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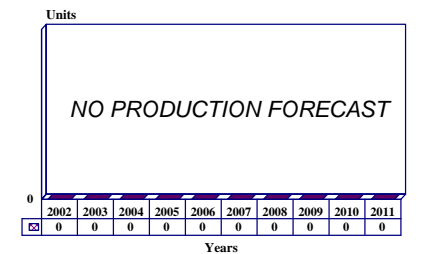
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AGM-122 SIDEARM - Archived 3/2003

Outlook

- Production concluded
- AGM-122 SIDEARM is intended for use from light attack aircraft and helicopters
- US examining potential AGM-122 follow-ons
- The Advanced Anti-Radiation Guided Missile (AARGM) project could provide a eventual replacement for SIDEARM
- US is examining the use of a modified HELLFIRE to perform anti-radar missions and procurement of a foreign-designed system

10 Year Unit Production Forecast
2002 - 2011



Orientation

Description. Lightweight anti-radiation missile.

Sponsor. US Department of Defense through the US Navy Air Systems Command, Washington, DC, and the US Naval Weapons Center, China Lake, California, USA.

Contractors. Motorola Incorporated Government Electronics Group; Tempe, Arizona, USA, is the prime contractor for the guidance and control section for SIDEARM.

Status. Modification of existing AIM-9C missiles has been completed. The US Navy is considering the production of a new SIDEARM batch, but no funding has been provided by the US Congress. The SIDEARM could be replaced by the Advanced Anti-Radiation Guided Missile (AARGM), if this program is continued by the US Department of Defense.

However, modification efforts are also under consideration as potential options for replacing the SIDEARM.

Total Produced. Production orders presently filled; awaiting new contracts. Approximately 717 AGM-122A SIDEARM I anti-radiation missiles were completed by 1991. The US armed services have repeatedly stated their desire to acquire some 5,000 SIDEARM-type missiles.

Application. The suppression of hostile land-based radar-directed surface-to-air missile (SAM) and air defense artillery batteries.

Price Range. The US Navy's unit price for the AGM-122A SIDEARM I was listed at \$91,690 in the FY88/FY89 budget documents.

Technical Data

	<u>Metric</u>	<u>US</u>
Dimensions		
Missile length	287 cm	9.42 ft
Missile diameter	13 cm	5.12 in
Missile weight	88.5 kg	195 lb
Finspan	63 cm	24.80 in

Performance

	<u>Metric</u>	<u>US</u>
Speed	Mach 2.5	Mach 2.5
Range	17.7 km	11 miles

Propulsion. Hercules Incorporated manufactured the Mk 36 Mod 11 for installation on the AIM-9M and the Mk 36 Mod 12 for the AGM-122 SIDEARM.

Control & Guidance. The AGM-122A SIDEARM uses a Motorola Incorporated Government Electronics Group radiation seeker head. The fins are designated BSU-32/B (four per set), and the wings and rolleron assembly is an Mk 1 Mod 2 (four per set).

Launcher Mode. The SIDEARM I is compatible with the Sidewinder LAU-7 launcher. The US Navy and Marine Corps will deploy the AGM-122A on AV-8 and A-4 attack aircraft and on the AH-1 Cobra attack helicopter.

Warhead. The 4.5-kilogram (10-lb) blast fragmentation SIDEARM warhead has been designated the WDU-31/B. The missile uses a proximity/contact fuse and a Mk 13 Mod 2 safe/arming device.

Variants/Upgrades

The SIDEARM is a modification of an existing AIM-9C Sidewinder. The missile has been produced in the SIDEARM I configuration, designated AGM-122A. However, the US Navy is considering the production of a SIDEARM II, tentatively designated AGM-122B. The US Marine Corps requirement for a new helicopter-launched ARM, originally to have been fulfilled by the Advanced Anti-Radiation Guided Missile (AARGM), could be met via a product improvement program for the SIDEARM. The program could incorporate a digital tuner signal-processing capability, a new seeker,

aerodynamic shaping of the missile airframe, and the installation of an enhanced rocket motor. Other options include modifying the ALARM or HARM by down-sizing these missiles to provide helicopter compatibility. Upgrades to other fielded weapons include replacing the HELLFIRE's existing laser seeker with a radio-frequency seeker.

