



National
Defence

Défense
nationale

CANADIAN PATROL FRIGATE PROJECT



NAVY MODERNIZATION



Canada



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NEW PATROL FRIGATES

Canada's navy, spread over the Pacific and Atlantic coasts, working with allied navies in guarding our trade routes and lending weight to our counsels in international alliances, will be showing the Canadian flag in new patrol frigates beginning in 1990.

The Canadian Patrol Frigate (CPF) Project includes the building of twelve new patrol frigates for the Canadian Forces. It is in keeping with Canada's maritime interests and maritime tradition.

The CPF Project is part of a long-range plan to replace the 20 steam-driven naval destroyers which were built between 1955 and 1964. The CPF Project will replace the twelve oldest steam-driven destroyers that first saw service in the 1950s and early 1960s.

New naval ships to protect Canada's growing national interests and resources in coastal waters also support Canada's commitments to the defence of North America and the collective strength of the North Atlantic Treaty Organization (NATO) whose member countries share commitments to peace and security.

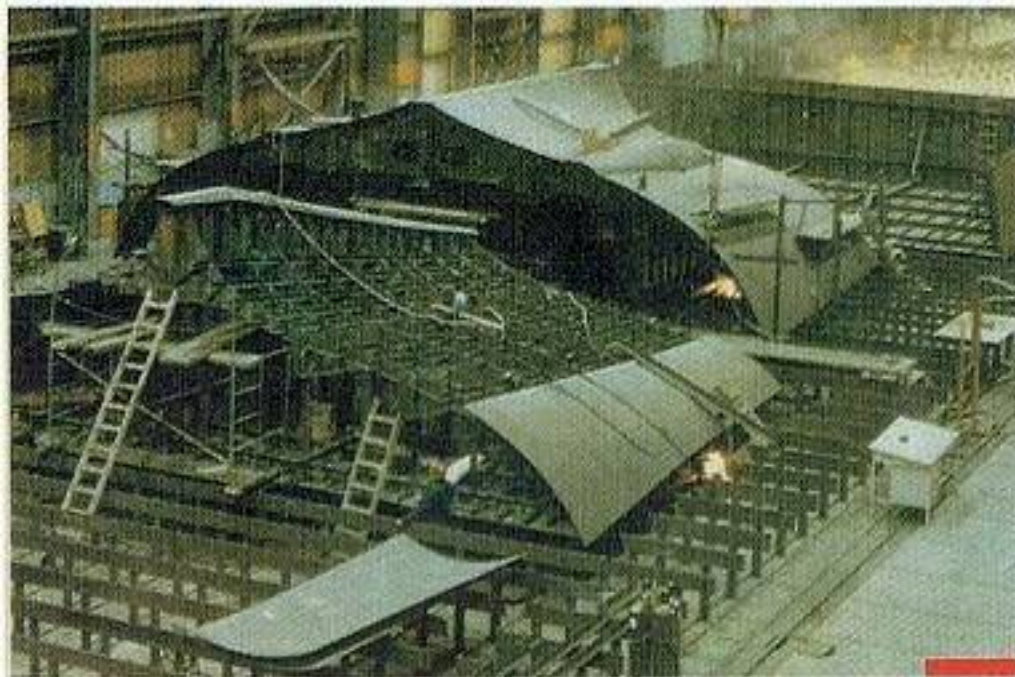
In 1983 the Federal Government approved the expenditure of funds to design and construct six new frigates. In 1987 the White Paper on Defence was published and outlined a total modernization plan for the navy which included the procurement of an additional six

frigates. Approval for procurement of the second six ships came in December 1987.

The Federal Government intended from the start that Canadian industry participate in the production of these new patrol frigates to the greatest extent possible. To this end, the prime contractor is a Canadian owned company and the ships are being designed by Canadians and built in Canadian shipyards.

The CPF Project represents the largest and most technically complex procurement undertaken in Canada by the Federal Government. The Government is therefore using this major purchase to pursue its objective of creating near and long term industrial benefits for Canadians.

This booklet contains general information about this important naval shipbuilding project.



Assembly of unit for CPF 01 at Saint John Shipbuilding Ltd.



NATIONAL MARITIME INTERESTS

A modern and technologically superior navy will result as the new frigates enter service in the early 1990's. Since the start of Canada's navy in 1910, the requirement to periodically modernize its ships reflects long established government policy to provide for ways and means to enhance national security.

Thanks to Canada's geographical position, trade and oceanic wealth, Canadians enjoy and expect continuance of their North American standard of living. For this reason, Canada has provided for the protection and defence of its national maritime interests throughout its history.

