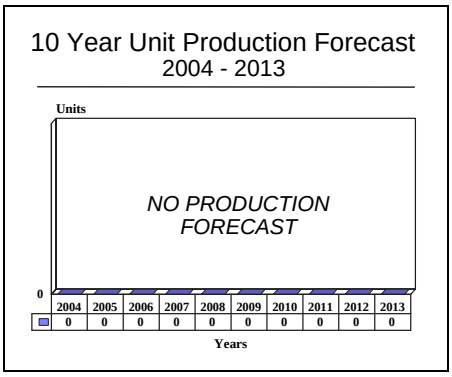
Floréal Class - Archived 11/2005

Outlook

- Production of this class has ceased
- No outstanding prospects despite excellence of basic design
- Navies prefer more warship-like appearance
- This report will be archived next year



Orientation

Description. In French, the ship's original designation is *frégate de surveillance.* Intended for policing of sovereign waters, its main objective is controlling France's overseas maritime areas.

Status. In service.

Total Produced. Eight

Sponsor

Délégation Générale pour l'Armement
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Pennant List

Name	Builder	Operator	Launch Date	Commission Date
F730 *Floréal*	Chantiers de l'Atlantique	French Navy	10/1990	5/1992
F731 *Prairial*	Chantiers de l'Atlantique	French Navy	3/1991	5/1992
F732 *Nivose*	Chantiers de l'Atlantique	French Navy	8/1991	10/1992
F733 *Ventose*	Chantiers de l'Atlantique	French Navy	3/1992	5/1993
F734 *Vendemaire*	Chantiers de l'Atlantique	French Navy	8/1992	10/1993
F735 *Germinal*	Chantiers de l'Atlantique	French Navy	3/1993	5/1994
611 *Mohammed V*	Chantiers de l'Atlantique	Moroccan Navy	2001	3/2002
612 *Hassan II*	Chantiers de l'Atlantique	Moroccan Navy	2002	12/2002

Mission. The missions allotted to the Floréal class are to preserve the sovereign interests of France in the sea areas where presence, permanence, and vigilance are necessary, including the North and South Atlantic, the Mediterranean, the Indian Ocean, and the Pacific Ocean. They protect the interests of France and also guarantee the rights and safety of French fishermen in those regions.

Other tasks include survey navigation, maritime policing, assisting maritime accident and disaster victims, and procuring for the French authorities the naval support necessary for "keeping order" in general.

Price Range. According to French budget documentation, these ships cost US$165 million each. The two sold to Morocco were valued at US$53.5 million each.

Contractors

Alstom Marine, Chantiers De l'Atlantique, http://www.marine.alstom.com, Avenue Bourdelle - BP 61775, Saint Nazaire Cedex, 44617 France, Tel: + 33 33 02 51 109100, Fax: + 33 33 02 51 109797, Consortium Member

Chantiers de l'Atlantique, St Nazaire, FF-44608 France, Tel: + 33 4090 9100, Fax: + 33 4026 2320, Prime

Giat Industries - Weapon Systems and Ammunitions Division, http://www.giat-industries.fr, 7, route de Guerry, Bourges, 18023 France, Tel: + 33 2 48 21 891 11, Fax: + 33 2 48 21 91 42, Consortium Member

Thales Nederland, http://www.thales-nederland.nl, Haaksbergerstraat 49, Hengelo, 7554 PA Netherlands, Tel: + 31 74 2488111, Fax: + 31 74 2425936, Consortium Member

Technical Data

	Metric	U.S.
Dimensions		
Length	93.5 m	306.8 ft
Beam	14.1 m	45.9 ft
Draft	4.3 m	14.1 ft
Displacement		
Standard		2,600 tons
Full Load		2,950 tons
Performance		
Speed, Maximum	37 km/h	20 kt
Range	16,600 km at 28 km/h	9,000 nm at 15 kt
Endurance	50 days	
Crew	7 officers and 93 enlisted	