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

Program Review

Background. With the AGM-88 HARM costing around \$250,000 each, both the Air Force and Navy have an urgent need for a less-expensive anti-radiation missile for use against lower-priority emitters. In the early 1980s, the US Air Force and Navy initiated a joint program to develop such a missile. Developed by the Naval Weapons Center at China Lake, California, the AGM-122A SIDEARM I (Sidewinder Anti-Radiation Missile) is the integration of an anti-radiation seeker to the AIM-9C Sidewinder air-to-air missile. Slightly more than 1,000 AIM-9C missiles were in US Navy inventory when this program commenced. SIDEARM is to arm helicopters and other aircraft for use against systems such as the ZSU.23-4 and the SA-9, both Soviet surface-to-air systems using radar fire control.

The US Navy and Marine Corps will deploy the AGM-122 on AV-8, A-4, and AH-1 attack aircraft. The first funding for SIDEARM I modification/procurement was authorized for FY86. The program has been fully funded, and work on this contract was completed in 1991. Although production will cease with the completion of just over 700 AIM-9C modified missiles, the Services would like to have procured upward of 5,000 units.

The SIDEARM was successfully test-fired from an AH-64A as part of an ongoing McDonnell Douglas program to explore a multiple missile capability for the helicopter. The missile scored a direct hit on an armored vehicle containing a radio frequency emitter at the Naval Weapons Center, China Lake, California.

AGM-122B SIDEARM II. In late 1983, the US Air Force announced that although it was working with the US Navy on the SIDEARM project, it was independently developing a SIDEARM II for specialized targets and missions. The US Air Force said that the original SIDEARM design did not meet its requirements. Little more was heard of this program, which may have had the potential to lead to new-production SIDEARM IIs. The US Air Force had intended to deploy SIDEARM I on its F-4G aircraft.

In early 1989, the US Navy won additional funding for the development of a SIDEARM II missile, tentatively designated the AGM-122B. Although similar in name, there is no indication that this program is related to the previous US Air Force SIDEARM II effort. The funding, taken from the FY89 Balanced Technology Initiative, will allow the US Marine Corps to accelerate the development of a new wideband seeker for an

advanced short-range anti-radiation missile. This development was necessary to provide US Marine Corps aircraft (in particular, helicopters) with improved self-defense capabilities against enemy radar-directed air-defense systems.

The Marine Corps AH-1 helicopters were left without anti-radiation missiles when the production program was cut back from 1,000 units to 750. The option of using Texas Instruments' AGM-88 HARM (High-Speed Anti-Radiation Missile) was not seriously considered since the system is far too heavy for helicopter deployment.

The US Navy is believed to have started proof-of-concept in 1989, with full-scale engineering development following in FY91. Production of the SIDEARM II had been planned to begin by FY93. Since the AIM-9C inventory was almost depleted, the SIDEARM II project was expected to use AIM-9L missiles. However, the service also had the option of remanufacturing the AGM-122As. The initial production run could have totaled between 250 and 400 systems. However, no further production was known to have been undertaken beyond the original AGM-122A units.

Motorola appeared to be the most likely contractor for this program, and may have already been involved. The company had previously stated that it was trying to modify the missile's seeker to conform to Western radar frequencies. This follow-on system would have allowed the pilot to change the frequency of the seeker head from the aircraft's cockpit.

AARGM. The US Marine Corps has expressed interest in the acquisition of a new lightweight anti-radiation missile for its fleet of AH-1 Cobra attack helicopters and AV-8B Harrier attack aircraft. These platforms are currently armed with the SIDEARM, enabling US Marine Corps units to deal with local threats, such as the mobile ZSU.23-4 anti-aircraft artillery system. The new missile study effort, known as the Advanced Anti-Radiation Guided Missile (AARGM), could provide the technological basis for the development of a SIDEARM replacement.

