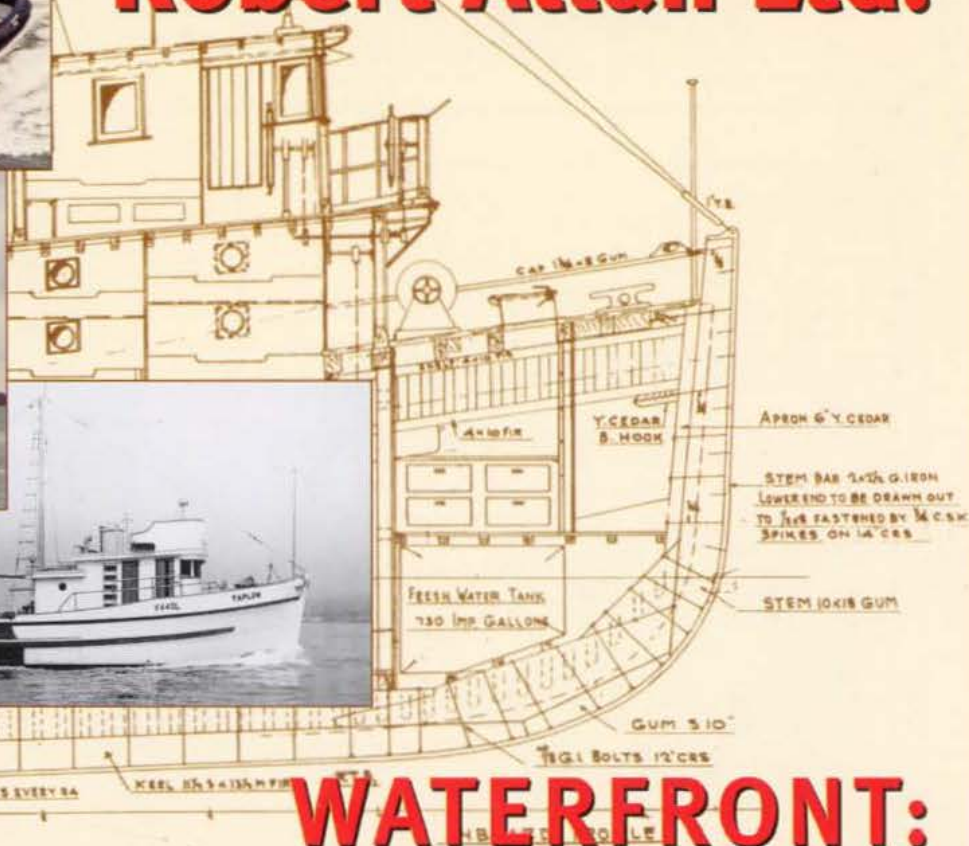


Western Mariner

The Magazine of the Coast



**75th Anniversary:
Robert Allan Ltd.**



**WATERFRONT:
Burrard Inlet - Part 1**
CIMarE Newsletter

JUNE 2005 \$4.95 US/CANADA



Western Mariner

The Magazine of the Coast

June 2005 ▶ Volume 3 ▶ Number 4

Features

Waterfront: Burrard Inlet - Part I ▶ II

By Rob Morris

Island Tug and Barge Ltd.

Honoured for Marine Safety Excellence ▶ 21

By David Rahn

Robert Allan Ltd. – 75th Anniversary ▶ 22

Three Generations of Innovative Ship Design

By Rob Morris

Boatbuilding Technology ▶ 39

TractorPlus – New Drive Combination Increases Bollard Pull

By Alan Haig-Brown

The Vancouver Journal ▶ 42

Canadian Institute of Marine Engineering Newsletter

Departments

From the Editor's Desk..... 6

Robert Allan Ltd. 75th

Anniversary

By Rob Morris

From the Publisher's Desk.. 6

Good News

By David Rahn

Letters 7

A Letter from Home 10

Ancient Mariners

By Mrs. Amor de Cosmos

Name this Spot 20

Deck Watch..... 38

Quiz 6: RADAR - Radio

Detection And Ranging

By Capt. Barb Howe

In the Shipyards 44

By Rob Morris

Classifieds..... 50



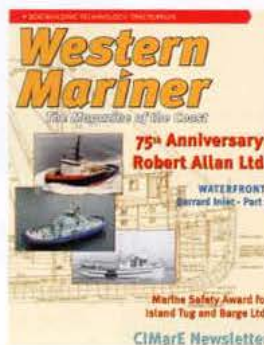
11



22



39



Photos of Island Crown, Velox and Taplow courtesy of Robert Allan Ltd. Background plan: table seiner **Nanceda**, designed by Robert Allan for Louie Percich, built at Menchions Shipyard, Vancouver (1950), lost off Carmanah Point March 13, 1987.

Western Mariner

The Magazine of the Coast

June 2005 Volume 3 Number 4

Editor

ROB MORRIS

robmorris@shaw.ca
250-338-1918

Contributors

MRS AMOR DE COSMOS
STACY ALEXANDER
ALAN HAIG-BROWN
CAPT. BARB HOWE
GINA JOHANSEN
DR. DON PEPPER
LEE WEIGOLD

Advertising

LORNA BARCHARD
lorna@eagleharbour.com
604-876-7150

Design & Layout

DEANNA SMITH
Artvark Type & Design
deanna@artvark.ca

Publisher

DAVID RAHN
david@eagleharbour.com
604-921-7209

Published Monthly by
Eagle Harbour Holdings Ltd.
PO Box 91370, West Vancouver, BC,
V7V 3P1, Canada.
Tel: 604-921-7209
Fax: 604-921-7206
info@eagleharbour.com

Subscriptions

One-year Rates:

Canada \$42.80 (includes GST)
USA \$45.00 (US funds)
Foreign \$68.00 (US funds)



Cheques payable to

Eagle Harbour Holdings Ltd.

Subscribe online at: www.eagleharbour.com

Contributions

Identify all material with your name and address and we will return if accompanied by sufficient return postage. We do take care of your contributions but we cannot be responsible for damage or loss.

Contents © 2005 Eagle Harbour Holdings Ltd. All rights reserved. No part of this publication may be reproduced without written permission from the publisher.

PUBLICATIONS MAIL AGREEMENT NO. 40790554

RETURN UNDELIVERABLE CANADIAN ADDRESSES TO

EAGLE HARBOUR HOLDINGS LTD.
PO BOX 91370, STN WEST VANCOUVER
WEST VANCOUVER, BC V7V 3P1
email: circulation@eagleharbour.com

ISSN 1705-3269

Published and Printed in British Columbia, Canada



SUPPORTER SUPPORTER MEMBER MEMBER

Western Fish AND SEAFOOD

June 2005 Volume 3 Number 4

From the EDITOR's DESK



ROB
Morris

Robert Allan Ltd. 75th Anniversary

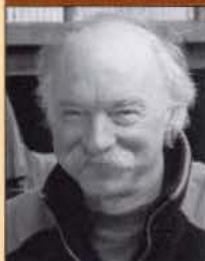
If we had a nickel for every time we've written "designed by Robert Allan Ltd." over our 15 years of writing about the BC marine industry ...! From Prince Rupert down to Sooke and up into the Fraser River, there are so many work boats which trace their design to the well-known Vancouver firm of naval architects and marine engineers.

Over the years we've been aware that there were three generations, all named Robert Allan, who have created vessel-designs dating back into the 1930s. The third generation, Robert G. (Rob) Allan, became president of the company in the early 1980s and **The Westcoast Mariner**, which started up in 1988, picked up the coverage of his company's design work on the Z-drive harbour tugs for Cates Tugs, Hawaiian Tug and Barge, and Shaver Transportation which followed the 1982 prototype Z-drive, the **Charles H. Cates II**. Now **Western Mariner** continues to follow the large volume of offshore design work, mainly tugs, from the company.