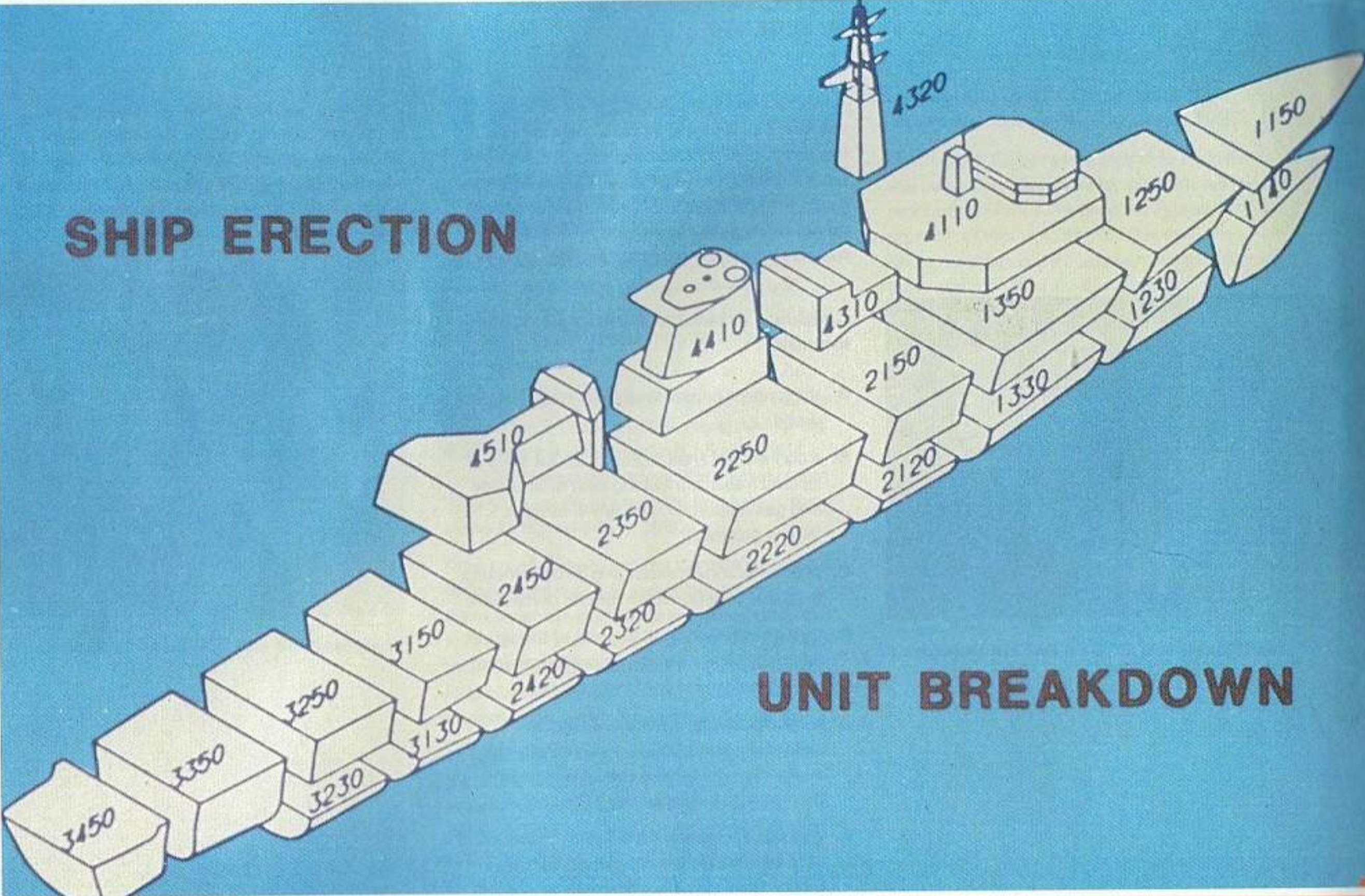


Preoutfitting of unit for CPF 01 at Saint John Shipbuilding Ltd.

Canada's extensive maritime interests include:

- A. the longest coastline of any nation in the world;
- B. a continental shelf, equal to about 40% of its land mass, containing vast offshore oil and gas resources, and world famous fishing grounds;
- C. economic zones, extending 320 kilometers from our coasts, which require protection;
- D. trading interests with the rest of the world, which depend on shipborn trade and free use of the sea lanes of commerce;
- E. responsibility for maritime defence — essentially surveillance and control — in areas of water whose total size exceeds the nation's land mass by 10%; and
- F. a strategic position from which to work with other like-thinking nations for the collective defence of North America, and the North Atlantic and North Pacific regions.

SHIP ERECTION



UNIT BREAKDOWN

Illustration of modular construction concept



DETERRENCE AND PEACE

The work of Canadian Maritime Forces does not begin and end with war. The expenditure of up to \$10 billion dollars on 12 fully supported ships in a time of peace may appear to some to be excessive. Why spend all this money; why build all these ships; why train all these men? What does the navy do in peacetime?