Funding

No specific funding is known to be available for the continued procurement of the SIDEARM I in the current US defense budget. Procurement of the SIDEARM I modification kits commenced in 1986 with the purchase of 200 units. The US Navy had requested 276 AGM-122A missiles in its FY88 budget, which was reduced to 261. The FY89 procurement of 269 SIDEARMS were deleted from the budget.

Recent Contracts

In October 1996, Science and Applied Technology Inc, San Diego, California, was awarded a \$98.2 million modification to exercise an option on an existing contract for the development of one dual-mode seeker for the Advanced Anti-Radiation Guided Missile (AARGM), under Phase III of the Small Business Innovative Research Program. Work was to be completed September 2000. Contract Number N00019-94-C-0078

In August 1995, Science and Applied Technology Inc received a \$7 million modification to a previously awarded contract (N00019-94-C-0078) to exercise an option to develop the expansion test program and conduct testing for the Advanced Anti-Radiation Guided Missile (AARGM). Work was completed by July 1997.

In September 1994, Science and Applied Technology Inc was awarded a \$15.1 million contract for the design, fabrication, and testing of a single dual-mode seeker breadboard for the Advanced Anti-Radiation Guided Missile (AARGM). Work was completed by April 1996. Contract Number N00019-94-C-0078

Timetable

<u>Year</u>	<u>Major Development</u>
1986	Procurement of SIDEARM I commenced
1987	Procurement continued
1989	Last SIDEARM I contract awarded to Motorola
1991	Work on final SIDEARM I contract completed

<u>Year</u>	<u>Major Development</u>
1991-92 ^(a)	US Defense Department considering SIDEARM II purchase
1992	AARGM program announced
1993	AARGM study funding allocated
1994	Additional AARGM study funding provided
1990s ^(a)	Outyear funding tentative

^(a) Estimate

Worldwide Distribution

For the first time, the AGM-122A SIDEARM I may be sold overseas. Italy has a requirement for a short-range anti-radiation missile to outfit its Tornado IDS and AMX fighters. The preliminary specifications call for the missile to be compatible with the Sidewinder launch rail, which appears to limit the field to the AGM-122 SIDEARM. However, the Italian Air Force would prefer newly built AGM-122A SIDEARM IIs fitted with a more sophisticated seeker. This could help to push forward the US SIDEARM II upgrade plans.

User Countries. The **United States** Navy and Marine Corps are the only operators of the AGM-122A SIDEARM I.

Forecast Rationale

The United States has yet to launch a formal AGM-122 SIDEARM follow-on program. There is a long-running and unresolved argument in the US military as to whether or not one is even needed.

Still, many believe that lightweight anti-radiation missiles will be needed to counter the proliferation of mobile radar-guided SAMs. Surface-to-air missiles pose a considerable threat to helicopters and fixed-wing aircraft, especially when performing close air support missions.

With the new emphasis in the United States and Western Europe on rapid reaction units, the demand for

a lightweight anti-radiation missile has the *potential* to grow in the future. Of course, these weapons could take on many forms, such as lethal unmanned air vehicles.

For now, work on technologies applicable to the development of a next-generation anti-radiation missile is proceeding. It may be a while, though, before the US military decides on what direction it will take in fulfilling this requirement. A full-scale development program has been commenced, and an operational system could be ready for deployment within four to five years, depending on the complexity of the design.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Missile	(Engine)	High Confidence Level				Good Confidence Level				Speculative			Total 02-11
		thru 01	02	03	04	05	06	07	08	09	10	11	
MOTOROLA													
AGM-122 (a)	MK.36	717	0	0	0	0	0	0	0	0	0	0	0
Total Production		717	0	0	0	0	0	0	0	0	0	0	0

(a) Remanufactured from AIM-9C missiles.