However, preparing this month's feature celebrating the 75th anniversary of Robert Allan Ltd. brought into much sharper focus the incredible volume of design work produced by Rob Allan's grandfather, Robert Allan Sr., who founded the company in 1930, and father, Robert F. (Bob) Allan. So many of this coast's beautifully-lined, robust wood fishing vessels came off the drawing board of 'the senior' Allan and many are still afloat, along with his tugs, former mission and patrol boats, and the handsome motor-yachts **Meander** and **Fifer**. After WW II, there's roughly a 15-year period when Robert Sr. and Bob Allan were working together, during which time the "lines are blurred" somewhat as to which Allan was mainly responsible for the drawings of some vessels and it's clear that design traits and ideas were definitely being passed from father to son. In the 1960s and '70s, Bob Allan's steel tugs and barges for this coast and for the Western Arctic were a dominant body of design work but, in similar fashion, his son Rob, was fully-involved on the drafting board for those vessels in the '70s. The vast majority of the vessels from that period are still working, thus the frequency of "designed by Robert Allan Ltd." in these pages.

Selecting a few dozen representative vessels from the hundreds the family firm has designed over 75 years was a challenge, but we know readers will enjoy seeing the photos and appreciating the great design heritage behind them. Also that they will join with **Western Mariner** and many of our advertisers in congratulating Robert Allan Ltd. on their 75 years of continuous business. ◀

From the PUBLISHER's DESK



DAVID
Rahn

Good News

The award given to Island Tug and Barge Ltd by the State of Washington last month (see "Island Tug and Barge Ltd. Honoured for Marine Safety Excellence" on page 21) is a good news story we can get behind. The best part is that nothing happened. That is, by voluntarily setting the bar high, Capt Bob Shields and his team are helping make petroleum transport a non-story on our coast. Good news for all of us.

Robert Allan Ltd. 75th Anniversary

Three Generations of Innovative Ship Design

By Rob Morris



Robert Allan Ltd. designed the 9650-hp escort tug *Ajax* (see photo on page 35) for the oil tanker escort operations of Østensjø Rederi AS of Norway. *Ajax* led to the 122', 6430-bhp (Voith cycloidal drives) *Velox* for the same owner's tanker escort operations at the Norsk Hydro oil terminal at Sture, Norway. *Velox*' hull form was based on the *Ajax* but with refinements to increase underwater lateral area with minimum increase in displacement and wetted surface. The bow has a quasi-bulb to increase underwater lateral area. The skeg not only generates more lift but also incorporates the first application of the Voith 'Turbo-Fin' technology, a rotating cylinder at the skeg's leading edge which maximizes skeg lift in the indirect mode. The unique towing staple accommodates steel wire and synthetic ship-handling hawser for both towing and escort functions. *Velox* has an indirect steering force capability of 150 tonnes at 10 knots.

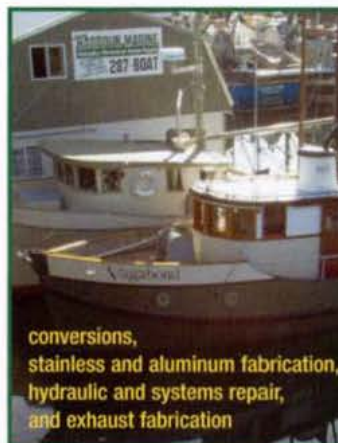
This year marks Robert Allan Ltd.'s 75th year of continuous operation as a firm of consulting naval architects. The third generation of the Allan family is now at the helm of the Vancouver company. Among the hundreds of designs that have been generated since 1930 when Robert Allan Sr. first "hung out his shingle" as a naval architect, the vessels in the photos here represent a small fraction, but they serve to highlight significant individual designs and vessel types that have proven successful throughout the passage the company has navigated to the present day.

POWER FOR MARINE PROFESSIONALS

*Congratulations to Robert Allan Ltd.
on their 75th Anniversary!*

VOLVO PENTA

Volvo Penta Canada Inc.
7972 Enterprise St. Burnaby, BC V5A 1V7 (604) 872-7511
www.volvopenta.com



SOUTH HARBOUR MARINE

TOM GREEN

Office: (250) 287-BOAT (2628)

Fax: (250) 287-2625

Cell: (250) 287-6161

Res: (250) 287-4288

Email: shmarine@telus.net

Located at Fisherman's
Wharf, Campbell River, BC

conversions,
stainless and aluminum fabrication,
hydraulic and systems repair,
and exhaust fabrication

Robert Allan, the first generation

In 1907, as a new graduate in naval architecture from the University of Glasgow, the only UK institution to offer that discipline, Robert Allan was discouraged to find that his Bachelor of Science degree actually barred him from even the most humble shipyard jobs. His father had decided that, when "wee Robbie" turned 14, he should apprentice as a draughtsman and become a shipbuilder. However, the reality was that education was not important to the owners of the large yards on the banks of the River Clyde. Instead they demanded "practical men, trained at the bench."

Sir Alfred Yarrow eventually opened his shipyard's draughting and design department to university graduates. He was willing to gamble on education paying dividends. Robert Allan, however, landed his first job in the "scientific department" of the Fairfield Shipyard in Glasgow where he spent five years designing while



Robert D. Turner collection

The elegant *Princess Louise* (1921) was the first design success for Robert Allan after he arrived in Vancouver and was working at the Wallace Shipyards in North Vancouver, the precursor to Burrard Dry Dock Company.



The motoryachts *Meander* (1936) and *Fifer* (1939) lifted Robert Allan out of the Depression years and onto a stable financial foundation that set the course for the company's next 65 years.

working summers in the plating plant.

With WW I

drawing near, naval contracts increased and Allan went to the Thames Iron Works near London (they built the Dreadnought-class battleship *Thunderer*) then to Cammell Laird at Birkenhead (warships *Birkenhead* and *Audacious*). At his next shipyard, Palmer's at Yarrow-on-Tyne, he had the opportunity to work on many different naval craft. Employed in the office of the chief designer, he made the princely sum of \$5 a week. Enough to contemplate a future. Allan married Caroline Brittain and in 1916 they

had a son, Robert F. "Bob" Allan.

Vancouver-bound

At the end of the war, advancement to the position of chief draughtsman at Palmer's wasn't forthcoming, so Robert Allan emigrated to Vancouver. There the Yarrow and Wallace shipyards were competing for the contract to build the *Princess Louise*, the first of CPR's coastal steamships to be built outside of

The *Hyak* (1937) was the first tug in Oswald "Sparky" New's Coastal Towing Co.



Rob Morris collection

Frontier
POWER PRODUCTS

www.frontierpower.com

Frontier Power Products Ltd.
8029 River Way
Delta, BC V4G 1L3
tel: 604-946-5531



JOHN DEERE

Congratulations to
Robert Allan Ltd.

Reliable marine power.
Marine engines, generators & auxiliaries.



