February 2020 Volume 42 Issue 2

The Binnacle

Victoria Model Boats
Victoria, B.C.

Ken Lockley

On Smit tugs in Prince Rupert

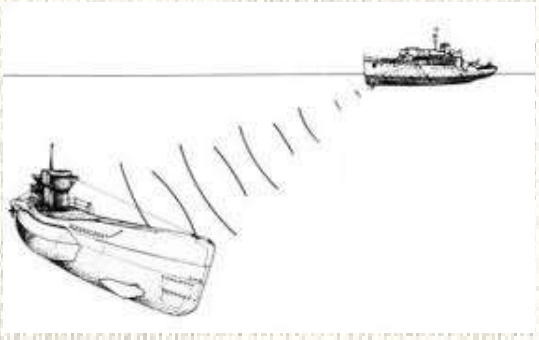
Tips on Detailing.

Mike Creasy

Hard Luck Queen

Edward White

Battle of the Atlantic Part 5



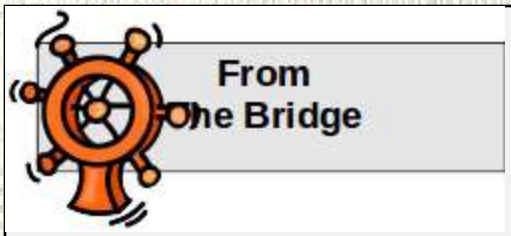
This Thursday is our Swap and Shop

Bring some Stuff and some Money!

Leave with new Stuff!

You'll Love It

http://www.vmss.ca



It is still winter, but the sailors are having a good time at Harrison Pond every Sunday morning, There is the odd power boat out as well. Bring your boat down Sunday mornings and maybe we can throw some buoys in the water and sharpen our steering skills.

Our entertainment this month is a swap and shop. Next month there will be demonstrations of installing motors and shafts in models. If you have questions, this will be the time to ask. If you have done this many times, you may have answers.

A housekeeping reminder is that executive has a fiduciary responsibility to the membership by law. Expenditures must be approved by executive in advance.

Finally, please renew your membership now. See you at the pond.

Ron

2020 Executive Committee

President: Ron Hillsden	*479-5760*
Vice-Pres: Dave Nelson	*812-1942*
Secretary: Elgin Smith	*384-0574*
Treasurer: Mike Creasy	*888-4860*
Director @ Large: Ken Lockley	*477-5830*
Binnacle Editor: Edward White	*385-6068*
Quartermaster: Vacant	
City Liaison: Mike Claxton	*479-6367*
Membership: Bev Andrews	*479-2761*

All above area code (250)

ON THE RADAR

Upcoming Events

Swap and Shop at this Thursday's general meeting. 7:30 at St. Peter's.
Demonstration of motor and shaft installation next month. March 12th,

Meetings: Second Thursday 7:30-9:30
St. Peter's Anglican Church, Lakehill
3939 St. Peter's Road
Upcoming meeting: February 13th.

Sundays 9-11
Harrison Model Yacht Pond (HMYP)
Dallas Road at Government Street

LANGFORD LAKE
Wednesdays 9:30
Langford Lake, Leigh Rd. at Trillium

Club Records

"Hello from Dave North, I am the member who was requested to develop two separate databases. The first one which is well underway includes the club's assets, things like club boats, trophies, equipment (things like PA systems, ponds and liners, pumps) and other assets the club either owns outright or has contributed to.

This first database is a public record available to the club membership and is designed to track the assets the club owns and their locations.

The second database is more private in nature and will include records including pictures and details of club member's collections.

Listing in this database will be at the member's discretion and choice. I have received some pictures from several members of their boats and will be placing these in this second database which will not be public. I encourage members to send me pictures and details and pictures for this database if you want to be included in this database. I also offer to take pictures for you if you need this.

I can be reached by phone at (250) 595-5772 or by email at northd@telus.net."

