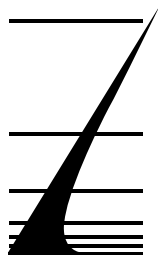


The Market for Anti-Ship Missiles

Product Code #F658

A Special Focused Market Segment Analysis by:



FORECAST INTERNATIONAL

Analysis 3

The Market for Anti-Ship Missiles

Table of Contents

Table of Contents	1
Executive Summary	2
Introduction	3
Trends	5
Competitive Environment	6
Market Statistics	12
Table 1 - The Market for Anti-Ship Missiles Unit Production by Headquarters/Company/Program 2008 - 2017	18
Table 2 - The Market for Anti-Ship Missiles Value Statistics by Headquarters/Company/Program 2008 - 2017	22
Figure 1 - The Market for Anti-Ship Missiles Unit Production 2008-2017 (Bar Graph)	26
Figure 2 - The Market for Anti-Ship Missiles Value of Production 2008-2017 (Bar Graph).....	26
Table 3 - The Market for Anti-Ship Missiles Unit Production % Market Share by Headquarters/Company 2008 - 2017	27
Table 4 - The Market for Anti-Ship Missiles Value Statistics % Market Share by Headquarters/Company 2008 - 2017	29
Figure 3 - The Market for Anti-Ship Missiles Unit Production % Market Share by Headquarters 2008-2017 (Pie Chart)	31
Figure 4 - The Market for Anti-Ship Missiles Value Statistics % Market Share by Headquarters 2008-2017 (Pie Chart).....	31
Conclusion	32

* * *

PROGRAMS

The following reports are included in this section: (**Note:** a single report may cover several programs.)

AGM/RGM/UGM-84 Harpoon
Chinese Anti-Ship Missiles
Exocet
Gabriel
Hsiung Feng I/II
MILAS
OTOMAT
Penguin/AGM-119
RBS15
RUR-5A ASROC/Vertical Launch ASROC
Russian Anti-Ship Missiles
Sea Killer/Marte Mk 1/Marte Mk 2
Sea Skua
South African Anti-Ship Missile
Type 80 (ASM-1/ASM-2)/Type 88 SSM-1

Introduction

The anti-ship missile has helped change the nature of naval warfare. However, the foundation for this shift was laid by the desperate efforts of the Japanese military to stave off impending defeat during World War II.

At the beginning of the Second World War, it was a lucky hit if a single bomb or torpedo was able to sink a major surface combatant, especially an aircraft carrier.

Naval warships proved quite resilient. Adding armored decks to aircraft carriers further improved their durability.

It took two large Japanese aerial attacks on the USS *Yorktown* during the Battle of Midway to finally put this aircraft carrier out of action. Although severely damaged and set ablaze by these strikes on June 4, 1942, the *Yorktown* did not sink until June 7.

As the war turned against Japan, its leaders became increasingly desperate. Japan could not keep up with pilot losses. The "Great Marianas Turkey Shoot," which occurred during the Battle of the Philippine Sea (June 19-20, 1944), resulted in the loss of 375 Japanese aircraft, compared with U.S. losses of 123. Many of the U.S. pilots were rescued and able to return to duty, whereas the majority of the Japanese aircrews were lost. This fighting broke the back of Japan's naval air service. Thereafter, the quantity and quality of Japan's pilot and flight crews would decline.

Adding to Japan's troubles was a growing lack of high-quality aviation fuel. Numerous Japanese aircraft were lost when their engines cut out due to low-quality fuel. This lack of fuel was a further hindrance to training.

In the aftermath of this disaster, the Japanese military leadership realized that desperate times called for desperate measures and turned to a new weapon, the Kamikaze, for salvation. Japan could not train pilots fast enough with the necessary proficiency to match their opponents, but it could produce pilots with sufficient flying skills to act as the guidance system for its new strike weapon.

Imperial Japanese Navy Vice Admiral Takashiro Ohnishi, commander of the First Air Fleet in the Philippines, helped conceive the Kamikazes (but was not the first to order suicide operations). He noted that an aircraft crashing into a carrier caused more damage than 10 planes strafing it. Therefore, he formed suicide units and ordered his pilots to crash their aircraft

(loaded with high explosives) into enemy naval vessels to inflict the maximum amount of damage on American ships with the minimal forces available (the First Air Fleet had 40 aircraft in the Philippines).

This concept was quickly proved on October 25, 1944. On that day, the aircraft carrier USS *St. Lo* was attacked by five Zero fighters off the Philippine coast. Although only one Kamikaze actually hit the ship, the resulting fire caused the ship's bomb magazine to explode, sinking the carrier. The success of attacks like the one on the *St. Lo* prompted the Japanese to rapidly expand the program.

Purpose-built Kamikaze aircraft soon appeared, including the Yokosuka MXY7 Ohka. This rocket-powered bomb has been called an anti-ship missile with a human pilot for a guidance system. The first was used in March 1945.

By the end of the Second World War, Japan's naval air service had sent 2,525 Kamikaze pilots to their death, with the Army adding another 1,387 (numerous other Japanese soldiers and sailors died conducting suicide missions that had little influence on the course of the war).

Japanese records claim Kamikazes sank 81 ships and damaged 195. The U.S. military acknowledges the loss of 34 ships, the damaging of another 368 (including 23 aircraft carriers, 5 battleships, 9 cruisers and 23 destroyers), and the death of 4,900 sailors and the wounding of more than 4,800 servicemen as a result of Kamikaze attacks.

The uncoordinated nature of Japanese Kamikaze attacks and the hoarding of these resources for the defense of the home islands degraded their effectiveness. The Japanese had more than 9,000 planes in the home islands available for Kamikaze attack, and more than 5,000 had already been specially fitted for suicide attack to resist the planned invasion.

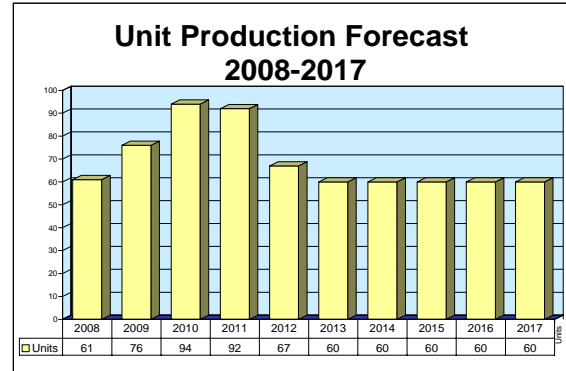
Of the Kamikazes sent against the U.S. fleet in Leyte Gulf, about one-quarter scored hits or a damaging near-miss.

Even with the use of radar, heavy combat air patrols, and massive increases in the number of anti-aircraft guns on U.S. warships, a distressing number of Kamikazes (10-15 percent) were able to successfully crash their aircraft into U.S. surface ships in the last **Continued...**

Exocet

Outlook

- Production continuing
- Block 3 will carry production line in the future
- Middle East is an important source for sale, but Asian sales are expected to grow
- UAE and Oman are recent customers for Block 3
- New orders may come from Argentina, Libya, Qatar
- Block 3 will be available as an all-new missile or an upgrade kit



Orientation

Description. Family of anti-ship missiles.

