turn as you slow the boat down- and then speed up again. Seemingly comparable to real ocean dynamics.

Decks Awash/Partially Submerged:

It is possible to click on the depth gauge in the Helm screen at depths of 6 or 7 meters and have the boat running with the decks awash and only the conning tower above the water (default surfaced depth is 4 meters depth to keel). There seems to be two of these selectable depths that are not fully submerged or surfaced- one at 5 or 6m and one at 6 or 7m- the deeper of the two seems to work the best.

Whether or not this gives you a detection reduction due to the low profile is not currently known for certain- but in my experience I have been able to get closer to groups using this technique. The obvious speed increase available from using the diesels over the electrics is the most obvious advantage.

Destroyer Killing Tactical Section

Overview:

Due to the constant threat of the escorts and other ASW vessels in Silent Hunter II, and after analyzing the escorts AI behavior in the game, logic dictates the following;

A) U-Boats seem to have a better chance of killing escorts than avoiding them.

B) The torpedo loadout of the common type boats (VII & IX series) is large enough that five or more escorts can be killed with a large amount of torpedoes left in reserve for sinking the merchants they had been escorting.

C) Once the escorts are gone, the attacks against the merchants can be done in a much more thorough and concise, relaxed manner, primarily because you wont have a bunch of escorts trying to kill you as you maneuver into attack positions or shadow the group during the long torpedo reloading periods.

The following basic tactical fundamentals have been based on one of the most common boat types used in the war, the type VIIC- (and also because it was my WPL U-Boat numbers historic boat type - U-420!) up against a large, heavily escorted convoy during the late period of the war, in the Atlantic. This should be one of the most common boats and in one of the most common locations for many of the Campaign and historic missions in Silent Hunter. The difference is the five escorts going against your lone boat- this situation may not be as common. If you can master these escort killing tactics with this boat type in these conditions, exploiting the AI deficiencies, you will be (historically speaking) as successful if not better than the U-Boat Commanders of the real war, and (with one or two more tips/tactics or adaptations to these regarding human opponents) a force to be reckoned with in multiplay games.

Section I. - The Approach

Stay surfaced or partially submerged for as long as possible in your approach - this should be done to give your radar (which is mounted inside the top of the conning tower) and your spotters, the chance to visually acquire the target vessels, along with more accurate speed and bearing readings before submerging to Periscope depth. (The radar detector, one of your more important sensors, is mounted to the top of the Periscope)

Your first priority is to get rid of the escorts so that you can follow the convoy at your leisure, allowing you to take your time with each kill, and as a result, increasing the effectiveness of the patrol. We'll assume the worst and figure that you are attacking a heavily escorted convoy, which should include five escorting ASW vessels, normally consisting of 2 to 3 DDs and several frigates or corvettes. This is the escort compliment for a Created Convoy Encounter (large enemy forces) with Escorts. The common tactic of the AI seems to be to send three ships, usually the larger Destroyers - straight after your boat as soon as you come in contact, -or- to send one lone vessel to harass you- and this will sometimes not be the closest Escort. If it is the latter situation, your task will be easy, for all you will have to do is dispatch one Escort at a time, but if the tactic used by the AI it is the former, read through these following sections and see if any of this may come in use.

With 'silent running' ineffective, and detection unavoidable, setting your speed to Full will allow quicker maneuvers during upcoming combat- it takes a long time to turn the boat and dive times are pitiful at Ahead Slow - while running at one or two knots. By heading straight at them-or the sooner you pick a heading and stick to it, the Destroyer will try to intercept and as a result, stays on a constant heading- for example, if you fire a torpedo at a Destroyer and turn away immediately after, they will likely change course to follow you, and your torpedo misses as a result. You can also use this method to make a destroyer turn into torpedoes paths that would have otherwise missed- you turn and lead the detroyer in the direction that you want it to go.

You will want to wait until the Destroyers/Escort Vessel(s) are within 800 meters or less before even considering firing a torpedo, as this will be such a short distance that the torpedo is very unlikely to miss. I recommend waiting until 600 meters- you rarely fail against AI at that range. You wont be able to 'T' off of the Destroyers like you do with unescorted merchant ships, as the escorts are heading straight at you instead of cruising by, so this makes it even more important to wait until VERY short ranges to fire -

Destroyers coming head-on make very small targets. Things will happen quickly during the next few phases of combat following the first kill, so you may want to make certain you are at 1x speed at this time (this is assuming that you aren't going to be pausing the game every few minutes to get your bearing and lock onto enemies.) Note: You may want to actually draw a waypoint line directly down the center of the targeted Escort as you approach- this will give you the straightest possible line heading directly at the DD- so that you can make certain your torpedo will go directly in the center of its bow.

