



The Binnacle

April 2023

Volume 45 Issue 4

This month's meeting will be on Zoom again, not in person. Look for Calvin's invitation in your e-mail, and click on the link to join in.

Ken Lockley makes progress on his latest Tug. And tells you how he does it!



Edward White takes a first look at the Royal Canadian Navy





From
The Bridge

Our President Dave is currently in Ontario and will return near the end of the month. I hope everyone enjoyed the Easter weekend even though the weather hasn't been very cooperative. We saw a few more boats at the pond on Sunday and the sailboats had a good breeze for some decent sailing.

Meeting Change - Please look for the Zoom link for the meeting on the 13th. It was decided to not have a meeting at the hall yet – a few members still feel it is too soon and we have heard of a number of cases of Covid still out there.

For those who haven't joined one of the Zoom meetings – please try to attend the Thursday meeting.

Calvin will send out the link – click on it – join meeting and we should see you!

Tidy up your boats, charge the batteries, pull the old leaves out of the prop and be ready for the Battle of the Atlantic tribute on May 7th. Usually takes place around 10 – 11 am (time will be confirmed).

That will be followed by the first run of the Denton Cup.

We hope to see a number of entries for the under 20 dollar boat race – a date will be forthcoming.

The parking area is still fenced off due to construction in the area and it's unclear for how long.

We've been invited to display our boats again at the Point Hope Shipyard on Father's Day – June 18 – more information will be available after we have met with them.

Looking forward to having more boats out – don't be afraid to bring your latest model to the pond if you are looking for assistance, lots of ideas available.

See you at the pond,
Mike

2023 Executive Committee

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On the Radar!

On May 7th we will do our annual ship parade to commemorate the Battle of the Atlantic. The parade will be followed by the first run of this year's Denton Cup. See some of the absolute best of boat modelling, and some of the worst of controlling them.

On Fathers' Day, June 18th. We have been invited again to display our boats at Point Hope Shipyard. So think about which of your models you would like the public to see.



Regular General Meetings

2 nd . Thursday, 7:30 pm. St Peter's Anglican Church Hall,
St. Peter's road, Lakehill.

Next Meeting Thursday 13th. April. 7:30 pm. On Zoom.



Every Sunday Morning, 9am-ish to 11:30-ish at Harrison
Model Yacht Pond, Dallas road.



The Langford Lake Navy.

Wednesday Mornings 9 :30 ish, Leigh Rd. At Tillicum.

IN THE WORKSHOP**APRIL 2023****by Ken Lockley**

One aspect writing for the club's Newsletter (The Binnacle), is I can pass on ideas and techniques that I have learned over the years. As most of you know I have been at the game for a considerable time.

This leads me into further studying of the most suitable woods to build with, that have a easy procurement in places like Windsor Plywood, Lumberworld, Castle building Supplies and Home Depot. These firms all have suitable wood materials for us ship builders but in most cases the builder has to have a way of cutting the stock to desired proportions and this can be a real problem. Last month we touched on the kit boats supplying Mahogany planking material. Yesterday, visiting BC Hobbies, they have several Billing's kits on their shelves and I would like to mention that I was able to purchased a propeller and shaft at the store. Mark mentioned that they hope to have a few more marine items in the future. That would be better, looking better for us!!!!



As you can see the pictures to the left shows the Cabin continuing to take shape.

As with all boats I turn to Styrene for the superstructures. I really like the change that takes place on the bench. Put all the wood away, clean up the sawdust and start laying paper patterns for the cabin.

Styrene is available in large sheets from Industrial Plastics and strips and rods etc.

from the hobby shop. Methylene Chloride is my bonding agent and this is available in both stores mentioned. In my case I buy large quantities of the product because I am also using it on Model Railroad structures. The doors and windows will be lined with moldings and Port lights will need to be purchased by mail order.



I should mention my motor and battery you see here where purchased through Amazon. So the parts procurement is continual, looking for what you need at acceptable prices. There is no one stop shopping in model boat building.