Sponsor. French Ministry of Defense through the French Navy.

Status. Fabrication of the Exocet missile is continuing, but in its Block 2 configuration. A turbojet-powered Block 3 is available.

Total Produced. As of the end of 2007, 1,076 AM39, 168 AM39 Block 2, 1,265 MM38, 37 MM39, 536 MM40, 694 MM40 Block 2, 25 MM40 Block 3, 145 SM39, and 64 SM39 Block 2 missiles had been produced. All missiles associated with the MM39 program are RDT&E units. Some 800 MM40 Block 2 missiles were ordered through 2005.

Application. Medium-range, air-to-surface, and surface-to-surface anti-ship missiles compatible with a variety of platforms. The MM38 and MM40 are shipboard-mounted or used in fixed/mobile coastal defense positions. The SM39 is launched from submarine torpedo tubes. The AM39 equips a variety of fixed-wing aircraft and helicopters.

Price Range. Prior to the Falklands War, a single Exocet missile, with no support equipment, was being sold for approximately \$197,000 (FY82 dollars). Apparently, the price more than doubled immediately following the war, but returned to approximately \$242,191 in FY93 dollars. Some sources suggest that the price of the Exocet on the international market is about \$602,000.

Contractors

Prime

MBDA France	http://www.mbda-systems.com , 8 rue Le Brix, BP 35, Bourges, 18020 France, Tel: + 33 2 48 55 50 01, Fax: + 33 2 48 55 54 94, Email: css.MBDA-Group@mbda.net , Prime
--------------------	--

Subcontractor

EURENCO, Head Office	http://www.eurenco.com , 12, quai Henri IV, Paris, 75004 France, Tel: + 33 1 49 96 7400, Fax: + 33 1 49 96 7401, Email: eurenco@eurenco.com (Cast PBX Charges)
Luchaire Défense SA, Giat Industries - La Chapelle Saint-Ursin	http://www.giat-industries.fr , Route de Villeneuve, BP 13, La Chapelle St-Ursin, 18570 France, Tel: + 33 02 4868 7171, Fax: + 33 02 4868 7054 (Warhead)

Exocet

Microturbo SA	http://www.microturbo/fr , 8, Chemin du Pont de Rupé, B.P. 2089, Toulouse, 31019 France, Tel: + 33 5 61 37 55 00, Fax: + 33 5 61 70 74 45 (TRI 40 Turbojet)
Nammo Raufoss AS	http://www.nammo.com , PO Box 142, Raufoss, 2831 Norway, Tel: + 47 61 15 36 50, Fax: + 47 61 15 36 60, Email: info@nammo.com (Auxiliary Boost Rocket Motor)
Roxel France	http://www.roxelgroup.com , Ave Gay Lussac, Saint-Médard-en-Jalles, 33167 France, Tel: + 33 556 70 50 50, Fax: + 33 556 70 75 22 (Rocket Motor)
Thales Airborne Systems	http://www.thalesgroup.com/aerospace , Centre Charles Nungesser, 2, ave Gay-Lussac, Elancourt, 78851 France, Tel: + 33 1 34 81 60 00, Fax: + 33 1 30 66 79 66 (ADAC 4138 Seeker)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Samples/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

	<u>Metric</u> MM38	<u>Metric</u> AM39	<u>Metric</u> MM40	<u>U.S.</u> MM38	<u>U.S.</u> AM39	<u>U.S.</u> MM40
Dimensions						
Length	5.212 m	4.69 m	5.80 m	17.10 ft	15.38 ft	19.02 ft
Diameter	35 cm	35 cm	35 cm	13.78 in	13.78 in	13.78 in
Weight	750 kg	670 kg	870 kg	1,653 lb	1,477 lb	1,918 lb
Wingspan	100.4 cm	110 cm	113.5 cm	3.29 ft	3.61 ft	3.79 ft
Finspan	76 cm	76 cm	76 cm	2.49 ft	2.49 ft	2.49 ft
Performance						
Speed	Mach 0.93	Mach 0.93	Mach 0.93	Mach 0.93	Mach 0.93	Mach 0.93
Altitude	Sea-skimmer	Sea-skimmer	Sea-skimmer	Sea-skimmer	Sea-skimmer	Sea-skimmer
Range	42 km	50 km	70 km	22.60 nm	26.99 nm	37.79 nm

Propulsion. The Exocet family uses booster and sustainer motors provided by Servia des Poudres (SEP) and Societe Nationale des Poudres et Explosifs (SNPE), respectively. The sustainers in the MM38 and MM40 are solid-fuel motors designated Eole V and Aither, respectively. These motors are composed of cast double-base propellant and burn for 93 seconds in the MM38 and 220 seconds in the MM40. The booster motors are designated Vautour and Gerfault, respectively. The AM39 uses a solid-fuel booster motor designated Condor; this motor burns for two seconds. The sustainer motor is the Tristan solid-propellant rocket motor. The Tristan motor burns for 150 seconds. Both motors are supplied by SNPE. The SM39 uses the same sustainer motor as the AM39, but a different and more powerful booster designated Narval. These latter boosters and sustainers feature steel rather than alloy cases. SEP and SNPE now operate under a joint venture known as Roxel.

Control & Guidance. In prelaunch phase, the Exocet's onboard computer stores the launch platform's velocity and true vertical and target distance/direction. The target's range and bearing are input to the computer

by the fire control system operator on naval and land-based applications, or by the pilot in aircraft applications. After launching, the missile seeks the target initially by inertial navigation, then by proportional command/guidance provided by the Auto Directeur Anti-Clutter (ADAC, or more recently the Super ADAC) 8- to 10-GHz, I/J-band, active radar homing head. The RAM.01 AHV-7 radio altimeter is supplied by Thales. The low-level RE576 inertial guidance system is a modified version of the system developed for the Kormoran missile. The MM38 has an analog computer, whereas the AM39 and MM40 have digital computers. A sea-skimming flight profile is followed.

Launcher Mode. The MM38 is stored in a container/launcher, usually in fixed position, for the surface-to-surface role. The MM40 is grouped four per launcher for shipboard or coastal defense installations. The AM39 is launched from Mirage F1, Mirage 50, Mirage 2000, Atlantic 1/2, Guardian, and Super Etendard fixed-wing aircraft and the Commando, Sea King, Super Frelon, and Super Puma helicopters. The SM39 is launched in a capsule from a submerged submarine.

Exocet

Warhead. The Luchaire high-explosive-charge type, weighing approximately 165 kilograms (363 lb), is used by all Exocet variants. The explosive charge is supplied by Societe d'Etudes, de Realisations et d'Applications

Techniques. The Exocet is outfitted with a SERAT delayed impact fuze and an autopilot-controlled proximity fuze.