January Show and Tell

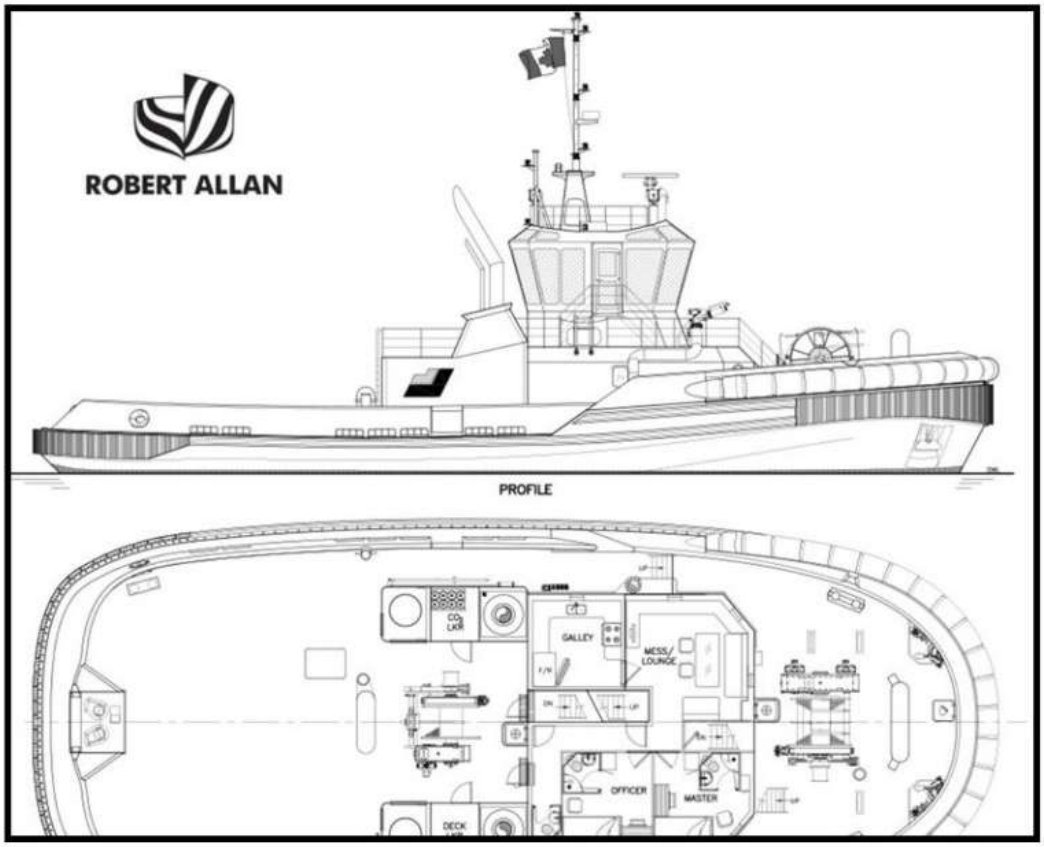
Terry Girard showing a model Seadoo with all parts 3D printed.

Arnold with a very beautiful old Billings "Polar" he is putting up for silent auction.

NEXT BUILD: ISSUE #29 FEBUARY 2020 KEN LOCKLEY

The Port of Prince Rupert has become home to this new Smit Tug, Tsimshian Warrior. It's become very evident in the last few years, that Prince Rupert has become a gateway port for the Pacific Northwest. The new "Silk Road" or the fastest way to get from Shanghai to Chicago. Transit across the Pacific Ocean requires 232 hours to Prince Rupert and 291 hours to Los Angelis. That's about 25 % savings for sea time. CNR is striving to get the travel time to Chicago reduced. The Railroad is building long sidings in many strategic spots on the line from Prince Rupert to Prince George. The average length of a container train today is close to two miles, and from what I can read, container trains have the priory over all other types of rail freight.

This picture to the right is the new Fairburne Container terminal at Prince Rupert. The Port city has six other marine terminals serving, coal , propane, coastal shipping etc.
There are plans to expand the Fairburn terminal after having a 28% increase in traffic in 2018.