These pictures are mostly showing the hull ready for painting and I used the product I mentioned last month, "Zinsser Primer". Are you wondering what those three bars are inside the hull? They are 12inch bars of lead. These are not readily available but a close friend passed them on my way. I plan on cutting them to appropriate lengths to fit between the frames. Once satisfied with the placement of the ballast, I will pour a little glue over them to keep them in position. This is certainly after water testing and some shake down cruising. Lead cuts well with a standard hacksaw.

Some thoughts on using styrene on your next boat !

If you haven't tried working with styrene, let me describe some of the positives of developing the simple skills needed. Tools you likely have but one must is a steel rule with a cork backing, usually available at Staple's for about \$3-5. A good quality Olfa utility knife with snap off blades is your cutting tool. You need a cutting surface like the green cutting boards found at Michael's. A 12'x12" is about minimum, if you have access to a used one that will work well. When applying the solvent to the seams, I use a small artist type paint brush. When joining two surfaces with your bonding agent, the surfaces need to be touching to weld the styrene plastic together.

I make patterns for all the pieces out of cereal boxes to form a cabin. The paper board in these boxes has a certain stiffness that holds its shape very well. The hobby shop has a huge selection of strips and molding for around windows, doors and hatches of styrene. Start with something simple joints and you will like it.

When it comes to painting, you will like it more than ever as hardly any sanding is required and paint sticks to the surface very well.



The picture on the left is my hull with 3 coats of the primer I mentioned last month. Over the years I have been a great supporter of Tremclad paints. The tin on the right is a product sold at Lumber-world which really went on nicely. Actually, it is one of the best finishes I have encountered for a while. It's an Ace Hardware product but will be made by someone else for the Ace Hardware Stores. Anyway, both are readily available here in Victoria.



Here is a few shots of the finish paint on the main part of the hull. All brushed with a 1/2" natural bristle brush.

This time the process went easy which is not always the case. I am currently leaning to more brush painting. It is something that I enjoy and a simple process compared to airbrushing.

In my early life , I spent 18 months working at a body shop and learned a lot about painting and the process leading up to the final finish. I have used this knowledge all my life and continue to thank Bill Fernyhough every time I get results like you see here. At this point I will not touch the hull for about three days, until it's really dry and set up hard.

Next month we'll really get into the topsides of our little tug. The bulwarks are to be painted whites with a gray deck .

You can't beat Red, White and Black for tugs.

I am hoping to do initial water-ing testing at Harrison in a couple of weeks .



The Canadian Navy Today. Part 1

The Royal Canadian Navy consists of 8,400 Regular Force and 4,100 Primary Reserve personnel supported by 3,800 civilians. It operates 68 ships, including auxiliary vessels. Its history dates from the 4th of May, 1910. It's a small navy, its main purpose is the coastal defence of Canada, with some capability of offshore defence of trade. Currently it lacks the support ship capability to sustain its warships for long periods in remote dangerous waters, although there are some plans to acquire such support ships in the future. But it does have some very interesting ships from the modeller's viewpoint.

So in these articles I propose to review Canada's navy ships and auxiliaries, and some of the possibilities for the future.

The Navy's sharp end is 12 Halifax class Frigates. These are classified as multi-role patrol frigates. To be clear, they are 40 feet longer, a full 2 knots faster, with double the tonnage and double the range of the destroyers that



they replaced, (Restigouche class). I think the term frigate is a little misleading.

Here's a bunch of facts from Wikipedia.

Halifax Class overview

Name Halifax class

Builders

Saint John Shipbuilding Ltd., Saint John

MIL Davie Shipbuilding, Lauzon

Operators Royal Canadian Navy

Preceded by Annapolis class

Succeeded by Single Class

Surface Combatant

Built 1987–1996

In commission 1992–present

Completed 12

Active 12

General Characteristics

Type Guided-missile frigate
 Displacement 4,770 t (4,770.0 t)
 Length 134.1 m (440 ft 0 in)
 Beam 16.4 m (53 ft 10 in)
 Draught 4.9 m (16 ft 1 in)
 Propulsion

