The Binnacle

May 2023 *Volume 45 Issue 5*

Ken Lockley:-
Tips from My Workshop.
Paint, Rudder Mounts, Motors and More

Edward White:-
The Royal Canadian Navy Ships
Part 2.

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On the Radar!

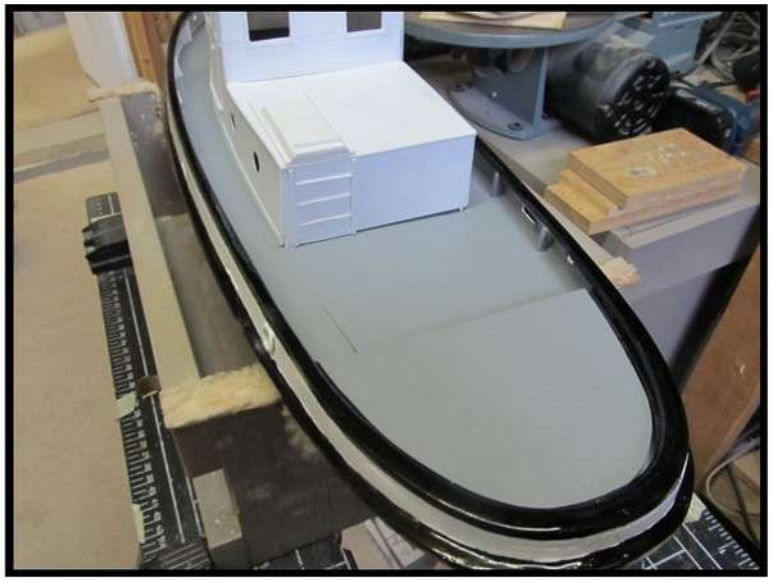
Regular General Meetings
2 nd . Thursday, 7:30 pm. St Peter's Anglican Church Hall, St. Peter's road, Lakehill.
Next meeting 11th. May.

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 MAY 2023

by Ken Lockley



There's a certain point in every hull construction where there is nothing else to do but paint the hull. That's where we were in these pictures. After several months of construction the hull was ready for finish paint. In most cases I use oil based paints on the hull if I can find them.

I used the primer I mentioned last month, and it worked exceptionally well. Here I started with Trem Clad fire red for the anti–fowling. This flowed on very smoothly using a natural bristle brush.

The White and Black topsides also proved to be manageable. Sometimes it doesn't go that well but this time it did.

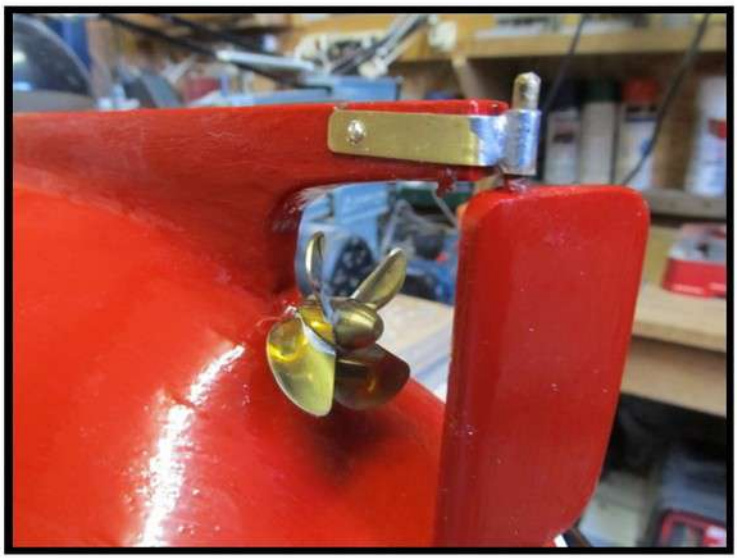
The white strip is pin stripping tape available at most Canadian Tire stores.