Nothing could be more futile than to argue that because there is no immediate fear of war, there is no immediate need for the navy. One might as well say that because people have no immediate fear of death, they have, therefore, no immediate need for life insurance. War, like death, comes suddenly, and in many strange forms. A country cannot build ships and train men in a day, or even a few years.

Since the Naval Service Act of 1910, the navy has been part of the life insurance of the nation. It has been involved in the defence of our national interests in two world wars and the Korean conflict. It has contributed to United Nations efforts in keeping the peace in various parts of the world.

Apart from helping to deter, and if necessary, to combat aggression, the peace-time navy has many tasks to perform. Through our collective security ties and common interests with our friends in the international community, the navy is always ready, maintaining the peace by being part of credible naval deterrent



Erection of keel unit for CPF 01 in dock at Saint John Shipbuilding Ltd. on 19 March 1987

CANADIAN GOVERNMENT OBJECTIVES

forces. No great naval actions have been fought by our navy since the Korean conflict, yet these years mark one of the most important periods in our national development. In a period of almost uninterrupted peace and progress, Canadians have been able to engage, quietly and legitimately, in international trading, a vital activity in sustaining and improving Canada's economy. As a major trading nation, if we want to buy abroad, we must sell abroad. When this business is conducted by sea, the responsibility for the protection of the export and import sea lanes is one of the navy's tasks.

In Canadian home waters the navy trains and at the same time protects our resources at sea, be they minerals, fish or other assets. The navy is there to remind others that legitimate Canadian interests are and must remain inviolate... and the navy is there to save lives in search and rescue operations in some of the world's severest sea and weather conditions. This is no small accomplishment when the unforgiving environment of Canada's seas and coastlines is considered.

The teachings of history clearly show that the navy must be ready with modern ships and trained people to remain a force for deterrence along with our close friends with whom we share commitments to peace and security.

When the Government decided to press ahead with the modernization of our naval forces, it also defined what Canada should expect to gain from such a large capital program. In addition to sharing with our friends our commitment to peace and security, it is important to contribute to the enhancement of our economy and to ensure that the capital expenditures are made in a manner that maximizes socio-economic benefits to Canada.

It was decided that the ships would be built in Canada and result in:

- A.** the best and most effective ship possible for the money allocated to the CPF Project, a ship that would incorporate the best of late twentieth-century technology so that it would be a credible force for deterrence and peace;
- B.** the establishment within Canadian industry of a capability to manage the design and integration of complex naval ship projects of comparable magnitude, as well as a Canadian capability to undertake large scale projects featuring electronics systems integration; and
- C.** the creation of large scale economic and regional development benefits for Canadian industry, and especially, the enhancement of Canada's high technology electronics capability.



THE DEFINITION PROCESS

The CPF Project began in 1977. To plan, design, build and deliver operational naval ships is a long and complex process.

First, a detailed analysis was conducted to determine the type of ship which would best serve the Canadian requirements. It was established that the most cost-effective solution within the constraints of the defence budget was to build one type of ship rather than several. The full range of capabilities in this single type of ship will permit it to do all its maritime tasks on both the national and NATO level, and in all sea and weather conditions found in Canadian maritime areas of interest. Canadian industry has been involved since the initial planning to ensure its participation in the Project's implementation.

Some of the major steps during the planning stage (1977 to 1983) included:

- A.** the definition of detailed program requirements;
- B.** the submissions by five industrial organizations of their proposed approaches to meet the new frigate's requirements;
- C.** the evaluation of these proposals and the selection of two Canadian industrial groups to prepare and submit their detailed proposals for the design and construction of the ships;
- D.** the evaluation of the two competitive proposals;
- E.** the selection by Government of a winning contractor; and
- F.** the award in July 1983 of an implementation contract to Saint John Shipbuilding Limited.



Preparing HMCS HALIFAX for Float-Up and Naming Ceremony



HMCS HALIFAX Naming Ceremony 19 May 1988 at Saint John Shipbuilding Ltd.

THE TYPE OF SHIP REQUIRED

The performance required of a ship stems from the environment in which it will operate, and its missions. The new frigates must be able to operate in sea and weather conditions off the coasts of Canada and in the North Atlantic, which are among the harshest in the world. They must be able to carry out the military tasks associated with the defence and protection of Canada's maritime interests. They must be able to contribute to collective defence and, with other NATO forces, provide a credible and effective deterrent against any potential threat and challenge.

Careful analysis of these required capabilities determined size, sea-keeping qualities, speed, endurance, and the equipment which would make the ship fully capable of carrying out its peacetime tasks and waretime combat missions.

