

# ARCHIVED REPORT

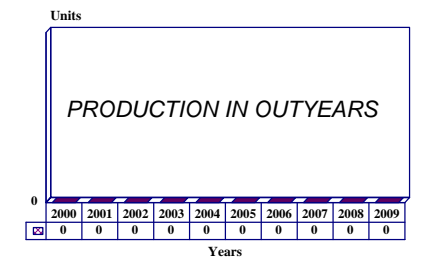
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## Anti-Navires Futur - Archived 6/2001

### Outlook

- ANF program suspended in December 1999
- France said decision was based on the belief that the threat against its naval vessels in the foreseeable future did not justify the high cost of the ANF
- Instead of the ANF, which was to have entered production around 2005, France will upgrade its existing Exocet missile
- Full-scale development of the VESTA to continue

10 Year Unit Production Forecast  
2000-2009



### Orientation

**Description.** Future supersonic anti-ship missile.

**Sponsor.** The French Ministry of Defense through its Delegation Generale pour l'Armement (DGA).

**Contractors.** Aerospatiale Matra was awarded a definition phase contract in 1998 for the ANF, but a formal program launch was waiting for the Paris Air Show '99.

Aerospatiale is also working on the VESTA, which could meet the propulsion portion of the ANF requirement.

**Status.** A definition contract was awarded in November 1998. France suspended this program in December 1999.

**Total Produced.** No production has taken place. The proposed ANF full-scale development contract included an initial production award for 100-200 missiles.

**Application.** Supersonic anti-ship missile suitable for use on surface ships and submarines, as well as fixed-wing aircraft.

**Price Range.** Initial estimates placed the cost of this missile in the area of \$450,000 to \$600,000 (in Fiscal 1999 dollars). Some sources believe that the missile could have cost upwards of \$1 million each.

### Technical Data

**Design Features.** No technical data information is available concerning ANF. The following has been estimated from available data.

	<u>Metric</u>	<u>US</u>
<b>Dimensions</b>		
Missile Length:	580 cm	
Missile Diameter:	35 cm	13.78 in
Missile Weight:	850 kg	1,870 lb

### Performance

	<u>Metric</u>	<u>US</u>
Speed (max):	Mach 2-3	Mach 2-3
Range (max):	150-200 km	

**Propulsion.** The ANF was to use a liquid fueled ramjet propulsion system developed under the VESTA (VEcteur à STAtoréacteur) project. The ramjet would use JP-4 fuel. The missile was to be used with an external axial booster and an integral solid propellant booster for the initial phases of acceleration.

**Control & Guidance.** This missile was to use an autonomous inertial guidance system linked to a global positioning system during the initial flight phase. Active radar homing was to be used during the terminal phase. France opened this portion of the program to

competition, although Dassault Electronique was offering its own seeker. At about 30 kilometers from the designated target, the missile would descend to final attack profile.

**Launcher Mode.** Air- and shipborne launch capability were projected. The missile was to be compatible with the Exocet launcher.

**Warhead.** An enhanced high-explosive, semi-armor-piercing warhead based on the one proposed for the Anti-Navires Supersonique (ANS). The ANS was to have carried a 180 kilogram (440 pound) warhead.

## Variants/Upgrades

Since this program was in the initial stages of development, no variants or upgrades were planned. The missile was initially to be available for shipborne use, but eventually was to be launchable from submarines and fixed-wing aircraft.

## Program Review

**Background.** In Europe, France and Germany have long been interested in the acquisition of a next generation supersonic anti-ship missile. The original efforts were the Anti-Navires Supersonique (ANS) and Anti-Navires Leger (ANL). However, neither of these programs produced an operational missile.

The next major attempt was led by France, which attempted to get Germany involved in another joint development program, Anti-Navires Nouvelle Generation (ANNG). Although a contract was awarded by France, and supported by Germany, eventually this program fell apart.

France's last sortie into the supersonic anti-ship missile development arena was known as Anti-Navires Futur (ANF). This program was supported by the VESTA technology demonstrator effort.

**VESTA.** The VESTA (VEcteur à STAtoréacteur) project is intended to develop a propulsion section for use by a new family of multimission missiles. The first will be the ANF.

The VESTA was commenced in 1996. The prime contractor, Aerospatiale, is teamed with French research agency ONERA and the rocket engine manufacturer CELERG. A full-scale development contract was awarded in October 1997.

The VESTA has two air intakes and a liquid propellant ramjet engine, intended for use during the cruise phase.

An external axial booster is used in the first phase of acceleration and an integral solid propellant booster, for the second.

France plans to conduct three flight tests from a fixed launcher at the CEL facility in 2001-2002.