Variants/Upgrades

The Exocet is a family of missiles deployed in various launch configurations, including airborne (the AM39), sea-based (the MM38 and MM40), and coastal defense (the MM40). An upgrade package for the Exocet is designated Block 2. This upgrade package is compatible with the AM39, MM40, and SM39 missile models.

In 2000, France announced that it would upgrade its inventory of MM38 Exocets. By 2002, MBDA had announced that it was developing a turbojet-powered Block 3 missile.

For additional information, see the pertinent entries in the **Program Review** section.



MM40 Exocet

Source: MBDA

Program Review

Background. Exocet, the French name for a species of flying fish, is a family of anti-ship missiles originally designed by Aerospatiale. The Exocet was intended to be an all-weather, surface-to-surface attack missile for use on a wide range of warships, from small fast patrol craft to larger frigate-type vessels. The Exocet was designed to fly very close to the ocean's surface and to operate effectively in a heavy electronic countermeasures environment.

Exocet Hits British Hard in Falklands

The Exocet became a celebrity in the 1982 Falklands War when Argentina's Air Force scored several kills with the missile against U.K. Royal Navy ships. The Exocet also ran up an impressive score of ships sunk or

severely damaged during the Iran-Iraq Gulf War (1980-1988), where it achieved its first victory in late 1980. Iraq, having leased five Super Etendard fighters from France, bought AM39 Exocets to complement the MM38 versions on its ships. In the Gulf War, approximately 70 ship attacks on both civilian and military craft up to fast attack craft size had been attributed to Exocet. In May 1987, the AM39 Exocet again gained worldwide notoriety with the inadvertent attack on the USS *Stark*.

Missile Models. The Exocet is a family of missiles deployed in various launch configurations: airborne, sea-based, and coastal defense.

Exocet

MM38. The original sea-skimming missile produced by Aerospatiale. Development commenced in 1968, and it was the first Western weapon to counter the threat of the Soviet Styx missile, which had proved itself with the sinking of the Israeli destroyer *Eilat* in October 1967. The initial order for Exocet was placed by the French Navy in October 1968. The first development round was fired in July 1970, and, following successful development, the first production round was fired in June 1971. Deliveries to the Greek Navy commenced in March 1972. The MM38 is in the arsenals of at least 31 nations.

The MM38 weighs 735 kilograms (1,617 lb) and is 521 centimeters (17.10 ft) long. The missile is stored in a box-type container that also serves as a launcher. After being fired, the MM38 updates its stored fire control data and enters the final guidance phase. The missile flies directly to the target under the direction of its active homing head. Its sea-skimming cruise profile is maintained until impact.

Production between 1983 and 1985 averaged 20 units per month, but fell off due to the declining market and the advent of the enhanced-performance MM40. In October 1980, the 1,000th MM38 round was delivered, and by late 1981 some 1,250 MM38 rounds had been ordered. A total of 1,265 MM38s had been produced as of December 31, 1986.

Growing Demand, New Versions

AM/MM39. Originally designated the AM38, the AM39 is an air-to-surface variant of the basic MM38. Development of the AM39 began in 1972, and between April and June 1973, drop trials and test firings of an interim version, the AM38, were carried out from a Super Frelon helicopter. The AM39 is lighter and shorter in length and has a longer engine burn time for increased range; a digital computer replaces the analog type of the MM38. All other components are interchangeable within the Exocet family of missiles. Aircraft and helicopters cleared for operation with AM39 include the following: Super Frelon (in service with the AM39 in France, Iraq, and South Africa), Sea King (Pakistan), SH-3D (Peru), Super Etendard (France and Argentina), Atlantic ATL.2 (France), and Mirage F1 (Iraq). Other launch platforms are AMX, Guardian, Mirage 50, Mirage 2000, and Super Puma. The AM39 has been enhanced and can now fly at an altitude of 10,000 meters (32,800 ft). This enables the Exocet to extend its radius of action due to the higher altitude firing capability.

First series production missiles were delivered in 1976. Production is ongoing for French naval anti-surface warfare requirements and export. By the end of 1987, a

total of 917 AM39s had been ordered and 819 missiles had been produced. As of December 31, 1988, 968 AM39s had been ordered, with 850 delivered. The AM39 is also available in a Block 2 configuration (for more information, see MM40 Block 2 entry, below) and will likely be purchased by the French Air Force.

The MM39 is identical to the AM39, but has less range because of its surface launch capability. Compared to the MM38, the MM39's lower weight allows four missiles to be grouped within one mounting. The MM39 can be configured to fast patrol boats and hydrofoils. However, due to the superior performance of the MM40, this version has received no known orders and has not been serially produced.

SM39. Development of the SM39 began in 1979. It was installed on and fired from an Agosta class submarine in 1981. Derived from the AM39, the submarine-launched SM39 became operational in 1985 with the French Navy Agosta class and SNA attack submarines, and the strategic SNLE class submarines. The missile is already deployed on board the *Saphir* nuclear-powered submarine. It can supplement or replace existing torpedoes; up to 12 missiles can be carried.

This missile differs from the AM39 in that it has folding wings, a digital computer from the MM40, a waterproofed ADAC seeker that has also been made resistant to low temperatures, a lighter and more powerful solid-propellant boost motor, and a more powerful solid-propellant sustainer motor. The entire missile is enclosed within a sealed container (Vehicule Sous-Marin, or VSM), which is launched from the submarine by a gas generator.

The missile is ejected when the boost motor ignites after breaking the surface. Thereafter it follows a sea-skimming profile to the target. The underwater section of the flight is guided; the missile travels away from the submarine powered by a solid-propellant motor at the end of the VSM. This motor then boosts the VSM out of the water, at which point the missile is released and the boost motor ignites. The use of a guided, powered container allows the missile to break the surface well away from the submarine, and reduces the maximum height to which the missile ascends under booster power before it commences its sea-skimming flight. Aerospatiale claims the SM39 will reach only 50 meters (164 ft), while the Sub-Harpoon reaches 600 meters (1,970 ft), and the range of the SM39 at 50 kilometers (31 miles) is some 40 kilometers (25 miles) shorter than the Harpoon's range. The remainder of the flight is identical to that of the rest of the Exocet family.

Deliveries of the SM39 began in January 1985. At the end of 1987, total orders stood at 73, with 33 units produced. As of 1989, 53 of the 84 SM39s ordered by the French Navy had been delivered.

For years, this missile version was offered for domestic use only on French Navy nuclear-powered attack and ballistic missile submarine classes. However, a change in this policy resulted in the SM39 being offered for export.

MM40. Development of the MM40 missile began in 1976. In 1979, firing trials were conducted, and production began. The first full firing, in February 1980 from the test ship *Ile d'Oleron*, resulted in a direct hit over the full range of 70 kilometers (43.5 miles).