PATROL FRIGATE DESIGN

A patrol frigate capable of meeting these demanding requirements has been designed by Canadian industry. Some features of the CPF design include:

DISPLACEMENT	4750 tonnes
DIMENSIONS	
– length (overall)	134.1 meters
– beam (at one deck)	16.4 meters
– hull draft	4.9 meters
– navigational draft	6.9 meters
PROPULSION SYSTEM	– Combined Diesel or Gas (CODOG) – one Pielstick Model PA6, 20 cylinder, cruise diesel – two GE LM 2500 Gas Turbines – Cross-connect gearbox – two Escher Wyss controllable pitch propellers
SPEED	– greater than 27 knots
RANGE	– in excess of 4500 nautical miles at economical speed
ELECTRICAL POWER	– four 850 kW Telefunken Diesel Generators
SENSORS	
– Underwater	– CANTASS Canadian Towed Array Sonar System – AN/SQS-505 (V)6 Hull Mounted Sonar – Sonobuoys and AN/UYS-503 Sonobuoy Processing System – Acoustic Range Prediction System
– Above Water	– AN/SPS-49 (V) 5 Long Range Air Search Radar – Sea Giraffe 150 HC/CPF Medium Range Search Radar – Sperry MK 340 Navigational



— **Electronic surveillance measures:**

- Radar
- two VM25 STIR Fire Control Radar Systems
- IFF MK 12 System
- AN/SLQ-501 CANEWS, Canadian Electronic Warfare System
- AN/SRD-502 Communications Intercept System

NAVIGATION

- Omega II
- LORAN-C
- AN/URN-501 Tacan
- Inertial Navigator/Gyro-Compass MK 29 Mod 3 (2 fitted)
- Echo Sounder
- AN/SRD-331 Doppler Log

WEAPONS

— **Torpedoes**

- MK 46 Torpedoes (Ship and helo launched)

— **Missiles**

- 16 RIM 7M Vertically launched Sea Sparrow surface-to-air missiles
- 8 Harpon surface-to-surface missiles

— **Guns**

- Bofors 57 mm MK 2 GWS
- Phalanx MK 15 Block 1 Mod 1

— **Electronic countermeasures**

- RAMSES Jammer
- SHIELD Offboard infra-red and chaff decoy

— **Acoustic Countermeasures System**

- AN/SLQ-25 NIXIE



HMCS HALIFAX, Fall 1988

COMMAND AND CONTROL SYSTEM

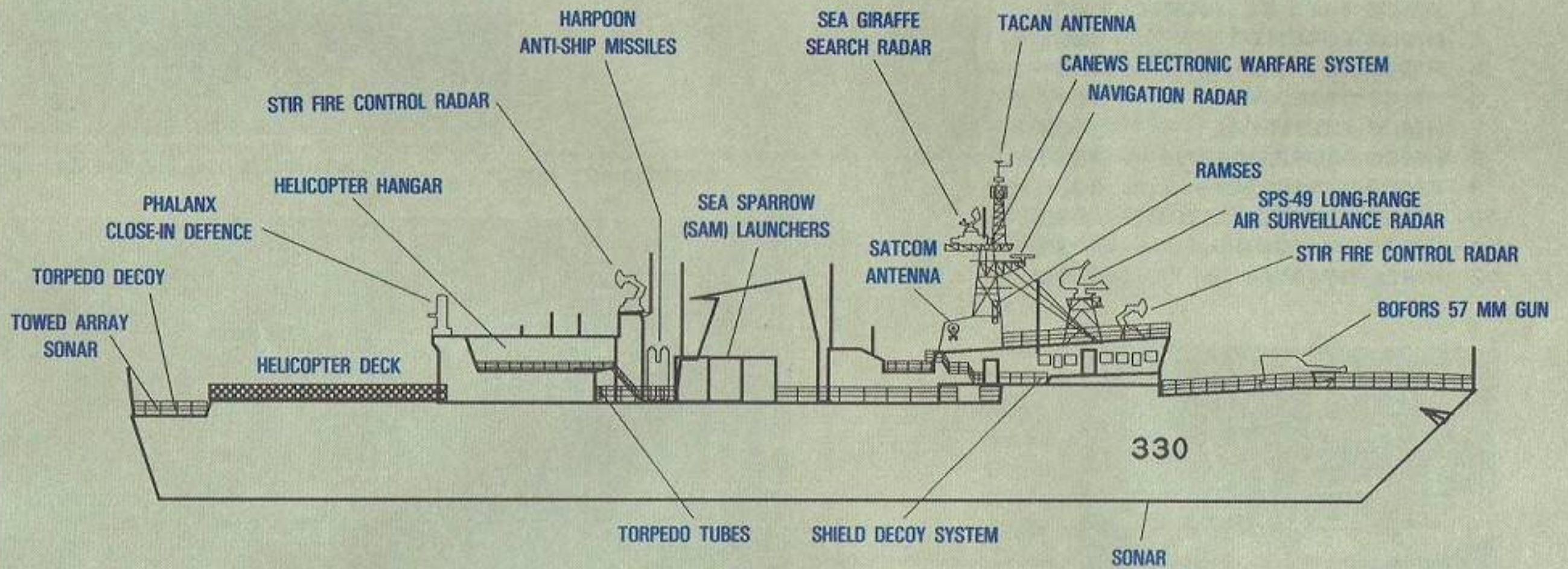
- SHINPADS, (Shipboard Integrated Processing and Display System), Distributed system using a Serial Data Bus and AN/UYQ-501 CPF Standard Display Consoles, AN/UYK-505 and AN/UYQ-504 computers