Section III. - The Attack and Evasive Maneuvers

As the lead Destroyer reaches 600meters distance and your solution is as close to 100 as possible, fire your first torpedo. You have to stay on a constant heading while the torpedo is in transit to the target so that the target wont turn- while you wait for the impact, drop your Periscope, order a new depth of 20 meters, and get ready to order hard right or left rudder- Switch to the Plot Screen and turn away from any possible collision with the Destroyer as soon as the Torpedo strikes- You may not need to turn, but be ready just in case. This should be done by selecting hard right or left rudder rather than the navigation wheel during combat situations- you just have to remember to set it back manually or you'll end up running in circles. You should be moving at six or seven knots when you pull the hard rudder and if you choose the correct direction to turn, you should avoid collision- switch to external and see how close you are- brace for impact! This is the most dangerous part of Destroyer hunting - colliding with the dead boat as you pass under it after an attack.

You will want to pop up to Periscope depth as soon as you clear the first victim-sometimes the order can be given before you are even under the boat, as it takes several seconds to rise- as soon as you are clear, raise your scope. You are looking for the next closest Destroyer- and he should be closing at around 1000 meters by this point, if not closer. Here you are repeating the same series of actions that killed the first Destroyer- head toward him if possible, (using a manual hard right or left rudder again) and wait until he is around 600 meters away to fire. Again, drop to 20 meters, drop Scope, and wait for impact, - ready to turn and avoid a collision again-

Section IV. - The Last of the First Three Victims

There is most likely a third vessel lurking about up above you, so as soon as you clear the second dead Destroyer, pop back up to Periscope depth and raise the scope - find him quick, get a lock and head towards him if possible- or use you ass-end tube if that one is closer to bearing on the target than the front tubes.

This next part may sound familiar- wait until he is around 600 meters away, fire and drop to 20 meters, dropping Periscope at the same time- wait for impact, turn hard if necessary, clear the wreck, and pop-up to Periscope depth- you just killed three DDs- hopefully with one torpedo each and two tubes still loaded and ready for action. You'll need them cause there should be two more escorts, probably pissed that you killed their compatriots, and are coming after you- you aren't worried though, because no know how to deal with them…

Notes: After killing the first three, if you don't have any info on the other two Escorts, order boat to Partially Submerged depth to give your sensors a chance to pick them up- they will fire at you, but it is unlikely they will hit if you don't stay up there for too long- then just use the same steps as above to take them out. If the other two seem too close to perform this safely, don't partially surface, just use the scope instead.

I noticed a while back that the deepest Periscope depth in type VIIs and IXs is around 16 to 18 meters if set manually instead of the hotkey, and decided that when fighting escorts in Type VII and IX boats, set depth to 16 or more meters with the scope fully extended- so that all you have to do is pull the scope down and drop two or three meters (18-20 meters total seems safe for avoiding all common escort classes) and could easily pop back up to Periscope depth and continue attacking (instead of diving after killing one or trying to evade) . XXI periscope is long enough to view surface while at depths of 18 meters or so- deep enough to avoid most escorts with scope retracted without having to dive deeper.

Right when you are under a Destroyer you have killed, hit the P key and start heading to the surface as soon as possible- you may even be able to issue the order before you are under the destroyer, because it takes a few seconds to reach the new depth.

Section V. - Contingency Plans

Okay, you missed one or two of the escorts with your last torpedoes or had some duds and you have to wait 15 minutes for each tube to reload- thirty minutes before you can even consider firing a second reloaded torpedo tube, and you think, 'what now??'- 'these tactics suck!' It requires concentration and constant maneuvering, but it is possible to outmaneuver two escorts - although one is MUCH easier. I have never been able to avoid three or more escorts in a type VII while waiting for reloads. As a rule of thumb in terms of difficulty and risk trying to avoid depth charges while waiting for reloads, each destroyer or ASW vessel in the fight against you seems to add 100% more chance of gruesome, watery death. Not only do you have to wait 15 minutes for each reload to kill each boat, your batteries will begin to run out from the constant high speed maneuvers necessary to avoid so many escorts - and each additional vessel makes it harder to avoid some kind of contact by collision or depth charge attack.