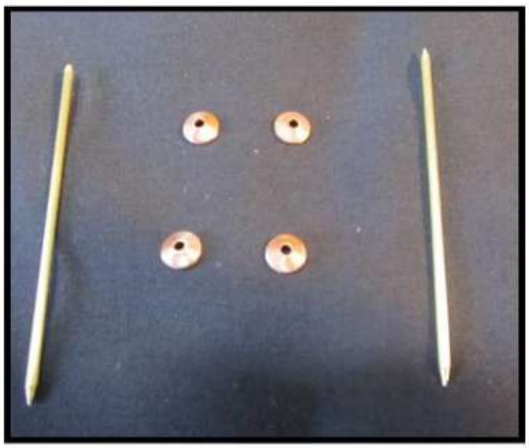
The picture above is a basic drawing of one of the new Robert Allen designs and I feel it's the base for the tug on the first page. The picture below shows the three "Smit" tugs pushing in a LNG tanker to the new Altagas LNG terminal in Prince Rupert. This facility is the first of the LNG projects to actually be operational . Altagas uses a 40 year old pipeline that provides domestic customers with natural gas heating, and the surplus natural gas is storage at Prince Rupert for export . The export side is augmented with LNG (natural gas) being brought into Prince Rupert by CNR railroad. This Natural Gas comes from the abundant supply in the Fort St John region of the Peace River district. I suspect the next LNG port will be in the Kitamat region to the South of Prince Rupert. Once again a short hop across the Pacific ocean to the Oriental Coastal Ports.

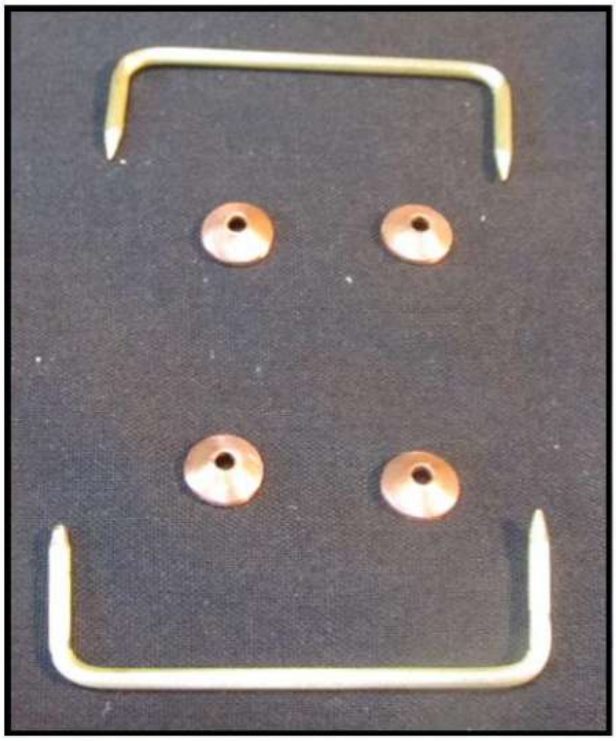
My neighbor "Dan" is building a static model of a Scallop boat. As a young man he worked on the original boat during the construction, at his Grandfathers Shipyard in Nova Scotia. No plans available but with pictures as the only source of information he started the project by building a half-hull. From the half-hull he was able to come up with what looks like a great hull shape. The keel you see is basswood with red cedar planking and maple cap rails. This is Dan's first hull and what a great job he is doing…….

The picture on the left is the stern of the CNAV Clifton with it's rubber bumper protecting the hull. This was created using 1/2" wide strips of neopream scraps from a pond liner.

Punching a hole at 1 inch intervals and then threading wire through the holes, you end with what you see here. In reality I think it looks better than what the picture shows.

Making small hand holds for cabin sides.





The five pictures above show the steps to make my handrails on the Clifton using 1/16" brass rod bent to the shape shown. The copper doomed washers are used as the rivet backing in clinker hull construction. I happen to have these from my large boat building days.
Another tip I have found is using Humel enamel paint, as it sticks to metal very well. Another advantage is the huge assortment of colours available with that product. Humel Paints are available at BC Shaver Shop.