COMMUNICATIONS

- **Exterior**
 - LF/MF/HF/VHF/UHF & SATCOM Integrated System
- **Interior**
 - SHINCOM (Shipboard Integrated Communications System)
- **Underwater**
 - AN/WQC-501 Underwater Telephone
- **Helicopter**
 - one CH 124A Sea King or replacement
- **Ice Capability**
 - Brash ice
- **Accommodation**
 - 225 all ranks



CANADIAN PATROL FRIGATE



PROJECT MILESTONES

The design construction and delivery of twelve Canadian Patrol Frigates will continue until 1996.

Delivery Schedule Plan

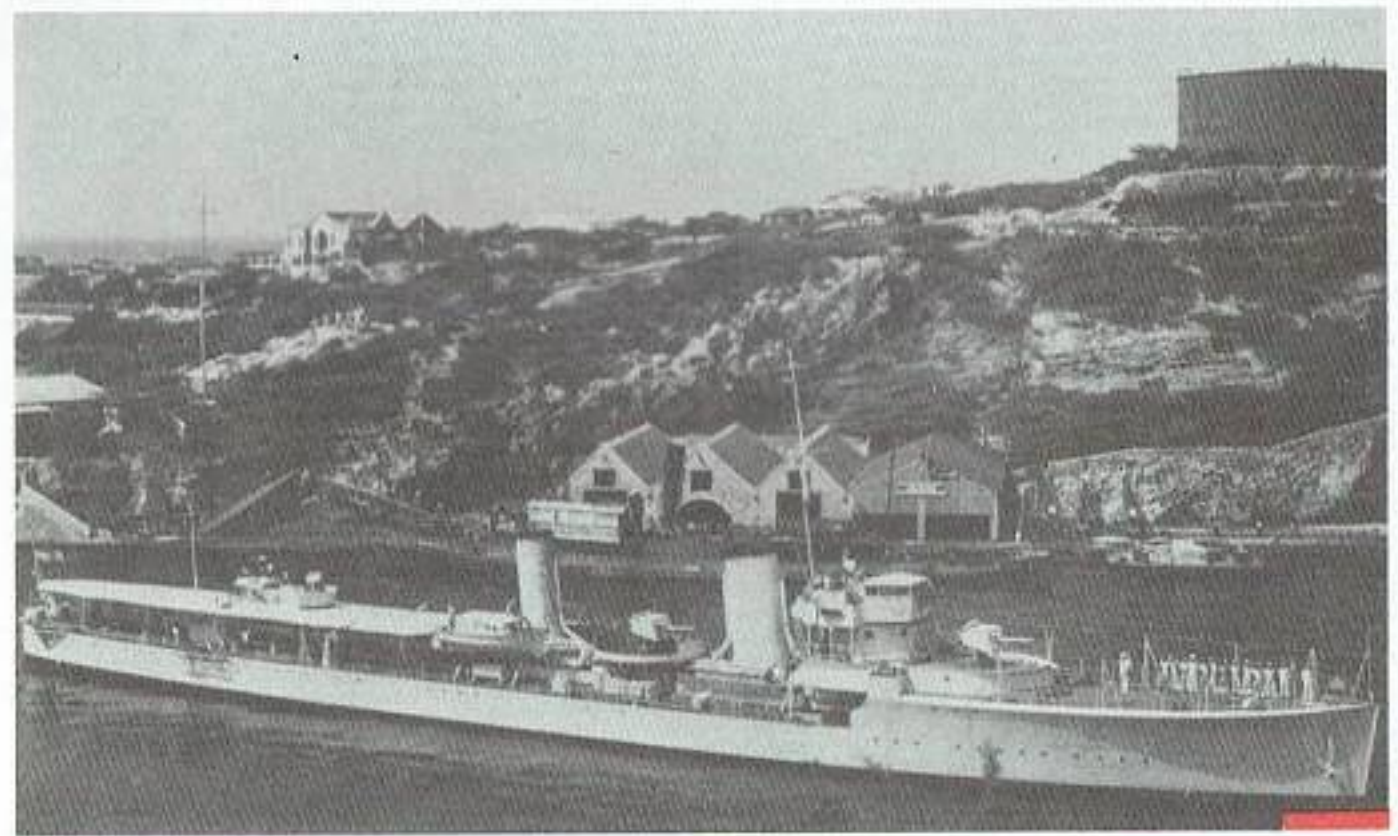
1	HMCS HALIFAX	1990
2	HMCS VANCOUVER	1990
3	HMCS VILLE DE QUEBEC	1991
4	HMCS TORONTO	1991
5	HMCS REGINA	1991
6	HMCS CALGARY	1992
7	HMCS MONTREAL	1992
8	HMCS FREDERICTON	1993
9	HMCS WINNIPEG	1994
10	HMCS CHARLOTTETOWN	1995
11	HMCS ST. JOHN'S	1995
12	HMCS OTTAWA	1996