CODOG

2 × General Electric LM2500 gas turbines, generating 47,500 shp (35,400 kW)
 1 × SEMT Pielstick Diesel engine, generating 8,800 shp (6,600 kW)
 1 × Royal de Schelde cross-connect gearbox
 2 × Escher Wyss controllible pitch propellers
 4 × 850kW AEG Telefunken generators

Speed 30 knots (56 km/h; 35 mph)
 Range 9,500 nmi (17,600 km; 10,900 mi)

Complement 225

Sensors and processing systems

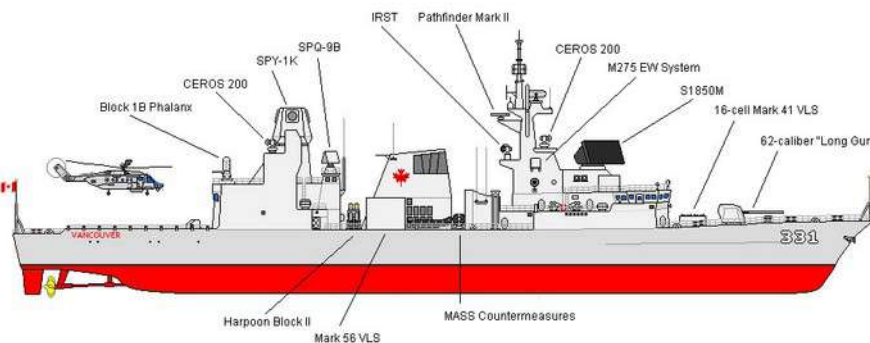
Air/surface search: Saab Sea Giraffe HC 150 (G band)
 Surveillance radar: Thales SMART-S Mk 2 3D
 Fire control: SAAB CEROS-200 Fire control radar
 Active sonar: AN/SQS-510 Hull-mounted sonar
 Passive sonar: AN/SQR-501 CANTASS Passive towed array (variable depth)

Electronic warfare & decoys

TKWA/MASS (Multi Ammunition Softkill System)

Armament

The Refitted Halifax Class Frigate



Refitted Halifax Class Frigate

Specs

Displacement: 5,075 tons
 Length: 134.1 m
 Beam: 16.4 m
 Draft: 5.0 m
 Crew: 257
 Top Speed: 29 knots (54 km/h)
 Range: 9,500 nautical miles (17,600 km)

New Sensor Fit:

- Raytheon SPY-1K S-band Air/Sea Search Radar
- Thales S1850M L-band Air Search Radar
- Thales Sirius IRST infrared tracking system
- 4 Saab CEROS 200 X-band Fire Control Radars
- Emerson Electric SPQ-9B I-band Gunfire Control Radar
- Raytheon Pathfinder Mark II Ka-band navigation radar
- Elisra M275 frequency-agile Electronic Warfare System
- ATI Technologies SLV-MMS Combat Management System
- ATI Technologies CANTASS II sonar system
- Rheinmetall MASS Decoy System

New Weapons Loadout:

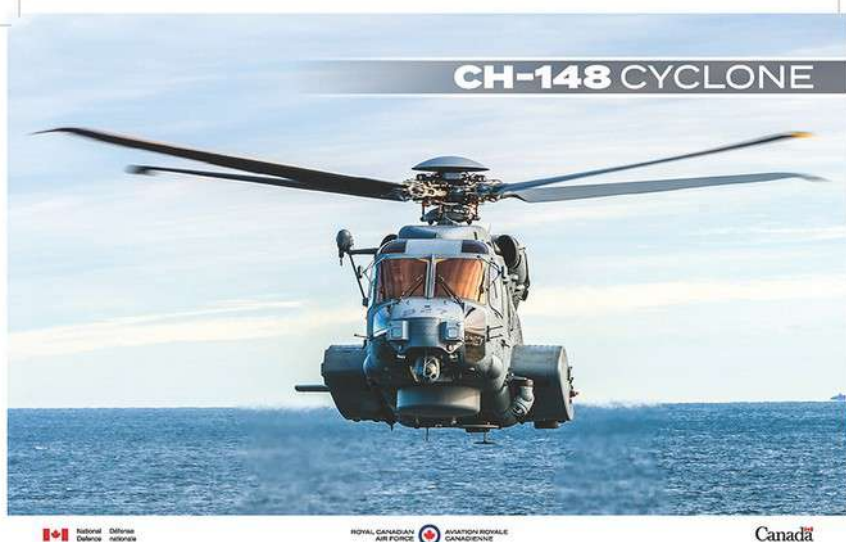
- 1 16-cell Mark 41 Vertical Launch System (16 SM2-MR or Tomahawk missiles)
- 2 32-cell Mark 56 Vertical Launch Systems (64 ESSM missiles)
- 2 Mark 141 Harpoon Missile Launchers (8 Harpoon missiles)
- 1 Mark 45 Mod 4 5"/62-caliber naval gun (360 rounds)
- 1 Phalanx Block 1B 20mm CIWS system (8000 rounds)
- 2 Mark 32 12.75" triple torpedo tubes (24 Mark 54 LHT torpedoes)
- 6 M2 Browning 12.7mm machine guns (7500 rounds)

8 × MK 141 Harpoon SSM
 16 × Evolved Sea Sparrow Missile SAM/SSM
 1 × Bofors 57 mm Mk 3 gun
 1 × Phalanx CIWS (Mk 15 Mod 21 (Block 1B))
 6 × .50 calibre machine guns (M2HB-QCB)
 24 × Mk 46 torpedoes Mod 5

Aircraft carried

1 × CH-148 Cyclone helicopter

Aviation facilities One landing pad and one hangar.



The Cyclone multi-purpose helicopter is the primary anti-submarine weapon, carrying two torpedoes alongside its sono-buoy tracking systems. It also has significant self-defence capability in anti-missile decoy and electronic counter measures systems and a 50 calibre machine gun. The total possible load carried (including fuel) is 7000kg so it can carry 18 people with personal equipment in addition to its crew of 4 if needed. Its maximum speed is 165 knots and its service ceiling is 15,000 feet.

The Harpoon missiles are sea-skimming cruise missiles with a range of 70 nautical miles or more at 860 km/hr. They carry a 220 kg warhead, and a cost of about 2 million Canadian dollars each so I doubt if our crews get a lot of firing practice. Final homing is onboard active radar.



The Sea Sparrows are surface to air missiles with an operational range of 10 nautical miles, a maximum speed of 4256 km/hr and a 90 lb warhead. They are radar guided and were originally designed to defend against low-flying attack aircraft and now can be very effective against cruise missiles.



The Bofors gun looks pretty small in comparison to traditional naval guns, the shell is only 2.4 kg. But it can put 4 of those shells out in a single second, with an effective range of 8 kilometres and a barrel elevation of 75 degrees (anti-aircraft). The muzzle velocity is 3400 ft/second. The mounting carries 120 rounds, and the ship carries 1000 rounds in total. The mounting is fast enough to be effective against sea-skimming missiles.

Next in is the Phalanx "Close-in Weapons System". This is a self-contained defence system based around a 20 mm auto-cannon linked with a fire control radar system and a computer. The entire thing weighs close to 6,000 kg. In addition there is an infra-red sensor that provides improved sensing of small and low speed targets. Once engaged, the system can independently identify, track and engage potential threats as they appear over the horizon. When the threat is within 8 km, the mount will turn towards the target and the tracking will be passed from the search antenna to the much more accurate tracking antenna. The computer then determines the best firing range for a probable hit. Typically it will engage at 2 km or less and then will track both the target and its own rounds to "walk" subsequent bursts onto the target. A typical burst is around 100 rounds in 133 milliseconds.

I don't have any information on how many targets the computer can track and engage at once but the mounting can move around at 100 degrees per second both horizontally and vertically, so about 2 seconds to engage on the opposite side of the ship. In that time the incoming missile will have closed by 500 metres.

Anyway, the Phalanx is priced at \$CAD 18 million and rounds are about \$CAD 40 apiece.