The MM40 is a lengthened version of the AM39 with an alternative motor configuration for greater range from surface launch. A longer sustainer motor increases its length over that of the MM38 by 60 centimeters (1.97 ft), and its weight by 100 kilograms (220 lb) to 850 kilograms (1,874 lb). More significantly, because of the missile's folding wings, four missiles can be grouped in almost the same space required for one MM38 housing. The missile is housed in a cylindrical container that is much lighter than that of the MM38 (from 1,750 to 1,150 kg/3,858 to 2,535 lb). Similar weight and space savings are achieved for support equipment below decks.

The MM40 homing head has a wider area of sensitivity (gyro angling through 90°; the MM38 is limited to 30°) in line with its greater range (70 km). When a target is over the radar horizon, range and bearing information can be supplied from aircraft or from other ships directly to the firing installation on the missile launch ship and hence to the missile's inertial navigation system. Its flight path is again identical to that of the other Exocet missiles.

Additionally, the MM40 is well suited to the coastal defense role in both mobile and fixed positions (mounted on a Berliet 6x6 wheeled vehicle chassis). Aerospatiale had reported firm orders from 11 countries. As of December 31, 1988, some 501 MM40s had been ordered.

MM40 Block 2. Development of the MM40 Block 2 upgrade package commenced under a classified program in the early 1980s and incorporates ECM improvements and technology from the next-generation Anti-Navires Supersonique (ANS). Specific improvements include a new Dassault Electronique active-monopulse, frequency-agile homing head (a traveling wave tube replaces the magnetron unit) and a computerized firing installation that reduces operator

workload. The missile is also said to include a re-attack capability, but this is restricted to French Navy service.

During operation, the Block 2 automatically selects the lowest possible altitude over seas of up to Sea State 7. The missile can perform random maneuvers during its terminal flight phase to counter shipborne missile defenses, an enhancement that improves the missile's resistance to countermeasures. The missiles can be salvo-launched in such a way that they reach the intended target simultaneously but from different directions. The new launchers and consoles developed by Aerospatiale and Deutsche Aerospace (now part of EADS) were intended to be compatible with the ANS. MBDA is seeking to convince operators of the MM38 to upgrade with the MM40 Block 2.

Out of the Ashes Comes Exocet Block 3

MM40 Block 3. With the demise of the ANS and ANF (Anti-Navires Futur) development efforts, the French Ministry of Defense began to consider alternative next-generation anti-ship missile development options.

In 2001, France said it was developing further enhancements for the Block 2 missile. These upgrades draw on technology from the ANF and VESTA programs and involve the development of three new Block 2 variants:

- Block 2 Mod 1 – incorporates a new laser-gyro inertial navigation system (INS) and upgraded seeker; the Mod 1 is in production.
- Block 2 Mod 2 – adds a new digital guidance computer and GPS receiver; this version will be able to attack ships in harbors or land targets.
- Block 2 Mod 3 – will introduce a new active-radar seeker and improved ECCM capabilities.

By October 2002, France announced that it had approved an MBDA proposal to develop an Exocet Block 3. The Block 3 will build on the Block 2 upgrades. In addition to its traditional anti-shipping role, the Block 3 will have a coastal attack capability. Full-scale development has begun.

MM40 Exocet Block 3

Length	4.69 m
Diameter	0.35 m
Weight	670 kg
Range	50-70 km
Speed	Mach 0.93

The Block 3 will be outfitted with a Microturbo TRI 40 turbojet engine, doubling its range to 180 kilometers. The missile will be fitted with a jettisonable solid rocket booster (to be provided by Nammo). The missile will

Exocet

weigh 740 kilograms, 130 kilograms less than the Block 2.

Turbojet Provides Significant Range Boost

In addition to a new propulsion system, the Block 3 will incorporate an airframe designed to minimize EM and IR signatures and provide for greater lateral acceleration and high-g evasive maneuver. Also, the Block 3 will feature mission planning software to assist with operational engagement planning and a new INS/GPS navigation package. This guidance system will provide the Block 3 with an improved capability to penetrate targets such as anti-missile defense systems. Terminal

guidance will rely on an ECM resistant J-band active seeker.

First firings of the Block 3 were scheduled for 2004. Production deliveries of the MM40 Block 3 commenced in 2007. The Block 3 will be compatible with existing MM40 deck-mounted launchers and logistic support infrastructure assets.

In the future, MBDA could add additional improvements to the Block 3, including a vertical launch capability, a dual-mode seeker (radar and infrared), and an improved warhead with a better capability against land-based targets. MBDA may also develop an air-launched version of the Block 3.

Related News

Nigerian Government to Review Defense Program Cost Growth – The government of Nigeria has concluded plans to review several abandoned and current multibillion naira defense projects scattered across the country and listed by defense and finance experts as white elephant projects.

As a first step to reviewing the project, Minister of Defense Yayale Ahmed considered convening a defense summit where issues of all abandoned defense projects would be discussed and reviewed. Among projects for review are the NGN250 million F-7 fighter jet project of the Nigerian Air Force, the NGN25 billion National Defense College (NDC) project, and the moribund Naval Ordnance Depot (NOD) project, otherwise known as the Monomonon project.

Investigations revealed that the Monomonon project, initiated by Military President Ibrahim Babangida, is yet to get off the ground, while the F-7 fighter jet project, initiated and personally negotiated by former president Olusegun Obasanjo with the Chinese government in 2000, is stuck midway because of insufficient funding.

The source further disclosed that the Monomonon project alone has gulped billions of nairas without any significant progress and that the Ministry of Defense has concluded plans to move out all the missiles, arms, and ammunition at the depot to either Kachia in Kaduna State or Makurdi in Benue State for safekeeping.

The Exocet missiles, produced by the French, meant to be housed at the NOD House, were moved back to France over two decades ago, for which the federal government is currently paying heavy demurrage to manufacturers of the missiles.

Meanwhile, the cost of the NDC project, initially expected to amount to about NGN9 billion, has increased to NGN25 billion.

“This amount defense experts have repeatedly said is too huge under the current defense budget arrangement,” the source said. (This Day, 2/08)

Chile Sells Frigates to Ecuador – The Chilean government has agreed to sell two decommissioned frigates to Ecuador. The two frigates will be sold for a total of \$24 million. This deal is the third in a series of military upgrade and overhaul agreements between the two nations.

The frigates to be purchased are the Condell and Lynch of the Leander class. They were retired between 2006 and 2007 after 34 years of service. Overhauls on the vessels were done in the 1990s and then again in 2000. They will now be refitted to meet the Ecuadorian Navy’s needs, although specifics for the type of work have not been disclosed.

Ecuador has decided to decommission two frigates already in service. The *Moran Valverde* and *Eloy Alfaro* will be replaced by the Chilean vessels. The new frigates will come equipped with two 114mm cannons, eight MM40 Exocet missiles, and complete electronic systems.