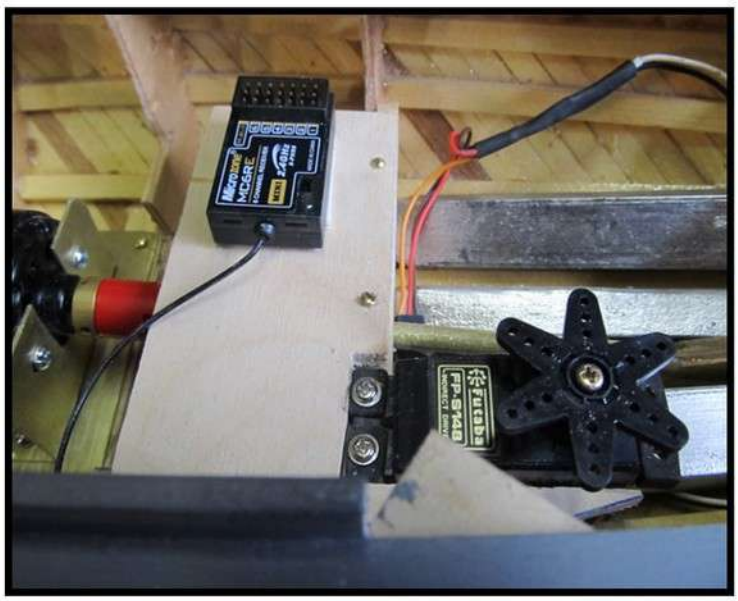
I use Hillside store because my theory is, it's the biggest so it should have the biggest variety. Most of the time this works well!! The grey deck is a water based hobby paint available at Michael's. This is just a standard grey in the "Americana Series". I also have found that Michael's is the best place to buy brushes. I get the flat type over the round for flat surfaces.

During this painting process, you can see I have been able to install a rubber guard over around the sheer guard of the vessel plus tires for side protection. Harrison Yacht Pond, being a concreted walled pond needs to have the additional protection for the vessel.

As you can see above, construction almost complete, just a little dressing up to be done.

A six month project with a go slow orders from upstairs!!!!!





These three pictures tell quite a bit actually, first you will notice the rudder. I made a shoe to take the bottom end of the rudder shaft . Believe me, your rudder needs to have free movement to get the best performance. There's a critical angle, 35-38 degrees, which allows free rudder movement and if you don't get it right it will plague you for the whole life of the vessel.

This second picture shows a little collar and a piece of brass soldiered together

to make a control arm. It's easy to buy a control arm that will do what you see here, if not in stock, then you make…….

I use clevis pins and 1/16 rod with 256 thread. This system is regarded as a fail safe in most applications.

Your rudder arm must gave 35-38 degree swing to either side of center and this will give you good boat control under most circumstances.

This third picture just gives a glimpse of my motor and the receiver elevated above the drive shaft. That's the rudder servo you see in the foreground.

There's those bars of lead for ballast also to be seen .

More lead is likely to be need as we do water testing etc.

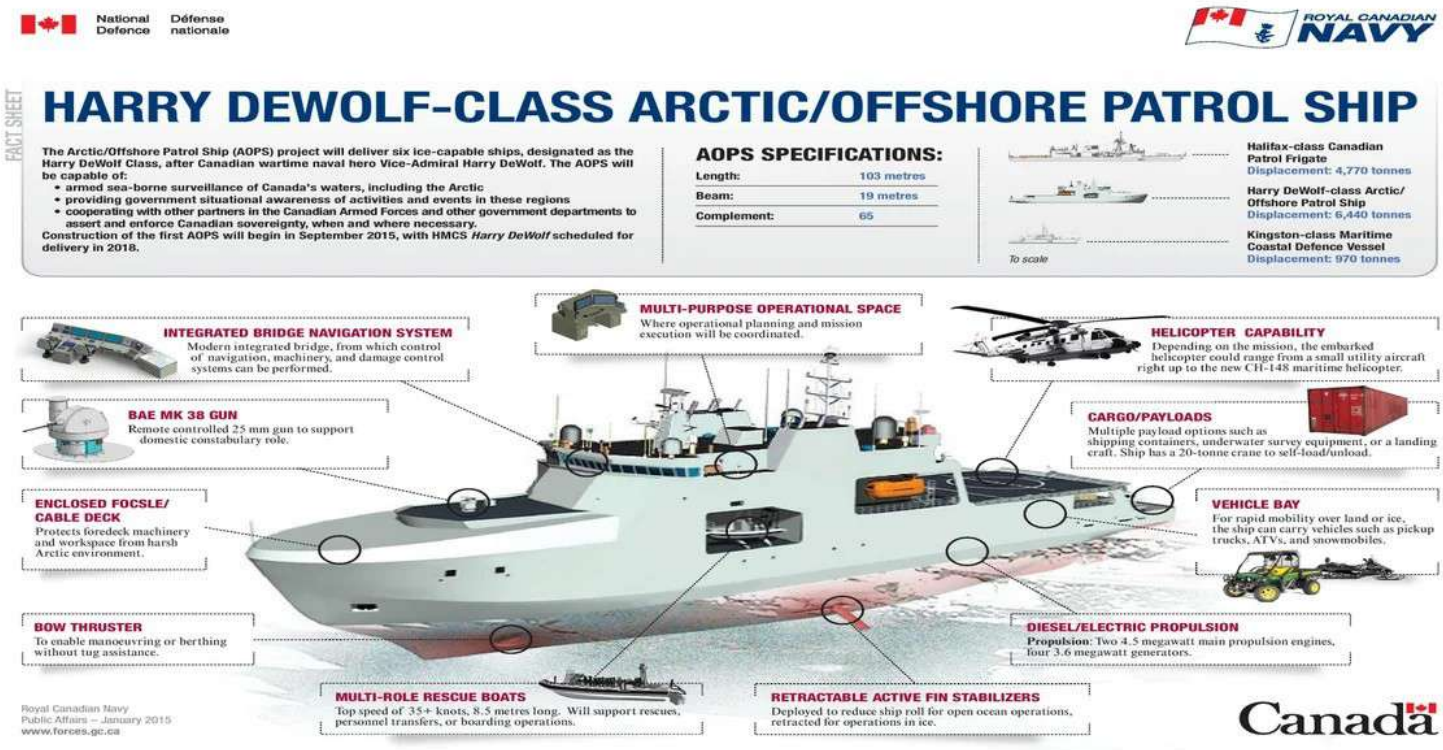
The Pittman Motor to the left was purchased in the early 1970's at Victoria Hobbies and Craft, which was located at the corner of Yates and Broad Streets. These motors were the Cadillac at the time. Thanks Dave for the picture.