ABD ALUMINUM YACHTS

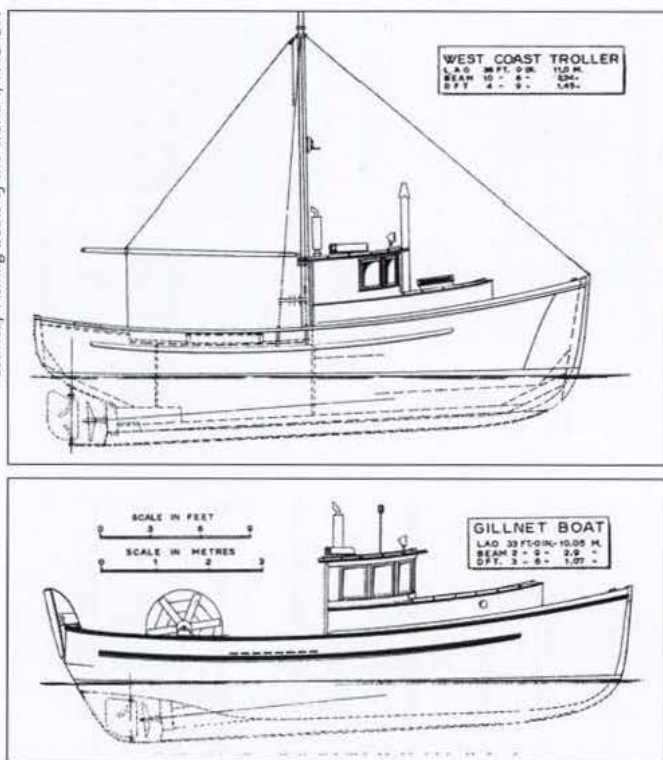
Congratulations to Robert Allan Ltd.
on 75 years of design excellence.

ALAN DAWSON • BURTON DRODY

Plant Address: 1667 Columbia Street, North Vancouver, BC Canada
Mailing Address: 6340 Buchanan Street, Burnaby, BC Canada V5B 2S7
Tel: 604 980 8711 • Fax: 604 980 8721
Email: info@abdaluminumyachts.com • www.abdaluminumyachts.com

Robert Allan Ltd – 75th Anniversary

Courtesy Fishing Boats of the World 1, FAO-UN



In 1958 Robert Allan published a paper in the UN's FAO book "Fishing Vessels of the World" which included these examples of his designs for a BC salmon troller and gillnetter.

Scotland. Allan joined the Wallace firm (the predecessor to Burrard Drydock Company) in 1919 to estimate the job. When the shipyard won the bid he was charged with completing the design. In Francis Mansbridge's "Launching History: The Saga of Burrard Drydock" a CPR executive described the **Princess Louise**, launched in 1921, as "the first ship built in the Americas which will compare in design and finish with the best product of the great yards in the British Isles."

The first design office

Robert Allan remained at Wallace Shipyard until 1928, then decided to strike out on his own.

His grandson, Robert G. (Rob) Allan, now president of Robert Allan Ltd., notes that the company archives indicate his grandfather may have experimented with a partnership or two. But, as Rob Allan describes today, "he was a



The Silver Lure is a fine example of the many West Coast trollers in the 38'-plus range that were built to Robert Allan's design.

Robert Allan Ltd. collection



Riverside Towing



General Marine Towing, Log Towing & Log Storage

**Congratulations to Robert Allan Ltd.
on 75 years of Innovative Boat Designs**

16031 River Road, Richmond, BC V6V 1X5

Tel: 604-273-7551 • Fax: 604-273-5918

Robert Allan Ltd. collection



Alan Haig-Brown collection



Alan Haig-Brown collection



Three big, beautiful wooden fishing vessels from the drawing boards of Robert and Bob Allan, when they were in business together following WWII: **Taplow** (Sterling Shipyard, 1945), **Nanceda** (Menchions Shipyard, 1950), **Pacific Belle** (Matsumoto Shipyard, 1955). **Taplow** and **Pacific Belle** are still fishing; **Nanceda** was lost off Carmanah Point, 1987.

pretty independent individual and he hung out his own shingle as Robert Allan, BSc. in 1930."

Unfortunately he took the decision at an inopportune time. The depression was setting in and, though he adhered to the philosophy of sticking with the trade you are trained in, the situation soon became very grim for the young naval architect. Barely eking out a living, his income dropped to a low of \$25 a year. The creditors removed the furniture from his downtown Vancouver office so he set up in the basement of his home where he continued to scratch out a living doing routine stability work and designs for a couple of inland ferries, a few small tugs and fish boats.

In 1933, things started to look up again when Allan was commissioned to design the 60' yacht **Meander** for

Rob Morris collection



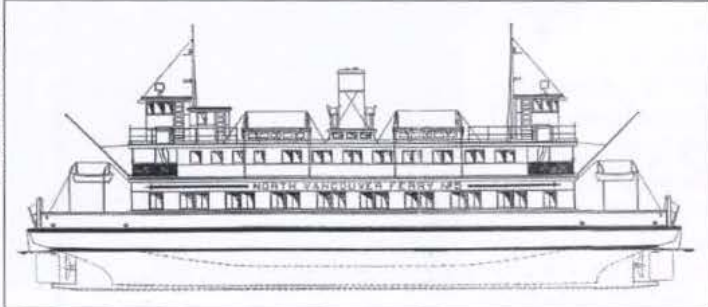
Robert Allan Ltd. collection



The P.G.D No. 2 and the **Columbia III**. Many wooden patrol/work boats were designed for government agencies such

as Fisheries, Public Works, RCMP and the Provincial Game Department. Robert Allan had a close relationship with Rev. Alan Greene of the Columbia Coast Mission and designed several of their vessels including the **John Antle** and **Columbia III**. Next to **Columbia** (1956) is the **Gikumi** (1954) designed for Telegraph Cove Sawmills.

Chuck Heath collection



The 150' double-ended **North Vancouver Ferry No. 5** was designed in 1940 with a 360-bhp Union Diesel engine, operated in Burrard Inlet (1941-1958) and endured as the **Seven Seas Restaurant** until recently.

Driest Shipyard on the Coast

DOLLARTON SHIPYARD
350 Ton Covered Marine Cradle

3829 Dollarton Hwy
North Vancouver, BC
Tel: 604-929-0866
Fax: 604-929-3898

Jamie Gonzales, Manager
Cell: 604-341-0279



Condensation or Noise Problems?

Better solutions based on proven technology for the Marine Industry.



M/V Kennicott, March 2005

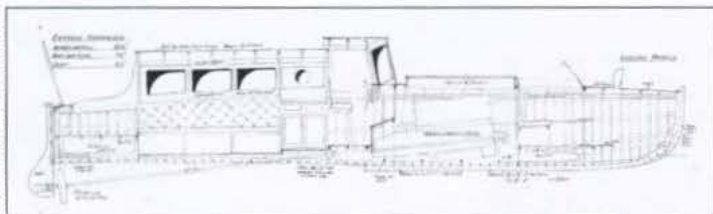
Solutions #1 & #2:
Cost Effective, Easy-to-Apply
DeltaT Marine Ceramic* or
Mineral Loaded Latex.

*8 years of proven service on over 380 ships around the world.
DeltaT Marine products are Coast Guard, DnV, Lloyds & ABS Approved

Advanced Coating Solutions

Telephone: 425-467-6610 Email: Richard@CoatingSolution.com

Solutions for Noise & Vibration Control!



In the mid-1930s Robert Allan designed the **Black Hawk**, an express hydroplane launch for Howe Sound water taxi operator Lloyd Burns. With stepped hull and a WWI 400-hp Liberty aeroplane engine, Burns and **Black Hawk** attained a top speed of 50 mph. Allan used ink-on-linen for many of his study sketches, such as this one.