	Type	Quantity
Armament		
Guns	Giat 100mm L55 Model 68	1
	Giat 20 F2 20mm	2
Missiles	MM-38 Exocet	2
	Simbad (twin)	2
	Mistral PDMS	
Helicopter	AS.332F Super Puma or SA-565 MA Panther	1
Electronics		
Radar		
Surface Search	DRBV-21 Mars 05	1
Air Search	DRBV-15 Sea Tiger	1
Navigation:	Racal Decca 1226 (DRBN 34A)	2
Electronic Warfare		
ESM	DR-2000	1
Decoy launchers	Dagaie	2
Fire Control		
Optronic	CSEE Najir	1
Communications	(I-band)	
SATCOM	Syracuse II	1

	Type	Quantity
Propulsion		
Main Propulsion (CODAD)	SEMT-Pielstick 6PA 6L280	4
Propellers	Controllable pitch	2

Design Features. The layout of the Floréal class reflects commercial standards. They are built to meet Bureau Veritas and SOLAS passenger vessel requirements, equipped with a spray-deflecting bulwark forward and a full-width deckhouse running more than two-thirds of the length of the ship. This provides freeboard and maximum internal volume as well as an extension for the flight deck. The superstructure is a single block set amidships, with twin diesel exhaust uptakes flanking the forward end of the hangar. The hull form is full-bodied to optimize helicopter operations, and stabilizers are fitted.

Automation enables crew size to be kept low, but the design requirement stipulates unsophisticated components for easy maintenance. The ships each accommodate up to 25 troops or marines, and air conditioning is provided. There are also 350 cubic meters of cargo space.

The choice of diesel propulsion is dictated by the need to remain at sea for up to 50 days. A two-shaft installation uses four SEMT-Pielstick six-cylinder 6PA 6L280 units developing a total of 6,500 kW (8,820 bhp). Two controllable-pitch propellers drive the ship at a maximum of 20 knots. The ships are equipped with a bow thruster. Electrical power is generated by three 590 kW sets. Each ship has four freight bunkers, with a total freight capacity of 350 cubic meters.

Operational Characteristics. The main armament was to have been four MM-40 Exocet anti-ship missiles positioned athwartship on the superstructure. Due to financial stringencies, these have now been replaced by two MM-38 missiles. A Giat 100mm L55 Model 68 gun is mounted forward in B position, backed up by two single Giat 20mm 20F2 guns astern of the wheelhouse. Close-range air defense is provided by two twin Simbad lightweight launchers for Mistral missiles.

The E/F-band surveillance radar on the foremast is Thales' DRBV-15, which is marketed commercially as Sea Tiger. Two Racal-Decca 1226 radar are provided, one on the foremast for navigation and one on the hangar for helicopter control. No sonar is provided, and the 100mm gun is controlled by a CSEE Najir optronic director. The ships will be provided with a Syracuse satellite communications terminal. Electronic warfare capability is limited to CSEE Dagaie decoy-launchers and Thales DR-2000 (ARBR-17) ESM equipment.

A 300 m² helicopter flight deck is provided, to allow a single AS.332F Super Puma, SA-565 MA Panther, or NH 90 to be embarked. Operations with helicopters can be undertaken in sea states up to level 5. These are permitted by a combination of stabilization grids on the flight deck to receive a landing harpoon and by the SAMAHE automatic helicopter handling system. The helicopter gives the ship great flexibility, with surveillance radar, anti-submarine sensors, or anti-ship weapons such as AS-15TT or AM-39 Exocet missiles.

Variants/Upgrades

Moroccan Version. The Moroccan version of the Floréal design differs only slightly from the original French design. The most obvious difference is the installation of a 76mm Oto Melara gun, with a WM-25 fire control radar replacing the 100mm weapon and Sea Tiger radar used on the French versions. The WM-25 radar and 76mm gun on these ships are reconditioned units from scrapped Lazaga class fast attack craft. A less obvious change is the use of U.S. radar and navigational equipment.