The Hard Luck Queen

- by Mike Creasy
d_creasy@shaw.ca

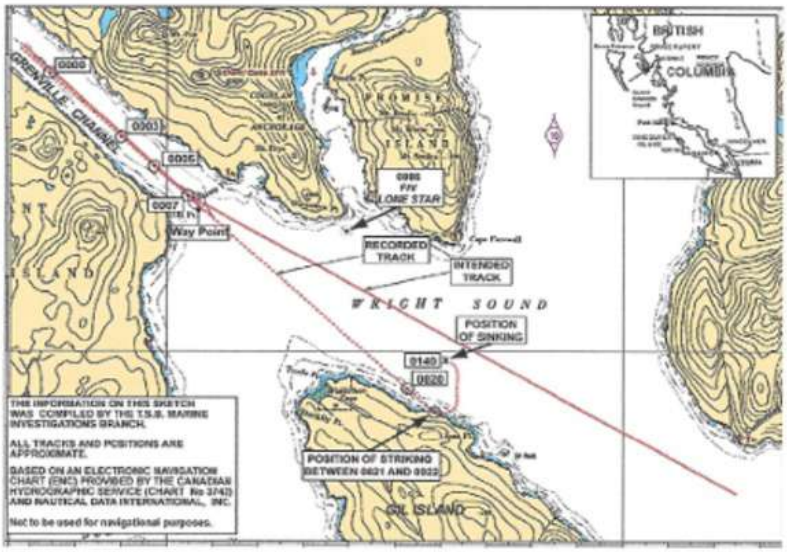
On March 22, 2006 the pride of the BC Ferries fleet, the **QUEEN OF THE NORTH**, failed to make a scheduled turn and collided with Gil Island on BC's north coast. The ship suffered massive underwater damage, including loss of both propellers, and sank in just over one hour. 2 of the 101 people on board were never found.

Both BC Ferries and the Transportation Safety Board conducted lengthy investigations into the cause, accompanied by salacious rumors of how the two crew members in control of the ship at the time were "engaged in personal business".

The TSB Report identifies several factors, beginning with a missed course change at Sainty Point, not confirming the vessel's actual course, not checking the Electronic Charting System and not using the ship's radars properly. There is no doubt the crew was distracted. Equally, there is no doubt that many opportunities existed to correct the error. So what happened?

Navigation errors, or deviations from plan, occur fairly regularly. Most of the time, these are discovered and corrected before there is serious risk of collision or grounding. This particular error went unnoticed far longer than it should, and we are ourselves distracted by speculation about why the crew was "otherwise engaged". It was simply too late - or was it?

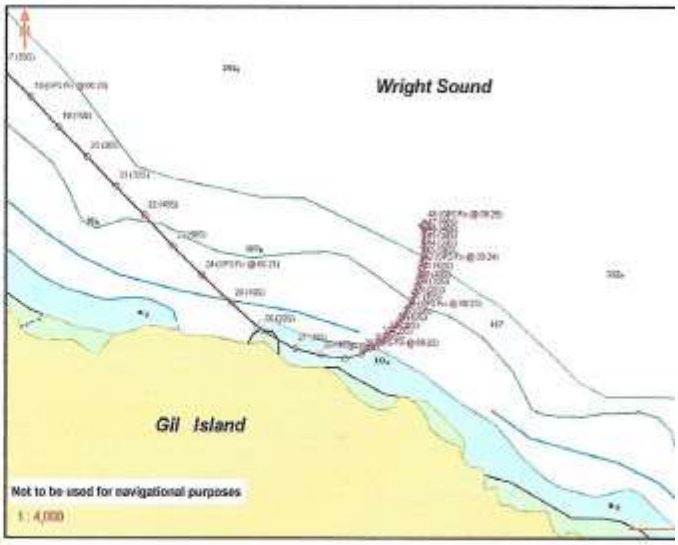
The sequence of events is this: at 11:59pm as the ship approached the southeast end of Grenville Channel, the 4th Officer made a small course correction to account for strong winds in Wright Sound. It was dark, with rain squalls and the only lights were from three navigation markers in the area. No city lights or houses along this remote stretch of coastline.



At 12:02am as the ship neared it's planned turn at Sainty Point, the 4th Officer called Vessel Traffic to advise of their position. The ship passed Sainty Point at 12:07am but the planned turn was not made and the ship continued - on autopilot - in a

straight line. According to the TSB Report, the 4th Officer believed the course change had been made.

Again, it was dark, there were rain showers in the area and few visual cues available. Many things could/should have been done to make better use of the ship's electronic charting and radars - some were dimmed, some were turned to minimal range, the electronic charting system's warnings weren't used, etc. Serious errors all.