Vancouver businessman George Kidd. The motor-yacht was launched in 1936 by the Wm. R. Menchions shipyard on Coal Harbour and can still be seen in fine condition today moored in False Creek. But it was design work for a second notable motor-yacht, the **Fifer**, that set Allan back on his financial feet. The luxurious 100' ocean cruiser was launched in 1939 by Burrard Dry Dock for Capt. W.M. Crawford, then was immediately pressed into war-time service.

Robert F. (Bob) Allan, the second generation

The "middle" Allan of the three generations, Robert F. (Bob) Allan, pursued mechanical engineering at the University of British Columbia until illness interrupted his studies. Then during the Second World War he worked as a superintendent at Burrard Dry Dock on corvette conversions. His training in naval

architecture was "practical", gained by working side-by-side with his father. After the war they went into business together, continuing to work out of the Allan home on West 63rd Avenue in Vancouver. It was said by veteran boat builders that it was practically impossible to distinguish between the drawings of father and son.

In the late 1940s and '50s the Allans worked on designs for wooden coastal patrol and mission boats, tugs and the many fish boats. Bob Allan had effectively taken over the business from his father by the late 1950s and the company was formally incorporated as Robert Allan Ltd. in 1962. Robert Allan Sr. continued to work after his nominal retirement and died in 1968, the same year his grandson entered his alma mater, the University of Glasgow, to study naval architecture.



The **Attu** (1959) was launched for the halibut fishery by Allied Shipbuilders and was one of the first steel boats to have an aluminum (rivetted) deck-house.

West Coast fishing vessels

The **Meander** and **Fifer** may have kick-started Robert Allan's career in naval architecture on this coast, it was his rapid development of fishing vessel designs for which he is perhaps best-known. While he designed a great diversity of vessels – small ferries, water taxis, barges, tugs, snag-pullers and mission boats – through the 1940s and '50s, there were dozens and dozens of drawings for wooden seiners, trollers and gillnetters generated from the basement office.

"How many fish boats were built to those plans, I have no idea," said Rob Allan recently. As he recalls some of the magnificent, bigger fishing vessels – **Pacific Belle**, **Phyllis Cormack**, **Nanceda**, **Taplow** – he unrolls a large profile drawing of a double-decker seine-boat. It shows incredible detail, from rigging diameters and block sizes to keel bolt locations, plus finished dimensions and wood types for all the components such as caps, deck-beams and deadwood timbers. Stem bar, GM diesel type, cleat locations and bunks, all are meticulously entered on the drawing. "I'm pretty sure this is the **Nanceda**. These drawings are real studies, works of art," observes Allan. "The days of this type of work are long gone; you can't afford to do drawings like this any more."



The **Papco III** was the first tug to be built from Bob Allan's trend-setting, under-15 ton tug design. Dozens more were built through the 1960s, mainly by John Manly Ltd. and Vito Steel Boat and Barge, and most of them are still in service around the coast.

Renewal of the B.C. coastal tug and barge fleets

Some of the first, steel fishing vessels built had come off the Allans' drawing boards. The 52' **Tiber**, one of the very early steel seiners on the coast, was followed by the likes of the **Bering Sea** and **Attu**. "Dad was pretty conversant in both wood and steel ship design," says Rob Allan. "But he really came into his own in the late '50s, early '60s when the towing industry started to rebuild its fleet." The coastal forest industry and other resource extraction industries in B.C. were expanding rapidly and it was clear that the ageing fleet of wooden tugs and barges could not carry the load. Spurred by a national shipbuilding program that provided a 40 percent subsidy to shipyards for building new vessels, a tremendous amount of work was soon available for BC naval architects and shipyards.

The shipbuilding program started in 1959 and remained in place until the mid-to-late 1970s, though the subsidies

Photo by M. McLellan



Bob Allan's prototype self-dumping log barges, *Powell River No.1* and *No.2*, evolved into the mammoth, self-loading/self-dumping barges in use today. The 453' *Island Forester* (1973), built for Island Tug and Barge of Victoria, is the largest of the type. It's now the *Seaspan Forester*.

were diminishing year-by-year, and during that time Bob Allan and other Vancouver naval architects designed many steel tugs, most smaller overall than their wood predecessors, but more powerful. Many of these tugs, now 35-plus years old, are still in service, a direct result of the high quality of their original design and construction and today's regular surveys, maintenance and upgrades.

Bob Allan worked along with the forest products transportation companies on the development of new tug and barge technology. He is generally credited with the design of the first self-dumping log barges, the *Powell River No. 1* and *No. 2* and the majority of that barge-type that followed. Self-unloading aggregate, cement and chemical transport barges were also designed at Robert Allan Ltd. One of the world's first ocean-going tug-and-barge systems, designed for Kingcome Navigation in 1964, saw the



Photo by Michael Dean

Kingcome Navigation's Bill Dolmage had Bob Allan design their first steel coastal towboats. The 'Harmac' tugs (*Pine, Spruce, Fir and Cedar*) were built by John Manly Ltd., 1963-65. Two of these boats were the first tugs on the west coast to use 'Kort' nozzles and, within six months, all four tugs had them fitted. (Allan had a license agreement with Kort in Hamburg, Germany, to design nozzles for North America and Manly manufactured them). These were the first of a new "hot rod" class. Also designed for Kingcome Navigation was the ocean-going tug *Haida Brave*, later renamed *Rivtow Commodore*.

140' tug *Haida Brave* tow a 365' covered barge loaded with newsprint destined for California (a trio of the barges were built to move the newsprint from B.C. mills).

Robert Allan Ltd. collection

CATERPILLAR



**CONGRATULATIONS TO ROBERT ALLAN LTD
ON THEIR 75TH ANNIVERSARY.**



www.finning.ca 1-888-Finning

Finning (Canada) Ltd. 120 – 15100 River Road, Richmond, BC Canada Tel: 604-231-3900 Fax: 604-231-3910

Robert Allan Ltd. collection



Photo courtesy Ocean Construction Ltd.



The list of tugs built for the coastal towing companies through the 1960s and '70s is very long, and

Bob Allan designed a large percentage of them. As illustrated by these tugs, the graceful lines from the era of the classic wooden tugs were carried over into the steel boats. The *Harold A. Jones* was built as the flagship of the Vancouver Tug fleet (1966) and is now the *Island Monarch*. The *Evco Breeze*, *Wave* and *Spray* were built in the mid-1960s and still tow aggregate and cement barges for Ocean Construction Ltd. The *Hecate Crown* (1970; see photo on this month's cover) was built for the Canadian Tugboat Company, then owned by Crown Zellerbach (Canada). It is now the *Seaspan Challenger* (a sister to the *Seaspan King*) and was converted several years ago for pushing Seaspan's trailer/railcar barge *Coastal Spirit*.

Robert Allan Ltd. collection



Bob Allan designed the 70' *G.D. Hemmingsen* (1972; the sister *Hamilton Baillie* followed in 1977) for Chemainus Towing, the first tug built to address the 1972 hull construction



and accommodation standards requiring crew quarters to be above the waterline. Noise levels were also addressed with "floating" accommodation structures. Island Tug and Barge's *Island Crown* (above) was built as the *Gulf Julia* (1974) for Gulf of Georgia Towing and has the raised forecastle design which achieved the above-waterline accommodation on the *G.D. Hemmingsen*. A bit bigger than the *G.D. Hemmingsen*, the 74' *Gulf Julia* was one of a series of six virtually identical <150 GRT tugs built locally. The 940-hp *C.T. Titan* (1979; top photo) is a powerful two-man shift boat that was also designed by Robert Allan Ltd. for Chemainus Towing.