Your U-Boat can turn in tighter radius than the destroyers can in some limited situations- part of this is because they are traveling too fast and have a wider turn radius as a result, but this is also due to the ability of the human user vs. AI to use hard rudder commands, speed and depth variations to outfox a limited script of AI tactics-

There is no 'step-by-step foolproof way to get out of this situation, - but here the concept- you try to stay as close to Periscope depth as possible, unless trying to avoid a collision. Pop your scope up every few minutes to get a visual, then bring it down quick again- you don't want to damage or lose it, or you are done. Staying near the surface allows accurate data with the scope, and if depth charged, the escorts may damage themselves too in the attempt!

Using the accurate periscope data displayed on the Plot screen every few minutes, issue hard right or left rudder commands while anticipating the movements of the escorts above- usually with speed set to full- (hint: while at Full doing 6 or 7 knots, with rudder hard right or left, issuing 'Back Emergency' for several seconds and then immediately switching back to Ahead Full will allow slightly sharper turns)

Sometimes the escorts will end up doing perfect wide circles just outside of your tight turns almost in a comical fashion as they try to catch you, but often you will have to reverse direction with an opposite hard rudder order to avoid them. Its like a dance of death, anticipating, reacting and popping the scope up for accurate data (it usually only last for a few minutes then becomes slightly inaccurate again) I often find myself doing several circles, a figure eight and several circular loops again in a pattern. Lock onto one of the escorts when you have your scope up, and start checking the time left for your reloads- remember, you're only running temporarily until you get your offensive capabilities back!

IMPORTANT: when ships are within 300 to 400 meters, I have had torpedoes go right under them- because they do not have time to get to the proper depth- and sometimes another fifteen minutes of battery power is not an option while waiting for another reload. Don't fire unless at ranges between 500/600 meters on average- it is possible to hit at shorter ranges, but it is a real heartbreaker to miss after avoiding them for so long and waiting for the precious reloads.

Section VI. - Notes and addendums to kill Human opponents in MP using the above tactics

1) I would recommend diving to depths of 25 to 30 meters and popping back up to p-depth and then down again repeatedly- acquiring visual contact on and off with scope, to avoid torpedoes manually fired by the human user while you lay in wait for them to come into range. (that is what I will do to try to counter these same tactics in MP using DC- I will fire several spreads from the DD toward the U-Boats position as I move in- to either hit it, or force him under so that he cant fire torps at me in my vulnerable approach)

2) When attacking, fire a spread of at least three (four if no other DDs are nearby) torpedoes against any human controlled DD. They wont be moving in a straight line right at you like the AI, and will most likely be swerving wildly as they approach your position and begin their attack run. By firing a 'fan' spread of four torpedoes at ranges of 600 or less meters, there is almost no chance for them to avoid impact in time. Spread angles only need to be slight at these short ranges to achieve the fan spread- I usually set them within the 1.0 mark on either side of the offset dial- and this seems to be plenty. (example, for 4 torpedo spread settings roughly would be 0.8 and 0.2 on either side of the zero on the offset dial, while a 3 torpedo spread would be set to 0.6 or so on either side with one set to 0 or straight-ahead).

You can of course dive and hide- and this area is dedicated to the tactics of running and hiding. Certain situations will dictate that you must run, for example, to wait for reloads, to escape death, or just because you are scared, etc...

<<more to come for this section later>>

SH2 U-Boat Data and Related Information

Table of Contents-

Planned Items:

Torpedo Damage Tables (escorts, merchants, etc)

Section 1- German Radar Detectors and US Radar

German vs. US Technology

German Radar Detectors and US Radar - Compatibility Reference Chart

Blue Text= Compatible Radar Detector Model

n/a = Not Applicable/out of frequency

US Radar Systems:		German Radar Detectors: File Name/Sensor Model		
		Metox	Naxos	Mucke
MinFrequency:		115	2500	9000
MaxFrequency:		250	3750	11000
File Name/Sensor Model				
RadarSC.DDF	Air Search SC			
Range				
SurfaceMaxX = 5 nm				
Frequency				
Frequency NotListed		n/a	n/a	n/a
Frequency Not Listed		n/a	n/a	n/a
RadarSG.DDF	Surface Search SG			
Range				
SurfaceMaxX = 11 nm				
Frequency				
SurfaceFrequency = 3000		n/a	**Naxos**	n/a
AirFrequency = 3000		n/a	**Naxos**	n/a
RadarUS_APS15.DDF	(APS-15)			
Range				
SurfaceMaxX = 35 nm				