The first frigate is slated to arrive at the end of 2008, followed by the second at the beginning of 2009. (El Universo, 1/08)

Oman Orders Exocet and MICA Missiles – The Royal Navy of Oman has recently ordered both Exocet anti-ship and VL MICA air defense systems. These missiles will equip Oman's three new Khareef Offshore Patrol Vessels (OPVs). MBDA has a longstanding partnership with the Sultanate of Oman and has already equipped the Sultanate Armed Forces with Mistral land-based air defense systems for the Royal Army, MILAN anti-armor for the Royal Guard and the Royal Army, Rapier air defense system for the Royal Omani Air Force, and Exocet missile system for the Royal Omani Navy. VL MICA is a vertical launched close area air defense system based on the MICA missile. The system offers a self-defense capability against saturating air and anti-ship attacks. (MBDA, 12/07)

Sales Up at MBDA – For his fifth presentation as CEO of MBDA, Marwan Lahoud reported another strong performance for an international defense group now fully integrated.

MBDA had higher sales of EUR 3.3 billion for 2006 compared with the previous year and further growth in the company's operating performance. The turnover was underpinned by the delivery of over 4,000 missile systems in the year, with the Storm Shadow/SCALP, Mica, and Brimstone airborne weapons, Exocet and Seawolf naval systems, and Taurus airborne missile from the newly acquired MBDA Deutschland, leading production deliveries.

Lahoud also announced another record year for orders with EUR2.65 billion worth of orders taken in the year, 25 percent higher than in 2005. Export orders swelled by 140 percent to EUR1 billion, representing almost 40 percent of the total orders for the year. "Now with an order book exceeding EUR13 billion and representing more than four years of work, we have a secure business base upon which to build the future of the company," said Lahoud.

MBDA's sales have grown from EUR1.8 billion in 2002 (the company's first full year of operation post-merger) to today's level while the annual order intake has remained stable over the five-year period. Lahoud said he expected sales and order intake to remain even over the coming years despite contracting European defense budgets and ever-stronger competition on the export market.

He stressed the importance of continually improving the cost base through closer integration of the company's pan-European engineering base as well as maintaining company investment in R&D and critical technologies to maintain the company's competitive edge.

"Our integration program has improved our profitability and competitiveness while also safeguarding the company's technological capability and skills," Lahoud said. "A key benefit is also our responsiveness to our customers needs, in particular ensuring they have the critical edge in new defense technology."

Lahoud added: "MBDA has delivered another year of outstanding operational performance. We have enjoyed success on our key development programs and we are now positioned at the center of the European defense stage and as the main strategic weapon systems partner for customers around the world." (MBDA, 2/07)

Details Emerge on Argentinian Weapons Procurement Priorities – Further details have emerged regarding Argentina's weapons priorities as the government begins a long-belated force structure overhaul. As expected, the replacement of the Air Force's remaining aged Mirage III and Mirage V fighters is among the top priorities. The most likely option is the procurement of 14 ex-French Air Force Mirage 2000C/Ds. Other items on the Air Force's list include MICA beyond-visual-range air-to-air missiles for the Mirage 2000s, and Antonov transport aircraft.

For the Navy, the focus is on missiles. It wants to procure SM39 Exocet missiles as part of an upgrade of its two Santa Cruz class (TR 1700) submarines, as well as MM40 Block II Exocet anti-ship missiles and VL MICA air-defense missiles for its surface warships. (*Military Procurement International*, 12/06)

Market Intelligence Service Subscribers: For additional news, go to the online E-Market Alert page located in the Intelligence Center at www.forecastinternational.com and click on the links to the products you subscribe to.

Funding

France proposed increasing its FY07 defense budget to EUR47.7 billion (\$60.5 billion). The French defense budget for 2006 was for EUR37.7 billion (this figure does not include the cost of overseas military operations). Funding for

Exocet

FY08 could reach EUR47.93 billion (\$61.40 billion). French President Nicolas Sarkozy wants to spend more on the military.

Contracts/Orders & Options

In December 2006, the United Arab Emirates (UAE) awarded MBDA a contract for MM40 Exocet Block 3 missiles. Originally, the UAE was expected to purchase Block 2 missiles. The missiles will arm the UAE's new Baynunah class corvettes. This contract is worth EUR450 million.

In July 2006, MBDA was awarded a contract to supply Seawolf Block 2 naval anti-missile system and submarine-launched Exocet SM39 anti-ship missiles to the Chilean Navy. The value of this contract was not released.

In October 2005, India awarded MBDA a contract for the delivery of SM39 submarine-launched anti-ship missiles. These missiles will arm Indian Navy Scorpene class diesel-electric submarines. The value of this contract was not released.

In February 2004, the DGA (Délégation Générale pour l'Armement) has awarded MBDA a development and procurement contract for the new Block 3 version of the MM40 Exocet. The contract makes provision for MBDA to upgrade the French Navy's existing extensive inventory of Exocet MM40 Block 2 variant missiles to the Block 3 configuration. The contract also gives MBDA the go-ahead to evolve the AM39 for integration onto the French Navy's Rafale fighters.

In October 2002, MBDA has been given the go-ahead by the French MoD and Navy to develop an extended range version of the Exocet MM40 anti-ship missile.

In September 2000, Aerospatiale Matra was awarded a contract from Greece for the MM40 Exocet Block 2. The contract is valued at EUR61.7 million (\$55 million) and involves the delivery of 27 missiles. The missiles will arm the Hellenic Navy's new fast attack craft. Deliveries will commence in 2001 and continue through mid-2004.

Also in September 2000, Aerospatiale Matra announced that an unidentified Asian nation had placed a \$700 million order for MM40 Exocet anti-ship and other missiles. The Asian nation is reportedly Singapore, which will use the Exocets to arm its La Fayette class frigates. The frigates were ordered from DCN.

In July 2000, South Africa signed a deal to procure the MM40 Exocet Block 2. This missile will arm the Navy's new MEKO 200SA corvettes.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1966 ^(a)	Research and development initiated
Oct	1968	Project announced by France's minister of defense and MM38 ordered by French Navy
Jul	1970	First firing of MM38 development round
	1970 ^(a)	Engineering development completed
	1971	Initial firing trials conducted
Jan	1973	Low-rate production of MM38 starts
Jun	1973	First firing of AM39 development round
	1975	Low-rate production of AM39 begins
	1976	Start of MM40 development
	1977	SM39 development initiated
Oct	1980	First combat victory for AM39 Exocet in Gulf War
Jan	1981	Start of MM40 series production
Apr	1981	Start of MM40 deliveries
Jul	1981	First submarine firing of SM39
May	1982	Argentinian AM39s used successfully in combat
	1984	AM39 begins use in Gulf War
Jan	1985	First deliveries of SM39
	1986	MM38 production completed
	1993	Production focuses on MM40 Block 2

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Dec	1999	Anti-Navires Futur (ANF) program suspended
Mar	2001	France announces MM38 re-engining program
	2004	Exocet Block 3 development and production contract awarded
	2006-2007 ^(a)	Block 3 enters production

^(a) Estimate

Worldwide Distribution/Inventories

Exocet has been widely sold and is used throughout the world. **Brazil** may be interested in a new helicopter-launched anti-ship missile. **Bulgaria** could receive Exocet missiles via the purchase of ex-Belgian Navy Wandelaar class frigates. The first frigate, the ex-Belgian Navy F912 "Wandelaar," was officially handed over to Bulgaria on October 21, 2005. The frigate will be christened *Drazki* (Courageous) and will have the hull number 41. The frigates will not be handed over with their original armaments intact. The MM38 Exocet and NATO SeaSparrow missiles once carried by these ships have been removed. Bulgaria may eventually replace these missiles.