VILLE DE QUEBEC keel laying at MIL Davie on 16 December 1988



HMCS HALIFAX, 1941-1945 World War II corvette



HMCS VANCOUVER I, 1928-1936 Pre World War II destroyer



CITY NAMES FROM COAST TO COAST

The twelve new ships will bear the names of Canadian cities from coast to coast. Most of these names have a history in the Canadian Navy, as shown below. The traditional naval practice of assigning 300 series numbers to the hulls of frigate type vessels will also be continued.

HULL NUMBER	NAME	HISTORY
330	HMCS HALIFAX	Corvette of revised "Flower" class. Built at Collingwood, Ontario in 1941. Commissioned at Montreal, 26 November 1941. In service on convoy duty December 1941 to January 1945. Paid off in July 1945 and sold to Mexican interests in 1946.
331	HMCS VANCOUVER	<p>First ship of that name was a pre-World War II destroyer commissioned in 1928. Made the first standard winter operation for RCN destroyers in 1930. Paid off and scrapped in 1936.</p> <p>The second HMCS VANCOUVER was a "Flower" class corvette commissioned in March 1942. Escorted convoys and carried out anti-submarine patrols in the north Pacific Ocean. Sailed for Halifax in February 1944 and served in the Atlantic. Scrapped in June 1945.</p>
332	HMCS VILLE DE QUEBEC	"Flower" class corvette built by Morton Engineering and Dry Dock Co. of Quebec City. Commissioned 24 May 1942. Escorted convoys. Took part in Operation "Torch" the allied invasion of North Africa. In June 1944 transferred to Mid Ocean Escort Force and

HULL NUMBER**NAME****HISTORICAL SIGNIFICANCE**

handed over to Admiralty for English Channel operations. Paid off in Halifax June 1945. Decommissioned 6 July 1945 and later scrapped.

333**HMCS TORONTO**

River class frigate. Launched 18 September 1943 from Davie Shipbuilding Company in Lauzon, Quebec. Commissioned 6 May 1944. In service to November 1945. Converted to Prestonian class frigate. Recommissioned in the RCN on 26 November 1953. Paid off at Halifax and handed over on loan to Norway on 14 April 1956. Renamed KNM GARM.

334**HMCS REGINA**

Revised "Flower" class corvette. Built in Marine Industries Ltd, Sorel, Quebec in 1941. Commissioned in Halifax on 22 January 1942. Accompanied convoys. Supported Operation "Torch". Attacked and sank Italian submarine Avorio. Took part in D-Day operations. Torpedoed in the English Channel on 8 August 1944, 66 survivors.

335**HMCS CALGARY**

"Flower" class corvette. Built by Marine Industries Ltd, Sorel, Quebec. Commissioned 16 December 1941. Employed in escorting convoys. Participated in Operation "Torch" and D-Day operations. Shared in U-Boat sinking on 20 November 1943. Paid off 12 June 1945 and eventually sold for scrap.

336**HMCS MONTREAL**

Corvette commissioned on 12 November 1943 at Montreal. Employed on convoy duty during the war and rescued the survivors of U1209 wrecked off Lands End in December



HULL NUMBER	NAME	HISTORICAL SIGNIFICANCE
		1944. Paid off to reserve on 15 October 1945 and broken up in 1947.
337	HMCS FREDERICTON	Corvette commissioned on 8 December 1941 at Sorel. Served in Aruba Tanker Convoys out of Halifax and under U.S. operational control to escort New York-Guantanamo convoys. Paid off on 14 July 1945 and broken up in 1946.
338	HMCS WINNIPEG	Algerine Coastal Escort commissioned on 29 July 1943 at Port Arthur. Served as escort to local and trans Atlantic convoys out of Halifax. Paid off on 11 January 1946 at Esquimalt. Handed over to the Belgian Navy as A.F. DUFOUR in August 1959. Broken up in 1966.
339	HMCS CHARLOTTETOWN	<p>The first CHARLOTTETOWN was a Corvette commissioned at Quebec City on 13 December 1941. Served as escort to Quebec-Sydney convoys until 11 September 1942 when torpedoed and sunk in the St. Lawrence River.</p> <p>The second CHARLOTTETOWN was a River Class Frigate commissioned at Quebec City on 28 April 1944. Became the only RCN ship to fly the same pennant number as her predecessor. CHARLOTTETOWN served on the East Coast until paid off on 25 March 1947.</p>
340	HMCS ST. JOHN'S	This will be the first ship of this name in the Canadian Navy.