Frequency				
	SurfaceFrequency = 10000	n/a	n/a	**Mucke**
	AirFrequency = 10000	n/a	n/a	**Mucke**
RadarUS_APS3.DDF (APS-3)				
Range				
	SurfaceMaxX = 20 nm			
Frequency				
	SurfaceFrequency = 10000	n/a	n/a	**Mucke**
	AirFrequency = 10000	n/a	n/a	**Mucke**
RadarUS_APS20.DDF (APS-20)				
Range				
	SurfaceMaxX = 43.5 nm			
Frequency				
	SurfaceFrequency = 10000	n/a	n/a	**Mucke**
	AirFrequency = 10000	n/a	n/a	**Mucke**
RadarUS_APS3.DDF (APS-3)				
Range				
	SurfaceMaxX = 25 nm			
Frequency				
	SurfaceFrequency = 10000	n/a	n/a	**Mucke**
	AirFrequency = 10000	n/a	n/a	**Mucke**
RadarUS_ASA.DDF (ASA)				
Range				
	SurfaceMaxX = 27.5 nm			
Frequency				
	SurfaceFrequency = 400	n/a	n/a	n/a
	AirFrequency = 400	n/a	n/a	n/a
RadarUS_ASB.DDF (ASB)				
Range				
	SurfaceMaxX = 20 nm			
Frequency				
	SurfaceFrequency = 400	n/a	n/a	n/a
	AirFrequency = 400	n/a	n/a	n/a
RadarUS_ASC.DDF (ASC)				
Range				
	SurfaceMaxX = 35 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_ASD.DDF (ASD)				
Range				
	SurfaceMaxX = 25 nm			
Frequency				
	SurfaceFrequency = 10000	n/a	n/a	**Mucke**
	AirFrequency = 10000	n/a	n/a	**Mucke**

RadarUS_ASE.DDF (ASE)				
Range				
	SurfaceMaxX = 20 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_CXAM.DDF (CXAM)				
Range				
	SurfaceMaxX = 8 nm			
Frequency				
	SurfaceFrequency = 200	**Metox**	n/a	n/a
	AirFrequency = 200	**Metox**	n/a	n/a
RadarUS_CXAM1.DDF (CXAM-1)				
Range				
	SurfaceMaxX = 11 nm			
Frequency				
	SurfaceFrequency = 200	**Metox**	n/a	n/a
	AirFrequency = 200	**Metox**	n/a	n/a
RadarUS_SA.DDF (SA)				
Range				
	SurfaceMaxX = **Air Only**			
Frequency				
	SurfaceFrequency = 200	**Metox**	n/a	n/a
	AirFrequency = 200	**Metox**	n/a	n/a
RadarUS_SA1.DDF (SA-1,SA-2,SA-3)				
Range				
	SurfaceMaxX = **Air Only**			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_SC.DDF (SC)				
Range				
	SurfaceMaxX = 5 nm			
Frequency				
	SurfaceFrequency = 200	**Metox**	n/a	n/a
	AirFrequency = 200	**Metox**	n/a	n/a
RadarUS_SC1.DDF (SC-1)				
Range				
	SurfaceMaxX = 10 nm			
Frequency				
	SurfaceFrequency = 200	**Metox**	n/a	n/a
	AirFrequency = 200	**Metox**	n/a	n/a
RadarUS_SC2.DDF (SC-2,SC-3,SC-4,SC-5)				
Range				
	SurfaceMaxX = 10 nm			

Frequency				
	SurfaceFrequency = 200	**Metox**	n/a	n/a
	AirFrequency = 200	**Metox**	n/a	n/a
RadarUS_SCR517.DDF				
Range				
	SurfaceMaxX = 7.5 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_SD.DDF	(SD,SDa,SD-1,SD-2)			
Range				
	SurfaceMaxX = **Air Only**			
Frequency				
	SurfaceFrequency = 118	**Metox**	n/a	n/a
	AirFrequency = 118	**Metox**	n/a	n/a
RadarUS_SD.DDF	(SD-3,SD-5,SD-5)			
Range				
	SurfaceMaxX = **Air Only**			
Frequency				
	SurfaceFrequency = 118	**Metox**	n/a	n/a
	AirFrequency = 118	**Metox**	n/a	n/a
RadarUS_SF.DDF	(SF, SF-1)			
Range				
	SurfaceMaxX = 6 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_SG.DDF	(SG,SGa,SG-1,SG-2)			
Range				
	SurfaceMaxX = 11 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_SG3.DDF	(SG-3,SG-4,SG-6)			
Range				
	SurfaceMaxX = 15 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a
RadarUS_SJ1.DDF	(original SJ)			
Range				
	SurfaceMaxX = 3.5 nm			
Frequency				
	SurfaceFrequency = 3000	n/a	**Naxos**	n/a
	AirFrequency = 3000	n/a	**Naxos**	n/a