The helicopter on the Moroccan version is expected to be the Dauphin. The complement of the ships is 11 officers and 109 enlisted, a larger total than on the French ships. The reason for this is unknown.

Program Review

Background. During the early 1980s, the French Navy became concerned with the growing obsolescence of its fleet of light escorts and auxiliaries intended for overseas service. The Direction Constructions Navale (DCN), which is responsible for French warship designs, had prepared designs for the La Fayette class light frigate. These were regarded by the French Navy as being too sophisticated and expensive to build in the numbers required. Accordingly, a new design for a corvette or "aviso" (similar to a U.S. Coast Guard cutter) was prepared. The design was publicly unveiled

at the 1988 Le Bourget Navale exhibition in October 1988.

The first two ships had already been ordered on April 12, 1988, from the Chantiers de l'Atlantique shipyard in St. Nazaire. The order called for Chantiers de l'Atlantique to perform the basic construction, with weapon system installation and integration to be carried out by the Lorient Naval Dockyard. The first and second keels were laid by the end of 1990. In total, six ships were approved. All were named after the months of the Revolutionary Calendar.

French law normally requires all major warships to be built at naval shipyards, while minor vessels and those suitable for export may be built at private yards. A French regulation, Clause 29, allows larger warships to be built at private yards if the ships are suitable for export. There is a guarantee in the law that if the ships are not ordered by a foreign navy, the French Navy will purchase them. On a number of occasions this clause has been used to keep shipyards in existence when they were threatened by a lack of orders. This system was not used for the Floréal class, the driving force in this case being to exploit the ability of the Chantiers de l'Atlantique to produce an inexpensive hull which could then be outfitted with the required equipment elsewhere.

On structural completion, each ship ran sea trials and was then sailed to Lorient under its own power, where the military equipment was fitted. Once this work was completed, a second set of sea trials was carried out. The sea trials of the lead ship were mostly satisfactory, as the ship was able to carry out all its designed functions. Range and endurance were substantially better than predicted.

Due to the mercantile-standard hull, many military functions had to be accommodated above the main deck, resulting in a large and prominent superstructure. In order to preserve stability, the ships were designed with a wide beam in proportion to their length, which resulted in their being subject to pitching and slamming in heavy seas. This is not considered to be a serious drawback.

By late 1994, all six ships were in service. The *Floréal* serves in the South Indian Ocean, the *Ventose* in the Antilles, the *Nivose* in Noumea, and the *Prairial* and *Vendemaire* in Tahiti. The *Germinal* serves as tender to the training ship *Jeanne d'Arc*. The completion of the six Floréals took considerable strain off the French Navy's escort forces, compensating partially for the long rundown in escort strength. Following the end of the Cold War, regional presence and maritime policing duties became a major requirement in European, Mediterranean, and Pacific waters. For tasks such as surveillance and control of offshore assets, the Floréal design quickly proved to be almost ideal.

During early 1994, the design was bid to meet a Kuwaiti requirement for an offshore missile vessel, but was rejected when that requirement was reconfigured into a rather different type of ship. DCNI has since launched the Souveraineté class frigate – effectively a downsized version of the La Fayette design – to fulfill much the same role as the Floréal class. This design has the advantages of significant commonality with its larger sibling and a strong resemblance to the successful La Fayette class with its elegant lines. This suggests that the DCNI product may cut sharply into the market envisioned for the Floréal class.

By mid-1996, reports began to circulate about a proposed Moroccan purchase of two to four Floréal class offshore patrol craft. These reports were acknowledged from the start to have some credibility, since Morocco has an urgent requirement to modernize its navy but lacks the resources to do so. Previous efforts included the attempted (but finally aborted) efforts to purchase the ex-Iraqi corvettes laid up at La Spezia, Italy. An order for two ships was announced on October 23, 1998. At the time of the contract award, the construction was expected to begin by mid-1999, with the first of the ships to hit the water within about a year's time and be handed over to the Moroccan Navy by early 2001. The second ship was expected to follow with about six months' delay.