HULL NUMBER**NAME****HISTORICAL SIGNIFICANCE**

341

HMCS OTTAWA

The first OTTAWA was completed in 1932 as HMS CRUSADER. Purchased by the RCN and commissioned HMCS OTTAWA on 15 June 1938 at Chatham, U.K. Served as convoy escort out of Halifax until 14 September 1942 when torpedoed and sunk in the North Atlantic.

The second OTTAWA was completed in 1936 as HMS GRIFFIN. Turned over to the RCN and commissioned HMCS GRIFFIN on 20 March 1943 at Southampton. On 10 April 1943 renamed HMCS OTTAWA. Served out of St. John's as an escort until May 1944 when reassigned to take part in D-Day operations. Paid off on 1 November 1945 and broken up in 1946.

The third OTTAWA was commissioned on 10 November 1956 at Montreal. A St. Laurent Class destroyer escort currently in service at Halifax. Will be decommissioned in 1991 when the new frigate HMCS VILLE DE QUEBEC is introduced.



HMCS CHARLOTTETOWN II, 1944–1947 River Class frigate



HMCS OTTAWA III, 1956– St. Laurent Class destroyer

ORGANIZATION

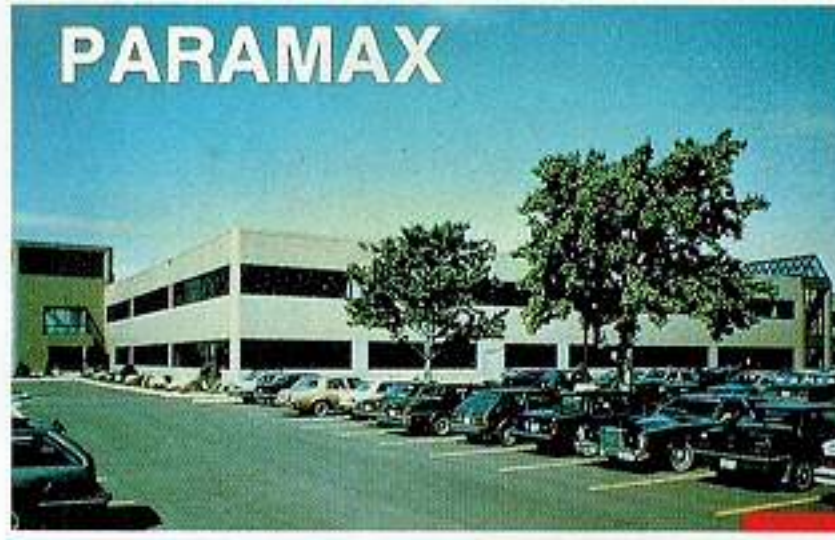
A Government CPF Project Team, working through the CPF Project Office headquartered in Ottawa, is monitoring the contractor's performance.



Saint John Shipbuilding Limited

This interdepartmental team, with representation from National Defence, Industry Science and Technology, and Supply and Services, oversees the primary interests of various federal agencies in the military, industrial, trade and contractual aspects of the project.

Canadian industry, through the prime contractor, Saint John Shipbuilding Limited (SJSL), is responsible for all aspects of design and performance. The Government CPF Project Office is ensuring that all contractual obligations are satisfactorily fulfilled.



Paramax Electronics Inc.

INDUSTRIAL BENEFITS

Previous naval ship projects in Canada over the last 30 years have been managed and designed by Department of National Defence personnel. One of the objectives of the CPF Project is to transfer this capability to Canadian industry.

The prime contractor, Saint John Shipbuilding Ltd., is implementing and managing all aspects of the project including ship design, construction, quality assurance, trials, material support, shore facilities and all other services. This will result in an enduring industrial capability to design, build, test and support new warships, and is being accomplished with the support of Canadian subcontractors and their skilled work forces across the country.

SJSL's principal subcontractor with responsibility for the design, integration and delivery

of the combat system is a newly formed UNISYS Company named Paramax Electronics Inc., located in Montreal, Paramax is to become a Canadian controlled company by the end of the CPF Contract. The result will be a Canadian capability in naval ship combat systems management, integration and support.

The CPF Project is designed to provide maximum industrial benefits to Canadian business and industry. The contractor has assumed responsibility to achieve business opportunities for industries located throughout Canada.

Recipients of industrial benefits are widely based. For example, the prime contractor is building nine frigates at its yard in Saint John, New Brunswick; and Marine Industries Ltd. is constructing three ships in Quebec shipyards at Lauzon and Tracy. In addition, the prime contractor is being supported by Canadian companies such as: Paramax Electronics Inc.