Just what the

Dock Ordered



**Congratulations on 75 years of
Dedicated Service to the Marine Industry**

The state-of-the-art Seaspan and Cates fleet of shipdocking tugs were specially designed, by Robert Allan Ltd., for working in Vancouver Harbour and Roberts Bank.



Phone: (604) 988-3111 Fax: (604) 984-1615
www.seaspan.com

10 Pemberton Avenue, North Vancouver, BC Canada V7P 2R1



Rolls-Royce

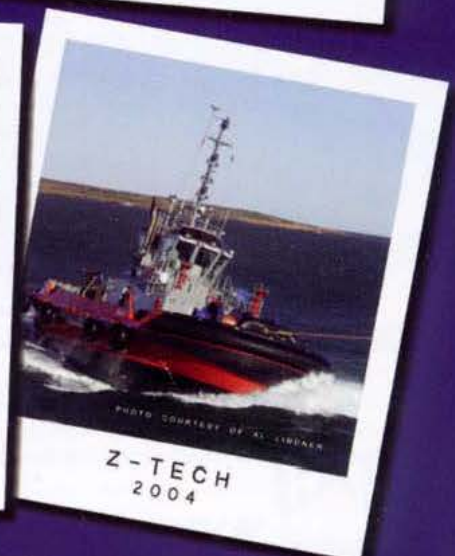
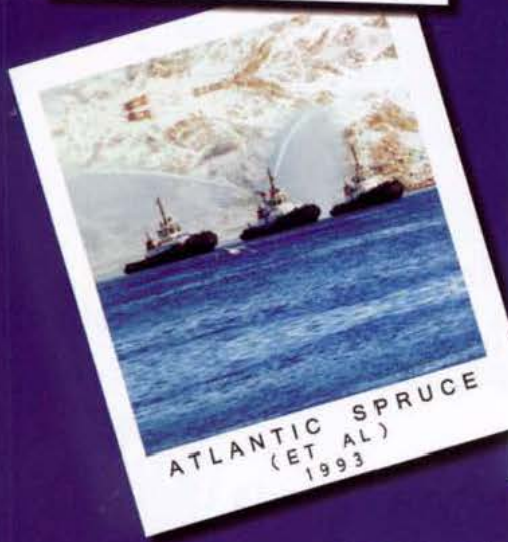
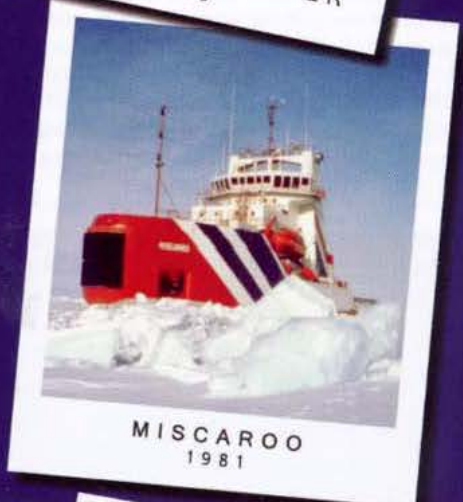
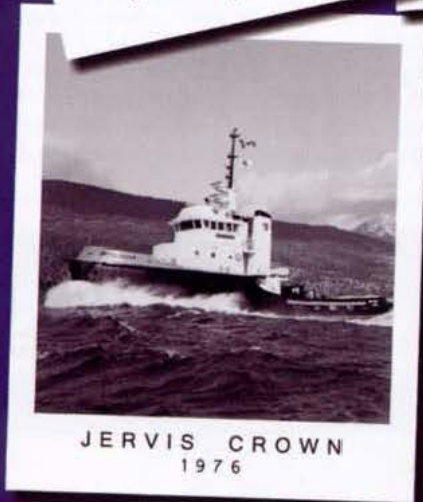
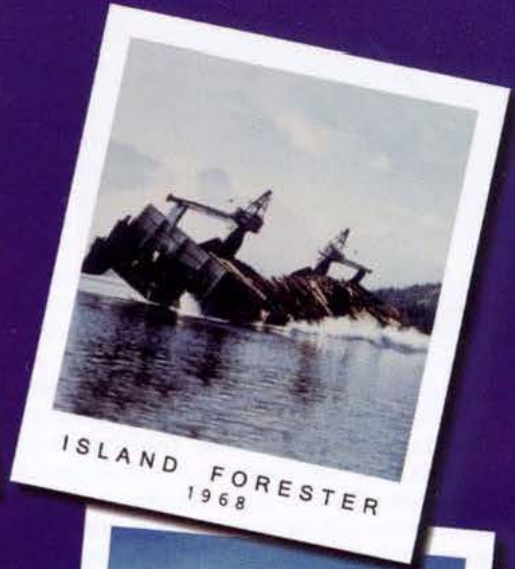
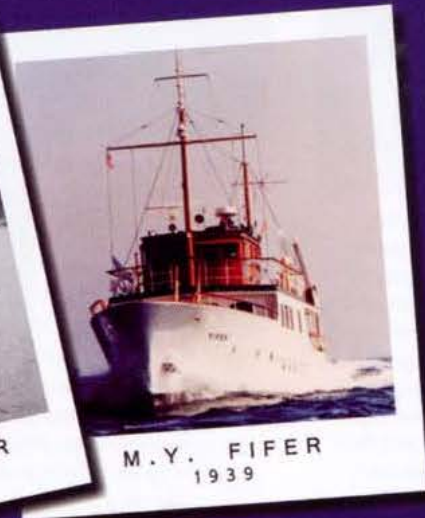
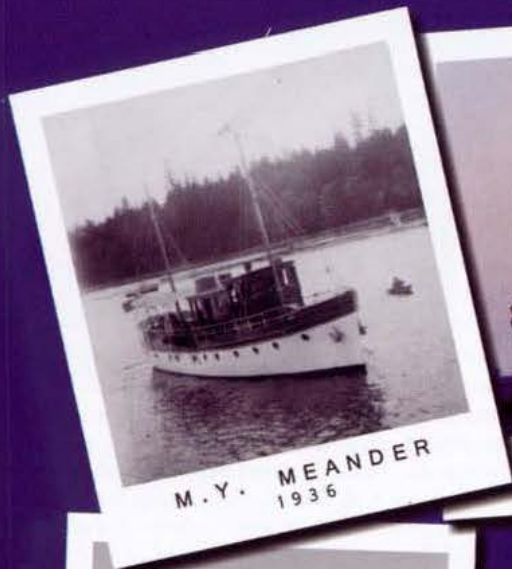
**CONGRATULATIONS
to Robert Allan Ltd.
on 75 years
of fine achievements
in boat design.**

Rolls-Royce Canada Limited

Telephone: 604-942-1100 • Fax: 604-942-1125
www.rolls-royce.com

1930 - 2005

Celebrating 75 Years of Service
to the International Marine Community



ROBERT ALLAN LTD.

NAVAL ARCHITECTS AND MARINE ENGINEERS

230 - 1639 West 2nd Avenue Vancouver, BC V6J 1H3 Canada
Telephone (604) 736-9466 www.raf.bc.ca Facsimile (604) 736-9483

For employment opportunities, visit our website

Robert Allan Ltd. collection



The *Jervis Crown*, now the *Seaspan Monarch*, was one of the last coastal towing tugs to be built (1977) in B.C. It was also the first project on which Bob Allan, according to his son, Rob, "gave me some free rein, but with close scrutiny." Thus the tug's design was largely Rob Allan's work.