Chile has mentioned an interest in a new anti-ship missile to equip its surface combatants and submarines. Chile's new Scorpenes are to be outfitted with the SM39. Also, additional Exocets (possibly even Block 3s) could be provided as part of Chile's purchase of ex-Dutch Navy frigates. **Spain** could procure the Exocet to arm its S-80 class submarines.

The **Franco-Italy** multimission frigates (FREMMs) will be armed with missiles provided by MBDA. This program could ultimately involve the construction of 27 warships for the Italian and French navies. French frigates will be outfitted with MM40 Exocet and Naval SCALP missiles. The new frigates will replace three older types of vessels in service with the French Navy: F67 frigates, F70 frigates, and Estienne d'Orves class A69 Aviso frigates. Italy could arm its FREMM warships with the Naval SCALP, but plans to use a different anti-ship missile.

In 2006, **Greece** expressed interest in purchasing new frigates for the Hellenic Navy, which could provide opportunities for missile companies in the United States and Western Europe. DCN and Thales are offering FREMM multipurpose frigates to Greece; the FREMM is already being purchased by France and Italy. Armaments expected to be included with this bid include the ASTER air defense and Exocet anti-ship missiles. One report said Greece had already ordered the Exocet Block 3 missile.

In Asia, **Indonesia** plans to place an order for new MM40 Exocets as part of its 10-year naval modernization program. Four Sigma corvettes ordered from Schelde Naval Shipbuilding (the Netherlands) may be armed with MM40 Exocet Block 2 missiles. As of late 2006, negotiations were under way for the procurement of this missile. In addition to the shipborne version, Jakarta could purchase the SM39 submarine-launched version. The Indonesian Navy wants to acquire four-to-six additional diesel-electric submarines (two are in service presently). Possible candidates to meet Indonesia's needs are the German Type 214 and the French Scorpene.

Elsewhere, **India** and **Malaysia** could receive the SM39 Exocet to arm their Scorpene class submarines. In 2001, India and France signed a Memorandum of Understanding for the local construction of an undetermined number of submarines. India later finalized its deal, which includes the delivery of SM39 missiles. Also, India could acquire Exocets to arm its Il-39 maritime patrol aircraft, which it acquired from Russia.

Libya is interested in Western defense equipment. In 2006, the French government had given its blessing to the nation's defense industry to commence a major marketing push to sell military equipment to Libya. This would be the first such major effort for the French since the European arms embargo on Libya was lifted in 2004. The French view the upgrade of the Libyan patrol ship fleet as a likely prospect. The Libyan Navy wants to upgrade its nine Combattante IIG class fast attack craft. These ships were built by the French shipyard CMN.

A new frigate ordered by **Morocco** in 2007 will probably be armed with MBDA missiles. Morocco could purchase either the MM40 Block 2 or Block 3 versions of the Exocet.

Oman is procuring three ocean patrol vessels (OPVs) from VT Group. This contract is worth over \$700 million (awarded in 2006). The three warships will carry helicopters and will be armed with anti-ship and air defense missiles. MBDA is expected to offer the Exocet or Sea Skua to Oman in competition with the Boeing Harpoon.

Exocet

Another option is the Saab Bofors Dynamics RBS15. A report from a 2007 defense show said Oman was purchasing the Exocet Block 3 missile.

The **Peruvian Navy's** six existing Type 209/1200 diesel-electric submarines are to be modernized. These submarines will gain the ability to fire SM39 Exocet anti-ship missiles. **Portugal's** new Type 209PN submarines could be outfitted with anti-ship missiles, with one option being the SM39 Exocet. **Qatar** mentioned in 2007 that it wanted a new fast attack craft armed with anti-ship missiles.

Romania will receive two ex-Royal Navy Type 22 frigates from the United Kingdom. The Seawolf air defense and Exocet anti-ship missiles will be removed before these frigates are delivered to Romania. **Tunisia** has purchased ex-German Type 143B fast attack craft. These ships were purchased without their MM38 Exocets, but a new missile could be acquired in its place.

The **Royal Saudi Navy** (RSN) may purchase 4-6 FREMMs, the European multimission frigates being developed by France and Italy. These warships will replace the RSN's existing Medina class frigates purchased as part of the Sawari I contract. France and Italy are arming these frigates with the ASTER air defense missile, as well as the Exocet and OTOMAT anti-ship missiles.

The **United Arab Emirates** (UAE) plans to arm its new Baynunah class corvettes with the Exocet missile. Under its original plan, the Exocet Block 2 was to be purchased. The UAE has decided to upgrade to the Block 3 version. This would make the UAE the first export customer for the Block 3. Further reports emerged in 2006 saying negotiations for a Block 2 purchase were continuing. This contract could see 150+ missiles delivered to the UAE.

The **Venezuelan Navy** is interested in purchasing new diesel-electric submarines, possibly armed with long-range strike missiles. These new boats would replace the Venezuelan Navy's Type 209 submarines. Russia is offering Amur class submarines armed with the Club-S (Klub-S) missile. There are two versions of this missile: the 3M-54E1, which is an anti-ship missile; and the land-attack version designated 3M-14E. The Russian option may not be the most favored. Other candidates for meeting this requirement include the German-built Type 212/214 and the Franco-Spanish Scorpene. Both these submarine classes can be armed with the SM39 Exocet. However, MBDA may not be willing to sell the SM39 to Venezuela if the U.S. strongly objects.

Also, Venezuela may arm its new Spanish-built corvettes with the MM40 Exocet.