In mid-2001 a revised schedule was released in which the first of the Moroccan Navy ships would be delivered in 2003 and the second in 2004. The reason for the delay is unknown. However, much of this time was made up by the shipyard, and the first of the class was delivered to Morocco on March 12, 2002. The second ship was completed in December 2002 and delivered early in 2003. At this time it does not appear that any additional sales are impending.

Funding

This program is funded by Délégation Générale pour l'Armement (DGA) for the French Navy. The first five ships were ordered from Chantiers de l'Atlantique at St. Nazaire on January 20, 1969; the second pair on January 8, 1990; and the third pair in January 1991, with funding from the 1991 estimates.

The total program cost is US$985.3 million.

Recent Contracts

Contractor	Award (US$ millions)	Date/Description
Chantiers de l'Atlantique	107.0	Oct 23, 1998 – Morocco announces order for two ships.
Construction Mecaniques de Normandie	N/A	Aug 3, 1999 – Design and integration of combat systems for Floréal class OPVs.
Societe d'Etudes de Machines Thermiques Pielstick	N/A	Oct 4, 1999 – Supply of eight 6PA6L diesel engines to Chantiers de l'Atlantique for Moroccan Floréal class OPVs.
DCNI	N/A	Jun 6, 2000 – Supply of SAMAHE deck handling and retrieval system for helicopters carried on Moroccan Floréal class OPVs.

Timetable

Month	Year	Major Development
	1980	French Navy initiates plans for Floréal class
	1988	First two Floréal class ordered
	1988	First keel laid
	1990	Second two Floréal class ordered
	1991	Last two Floréal class ordered
Jun	1992	First Floréal class commissioned
May	1994	Last ship of the class for French Navy service commissioned
Oct	1998	Morocco buys two ships
	1999	Construction start for the Moroccan units
	2000	Reported launch of the first Moroccan ship
Mar	2002	Likely completion date of the first ship (commissioning)
Dec	2002	Second Moroccan ship delivered
Jan	2003	Second Moroccan ship commissioned

Worldwide Distribution

France. 6

Morocco. 2

Forecast Rationale

The last year has seen no discernable international interest in any procurement of the Floréal class. The French Navy has no plans for further construction of this class, and their combination of ambitious plans for major fleet units and an extremely tight budget makes the any additions to the existing programs most unlikely.

In the export market, the Floreal class remains a well-designed and highly cost-effective solution to the requirements of protecting economic exclusion zones and policing territorial waters. Nevertheless, they remain unable to make any significant impact on the market. This is not for lack of requirements; over the years several countries, including the Philippines, Australia, India, and Poland, have formulated requirements for patrol ships that could have been written around the Floréal class. Yet despite the many sterling virtues of the Floreal class, it has failed to win acceptance for any of these programs. In most cases, the Floreal class appears to have been rejected because navies instinctively wanted something that looked more like a front-line warship than the stocky, dumpy, and distinctly trawler-like Floréal. The fact that trawlers

routinely work in conditions that defeat the racier-looking frigates and destroyers went overlooked.

In a strange way, it may have been the Floreal's very capability at its chosen niche that defeated its attempts to find additional markets. That capability was achieved by accepting design characteristics that most clients found unacceptable. As a result, the Floréal's demonstrated cost-effectiveness in its chosen role remained unappreciated. As of this time, the design does not appear to have any additional sales impending, and there is no indication that it is being seriously considered for any of the requirements currently being developed. Unless the next twelve months show a change in this perception, we will archive this report next year.

Ten-Year Outlook

At present, there are no outstanding orders for ships of this class. Therefore, no forecast chart is presented.

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