**ANF.** The French Ministry of Defense had been considering alternatives to the Anti-Navires Supersonique (ANS) since the program first ran into trouble. The ANS development effort was plagued by repeated delays and vacillating support from the program's partners: Germany and France. Eventually, the partners abandoned their efforts to restart ANS.

Making use of off-the-self components whenever possible, the new missile envisioned by France was to be less costly than previous attempts. Both Matra and Aerospatiale offered solutions to this need. Aerospatiale actually made two proposals: a supersonic one based on a modified ASMP; and another subsonic using a modified Exocet Block 2 (see separate report). In early 1995, Aerospatiale was selected to fulfill the French government's new Anti-Navires Futur (ANF) requirement with its supersonic missile.

This decision may have been influenced by the selection of Matra as lead contractor for the Arme de Precision Tres Grande Portee (APTGP) program (see separate APACHE report). Aerospatiale's bid combined technology from the ANS with the VESTA propulsion

section. The ANF could use the seeker from the ANS or the ADAC Mk 2 seeker from the MM40 Exocet Block 2.

Paris was offering to subcontract certain parts of this missile to foreign companies, but all development work was to be performed in France. Receiving ANF subcontracts was dependent on whether or not the host country had a national requirement for ANF. Germany had been mentioned as a possible candidate for inclusion in this program.

A definition phase contract was awarded in late 1998. Some expected the program to be formally launched at the 1999 Paris Air Show. The first qualification firings

of the missile were planned to take place in 2003. If all had gone well, France planned to have the first surface-launched ANF operational in 2005. An air-to-surface version may have followed in about three years for use on the Rafale. A submarine-launched version would have been available after 2010. Aerospatiale was also planning to develop a coastal defense battery version.

Unfortunately, in December 1999, France announced that it was suspending further development work on the ANF. France said it believed the threat against its naval vessels in the foreseeable future did not justify the high cost of the new weapon.

## Funding

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No specific information is available concerning annual funding allocations for the Anti-Navires Futur program. Aerospatiale believed it would be able to develop the ANF for FRF 5 billion to 6 billion, as opposed to FRF 10 billion to 12 billion for an all new development effort. The company saw a sales potential in Europe in excess of 1,000 units.

## Recent Contracts

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In November 1998, Aerospatiale was awarded a contract to perform a one year project definition phase for the ANF program. The contract was awarded by DGA, but no value was attached to it.

In late 1997, France was said to have awarded Aerospatiale a multi-year contract to design, develop and test the ANNG/VESTA missile. The contract is worth FRF 750 million (\$127.5 million) over a five-year period and calls for completion of flight tests by 2002. At the same time, Germany awarded a DM45 million (\$30 million) contract for the ANNG program.

## Timetable

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<u>Year</u>	<u>Major Development</u>
1983	France and Germany sign MoU for development of ANS
1991	ANS full-scale development decision made
1993-94	ANS program finally terminated
1994	Alternatives being examined
1998	ANF requirement announced by France
1998	Full-scale development of the VESTA commenced
1999	France suspends ANF program
2000s <sup>(a)</sup>	France continuing to research technology applicable to supersonic missiles

<sup>(a)</sup>estimate

## Worldwide Distribution

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User Country(s). **France** would have been the first operator of the ANF missile.

## Forecast Rationale

Paris may have given up its immediate plans to develop a supersonic anti-ship missile, but this by no way means they cannot revisit this effort in the future. France has long had an interest in designing a supersonic anti-ship missile and financial constraints are unlikely to inhibit this desire for long.

What could hurt this program in the long run is a changing threat environment. When France announced its decision, it was based on the realization that for the

foreseeable future, the threat against its naval vessels did not justify the high cost of the new weapon.

Of course, military threat environments are constantly shifting and future developments could alter this situation once again in favor the development of these weapons. Until this time, France is expected to depend on subsonic missiles, specifically the Exocet, to meet its anti-shipping requirements.

## Ten-Year Outlook

### ESTIMATED CALENDAR YEAR PRODUCTION

Missile	(Engine)	thru 99	<u>High Confidence Level</u>				<u>Good Confidence Level</u>				<u>Speculative</u>		Total 00-09	
			00	01	02	03	04	05	06	07	08	09		
AEROSPATIALE MATRA														
ANF	ALAIN	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - AEROSPATIALE MATRA		0	0	0	0	0	0	0	0	0	0	0	0	0
NOT SELECTED														
FRENCH ADV. ASH	UNSPECIFIED	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - NOT SELECTED		0	0	0	0	0	0	0	0	0	0	0	0	0
Total Production		0	0	0	0	0	0	0	0	0	0	0	0	0