Lower Right is one of mine. Several years ago at one of our swap meets, someone was selling this motor and I couldn't resist purchasing it, just to have, not to use as the bearings are no longer in useable condition. But neat to see!!

Two lower left pictures are what I currently use, "Surpass Hobbies" R/C truck motors. These motors are used with 7.2 Volt NMH batteries or a 6 volt Gel cell. I currently have three of them in operation with good results. You can see the noise suppression capacitors nicely soldered in place. At $19.99 they seem good quality for the price. Low rpm and high torque seems perfect for small tugs. These motors attach by using 14-40 machine screws from a metal motor mount bracket to the motor housing.

Very tidy operation.

Canadian Navy Ships Part 2



The next class of ships for the Canadian Navy is the latest. It's the Harry De Wolf class.

These are classified as offshore patrol vessels, lightly armed, but with a multitude of purposes and missions. Their primary inspiration is the defence of Canadian Sovereignty in the Arctic, but they are built to be operated anywhere from the Arctic to the Tropics, and to carry containers which can be very different "Mission Pods" for almost any purpose the Navy is called on to do. Or for the Canadian Coast Guard, because the country does intend to build 6 of these for the Navy and two for the Coast Guard.
As is quite common for armed forces procurement, they are not turning out to be cheap. But they are big, capable, ships. At 6,500 tons displacement, they have room for a lot of payload. Here again are the statistics from Wikipedia:-

Name	Harry DeWolf class
Builders	Halifax Shipyards
Operators	
	Royal Canadian Navy
	Canada Canadian Coast Guard (planned)
Preceded by	None
Cost	
	CA$3.5 billion (initial design and build) CA$2.3 billion (for construction of six vessels);[1] CA$4.3 billion (2018 estimate);[2] CA$4.98 billion (2023 estimate for first six Navy ships) + CA$1.6 billion (2023 estimate for two Coast Guard variants)[3]
Built	2016–present
Planned	8 (6 for RCN and 2 for the CCG)
Building	3 (RCN)
Completed	3
Active	2
General characteristics	
Type	Arctic/offshore patrol vessel
Displacement	6,615 t (6,511 long tons)
Length	103.6 m (339 ft 11 in)
Beam	19 m (62 ft 4 in)
Draught	5.7 m (18 ft 8 in)
Ice class	Polar Class 5
Installed power	4 × MAN 6L32/44CR[4] (4 × 3.6 MW)
Propulsion	Diesel-electric; two shafts (2 × 4.5 MW)
Speed	
	17 knots (31 km/h; 20 mph) (open water) 3 knots (5.6 km/h; 3.5 mph) in 1 m (3 ft 3 in) ice
Range	6,800 nmi (12,600 km; 7,800 mi)
Boats & landing craft carried	
	2 × 8.5 m (28 ft) multi-role rescue boats 12 m (39 ft) landing craft
Complement	65 (RCN). Accommodation for 87
Sensors and processing systems	

The Engine Room. 4 diesels at bottom left.