RadarUS_SJ1.DDF (SJa,SJ-1)				
	Range			
		SurfaceMaxX = 6 nm		
	Frequency			
		SurfaceFrequency = 3000	n/a	**Naxos** n/a
		AirFrequency = 3000	n/a	**Naxos** n/a
RadarUS_SK.DDF (SK,SK-2,SK-3)				
	Range			
		SurfaceMaxX = **Air Only**		
	Frequency			
		SurfaceFrequency = 3000	n/a	**Naxos** n/a
		AirFrequency = 3000	n/a	**Naxos** n/a
RadarUS_SL.DDF (SL,SLa,SL-1)				
	Range			
		SurfaceMaxX = 11 nm		
	Frequency			
		SurfaceFrequency = 3000	n/a	**Naxos** n/a
		AirFrequency = 3000	n/a	**Naxos** n/a
RadarUS_SS.DDF (SS)				
	Range			
		SurfaceMaxX = 15 nm		
	Frequency			
		SurfaceFrequency = 10000	n/a n/a	**Mucke**
		AirFrequency = 10000	n/a n/a	**Mucke**
RadarUS_ST.DDF (ST,STa)				
	Range			
		SurfaceMaxX = 4 nm		
	Frequency			
		SurfaceFrequency = 10000	n/a n/a	**Mucke**
		AirFrequency = 10000	n/a n/a	**Mucke**
RadarUS_SC2.DDF (SCV,SVa,SV-1)				
	Range			
		SurfaceMaxX = 8 nm		
	Frequency			
		SurfaceFrequency = 3700	n/a	**Naxos** n/a
		AirFrequency = 3700	n/a	**Naxos** n/a

German Radar Detectors and the Periods of Implemetation in SH2:

Metox	***
1942-09-01 through 1943-08-14	

Naxos	**$**
1943-12-01 through 1946-01-01	

Mucke	$ #
1944-05-01 through 1946-01-01	

*** At one point in 43 Doenitz issued a directive ordering all U-Boats to cease use of the Metox system because the Germans believed that the attacks upon their U-Boats were caused by HF/DF detection of Metox emmissions (which in theory *was* possible) so I believe this abrupt stop to the Metox represented by the date of its discontinuance in the file represents that directive by taking it away in the game. I am fairly certain no U-Boat commander would disobey the directive, even if the system was available.

Although no British radar falls within the Muckes detection frequency, after quick reference I noticed that sevaral US Surface Radars use frequencies in the area of 10000 (Mucke detects 9000-11000).

$ Not certain but I believe the use of both of these detectors together (Naxos and Mucke in order to detect both British and US radar frequencies) in one configuration was termed a different designation or specific name. Note that from May 1944 onward upon the implementation of the Mucke, U-boats are equipped with both.

US Radar Systems Outside of German Detection Frequencies:

RadarUS_ASB.DDF (ASB)	
Range	
	SurfaceMaxX = 20 nm
Frequency	
	SurfaceFrequency = 400
	AirFrequency = 400

RadarUS_ASA.DDF (ASA)	
Range	
	SurfaceMaxX = 27.5 nm
Frequency	
	SurfaceFrequency = 400
	AirFrequency = 400

Not Certain:

RadarSC.DDF Air Search SC	
Range	
	SurfaceMaxX = 5 nm
Frequency	
	Frequency NotListed
	Frequency Not Listed

Section 2- German Radar Detectors and British Radar

German vs. British Technology

German Radar Detectors and British Radar - Compatibility Reference Chart

Blue Text= Compatible Radar Detector Model

n/a = Not Applicable/out of frequency

	German Radar Detectors:		
	File Name/Sensor Model		
	Metox	Naxos	Mucke
MinFrequency:	115	2500	9000
MaxFrequency:	250	3750	11000