The Halifax carries 24 mk46 torpedos (around 1.2 million each for a bulk purchase of 425), which can be dropped from the helicopter or launched from tubes either side of the ships hangar.

Finally there are eight 50 calibre heavy machine guns, (dirt cheap at \$14,000 each).

The ships are also very well equipped with sensors. There's sonar in both fixed and

towed-array forms, a multitude of radars, and an infra-red sensor system to detect and track stealth threats.

For the future the Halifax's will certainly be equipped with unmanned vehicles, airborne drones in both vertical takeoff and smaller reconnaissance drones, and underwater vehicles to provide more anti-submarine and anti-ship capabilities.

Next in the RCN's hierarchy of ships are four patrol/attack submarines. These were built in Britain as the Upholder class, being super-quiet diesel-electric submarines designed to hunt and kill enemy surface ships and submarines. The British government decided to switch its submarine fleet to exclusively nuclear power and to sell off the 4 newly built Upholders.

Now neither the purchase of these ships nor their subsequent introduction to Canadian service could be called a smooth operation. But they are now operational, and well worthy of notice.

Three of them are based in Esquimalt, being Victoria, Corner Brook, and Chicoutimi. The fourth, Windsor, is based in Halifax. Here's the data from Wikipedia:

Class overview

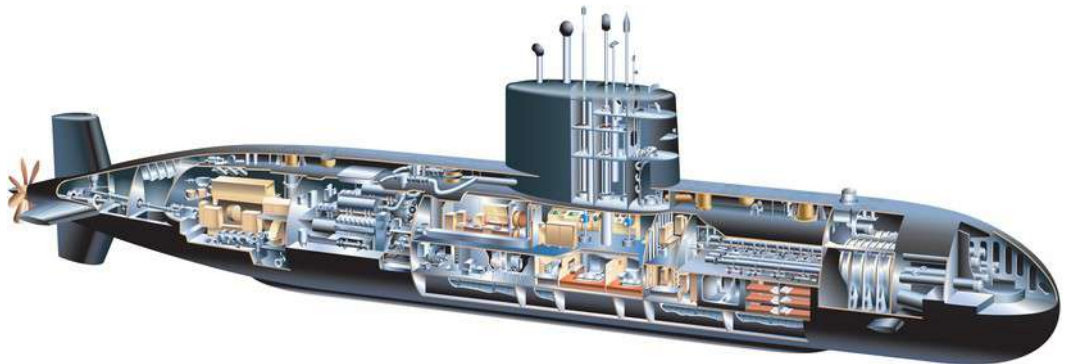
Name

Upholder class (UK)
Victoria class (Canada)

Builders VSEL, Ltd and
Cammell Laird Co.

Operators

Royal Navy (historical)
Royal Canadian Navy



In commission

RN: 2 June 1990– October 1994
CFMC/RCN: December 2000–present

General characteristics

Type	Diesel-electric submarine (Hunter Killer SSK)
Displacement	2,455 t (2,416 long tons)
Length	70.26 m (230 ft 6 in)
Beam	7.2 m (23 ft 7 in)
Draught	7.6 m (24 ft 11 in)

Propulsion

Diesel-electric – 1 shaft
2 × Paxman Valenta 2,035 hp (1.517 MW) 1600 RPA SZ diesels
1 × GEC electric motor (5 MW)

Speed

12 knots (22 km/h; 14 mph) (surface)
20 knots (37 km/h; 23 mph)+ (submerged)

Range

8,000 nmi (15,000 km; 9,200 mi) at 8 kn (15 km/h; 9.2 mph)
10,000 nmi (19,000 km; 12,000 mi) at snorkeling depth

Endurance 30 days

Test depth Over 656.17 ft (200 m)

Complement 53

Sensors and processing systems

Sonar

CN/BQQ-10 Active/Passive Sonar Suite Array[1]
Type 2040 active/passive bow multibeam echo sounder
Type 2041 micropuffs
Type 2007 flank
Type 2046/CANTASS MOD towed array,
Type 2019 active intercept

Fire Control: Lockheed-Martin Librascope SFCS Mk 1 Mod C

Radar: Kelvin Hughes Type 1007

Armament 6 x 21 in (533 mm) torpedo tubes (18 Mark 48 torpedoes)



These are not the most attractive of submarines. They are stubby, and with their hulls covered in acoustic tiles to decrease sonar detection, they are far from sleek. But they do possess the greatest of submarine virtues, they are quiet!