User Countries. Identified users of Exocet include the following: **Abu Dhabi** (AM39 – Abu Dhabi will also equip two new 630-ton Lurssen Type 62 fast attack craft with eight MM40 missiles), **Argentina** (MM38/40, MM40 Block 2, AM39), **Bahrain** (MM38/40), **Belgium** (MM38), **Brazil** (MM38/40, MM40 Block 2), **Brunei** (MM38/MM40 Block 2), **Cameroon** (MM40), **Chile** (MM38/MM40), **Colombia** (MM40), **Cyprus** (Greek-controlled – MM40 Block 2), **Ecuador** (MM38), **Egypt** (AM39), **Gabon** (MM40), **Federal Republic of Germany** (MM38), **France** (MM38/40, AM39, SM39, Block 2, and Block 3), **Greece** (MM38 & AM39/MM40 Block 2s), **India** (AM39, SM39), **Indonesia** (MM38 – Jakarta also considering the purchase of the AM39 for use by its Super Puma and CN235 maritime patrol aircraft), **Iraq** (MM38, AM39 – France is said to have sold an additional 500+ AM39 missiles to Iraq in 1987, but these missiles were apparently never delivered), **Ivory Coast** (MM40), **Kuwait** (MM40, AM39), **Libya** (AM39), **Malaysia** (MM38/MM40 Block 2, SM39 – unconfirmed), **Morocco** (MM38/40), **Nigeria** (MM38), **Oman** (MM38/MM40/MM40 Block 2), **Pakistan** (AM39/SM39), **Peru** (MM38 – Peru was expected to receive the MM40, but no deal developed), the **Philippines** (MM38), **Qatar** (AM39/MM40/MM40 Block 2), **Republic of Korea** (MM38), **Saudi Arabia** (AM39/MM40 Block 2), **Singapore** (AM39/MM40 Block 2), **South Africa** (AM39/MM40 Block 2), **Thailand** (MM38), **Tunisia** (MM40), **Turkey** (MM38), the **United Arab Emirates** (AM39/MM40/MM40 Block 3), and the **United Kingdom** (MM38, designated GWS 50 by the Royal Navy and equipped with the Super ADAC seeker). At least four other unidentified countries also operate unspecified versions of Exocet. Two unidentified Mediterranean countries operate the MM40 Block 2 in a coastal defense role. The SM39 is retained by the French and no export sales have been reported. Venezuela has aircraft capable of firing the Exocet, but has not purchased the missile.

Forecast Rationale

MBDA is Europe's largest tactical missile manufacturer. The company derives one-third of its earnings from the sale of naval systems, of which half is from

domestic purchases. The most popular anti-ship missile offered by MBDA, with more than 35 customers worldwide, is the Exocet.

Capitalizing on its customer base, MBDA has introduced the Block 3 version. The Block 3 offers greater range than the Block 2 and an enhanced guidance system providing better performance against defensive systems. Not only can this missile engage ships, the Block 3 can attack land-based targets. Additional upgrades could be added at a later date, including a dual-mode seeker and an improved warhead. MBDA sees potential revenues from the Block 3 in the area of EUR2 billion.

Block 3 Carries Production in Future

In addition to the Exocet, MBDA's product line includes the OTOMAT, Marte Mk 2, Sea Skua, and SCALP Navale. There is considerable capability overlap among these missiles, but no move to eliminate the lines. In the name of corporate harmony, MBDA has avoided canceling one partner's program in favor of another. The company may not be able to pursue this policy much longer.

MBDA's marketing campaign encompasses the entire world and the Block 3 will play a key role in sustaining Exocet production in the future. Demand for the Block 3 among existing Exocet operators is expected to be strong. The initial version of the Block 3 developed by the company will be for shipborne deployment. This version is compatible with existing MM40 deck-mounted launchers and logistic support infrastructure assets, which will help in marketing this missile among current Exocet operators.

Sales to the Middle East have been a large source of revenues for MBDA and may continue to be in the future. The United Arab Emirates is arming its new corvettes with the Exocet, ordered in late 2006, and

Oman has selected the Block 3. Others orders are pending and may include sales to Indonesia, Brazil, Argentina, Morocco, and perhaps even Libya.

In addition to meeting the evolving anti-shipping needs of existing users, MBDA sees the performance capability of the Block 3 attracting new customers as well. An air-launched version of the Block 3 will be developed by MBDA and possibly one for use by submarines.

Low-rate production of the MM40 Exocet Block 3 has begun. The Block 3's arrival could undercut demand for the existing Block 2, but perhaps not immediately. Helping to extend Block 2 production could be customers that do not feel the need to acquire the more capable (and potentially more expensive) Block 3 missile. Also, the Block 3 will only be available in a shipborne version, at least at first.

With the acquisition of LFK now complete, MBDA is neck and neck with Raytheon in the race to claim the title of world's largest missile manufacturer. For now, the edge goes to Raytheon, which is backed by a strong U.S. defense budget that is expected to outspend the rest of the world combined in a few short years. To counter this fierce competitor, MBDA is pushing to consolidate and unite Europe's missile manufacturers (Saab Bofors Dynamics, Kongsberg, and Diehl BGT Defense) under its banner.

Note: *Fluctuations are likely in the Exocet production figures for the individual models. Some sources believe that the remanufacture of the existing MM40s to Block 2 status is not cost-effective, and therefore will not be undertaken.*

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program	Thru 2007	High Confidence				Good Confidence			Speculative			Total
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
MBDA France												
MM.40 Block 2 Exocet												
	694	28	28	23	20	0	0	0	0	0	0	99
MM.40 Block 3 Exocet												
	25	21	43	59	60	60	60	60	60	60	60	543
SM.39 Block 2 Exocet												
	64	12	5	12	12	7	0	0	0	0	0	48
Subtotal	783	61	76	94	92	67	60	60	60	60	60	690
Total	783	61	76	94	92	67	60	60	60	60	60	690

FORECAST INTERNATIONAL

ORDER FORM FOR PROPER SHIPPING, PLEASE PROVIDE ALL OF THE FOLLOWING INFORMATION.

Name _____ Title _____

Company _____

Street Address _____

City _____ State/Prov. _____ Country _____ Zip _____




Phone _____ Fax _____


E-Mail _____

Cardholder Name _____

Card# _____ Exp. _____ csc# _____

Billing Address (if different from above) _____

- Check Enclosed
- Bill Company
(Purchase Order # and Signature Required)
- Quotation Requested
- VISA  MasterCard 
- American Express 

Name of Product/Service	Code	E-Mail Address	Qty.	Price
<p>Please include your e-mail address to receive twice-weekly E-Market Alert Newsletters.</p> 			Subtotal _____ In Connecticut add 6% sales tax _____ Shipping _____ Total _____	