First ship-handling tugs

Terry Waghorn, president of C.H. Cates & Sons, had some progressive ideas about what made a good ship-handling tug, particularly in the Port of Vancouver where Cates specialized in ship-docking. He took Bob Allan out to observe several jobs and the result was the company's first steel, dedicated ship-handling tug, the *Charles H. Cates XX*, launched in 1968. Together they kept refining and improving the designs which culminated in one of the first Z-drive tugs in North America, the *Charles H. Cates II*.

The Western Arctic fleet

While the production of harbour and coastal work-boats and barges continued through the 1970s, it was the design and construction of the Western Arctic and Mackenzie River oil exploration fleets that plugged the order books of BC naval architects and shipyards during that decade. "I started on the drawing board for all the shallow-draft Arctic tugs and barges designed for Northern Transportation Co. Ltd. and Northern Construction Co. Ltd. and for the first ice-breaking supply vessels for Dome Petroleum's Canmar

Robert Allan Ltd. collection



A flurry of design and building activity in the early 1970s produced a large fleet of shallow-draft tugs and barges for Northern Transportation Co. Ltd. and others on the Mackenzie River system. In this photo the 4500 hp barge-pushing tugs *Jock McNiven* and *Matt Berry* are under construction at the Vito Shipyard.

Allied Shipbuilders collection



Allan Ltd. designed the *Canmar Supplier*, the first of four 7000-hp ice-breaking offshore supply vessels to service Canmar's (subsidiary of Dome Petroleum) drilling operations in the Beaufort Sea.

The escalation of world crude oil prices in 1973 stimulated the Western Arctic offshore oil exploration which created lots of work for BC naval architects and shipbuilders. Robert



Robert Allan Ltd. collection

The *Charles H. Cates XX*, the first steel twin-nozzle ship-docking tug designed for C.H. Cates & Sons, evolved into the



Robert Allan Ltd. collection

larger *Cates IV*, then the *Cates XVIII* (right) (see photo on page 19 of "Burrard Inlet Waterfront" in this issue). The length, beam and horsepower was increased again for the next series of 60-footers, including the 1800-hp *Cates V* and *Cates VII* (top photo) and their two sisters.



Robert Allan Ltd. collection

The distinctive *Phyllis Yorke* (1970), a rail-barge pusher tug designed with three Harbourmaster Z-drives for CN's St. Clair River crossing, is thought by many to be the first Z-drive tug built in North America.

[Canadian Marine Drilling]," recalls Rob Allan. "The culmination of that work was the 1981 design for the Arctic-class IV icebreakers for Gulf Oil, the *Miscaroo* and the *Ikaluk*. Both are now operating under the SMIT International flag in Russian waters. One was built at Vancouver Shipyards and the other by NKK in Japan. That was a major and very exciting project."

Robert Allan Ltd. collection



The design of the ice-class IV *Miscaroo* (1982) was Robert Allan Ltd.'s most significant design work

for the Arctic fleet (and last as the Western Arctic oil exploration was shut down a couple of years after *Miscaroo*'s delivery). The Arctic had been divided into zones according to severity of ice coverage; ice-class I through X defined the requirements for vessels with the capability to steam continuously through ice of varying thicknesses and for various time periods.

Robert G. (Rob) Allan, the third generation

Robert G. "Rob" Allan had joined his father at Robert Allan Ltd. in 1973. "I went to the same university as my grandfather in Glasgow. In the early 1900s, when he studied naval architecture, the graduating classes were huge, generally 100-plus students. In 1971 I was one of a class of a half-dozen graduates. Shipbuilding in the UK was

Robert Allan Ltd. collection



The 2200-hp *Charles H. Cates II* (1983) was the first Z-drive ship-docking tug design from Robert Allan Ltd. and the first for C.H. Cates & Sons. The Cates tugs evolved with shallow draft, low lateral resistance, fairly light displacement and wide beam so they were highly manoeuvrable and could be pulled sideways without tripping.



Robert Allan Ltd. collection

The early 1980s were lean years at Robert Allan Ltd. but the company converted to CAD design systems which helped secure some design work on Coast Guard navais tenders and barges and, at the end of the decade, the 500-class cutters including the *Gordon Reid*.

probably at its lowest-ever ebb in those days. Traditional shipbuilding had essentially evaporated and the North Sea oil industry hadn't really started yet." Nonetheless, Rob Allan spent two years after graduating with one of the UK's leading naval architectural firms, Burness, Corlett and Partners, before returning to Vancouver.

Rob Allan had been with Robert Allan Ltd. for less than 10 years when his Dad died in 1981, the year before the launch of the *Charles H. Cates II*. "At that stage I hadn't

Continued on page 35...

*Congratulations to
Robert Allan Ltd.
for 75 years of
great designs*

International Marine Consultants Ltd.

**Project Managers
Material Managers
General Contractors**

E-mail: imcl@telus.net

Tel: 604-980-6775

Fax: 604-980-6873

258 East 1st Street, North Vancouver, B.C. V7L 1B3

Celebrating 70 Years of Service



EXPERIENCE IS OUR EXPERTISE!

WORKING WITH:

- ✓ Superston
- ✓ Nibral
- ✓ Manganese Bronze
- ✓ Stainless Steel & Steel

**Manufacturing and repairing
propellers since 1935**

**Computer Aided Propeller Design System
Exclusive MRI Propeller Testing**

1865 Spicer Road, North Vancouver, BC V7H 1A1

Tel: **604-929-8407** Fax: 604-929-7121

Robert Allan Ltd. collection



Five all-aluminum, 40' fireboats were designed and built in the early 1990s with twin waterjet propulsion (25-knot service speed) and two fire monitors providing 3000 gpm pumping capacity. Moored at strategic points around Vancouver Harbour, they provide fast-response with manning from the closest fire-hall.



Robert Allan Ltd. collection

The *Atlantic Spruce* class proved to be a "best-seller". In the early 1990s the first tugs in this ASD 30/60 class were delivered to Atlantic Towing in St. John, New Brunswick, by the Irving Group's East Isle Shipyard in Prince Edward Island. As of April, 2005, the shipyard had delivered a total of 18, the most recent builds for international clients. The prototype *Atlantic Spruce* (the sister tug, *Atlantic Oak*, is shown here) was sold to Østensø Rederi AS of Norway and as the *Alex* was later retrofitted with Robert Allan Ltd.'s escort skeg.

Robert Allan Ltd. collection



When launched by Nichols Bros. Boatbuilders in Washington in 2003, the *L.A. Fireboat 2* was announced as the most powerful, dedicated fireboat in the world. Main propulsion is twin 1800-hp Detroit Diesel/MTU diesels driving Voith Schiffstechnik cycloidal propellers. The 36,000 US gpm pumping capacity is provided by six pumps, four driven by two DD/MTU pump engines and two driven by the main engines.



Robert Allan Ltd. collection

The RAmports series of ship-handling tugs was introduced in 2001. Conceived as a standard series, aimed primarily at small shipyard clients, the design is derived from the company's numerous successful ASD designs. The *Achille Onorato* (2004), built by Sanmar Denicilik of Istanbul, is an example of the RAmports 3200 Class (32m./67 tonne bollard pull). In April 2005, RAmports tugs, ranging from the '2400' up to the '3600', were under construction in the Middle East, Southeast Asia, Europe, North America, South America and China (the RAmports '3200' tugs underway for the Ningbo Port Group mark the first time a Chinese port authority has gone outside China for a new tug design).

Robert Allan Ltd. collection



The *Seaspan Hawk* and *Seaspan Falcon* (1993) were designed for ship-docking operations in Vancouver Harbour and met Seaspan International's requirement for a heavier, full-bodied ship-docking tug while retaining the compact, powerful, manoeuvrability which Robert Allan Ltd. had developed with the Cates ASD tugs. The *Hawk* and *Falcon* led to the *Ocean Intrepide*, the first of a new ASD 24/50 class of which many have now been built in South America.