They have a huge range, 10,000 nautical miles at snorkelling depth, and they listen really well. They can disappear a mile or two off the Canadian coast, supported only by secret rendezvous' with a refuelling and re-provisioning ship every 30 days, and they have the ability to sink anything that floats. That's why, on its website, the RCN makes the point that the greatest asset they represent is that, in any form of confrontation at sea, an enemy cannot know for sure whether one of these four is close at hand, or not. The RCN seems to envisage as the future pattern of its operations, task forces consisting of 2 or more combat ships like the Halifax class, together with a support ship and potentially a submarine.

So if you fancy making a submarine model, why not study these. I find it fascinating to think about how one could keep on using this uncertainty as a strategic asset.

Which brings me to the next ship, which isn't even officially a RCN vessel. It's the MV Asterix. This might be the most interesting and attractive ship to model. It could hardly be a more convoluted and Canadian story of political procurement. And somewhere in Canada there's an unsung hero, a lead procurer, who pulled this off. There's a double meaning in the word procure that is entirely appropriate to judge from the story.



But telling that story would be a distraction from looking at the ship itself, it's role with the RCN, and covering the other RCN ships.

The MV Asterix is a conversion of a German designed and built container ship into a support ship for the RCN. It was originally launched as Cynthia in January 2009 and completed in May 2010. It is a stopgap solution until two new Joint Support Ships can be completed under the National Shipbuilding Programme. It lacks sufficient protection and armament to meet the RCN's full requirements for a support ship. But it is very capable otherwise. The Asterix is owned by a company called Federal Fleet Services, a partner company to the Davie Shipyard in Lauzon, Quebec, and is leased to the RCN complete with a civilian crew of 36. It also carries up to 114 RCN service personnel, 67 of whom are specifically there for replenishment duties. In an emergency the ship can carry up to 350 people.

As part of the conversion Asterix was fitted with a bow thruster, to improve manoeuvrability and control in close quarters, and much larger crew quarters together with medical/hospital facilities. It also now has two aircraft hangars and a landing deck capable of taking twin rotor Chinook helicopters. Its regular aircraft will be two CH-148 Cyclone helicopters. It carries smaller boats in the form of 4 rigid hull inflatables, 2 fast rescue craft, 2 landing craft, and 2 lifeboats. It can make 400 tonnes a day of fresh water, and carry 10,500 cubic metres of marine diesel fuel and 1,322 cubic metres of aviation fuel. It has provisions for mounting 3 Phalanx gatling weapons systems, should it need to.

Asterix is almost 600 feet long, with an 83 foot beam and 23 foot draught. She can make 20 knots and has a range greater than 10,000 nautical miles. The current lease expires in 2025, when the first of the new joint support ships may be complete, but it is renewable and the RCN has an option to buy the vessel outright. You can see from the pictures how uniquely attractive it is as a modelling subject, lots of detail to explain and stories to tell, and I suspect it will have a history well beyond 2025. It'll be amazing to compare it with the new Protecteur.



These three classes of ship, the Halifax frigates, the submarines, and the support ship, are essentially the main fighting arm

of the RCN. Current plans for the future involve replacing the Halifax class with a new "surface combatant" class, of a similar size but increased capability, based on the British Type 26, and bringing into the fleet two new support ships, Protecteur and Provider to form task forces with the combat ships and possibly the submarines.

So essentially the rest of the RCN is about coastal defence against threats from individual small ships. The heaviest armament on the remaining ships of the RCN are the 25 mm chain guns on the new Harry De Wolf class. With our coastline and climate change that is an increasingly important job for the Navy to do, and I'll review those ships and the fleet's auxiliaries in part two.



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