British Radar Systems:				
File Name/Sensor Model				
RadarGB_267.DDF (type 267)				
Range				
SurfaceMaxX = 7.5 nm				
Frequency				
SurfaceFrequency = 214	**metox**	n/a	n/a	
AirFrequency = 214	**metox**	n/a	n/a	
RadarGB_268.DDF (type 268)				
Range				
SurfaceMaxX = 4.5 nm				
Frequency				
SurfaceFrequency = 214	**metox**	n/a	n/a	
AirFrequency = 214	**metox**	n/a	n/a	
RadarGB_271.DDF (type 271)				
Range				
SurfaceMaxX = 5.5 nm				
Frequency				
SurfaceFrequency = 3000	n/a	**naxos**	n/a	
AirFrequency = 3000	n/a	**naxos**	n/a	
RadarGB_272.DDF (type 272)				
Range				
SurfaceMaxX = 6.5 nm				
Frequency				
SurfaceFrequency = 3000	n/a	**naxos**	n/a	
AirFrequency = 3000	n/a	**naxos**	n/a	
RadarGB_273.DDF (type 273)				
Range				
SurfaceMaxX = 9 nm				
Frequency				
SurfaceFrequency = 3000	n/a	**naxos**	n/a	
AirFrequency = 3000	n/a	**naxos**	n/a	

RadarGB_273Q.DDF (type 273Q)				
	Range			
		SurfaceMaxX = 11.5 nm		
	Frequency			
		SurfaceFrequency = 3000	n/a	**naxos** n/a
		AirFrequency = 3000	n/a	**naxos** n/a
RadarGB_276.DDF (type 276)				
	Range			
		SurfaceMaxX = 11 nm		
	Frequency			
		SurfaceFrequency = 3000	n/a	**naxos** n/a
		AirFrequency = 3000	n/a	**naxos** n/a
RadarGB_277.DDF (type 277)				
	Range			
		SurfaceMaxX = 17.5 nm		
	Frequency			
		SurfaceFrequency = 3000	n/a	**naxos** n/a
		AirFrequency = 3000	n/a	**naxos** n/a
RadarGB_279.DDF (type 279)				
	Range			
		SurfaceMaxX = **Air Only**		
	Frequency			
		SurfaceFrequency = 40	n/a	n/a n/a
		AirFrequency = 40	n/a	n/a n/a
RadarGB_281.DDF (type 281)				
	Range			
		SurfaceMaxX = 12 nm		
	Frequency			
		SurfaceFrequency = 85.7	n/a	n/a n/a
		AirFrequency = 85.7	n/a	n/a n/a
RadarGB_281BP.DDF (type 281BP,BPQ)				
	Range			
		SurfaceMaxX = **Air Only**		
	Frequency			
		SurfaceFrequency = 85.7	n/a	n/a n/a
		AirFrequency = 85.7	n/a	n/a n/a
RadarGB_285.DDF (type 285)				
	Range			
		SurfaceMaxX = 4.5 nm		
	Frequency			
		SurfaceFrequency = 600	n/a	n/a n/a
		AirFrequency = 600	n/a	n/a n/a
RadarGB_286.DDF (type 286)				
	Range			
		SurfaceMaxX = 4 nm		

		Frequency				
			SurfaceFrequency = 214	metox	n/a	n/a
			AirFrequency = 214	metox	n/a	n/a
	RadarGB_290.DDF	(type 290)				
		Range				
			SurfaceMaxX = 7.5 nm			
		Frequency				
			SurfaceFrequency = 3000	n/a	naxos	n/a
			AirFrequency = 3000	n/a	naxos	n/a
	RadarGB_291.DDF	(type 291)				
		Range				
			SurfaceMaxX = 4.5 nm			
		Frequency				
			SurfaceFrequency = 214	metox	n/a	n/a
			AirFrequency = 214	metox	n/a	n/a
HF	RadarGB_293.DDF	(type 293) HF				
		Range				
			SurfaceMaxX = 17.5 nm			
		Frequency				
			SurfaceFrequency = 3000	n/a	naxos	n/a
			AirFrequency = 3000	n/a	naxos	n/a
	RadarGB_294.DDF	(type 294)				
		Range				
			SurfaceMaxX = 17.5 nm			
		Frequency				
			SurfaceFrequency = 214	metox	n/a	n/a
			AirFrequency = 214	metox	n/a	n/a
	RadarGB_79B.DDF	(type 79B)				
		Range				
			SurfaceMaxX = 8 nm			
		Frequency				
			SurfaceFrequency = 42.85	n/a	n/a	n/a
			AirFrequency = 42.85	n/a	n/a	n/a
	RadarGB_79Y.DDF	(type 79Y,79Z)				
		Range				
			SurfaceMaxX = 10 nm			
		Frequency				
			SurfaceFrequency = 42.85	n/a	n/a	n/a
			AirFrequency = 42.85	n/a	n/a	n/a
**	RadarGB_ASVI.DDF	(ASV Mk I)				
		Range				
			SurfaceMaxX = 5.2 nm			
		Frequency				
			SurfaceFrequency = 214	metox	n/a	n/a
			AirFrequency = 214	metox	n/a	n/a