Robert Allan Ltd – 75th Anniversary

Robert Allan Ltd. collection



This sample group is representative of the high-speed passenger and patrol vessels that have come off the company's drawing boards since the early 1990s. Vice-president Hans Muhlert, the company's high-speed craft expert, was responsible for the design of these vessels.

Malaspina Express (1992; top left). A high-performance passenger/freight express cruiser achieved the design 45 knots through its light-weight but durable aluminum structure and twin 1425-hp GM 6V-92s on Hamilton waterjet drives.

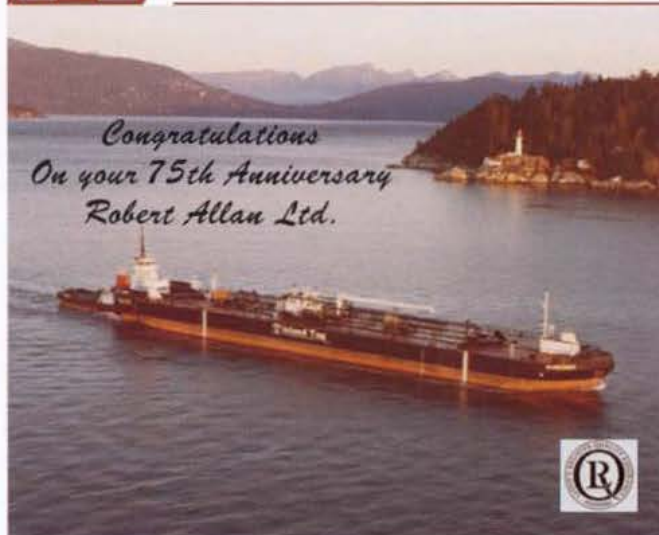
J/V Wind and J/V Runner (1996; top centre). Designed for Strait Crossing Joint Venture (primary contractor for the New Brunswick/Prince Edward Island bridge), the 16-passenger high-speed crewboats were equipped with waterjet propulsion, aluminum cabins and RHIB hulls by Zodiac Hurricane.

RCMP patrol catamarans (top right photo). In the early 1990s four 64'9" x 22'0" x 2'2" RCMP patrol cats were built to the Robert Allan Ltd. design for the prototype P/V **Nadon** (the P/V **Lindsay** and P/V **Higgitt** were also built for BC coastal operations; the P/V **Simmons** for Newfoundland).

They have twin Arneson surface-piercing propeller drives.

Takaya (2000). Please see page 13 in the "Burrard Inlet Waterfront" feature in this issue for a description of this Port of Vancouver Harbourmasters's patrol launch.

Tsimshian Storm (2003; bottom centre). An all-aluminum passenger ferry with seating for 45, the **Tsimshian Storm** was designed to service three, remote North Coast Tsimshian First Nation communities out of Tsimshian Prince Rupert. Three 440-hp Yanmar diesels provide 21 knot service speed.



www.islandtug.com

55 Rogers Street
Vancouver, BC Canada V6A 3X8
Tel: 604 873-4312 • Fax: 604 873-4318
Email: info@islandtug.com

NautiCAN

Congratulations Robert Allan Ltd.
for an impressive 75 years.
NautiCAN has enjoyed working with you
for over 30 years and looks forward to many
more collaborations in the future.



Nautican integrated nozzles, installed on the Edgar Kotokak (NTCL). A design collaboration between Robert Allan Ltd. and NautiCAN R & D Ltd.

NautiCAN R & D Ltd.

P.O. Box 428 – 115 Kelvin Grove Way
Lions Bay BC V0N 2E0

Phone: 604-921-1920 www.nautican.com

Robert Allan Ltd. collection

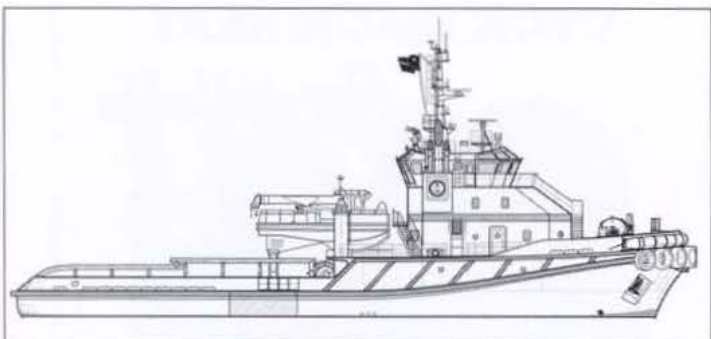


Robert Allan Ltd. collection



Hawaiian Tug and Barge's 2600-hp **Eleu** (1989) was the first offshore order for the ASD 23/30 design for which the 2200-hp **Charles H. Cates II** (1982) was the prototype. HTB has continued to order beamier and more powerful Robert Allan Ltd. ASDs and the latest is the ASD 23/60 **Mikioi** (bottom photo) (4730 bhp; launched in 2004 by Foss Maritime as the first tug in their 'Dolphin' class). The **S/N Jaua** is an ASD 24/40 recently launched by Sulnorte of Brazil.

Robert Allan Ltd. collection



The first of the 30-metre 8,000 bhp **Rampage 5000** class Offshore Support tugs was undergoing trials for Seabulk Offshore Ltd. in April, 2005, at Labroy Marine, Singapore. Construction is currently under way on two more vessels of this class for a French client.

quite anticipated taking over the reins, I can assure you," he recalls. Still the new president initiated a major change at his company.

The switch to Computer Assisted Design

"When I joined the business we were still doing all manual drafting. There were no more wooden boats being designed and the drawing of a steel boat doesn't quite have the same charm. We basically put our drawing boards away in 1982 and switched the office over to computer-assisted design (CAD). We were the first company in our field in



Robert Allan Ltd. collection

The **Indee** was the first of RAL's new 'Z-Tech' design of ship-handling tug developed for PSA Marine of Singapore. 'Z-Tech' is designed to incorporate the best operational advantages of both the Z-drive "tractor" tug and the ASD "pusher" configuration for handling large container ships. An escort skeg increases the astern directional stability and the indirect towing capability. The 'Z-Tech' concept won industrial design awards in Singapore and Germany.



Robert Allan Ltd. collection

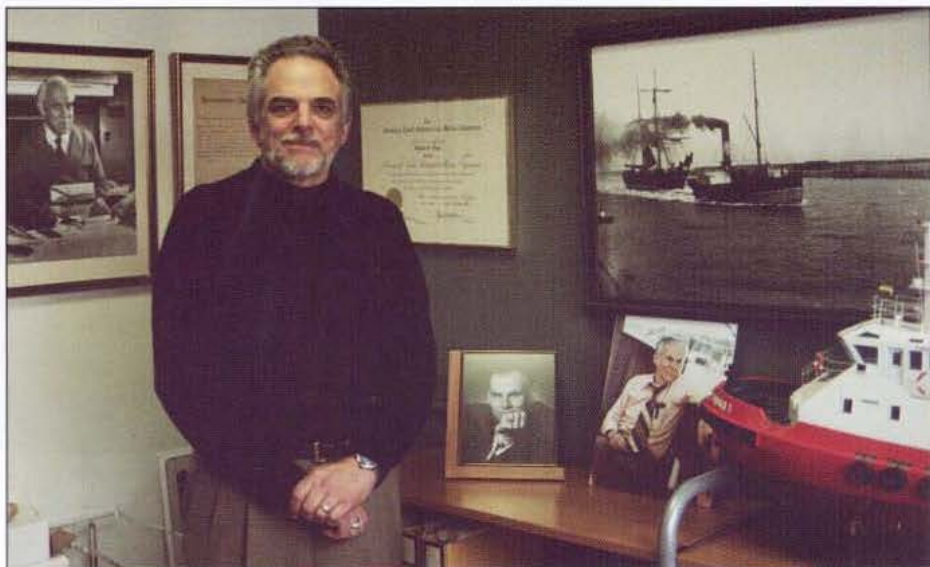
The result of an extensive program of research and development, the **Ajax**, with 9650-hp and Voith Schneider propulsion, is one of the most powerful dedicated escort tugs in the world. Robert Allan Ltd. claims that the tug provides the highest indirect steering force capability of any tug afloat, with a significant reserve of stability. The **Ajax** was designed for Østensjø Rederi AS of Norway for oil terminal tanker escort operations.