SHIPPING AND HANDLING RATES

	U.S.	World		U.S.	World		U.S.	World
Market Intelligence Services (pages 6-26)			Intermediate Military Library			Governments & Industries		
Binder	\$45	\$85	Binder	\$540	\$1,020	Binder	\$540	\$1,020
DVD	\$50	\$95	DVD	\$50	\$95	DVD	\$50	\$95
Binder & DVD	\$95	\$180	Binder & DVD	\$590	\$1,115	Binder & DVD	\$590	\$1,115
Binder & RT	\$45	\$85	Binder & RT	\$540	\$1,020	Binder & RT	\$540	\$1,020
Worldwide Inventories			Basic Military Library			International Military Markets (A Subset of G&I above)		
Aerospace/Engine/Power Systems (pages 12-13)			Binder	\$315	\$595	Binder	\$270	\$510
CD	\$50	\$95	DVD	\$50	\$95	DVD	\$50	\$95
Weapons Systems (page 24)			Binder & DVD	\$365	\$690	Binder & DVD	\$320	\$605
Hard Copy	\$45	\$85	Binder & RT	\$315	\$595	Binder & RT	\$270	\$510
CD	\$50	\$95	Civil/Commercial Library			Naval		
Power Systems (page 27)			Binder	\$360	\$680	Binder	\$90	\$170
Hard Copy	\$45	\$85	DVD	\$50	\$95	DVD	\$50	\$95
Focused Market Segment Analyses (pgs. 32-35)			Binder & DVD	\$410	\$775	Binder & DVD	\$140	\$265
Hard Copy	\$25	\$45	Binder & RT	\$360	\$680	Binder & RT	\$90	\$170
Market Intelligence Libraries (pages 28-29)			Market Intelligence Group Libraries (pages 30-31)			Power		
Complete Library (Civil/Commercial & Military)			Aerospace			Binder	\$90	\$170
Binder	\$1,575	\$2,975	Binder	\$360	\$680	DVD	\$50	\$95
DVD	\$50	\$95	DVD	\$50	\$95	Binder & DVD	\$140	\$265
Binder & DVD	\$1,625	\$3,070	Binder & DVD	\$410	\$775	Binder & RT	\$90	\$170
Binder & RT	\$1,575	\$2,975	Binder & RT	\$360	\$680	Weapons		
Complete Military Library			Electronics			Binder	\$180	\$340
Binder	\$1,440	\$2,720	Binder	\$360	\$680	DVD	\$50	\$95
DVD	\$50	\$95	DVD	\$50	\$95	Binder & DVD	\$230	\$435
Binder & DVD	\$1,490	\$2,815	Binder & DVD	\$410	\$775	Binder & RT	\$180	\$340
Binder & RT	\$1,440	\$2,720	Binder & RT	\$360	\$680			

NOTE: No charge for Real-Time format.

NOTE: DUE TO THE PUBLISHING CYCLE OF THESE PUBLICATIONS, ORDERS CAN TAKE UP TO 5 BUSINESS DAYS TO SHIP.

22 Commerce Road, Newtown, CT 06470 USA • Phone: 203.426.0800 • Fax: 203.426.0223
 Toll-Free (U.S. and Canada): 800.451.4975 • E-mail: sales@forecast1.com • Website: www.forecastinternational.com

WORLDWIDE SALES OFFICES

HEADQUARTERS USA

FORECAST INTERNATIONAL INC.

22 Commerce Road, Newtown, CT 06470 USA
Phone: 203.426.0800 Fax: 203.426.1964

Sales/Customer Service/Marketing

Phone: 203.270.0633 Worldwide
Toll-Free: 800.451.4975 U.S. & Canada
Fax: 203.426.0223
E-Mail: sales@forecast1.com
E-Mail: info@forecast1.com
E-Mail: customerservice@forecast1.com

Proprietary Research & Consulting

Phone: 203.426.0299 Fax: 203.426.1964
E-Mail: consulting@forecast1.com

Editorial

Phone: 203.270.0111 Fax: 203.426.4262
E-Mail: queries@forecast1.com

Technical Support

Phone: 203.270.0629 Fax: 203.426.0223
E-Mail: support@forecast1.com

Website

www.forecastinternational.com

EUROPE (INCLUDING RUSSIA), AND MIDDLE EAST

HAWK ASSOCIATES LTD. UNITED KINGDOM

HEADQUARTERS

Templehurst House
New Street, Chipping Norton
Oxon, OX7 5LJ, UK
Phone: (44) 1 608 643281 Fax: (44) 1 608 641159
E-Mail: support@hawkinformation.com
Website: www.hawkinformation.com

HAWK ASSOCIATES LTD. FRANCE

6 Rue de Levis, Paris
75017, France
Phone: (33) 1 4294 0693 Fax: (33) 1 4294 0433
E-Mail: france@hawkinformation.com

REPUBLIC OF KOREA

PAMANONG TRADING COMPANY

275-2 Yangjae Dong
Windstone 1712
Seocho-Gu Seoul 137-722 KOREA
Phone: (82) 2 572 4349 or (82) 2 572 4371
Fax: (82) 2 572 4370
E-Mail: sales@forecast1.co.kr
Website: www.forecast1.co.kr

JAPAN

AVIATION RESEARCH INSTITUTE

3-4-2 Mukojima
Sumida-ku
Tokyo 131-0033 JAPAN
Phone: (81) 3 5819 3491
Fax: (81) 3 5819 2973

CHINA AND SOUTHEAST ASIA

CHINA NATIONAL PUBLICATIONS I & E GROUP CORPORATION

P.O. Box 88
16 Gongti East Road
Chaoyang Beijing 100020 CHINA
Phone: (86) 10 6508 6953 Fax: (86) 10 6586 6970
E-Mail: orderus.p@cnpiec.com.cn

INDIA

GENSER AEROSPACE & INFORMATION TECHNOLOGIES PVT. LTD.

4/3 Crescent Road
High Grounds
Bangalore-560001 Karnataka, INDIA
Phone: (91) 80 2237 0417/418 Fax: (91) 80 2237 0420
E-Mail: genserin@genser.com
Website: www.genser.com

TAIWAN

GRAND INFORMATION INTL CORP LTD.

No 5 Sec 5 Room 7F-09
Hsin Yi Road, Taipei World Trade Center
Taipei 100 Taiwan, R.O.C.
Phone: (886) 2 2 7225 500
Fax: (886) 2 2 7225 154
E-Mail: grndinfo@ms5.tisnet.net.tw

TERMS AND CONDITIONS

Discount Pricing

10% for orders over \$10,000; exclusive of sales tax and shipping cost. Does not apply to codes prefaced by "Z" or "P" that reflect a discounted price.

Bookseller Discounts

For information call:
203.270.0633
800.451.4975 (Toll-Free U.S. & Canada)
E-Mail: info@forecast1.com

Data Usage

Photocopy/Copyright Permission: Forecast International observes all copyright laws. Reproduction and distribution of any product is prohibited by law. To obtain a release, please call 203.270.0633 or contact customerservice@forecast1.com.

Electronic Data Licensing

All products provided on DVD or in Real-Time format are for single-site, single-user applications. Multi-site, Multi-user Licensing is available. Call 203.270.0633 or contact sales@forecast1.com to discuss your requirements.

Payment Policies

Terms: Net 30 days. For overdue accounts we reserve the right to assess interest of 12% annually, and add collection fees.

New Clients: Payment in full is required with the initial order.

Purchase Order: Please submit a purchase order to ensure timely delivery.

Forms of Payment: VISA, MasterCard, or American Express, or a company check drawn on a U.S. bank in U.S. dollars.
Wire Transfer Details: Contact customerservice@forecast1.com or call 203.426.0800.

Please ensure bank charges are not deducted from the total amount due.

Note: Include the quotation or invoice number with your payment.

Returns or Refunds: Due to the nature of our products, no returns are accepted and no refunds are provided.