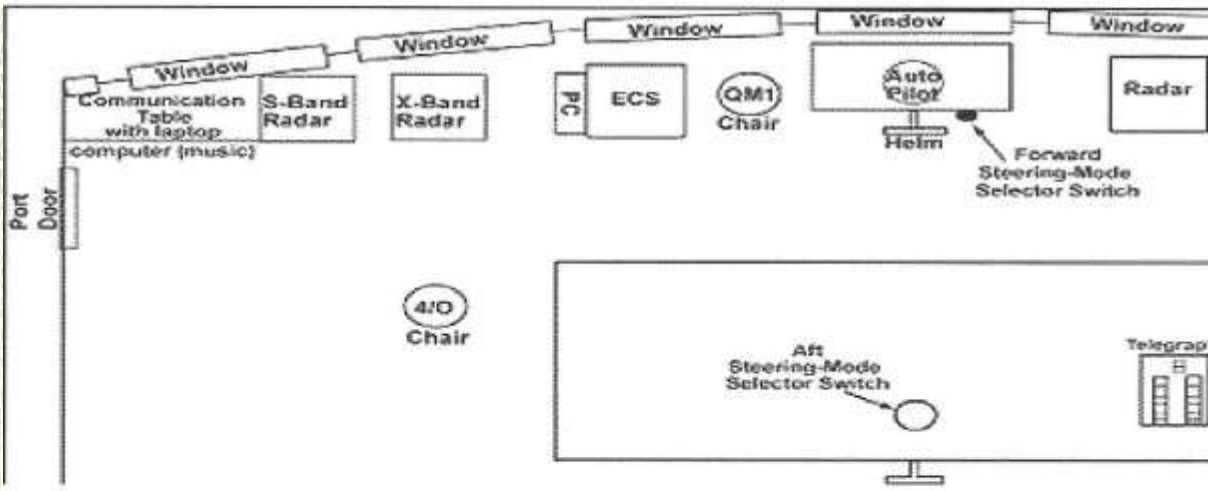


At least one minute before grounding the bridge crew spotted trees close at hand, fine on the starboard bow. The ship was now approaching Gil Island at an angle of about 30 degrees. An illustration from the TSB report shows her position at one-minute intervals.

A turn to port was ordered, but the quartermaster said she could not disengage the autopilot.

30 seconds before grounding, the TSB Report says the ship began a turn to por **QUEEN OF THE NORTH** struck at 12:21pm.

If the turn been started 10 minutes before striking, no doubt grounding would have been avoided. What about 5 minutes before? or two? How long did it take to turn off the autopilot? Was it ever disengaged? or was the turn made by inputting a course change? What was the latest point at which grounding was no longer avoidable?



QUEEN OF THE NORTH was in refit from November 2005 to March 2, 2006, during which significant changes were made to the ship's steering system and autopilot. For two weeks after refit the ship was operated by A watch, one of two complete crews who lived and worked aboard on a two week rotation. On March 21, B watch replaced B watch, and the two captains discussed the modified autopilot function, referring to a laminated sheet of instructions posted on the bulkhead behind the rear steering station.

There was no formal training for the changes to this vital system. Procedures fc operating the modified system do not seem difficult under optimal conditions, but coul certainly be confusing in a stressful situation.

The TSB report concludes that the autopilot was a training problem only , and makes no suggestion that the delay was a contributing factor.

Further, the TSB report contains no analysis of, or commentary about, the ship's rate of response to rudder commands, turn radius at speed, actual rudder deflection inputs or anything else that would shed light on the role played by the autopilot. Nor was there any attempt to quantify the actual length of delay.

Many mistakes were made that night, two lives lost and a fine ship sunk. The ship should not have been where she was. The crew made many mistakes.

It could be that the autopilot played no role, that it was simply too late, but it seems possible that it did. In any event, that vital question remains unanswered.

Accidents will always happen, human error will always occur, but this seems to have been one that was "waiting to happen".

- 30 -

Bibliography
Transportation Safety Board Marine investigation Report M06W0052
Queen of the North Disaster The Captain's Story, Colin Henthorne, Harbour Publishing, 2016
BC Supreme Court, R. v. Lilgert, Docket 25634. June 24,2016
Note: All BC Ferries Divisional Inquiries have been removed from their website

Battle of the Atlantic Part 5

Edward White

In this part of the series, I want to explore the way the battle was influenced by the changing tactics and technology that both sides deployed.

Location, Location, Location.

The most fundamental problem that both sides faced was how to find each other.

Let's start with the U-boat. In a type 7 U-boat on the surface the top of the conning tower is about 4.9 metres above the water surface. A lookout sees the horizon at about 4.3 nautical miles. On a loaded Canadian Fort class merchantman, a lookout on top of the bridge has his eyes about 11 metres above the water, giving a horizon of 6.4 nautical miles.