Canada to do so. There was no great game plan but we felt that going digital was the right thing at the time. In hindsight, we were probably a little premature because 1983 and '84 were particularly lean years for our business and the BC economy as a whole. There was a pretty significant learning curve with CAD, but we made the investment and it actually enabled us to land some work for the Canadian Coast Guard that we wouldn't have been able to get otherwise. We began to promote our strengths as a CAD-literate office. Ultimately it gave us a bit of a head start and certainly set us up for today's work".

Robert Allan Ltd. today

Rob Allan credits the development of the Cates ship-docking tugs as the foundation on which the largest segment of Robert Allan Ltd.'s business is built today. The company now designs ship-assist and escort tugs for tug operations world-wide. "We cut our teeth in the ship-assist business with the Cates tugs. But back in the early '80s you couldn't interest anybody in the "outside" world in a 24-metre harbour tug. The general perception was that they were too small, just toy boats."

After the Charles H. Cates II, Cates took delivery of two more of the light-displacement, shallow-draft, azimuthing stern-drive (ASD) tugs, each with 2400 horsepower. Then the first export order for the design came from Hawaiian Tug and Barge (HTB). The 2600-hp Eleu was delivered in 1989, followed by the Vancouver for Shaver Transportation of Portland. For HTB's Mamo and Brusco



In the company board-room, Robert G. (Rob) Allan, president of Robert Allan Ltd., is flanked by photos of his grandfather (left), Robert Allan Sr., and his father, Robert F. (Bob) Allan.



Congratulations, Robert Allan Ltd.
A Hull of a lot of Accomplishments
75 Years of Exceptional Designs!



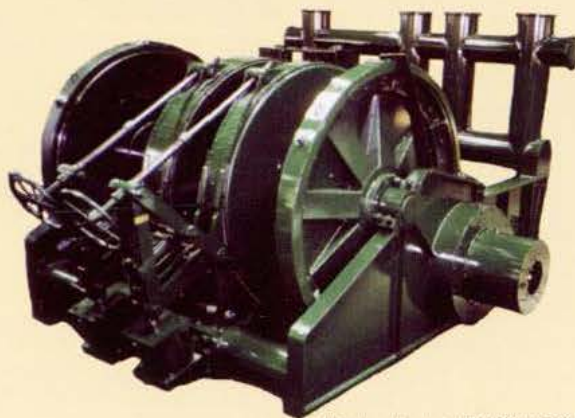
Series 60 — 350 bhp (261 kW) – 825 bhp (615 kW)
Series 2000 — 499 bhp (372 kW) – 2000 bhp (1490 kW)
Series 4000 — 1000 bhp (746 kW) – 3650 bhp (2720 kW)



To learn more, visit us
at www.ddabc.com
Or call 604-888-1211



BURRARD HEAVY DUTY DECK MACHINERY



HUD towing winch supplied to MARSHALL FOSS

TOWING WINCHES
ANCHOR WINDLASSES
MOORING CAPSTANS

CARGO WINCHES
HYDRAULIC OR
ELECTRIC DRIVES

Congratulations to Robert Allan Ltd.
on 75 Years of Family Business!

BURRARD IRON WORKS LIMITED

220 Alexander Street, Vancouver, B.C. V6A 1C1
Phone: (604) 684-2491 Fax: (604) 684-0458
E-Mail: sales@burrardironworks.com



The three senior personnel in today's Robert Allan Ltd., left to right (with the year the individual joined Robert Allan Ltd. in brackets): Hans Mulhert, P.Eng., Vice President, Engineering (1970); Ken Harford, P. Eng., Engineering Manager (1988); Rob Allan, P. Eng., President (1973). The company's current staff of 36 in the Vancouver offices handles a large volume of work, particularly over the last couple of years, as many new design projects continue to come on stream.

Tug and Barge's **Wynema Spirit**, the power was increased to 3000 bhp and 3600 bhp, respectively, and consequently the length and beam of the original design were increased to provide more stability. In Vancouver Harbour the concept of the compact, highly-maneuvrable, powerful ship-handling tug was carried through to the **Seaspan Hawk** and **Falcon**, both designed for Seaspan International.

Today, Robert Allan Ltd.'s designs for both compact and larger harbour tugs are being built world-wide. The designs prove themselves in service but the company also offers a complete production package that has been very successful. "Now we provide full 3-D 'Product Model' packages," describes Rob Allan. "We work with mostly small shipyards world-wide and they rarely have technical

staff, so they look to the designer to supply that expertise. Using the BC-developed 'Ship Constructor' software, we can offer a complete 3-D structural model, prepared in AutoCad, for NC parts cutting and assembly." Also offered are full 3-D piping models, as well as outfitting and electrical detailing. "With piping, for example, you are modelling to the millimetre," Allan says. "You need to know exactly what pump or compressor the shipyard is buying. A lot of interfacing is required with the shipyard's engineering and purchasing departments. But we have a very good team at Robert Allan Ltd. and, of course, the process becomes easier over a series of tug designs."

At the end of April, 2005, 30 of the Vancouver company's high-performance ship-handling tug designs were in various stages of construction, or close to launching, at shipyards in Spain, Italy, Turkey, Abu Dhabi, China, Singapore, Brazil, Chile, Canada (East Isle Shipyard, PEI), the U.S. (Diversified Marine Industries and Foss Shipyard, both in Oregon, and Colle Towing in Mississippi). A major success in early 2005 was the delivery of the AVT 37/65 design, **Velox**, a 6400-hp Voith tractor escort tug designed for Østensjø Rederi AS of Norway for oil terminal tanker escort operations (see photo on page 35).

Although it may be tempting to label Robert Allan Ltd. "the tug-design company", Rob Allan is quick to point out the variety of recent and current design work – fast patrol boats for the RCMP and the New York City police, high-speed crew boats for the Middle East which are being built in Sri Lanka, fire boats for the cities of Los Angeles, Philadelphia, Portland (Maine), New York City and Tampa (Florida). A 490' trailer ferry has just been designed and a 7000-tonne DWT bulk cement barge for Lehigh Cement of Seattle, recently completed in China, continues the tradition between Robert Allan Ltd. and the local cement companies which started back in the 1950s.

75 years of achievement

As this article was being prepared, Rob Allan returned to Vancouver from London with the 'Small Craft Group Medal' presented to him by his peers at the Royal Institution of Naval Architects. The award recognizes his "contribution to the field of workboat design and, in particular, his innovative work in the development of tugboats

for all types of operations." It's a prestigious award and Allan says, "I'm very pleased to share it with all who work at Robert Allan Ltd." The medal is a truly proud achievement and a milestone with which to mark the company's 75th year of ship design. ◀