

# ARCHIVED REPORT

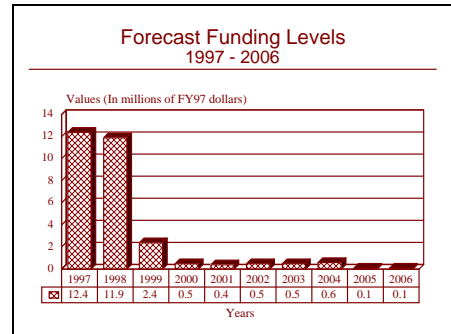
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## AF SEAD - Archived 3/98

### Outlook

- Funds development of new technology for defense suppression
- High-interest area since Gulf War proved value of SEAD
- Funding profile based on plans



### Orientation

**Description.** The program element is titled Manned Destructive Suppression of Enemy Air Defenses (MDSEAD). It is managed under program element #0207136F.

#### Sponsor

US Air Force

AF Systems Command

Aeronautical Systems Center

ASC/PAM

Wright Patterson AFB, Ohio (OH) 45433-6503

USA

Tel: +1 513 255 3767

#### Contractors

McDonnell Douglas Aerospace Corp

P.O. Box 516

St Louis, Missouri (MO) 63166

USA

Tel: +1 314 232 0232

Fax: +1 314 234 6934

(F-15 HARM carriage prime, HARM targeting device)

Texas Instruments Inc

Defense Systems & Electronics

P.O. Box 660246 M/S 3131

Dallas, Texas (TX) 75243

USA

Tel: +1 214 480 3866

Fax: +1 214 480 6296

(AGM-88 HARM)

**Status.** Technology base development. Advanced development. Engineering development.

**Total Produced.** This is a technology development program only.

**Application.** This program element provides funds for the development and procurement of a US Air Force

destructive suppression of enemy air defenses capability for tactical aircraft.

Price Range. Indeterminate.

## Technical Data

This program funds the development and procurement of the Air Force's Manned Destructive Suppression of Enemy Air Defenses (MDSEAD) capability. The AGM-88 High-Speed Anti-Radiation Missile (HARM) is the primary munition for MDSEAD.

The program provides certain F-16 aircraft with the capability to carry and employ the HARM. The F-16C/Block 50D has been modified to carry the ASQ-213 HARM Targeting System (HTS). This system allows real-time, "range known" HARM employment. This capability is necessary due to the phase out of the F-4G Wild Weasel.

The F-15 was to be modified with Precision Direction Finding (PDF), but this effort has been terminated in the FY96/97 budget due to fiscal constraints and better-than-

expected capability reports from units equipped with the fielded F-16 HTS.

The Air Force also began a Concept Exploration (Phase 0) of Pre-emptive Destruction of Enemy Air Defenses (PDEAD) in January 1994 within PE 605808F. The Pre-emptive Destruction program is scheduled for a Milestone I/II review in 4Q FY96 and will be transitioned to this PE in FY97. This PE also funds program support and management by the assistant secretary of the air force (acquisition) and air staff for electronic warfare planning. As this program element provides for the development of upgrades to the F-15 and F-16 — operational weapons systems that have received Milestone III approval — funding is included in the budget activity/research category operational systems development.

## Variants/Upgrades

This program develops technology that can be used to upgrade existing systems.

## Program Review

**Background.** Information is based on the latest program descriptive summary.

In FY92, the program updated the system concept, acquisition strategy, and other program documents. Planners began the demonstration and validation phase and initiated system risk reduction for HARM integration. Engineers began vibration flight testing for the F-15D.

In FY93, the program completed the F-15E/HARM vibration flight test and the HARM integration dem/val planners began long-lead procurement and development for HARM Integration EMD. Planners analyzed alternatives for PDF and selected candidate systems. They also continued risk reduction for the PDF dem/val and began a Milestone II PDF Cost & Operational Effectiveness Analysis (COEA).