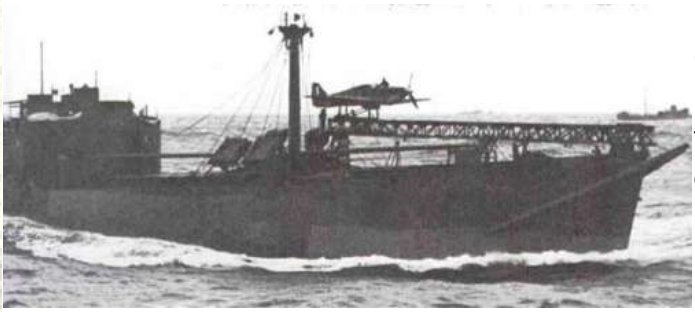
So in perfect conditions the two lookouts first see each other at 10.7 nautical miles.

A typical WW2 convoy would be 5.5 nautical miles wide. So for a screen of U-boats to have a decent chance of locating a convoy, they should be no more than 27 nautical miles apart. But in the North Atlantic, conditions are rarely perfect!

From the Southern tip of Greenland to the equator is 3600 nautical miles. To cover that, you would need a screen of 133 U-boats. Which makes it clear why Doenitz said he needed a total of 300 U-boats to keep 100 on station in mid-Atlantic and thus win the war. But he didn't get those till August 1942. And by then, life for the U-boats was far more difficult.

In 1938, Germany had a unique aircraft, the Focke-Wulf 200 Condor. It was unique in that it was the first land-based airliner to be capable of flying across the Atlantic. Long distance flights at that time were almost all by seaplane. The Japanese Navy requested a military version for ocean search and patrol so a military version was put into production, and these aircraft were taken over by the Luftwaffe as the war began. Fitted with a ventral bomb bay, and operating from bases in Western France after the fall of France, these aircraft could patrol the mid-Atlantic as reconnaisance bombers, and were central to Doenitz's Wolf pack strategy. With the Condor to locate convoys and track their routes, the Wolf Packs could assemble and intercept them. So valuable were they in this role that they were ordered to suspend their own successful attacks on shipping to reduce the risk of Condors being lost and, presumably, to replace bombs with fuel for longer patrols.

Churchill called the Condor "the scourge of the Atlantic", and bombing attacks by the RAF on the Condor airbases in France had as great a priority as those on the U-boat pens.



The earliest, rather desperate, counter to the Condors was the CAM ship. A total of 35 merchantmen were fitted with an aircraft catapult on the bow, and modified Hawker Hurricane aircraft could be launched to go after the Condors. The Hurricane was essentially expendable, the pilot having to ditch in the sea close to an Allied ship for pickup unless he could reach land. These operated from August 1941 till July 1943, when more escort carriers became available. There were nine actual combat launches, in which four Condors were shot down, and two chased off. Four Heinkel He 111s and a Junkers Ju 88 were also destroyed. Without doubt they were an effective deterrent to the Condors' activities, and an amazing success in the circumstances. The last combat launches were on 28th July 1943 from convoy SL 133. The Empire Darwin launched FO J A Stewart and the Empire Tide launched FO P J R Flynn. Two Condors were shot down and both pilots recovered by escorts.

Specially worth mentioning is SS Empire Morn, who launched FO JB Kendal on the 26th April 1942. Kendal shot down the Junkers Ju 88 and also chased off a Blohm & Voss BV 138, but died from injuries received while bailing out. Empire Morn also launched FO A H Burr on the 18th. September 1942, and he took out two Heinkels before he flew to land at the Russian aerodrome Keg Ostrov. This convoy was PQ 18, and its story on Wikipedia is epic. Both sides had information from the other through code-breaking and prepared for battle accordingly. And battle it was!

Which takes me to the next part of the location story I want to tell about.

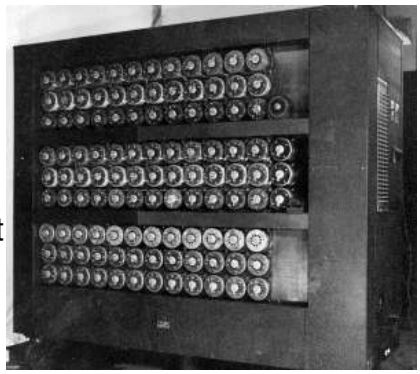
When Churchill made his famous speech "We shall fight them on the beaches....in the fields.....etc." He missed out ... on the blackboards... in notebooks... with pencils... and soldering irons... .