Combat System Test and Support Facility located at PARAMAX, Montreal, Que.





of Montreal; MIL Systems Engineering Inc., of Ottawa; Leigh Instruments Limited of Carleton Place, Ontario; SED Systems of Saskatoon, Saskatchewan; MEL Defence Systems of Ottawa, Ontario; Computing Devices Company of Ottawa, Ontario; CAE Electronics Ltd. of Montreal, Quebec; and Wagner Engineering of Vancouver, British Columbia. Hundreds of other smaller companies are involved across Canada.

The regional distribution of CPF industrial benefits, expressed as a percentage of Prime Contract Target Price is:

Atlantic Region	37%
Quebec Region	33%
Ontario & West	30%

Seventy-two percent of the Contract involves work done directly in Canada. The remaining 28 percent, for foreign purchases of equipment not made in Canada, will bring industrial offsets which in turn will create work for Canadians. The CPF Contract will create over 45,000 person years of work in Canada.



Marine Industries Ltd. in Lauzon

FURTHER INFORMATION

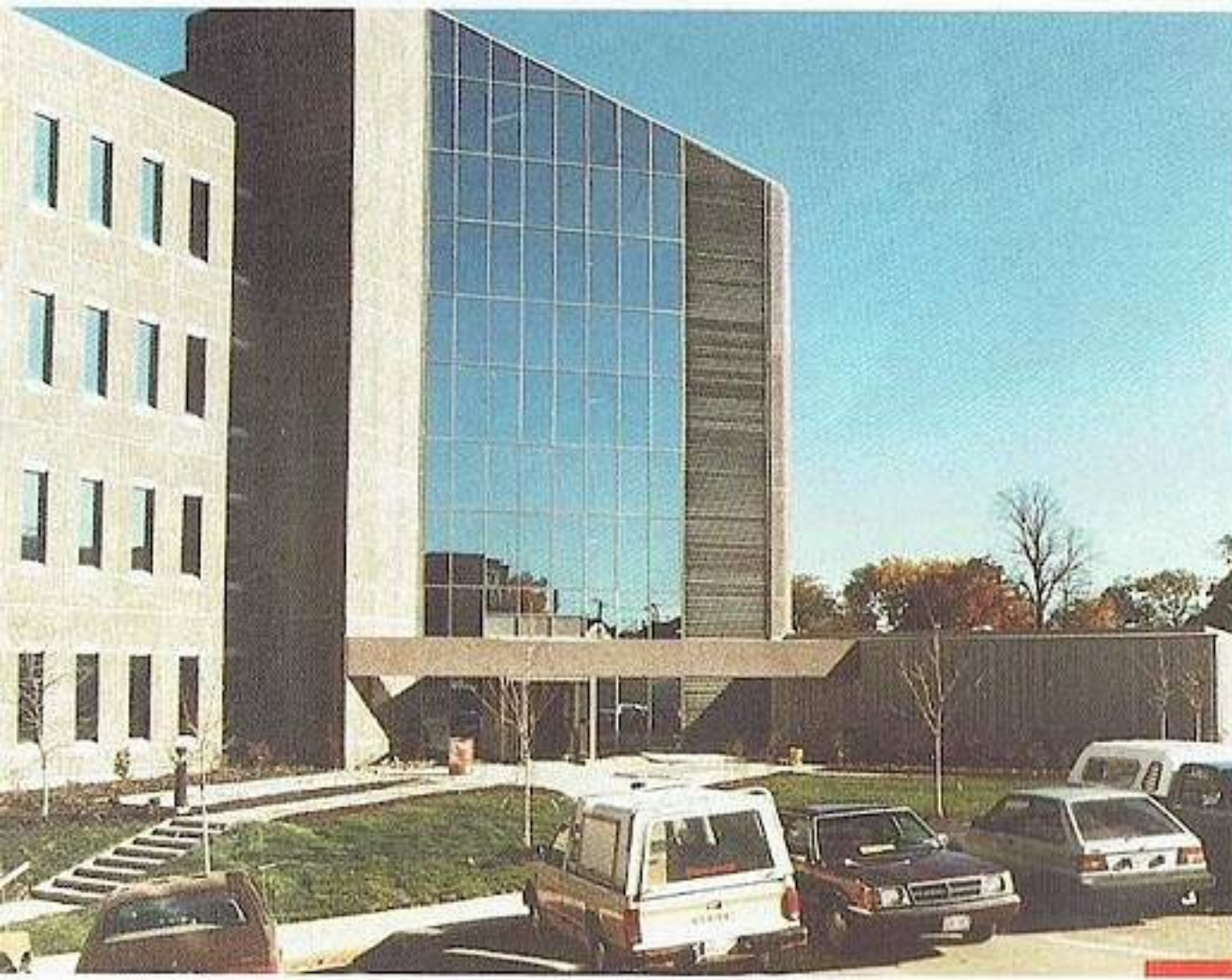
Additional information can be obtained from the Offices of the Director General Information at NDHQ, the CPF-Project Office or from the prime contractor:

Director Information Services
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Personnel Training Facility (Pullen Building) opened 15 April 1988 at CFB Halifax