**	RadarGB_ASVII.DDF (ASV Mk II)				
	Range				
		SurfaceMaxX = 8.7 nm			
	Frequency				
		SurfaceFrequency = 176.47	**metox**	n/a	n/a
		AirFrequency = 176.47	**metox**	n/a	n/a
**	RadarGB_ASVIII.DDF (ASV Mk III)				
	Range				
		SurfaceMaxX = 10 nm			
	Frequency				
		SurfaceFrequency = 3093	n/a	**naxos**	n/a
		AirFrequency = 3093	n/a	**naxos**	n/a
**	RadarGB_ASVIV.DDF (ASV Mk IV)				
	Range				
		SurfaceMaxX = 10 nm			
	Frequency				
		SurfaceFrequency = 3093	n/a	**naxos**	n/a
		AirFrequency = 3093	n/a	**naxos**	n/a

** These systems are the most commonly used British ASW Radars on all Allied Units using British radar systems.

German Radar Detectors and the Periods of Implemetation in SH2:

Metox	***
1942-09-01 through 1943-08-14	
Naxos	**$**
1943-12-01 through 1946-01-01	
Mucke	**$ #**
1944-05-01 through 1946-01-01	

*** At one point in 43 Doenitz issued a directive ordering all U-Boats to cease use of the Metox system because the Germans believed that the attacks upon their U-Boats were caused by HF/DF detection of Metox emmissions (which in theory *was* possible) so I believe this abrupt stop to the Metox represented by the date of its discontinuance in the file represents that directive by taking it away in the game. I am fairly certain no U-Boat commander would disobey the directive, even if the system was available.

Although no British radar falls within the Muckes detection frequency, after quick reference I noticed that sevaral US Surface Radars use frequencies in the area of 10000 (Mucke detects 9000-11000).

$ Not certain but I believe the use of both of these detectors together (Naxos and Mucke in order to detect both British and US radar frequencies) in one configuration was termed a different designation or specific name. Note that from May 1944 onward upon the implementation of the Mucke, U-boats are equipped with both.

British Radar Systems Outside of German Detection Frequencies:

	File Name:	Radar Type:
1	RadarGB_279.DDF	(type 279)
2	RadarGB_281.DDF	(type 281)
3	RadarGB_281BP.DDF	(type 281BP,BPQ)
4	RadarGB_285.DDF	(type 285)
5	RadarGB_79B.DDF	(type 79B)
6	RadarGB_79Y.DDF	(type 79Y,79Z)

Section 3- Allied Air Units Equipped With British Radar

Allied Air Units Equipped With British Radar, along with Radar model and date of Implimentation:

AFFBeaufighter (British)

#if between(19421112,date,19460101)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVIII
#endif

AHBB24 (USA) B-24 Liberator

AND (both share same stats)

AHBB24GB (British variant of B-24)

;; for brit VLR/GRV variant

#if between(19401229,date,19430520)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVII
#endif

#if between(19430520,date,19440519)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVIII
#endif

#if between(19440520,date,19460101)
[SENSOR2]
Type = RADAR
System = RadarGB_ASD
#endif

AHBSunderlandMkIII (British)

#if between(19401229,date,19430520)
[SENSOR1]
Type = RADAR
System = RadarGB_ASVII
#endif

#if between(19440520,date,19460101)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVIII
#endif

ASCCatalina (USA) Bomber

#if between(19401229,date,19430520)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVII
#endif

#if between(19430520,date,19440519)
[SENSOR3]
Type = RADAR
System = RadarGB_ASVIII
#endif

#if between(19440520,date,19460101)
[SENSOR3]
Type = RADAR
System = RadarUS_APS3
#endif

ASCCatalina (British variant of US Catalina)

#if between(19401229,date,19430520)
[SENSOR2]