### Project 4375 — F-15 Manned Destructive SEAD (MDS).

This project funded the development and procurement of the Air Force's Manned Destructive Suppression of Enemy Air Defenses (SEAD) (MDS) capability. The AGM-88 High-Speed Anti-Radiation Missile (HARM) is the primary munition for MDS. This project provided the F-15 aircraft the capability to carry and employ the HARM. This capability was deemed necessary due to the phase out of the F-4G Wild Weasel.

In FY94, the Air Force began the PDF demonstration/validation and continued the MS II PDF COEA.

FY95 plans were to complete the PDF demonstration/validation, spending US\$ 14.6 million on that effort. Funds were programmed for initiating the Initiated Programmable Armament Control Set (PACS) upgrade portion of the HARM Integration project. Effort. This would be completed in PE0207134F. The Air Force budgeted US\$1.896 million to start the PDF COEA, but redirected efforts to F-16 alternatives studies and the Navy's Joint Emitter Targeting System COEA. US\$750,000 went to mission support with US\$922,000 programmed to initiate the light defender foreign comparative test. US\$11.100 million was used to realign the effort with the HARM Targeting System to accelerate the HTS upgrade.

Work on this project ceased in 1996. The PACS upgrade will continue and was transferred to PE0207134F, F-15E squadrons. The F-15C Manned Destructive Suppression (MDS) effort was zeroed at the end of the dem/val phase.

Project 2671, F-16 HARM Targeting System (HTS). The F-16 HARM Targeting System (HTS) project transferred to this PE from a classified program element in FY96. The project provides the F-16 aircraft with the capability

to carry and employ the AGM-88 High-speed Anti-Radiation Missile (HARM). This capability allows real-time, "range known" HARM employment and is necessary due to the phase out of the F-4G Wild Weasel.

The HTS was fielded in FY94. This project develops performance upgrades and funds integration effort to remain compatible with the F-16C and associated support and training equipment.

In FY95, US\$11.100 million from the F-15 MDS project was used to realign the effort with the HARM Targeting System to accelerate the HTS upgrade.

In FY96, US\$432,000 went to completing R5 software upgrade and the developmental flight test support (Mar 96). US\$1.060 million was allocated to develop HTS-specific Air Force Mission Support System

(AFMSS) modifications. US\$3.0 was used to begin EMD on HTS upgrade (Feb 96) with US\$1.300 went to Mission Support.

Plans for FY97 included US\$11.084 million to continue EMD of the HTS upgrade, working toward a planned IOC in July 1999). \$1,300 Mission Support was continued at a budgeted US\$1.3 million.

Project 4516 Light Defender. This project expands the scope of the system's foreign comparative test which investigates options for the Air Force's preemptive destruction on enemy air defenses capability. The Light Defender FCT provides initial operational evaluations (including flight tests) as an alternative system.

In FY96, the Air Force spent US\$4.562 million on Light Defender Operational Testing.

## Funding

### US FUNDING

|                     | <u>FY94</u>       |            | <u>FY95</u>       |            | <u>FY96</u>       |            | <u>FY97</u>       |            |
|---------------------|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|
|                     | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> |
| RDT&E (USAF)        |                   |            |                   |            |                   |            |                   |            |
| PE0207136F          |                   |            |                   |            |                   |            |                   |            |
| Manned Destructive  |                   |            |                   |            |                   |            |                   |            |
| Suppression of      |                   |            |                   |            |                   |            |                   |            |
| Enemy Air Defenses  |                   |            |                   |            |                   |            |                   |            |
| 4375 F-15 MDS       | -                 | 4.3        | -                 | 36.2       | -                 | 0.0        | -                 | 0.0        |
| 2671 F-16 HTS       | -                 | 0.0        | -                 | 0.0        | -                 | 5.8        | -                 | 12.4       |
| 4516 Light Defender |                   | 0.0        | -                 | 4.6        | -                 | 0.0        | -                 | 0.0        |
|                     | <u>FY98 (Req)</u> |            | <u>FY99 (Req)</u> |            | <u>FY00 (Req)</u> |            | <u>FY01 (Req)</u> |            |
|                     | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> | <u>QTY</u>        | <u>AMT</u> |
| RDT&E               |                   |            |                   |            |                   |            |                   |            |
| (USAF estimate)     |                   |            |                   |            |                   |            |                   |            |
| 2671                | -                 | 11.9       | -                 | 2.4        | -                 | 0.5        | -                 | 0.4        |

All US\$ are in millions.