SATCOM (Link 16), Multichannel VHF/HF Radio, Anti-missile detect systems; OSI Maritime Systems, Integrated Bridge Navigational System; Kelvin Hughes SharpEye X and S-band navigation radars; SAGEM Damage/Machinery Control Systems

Armament

1 × BAE Mk 38 25 mm (0.98 in) gun
2 × M2 Browning machine gun

Aircraft carried

Sikorsky CH-148 Cyclone, or
Bell CH-146 Griffon (RCAF) and/or CU-176 Gargoyle UAV

Aviation facilities

Onboard hangar
Vehicle bay; can hold pickup trucks, ATVs and snowmobiles

All eight ships will be able to make 3 knots through 1 metre thick ice, and the foredeck is completely covered to make them operable under the worst weather the Arctic can throw at them. They also have retractably stabilizers which can be deployed in the open sea to reduce roll.

I think these ships are really good evidence that the Canadian government decided a long time ago that climate change was a reality and that the North-West Passage will become a very important waterway in world trade terms in the near future. I can imagine these ships being used to open the ice in the arctic spring and deliver container based ground stations with personnel and drones, to police traffic through the summer months. The experience so far of the Ukraine war suggests to me that drones of all types will be the dominant weapon of future armed forces actions, and the Harry de Wolf class looks like an ideal way of deploying and supporting such actions.

It seems likely that the ships will carry their own medium scale drone, the 540 lb Skeldar, (Gargoyle) in addition to their manned helicopter. There is a big question in my mind as to the class's defensive capability, but that applies to all surface ships as drone attacks increase.

But that's just speculation, what is clear is that these ships are attractive modelling subjects. They are full displacement craft, which will mean a well behaved model on the water, with the ability to load them up with all kinds of detail. Helicopters, drones, landing craft, fast rescue boats, mysterious containers, lots of radars and aerials, and a 20 ton crane on the stern. Twin props and a bow thruster for propulsion, even ice-breaking as a hobby when no other boat can get on Harrison Pond. And great conversations about "How did we ever pay That Much!"

The Kingston Class were built between 1994 and 1998 as "Maritime Coastal Defence Vessels".

Nanaimo and Saskatoon

The design was based on the UK's River class minesweepers as operated by the Royal Navy Reserve. The Kingstons were built to a similar specification, to be operated by both RCN members and reservists, built to commercial ship standards rather than naval with the exception of the magazines. The stability of the ships was not satisfactory as originally built and an extra 9 tonnes of ballast had to be added. They are not first class seakeepers and they have a large radar signature.

Name	Kingston class
Builders	Halifax Shipyards Ltd., Halifax, Nova Scotia
Operators	Royal Canadian Navy
Preceded by	Anticosti class
Built	1994–1998
In commission	21 September 1996–present
Completed	12
Active	12

General characteristics

Type	Coastal defence vessel
Displacement	970 t (950 long tons)
Length	55.31 m (181 ft 6 in) oa 49 m (160 ft 9 in) pp
Beam	11.3 m (37 ft 1 in)
Draught	3.42 m (11 ft 3 in)
Propulsion	2 × Jeumont DC electric motors 4 × 600 VAC Wärtsilä UD 23V12 diesel engines 2 × Z drive azimuth thrusters
Speed	15 knots (28 km/h; 17 mph)
Range	5,000 nmi (9,300 km; 5,800 mi)
Complement	47 max

Sensors and processing systems

Kelvin Hughes Nucleus S-band surface search radar
Towed high-frequency sidescan sonar
Remote-control Mine Hunting System (RMHS)
Magnetic degaussing system

Armament

1 × Bofors 40 mm L/60 Mk 5C cannon (removed 2014)
1 x Nanuk RCWS 12.7 mm heavy machine gun (trial)
2 × M2 machine guns

Aircraft carried

AeroVironment RQ-20 Puma UAS

The Puma UAV is a thoroughly capable reconnaissance drone with very impressive performance in adverse weather.

These ships also have on the aft deck the ability to carry and handle three 20 foot ISO containers. They provide a considerable increase in the ships' versatility being able to be outfitted as specialized "mission pods". Obviously that feature has been a success because it is being repeated in the Harry de Wolf class.