Type = RADAR
System = RadarGB_ASVII
#endif

#if between(19430520,date,19440519)
[SENSOR3]
Type = RADAR
System = RadarGB_ASVIII
#endif

#if between(19440520,date,19460101)
[SENSOR3]
Type = RADAR
System = RadarUS_APS3
#endif

ASCCatalina (USA) Black painted variant of Catalina

#if between(19401229,date,19430520)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVII
#endif

#if between(19430520,date,19440519)
[SENSOR3]
Type = RADAR
System = RadarGB_ASVIII
#endif

#if between(19440520,date,19460101)
[SENSOR3]
Type = RADAR
System = RadarUS_APS3
#endif

ATBSwordfishMkIII (British)

#if between(19430301,date,19460101)
[SENSOR2]
Type = RADAR
System = RadarGB_ASVIII
#endif

Section 4- Air Units Equipped with US Radar (Data Compilation In Progress)

Section 5- Batteries - Usage and Recharging Times (Data needs to be entered)

Section 6- Periscope Range vs Escorts in Various Weather Conditions

(IN PROGRESS-INCOMPLETE)

Periscope Sighting Ranges (vs Escorts only) in Various Weather Conditions

Test Section A01: Clear Weather - Morning

1

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Morning	Destroyer	6000m	Not Recorded	Scope	
Clear	Morning	Destroyer	6500m	Not Recorded	Scope	
Clear	Morning	Destroyer	5700m	Not Recorded	Scope	
Clear	Morning	Corvette	6800m	Not Recorded	Scope	
Clear	Morning	Destroyer	6200m	Not Recorded	Scope	

The national identity for these units was revealed upon the initial visual contact.

2

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Morning	Destroyer	7200m	Unknown Destroyer	Scope	
Clear	Morning	Corvette	5nm (10,000m)	Unknown Corvette	Scope	
Clear	Morning	Destroyer	8400m	British Destroyer	Scope	*
Clear	Morning	Escort	7400m	British Escort	Scope	*
Clear	Morning	Destroyer	7600m	British Destroyer	Scope	*

* The national identity for these units was revealed upon the initial visual contact.

3

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Morning	Destroyer	5600m	Unknown Destroyer	Scope	
Clear	Morning	Destroyer	6200m	British Destroyer	Scope	*
Clear	Morning	Destroyer	6200m	Unknown Destroyer	Scope	
Clear	Morning	Destroyer	6400m	Unknown Destroyer	Scope	

Clear	Morning	Destroyer	6800m	Unknown Destroyer	Scope	

* The national identity for these units was revealed upon the initial visual contact.

Visual Periscope Range spotting Escorts during Clear Mornings seems to average around 6800-7000m.

Test Section A01: Clear Weather - Noon

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Noon	Destroyer	6nm (11,000m)	Unknown Destroyer	Scope	
Clear	Noon	Destroyer	5.5nm (10,500m)	Unknown Destroyer	Scope	
Clear	Noon	Destroyer	9300m	Unknown Destroyer	Scope	
Clear	Noon	Destroyer	9200m	Unknown Destroyer	Scope	
Clear	Noon	Destroyer	7800m	Unknown Destroyer	Scope	

* The national identity for these units was revealed upon the initial visual contact.

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Noon					
Clear	Noon					
Clear	Noon					
Clear	Noon					
Clear	Noon					

* The national identity for these units was revealed upon the initial visual contact.

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Noon					
Clear	Noon					
Clear	Noon					
Clear	Noon					
Clear	Noon					

* The national identity for these units was revealed upon the initial visual contact.

Test Section A01: Clear Weather - Dusk

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Dusk					
Clear	Dusk					
Clear	Dusk					
Clear	Dusk					
Clear	Dusk					

* The national identity for these units was revealed upon the initial visual contact.

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Dusk					
Clear	Dusk					

Clear	Dusk					
Clear	Dusk					
Clear	Dusk					

* The national identity for these units was revealed upon the initial visual contact.

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	
Clear	Dusk					
Clear	Dusk					
Clear	Dusk					
Clear	Dusk					
Clear	Dusk					

* The national identity for these units was revealed upon the initial visual contact.

Test Section A01: Clear Weather - Night

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	

* The national identity for these units was revealed upon the initial visual contact.

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	

* The national identity for these units was revealed upon the initial visual contact.

Weather	Time of Day	Unit Type	Initial Contact Range	Contact Type	Scope/Surfaced	

* The national identity for these units was revealed upon the initial visual contact.