The organization of the convoys and their escorts, and that of the U-boats and reconnaisance aircraft, necessitated a huge volume of radio traffic on both sides.

In Britain, codebreaking was centred on Bletchley Park, and the stories are very well known. In Germany, each branch of the armed services had its own codebreaking service, and information was not necessarily well shared. The most famous of the German services was B Dienst, a branch of German Naval Intelligence devoted to both encoding German naval messages and deciphering Allied codes.

While I have been reading up on the story I have realized that there are two factors at work in codebreaking. Firstly can you break the code at all? Secondly, and equally important, can you read the code fast enough for the information to be still useful? And the second part is hugely affected by volume. With a limited number of people capable of deciphering code, can you keep up?

So B Dienst, by February 1942, could break British Naval Cypher No. 3, which was used for all naval traffic between Britain and North America, including the Atlantic convoy organization. But while the Germans could read 80 % of the total traffic between then and July 1943, only about 10 % was read soon enough to be acted on. Hence, although the British Admiraly knew that no 3 was compromised by August 1942, it wasn't till June 1943 that No. 3 was withdrawn. The scale of the problem was huge, by the end of 1943 B Dienst was intercepting around 8500 messages every day. With only around 200 people available to do the work of extracting meaning from that huge jumble, 6 minutes for each message isn't going to be enough.



On the British side, that's why Alan Turing was designing and building a computer to speed up the work.

Bletchley Park was a much bigger operation than B Dienst. In fact more than 10,000 people spent some time working for the Bletchley Park operation during the war. In 1945 75% of those staff were women.

Bletchley Park's success in their struggle to keep up with the German Enigma machines is so well known than I don't propose to repeat it here.

But here's an irony that I came across. That very success was used for the Admiralty to send out, encoded in Naval Cypher 3, a daily U-boat disposition report so convoys and escorts could plan or change their routes. But the fact that it was a routine message with information largely already known to B Dienst in a standard format, enabled B Dienst to decode it quickly and make much more informed guesses as to where and when the next convoy would go. Then a screen of 20 U-boats could be set up with a very good chance of intercepting. This was the basis of some very destructive convoy battles at the end of 1942 and the beginning of 1943.

The British and Allied location problem was very different. They knew that the U-boats were trying hard to come to them. So they needed to locate a concentration of U-boats in order to avoid it, or, if that failed, to locate U-boats accurately at close quarters in order for the escorts to attack them.

Three developing technologies were crucial, Huff-Duff, ASDIC, and Radar.

Huff-Duff was high frequency direction finding, and relied on detecting the enemy's own radio transmissions. Both sides knew about it and had directional receiving aerials that could give them a bearing on a radio transmission. But initially they needed a signal to last long enough for a radio operator to turn his aerial to the position of maximum signal strength. Two ships a few miles apart could then triangulate the position exactly. But if the U-boat kept any transmission down to a couple of seconds, they were reasonably safe.

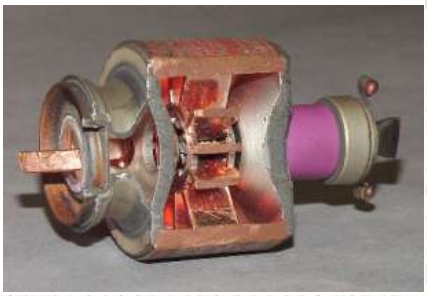
The British, however, developed an aerial array and an oscilloscope display with a crossed pair of conventional and fixed directional aerials that

instantly produced an accurate bearing on the signal. This was relatively cheap and simple to deploy and operate and a destroyer could just run down the bearing to force the submarine to dive or locate it with radar and attack. With two escorts equipped the convoy commander got an accurate position and had all kinds of options. A submarine on the surface that had spotted a convoy, (less than 11 nautical miles away), waited long enough to establish the convoy's course, and transmitted a wireless message had only minutes to dive and evade before the 35 knot River class destroyer was in range. It is believed that huff-duff played a part in a quarter of all U-boat sinkings.