They have served the RCN well, and my impression is that naval personnel have also performed with excellence in making the best of what they got in these vessels. They have served in the Caribbean and the central american Pacific coast, in the Baltic and off the African west coast, as well as all of the Canadian coastline and the Arctic. The Navy chose not to carry out an extensive mid-life refit on them, thinking the money would be better spent on new ships, but all of them are still in active service and no replacements are yet under way.

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The next class are the Orca class patrol vessels.

These do not carry the HMCS label as they are classed as auxiliary vessels rather than warships. They are also not normally armed, although they do have a strengthened foredeck to accept a 12.7 mm machine gun, and have the fire-protected lockers for that gun's ammunition. Their primary purpose is training for both officers and other ranks of the RCN. They can be operated by a core crew of five, but have accommodation for another 19 for cruises of up to six weeks.

All of them operate year-round from Esquimalt. They carry a Zodiac SR2 rescue boat and have a 2500 lb capacity davit crane to handle it and other loads. I find myself quite excited by these craft, both for what they can do in defence of the Canadian coastline, and for their potential as models.

Here's the stats:-

Name	Orca class
Builders	Victoria Shipyards, Esquimalt, BC
Operators	Royal Canadian Navy
Preceded by	YAG 300
Cost	CA$90.7 million (2004) for 8 vessels CA$11.3 million (2004) per unit
Built	November 2004 – October 2008

In service	17 November 2006 – present
Completed	8
Active	8

Nice Orca Pod

General characteristics

Type	Training tender and patrol boat
Displacement	210 tonnes (207 Imperial tons)
Length	33 m (108 ft)
Beam	8.34 m (27.4 ft)
Draught	2.6 m (8.5 ft)
Propulsion	2 x Caterpillar 3516B diesel engines, 2,500 hp each at 1,600 rpm 2 x ZF 7550A gearboxes 2 x 1,400mm fixed pitch propellers
Speed	20 knots (37 km/h; 23 mph) governed
Range	660 nmi (1,220 km; 760 mi) at 15 knots (28 km/h; 17 mph)
Complement	5 (minimum); 24 (maximum)
Armament	Not armed. Foredeck is strengthened to accept a 12.7 mm M2 machine gun.
Notes	1 x Zodiac SR2 rescue boat 1 x Allied Systems D2500S deck crane

The design of these was based on the hull of the Australian Pacific class patrol boat, which is extensively used by Pacific Island nations. The two caterpillar diesels make them fast and hugely reliable. But the accommodation and superstructure are exclusively Canadian.

The coast of British Columbia is just under 1000 km north to south as the crow flies. But there's actually some 26,000 km of shoreline. It's a lot, and it's complicated. As a training ground for seamen it's unbeatable.

In an emergency one of these Orcas can get anywhere on that coastline in less than 48 hours with a significant force of infantry backed up by a 50 calibre machine gun. Or can provide search and rescue for any emergency. With drones aboard to extend its eyes, (or underwater ears). I like that we have that capability.

As a model it would be 36 inches long, 9 inches beam at 1:36 scale, weighing 10 lbs., and with an impressive turn of speed on the pond. Twin motors and rudders are going to make it exciting to operate and the 1:36 scale gives plenty of scope for detail. Think of it as the modern version of the Fairmile. You are going to have to keep the construction light, but

in return the performance is going to be great. This is close enough to 1:35 scale, or 54 mm, the most popular scales for military figures and vehicles, to have a full complement of trainees aboard your model. How about an Airfix Bengal Lancer on the bow?

HMCS Oriole is the oldest ship in the Canadian Navy. She was launched on the 4th. of June 1921. She is 102 feet long, 19 feet on the beam, and 9 feet in draught. Primary propulsion is 11,000 square feet of sail, rigged as a ketch. Fully loaded she displaces 93 tons. She has a 165 horsepower Cummins diesel engine auxiliary.

She was built originally for the Commodore of the Royal Canadian Yacht Club of Toronto, and served as the flagship of that club until 1928. In 1941 she was sold to the Navy League of Canada and began a new career as a sail training ship. She has served the RCN ever since, getting her actual commission into the Navy as HMCS in 1952. She has been based on both coasts, at Esquimalt and Halifax, and is still in Halifax at the present day. Her complement is a permanent crew of 6 and 18 trainees. She's very beautiful, may no politician ever succeed in cutting her budget.

Canada also has two smaller sail training/adventure training boats, Goldcrest and Tuna, here's a picture of Tuna, looks like B.C. to me.

Next month I'll try to bring this series to a close by surveying the auxiliary vessels under the RCN's control.

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