ASDIC is a Canadian story. (Well, a little bit.) Canadian physicist Robert William Boyle worked with British physicist A B Wood from 1916 on active sound detection systems, producing a prototype in mid 1917. But it was first tested around 1920 under almost ideal sea and weather conditions and little was done between the wars to address its limitations. It is ineffective at high speed, the escorts own wake and noise drowning the signal. It is easily fooled by underwater disturbances, schools of fish, sharp temperature gradients, surface conditions in high waves, etc. At the beginning of WW2 it was believed to be an answer to the submarine threat. But set up in ships so that it had a narrow beam that had to be turned by the operator, had no ability to look down or establish the depth of a target, and depended, as a weapons system, on depth charges rolled off the vessel stern while the ship was blind as to the sub's movements. British depth charges had a maximum depth setting of 350 feet while the U-boat could dive to more than 600 feet, and they would have to be within 20 feet of the submarine when they exploded to be sure of disabling or destroying it. After a depth charge explosion the water would be so disturbed for several minutes that ASDIC could not regain contact.

By the end of 1942, escorts were being fitted with the "Hedgehog" anti-submarine mortar system, which threw contact-fused bombs ahead of the escort while the sub was still in the ASDIC beam, newer ASDIC sets included the ability to get a vertical bearing, thus a depth. This raised the success rate of attacks on submerged U-boats from less than 2 in 100 to 17.5 in 100.

Radar was in its infancy when WW2 started, and especially the sets supplied to Canadian escort vessels were primitive and obsolete. Radar's ability to detect objects depends both on its power and the frequency of the transmission (a radar signal with a two metre wavelength cannot detect anything significantly smaller than two metres,) and at the beginning of the war there was no ability to produce high power at microwave frequencies. The crucial development came from the University of Birmingham, UK early in 1940. There John Randall and Harry Boot improved the existing technology of the magnetron, to produce a valve that could produce pulses of 10 kilowatt power at a wavelength of 10 centimetres. Immediately it was realized that this valve would be small enough to put radar into aircraft, with the huge distances to the horizon that a plane's



height gives, as well as to make radar into a portable technology in surface vehicles of all kinds. At 10 cm wavelength, a submarine periscope can be detected. Churchill directed that the development be shared with the United States in return for access to American industry to make it. This was done as the most important part of the Tizard Mission in June 1940. Bell Telephone labs took on the production of cavity magnetrons and produced the first 30 in October 1940, and over a million by the end of the war. That one original magnetron has been described in the US as "the most valuable cargo ever brought to our shores".

When these new radar sets reached the escort fleets, U-boats could be detected at night and in fog or poor visibility of any kind, even from just their periscopes, within the limit of the horizon that the height of the radar dictated. For a slow, 7 knot, convoy running directly at a surfaced submarine, detection would be at a range of 11 nautical miles, and if the submarine dived to attack with torpedoes, the escorts would have some 40 minutes to get to the submarine before it could be in range to launch one.

Even more significantly, an aircraft so equipped could detect a surfaced submarine up to 100 miles away.

Along with the improved radar, aircraft could be equipped with another simple but amazingly effective development. This was the Leigh light, a poweful searchlight mounted underwing. At night, a submarine running on the surface to recharge batteries would not hear an aircraft over the diesel engines. The aircraft, detecting the sub on radar, would run in and switch on the Leigh light less than a mile from the sub. 25 seconds later they would be over the sub and bombs or depth charges would be dropping. In the Bay of Biscay, Wellington and Liberator bombers could now make run into and out of their pens really dangerous for the U-boats. The first kill with the Leigh light was U-502 on July 5th. 1942.

The other factor on the allied side was the increasing efficiency of the escorts as the crews learned under fire, especially in the case of the Canadian "Prairie boys".

Next time I'll be looking at the climax of the battle, late 1942 and early 1943.

Suppliers and Contacts Page.

I intend to use this page as a list of suppliers and other useful contacts that I or anyone else in the club finds and lets me know. All contributions will be gratefully received. Just a means of contact and a very brief description of why they are useful.

Suppliers.

* Hobbyking. hobbyking.com Big web-based hobby supplier, low prices
*Cornwall Model Boats. cornwallmodelboats.com. Not cheap, but brilliant for specialty parts.
* MicroMark . micromark.com. Good for modelling tools .
*Modelers Central. modelerscentral.com. US supplier and great web site with all kinds of resources. See their blog for lots of useful information.

Clubs

* Burnaby Association of Marine Modellers, BAMM. bammrc.com. Neighbouring club in Vancouver Burnaby Central Park.
*

Help me fill this out by sending me your favourites. Edward - edwud72@gmail.com.