## Timetable

|     |      |  |
|-----|------|--|
| Mar | FY92 | Milestone I                            |
| Jun | FY93 | HARM integration Milestone II          |
| Jul | FY93 | HARM integration EMD long-lead award   |
| Sep | 1993 | AF signed Mission Need Statement (MNS) |
| Nov | FY93 | HARM F-15E Vibration Flight Test       |
| Jan | 1994 | Milestone 0                            |

|     |      |   |
|-----|------|---|
| Apr | FY94 | PDF Dem/Val award   |
| Dec | FY94 | HARM F-15C qualification, stations 2/8                            |
| 2Q  | FY95 | F-16 HTS R-5 software development, R-5 fielded, start Upgrade EMD |
| 4Q  | FY94 | F-16 HTS prototype development start                              |
| 4Q  | FY95 | F-15 PDF dem/val  |
| 2Q  | FY95 | F-16 HTS prototype development complete                           |
| Jul | FY96 | Start F-15 PDF flight test  |
| Aug | FY96 | Complete F-15 flight test   |
| 4Q  | FY96 | F-15 PDF Dem/Val complete   |
| 1Q  | FY97 | F-16 HTS Upgrade EMD complete                                     |
| Jul | 1999 | F-16 HTS flight test  |

## Worldwide Distribution

To date, this is a US only program.

## Forecast Rationale

The F-4G Wild Weasel once was the only aircraft in the Air Force inventory available and configured to accomplish the destructive Suppression of Enemy Air Defense (SEAD) mission. The Air Force's other electronic warfare aircraft, the EF-111A, has a jamming-only capability and is being retired as well. The US Navy, using a somewhat different approach, can fire the AGM-88 HARM missile from its EA-6B electronic warfare aircraft. One way of extending the operational life of the Weasels was to operate in conjunction with an F-16, where the F-4G finds the radar and the F-16 strikes the target. This squeezed extra hours from the tired F-4G airframes.

Operation Desert Storm validated the SEAD mission and proved the operational value of an inherent and advanced SEAD capability. Wild Weasels were among the first aircraft to enter Iraqi airspace on January 17, 1991, when the air war to eject Saddam Hussein's forces from Kuwait began. F-4Gs combined with a variety of other aircraft to disrupt and disable the Iraqi air defense system.

The advanced capabilities of the AGM-88 high speed anti-radiation missile make it feasible to move away from the dedicated WW mission. By enhancing the HARM and giving the F-15 a precision direction finding capability, these aircraft could assume the defense suppression mission. Because of a shortage of the two-seat F-15E aircraft and an unwillingness to divert them from the strike mission, the Air Force decided to use the F-15C in the MDSEAD role. The platform would be less capable; but

the Air Force decided that the trade-off would be worth it, even though there was concern that the pilot of the F-15C would be overloaded by the demands of the mission.

Budget concerns continue to play a role in the Wild Weasel/MDSEAD debate. The Air Force has, at times, threatened to terminate the whole effort for affordability reasons. Instead the service decided to terminate the F-15 effort after the dem/val phase. This will give engineers a baseline system design, and the Air Force will not incur production and procurement costs.

The SEAD effort will be based on the HARM Targeting System of the F-16C, which will be much less costly than the Wild Weasel. The basic HTS has seen limited action over Iraq in Operation Deny Flight. The results have reportedly been good. With the retirement of the EF-111A, electronic warfare support will come from EA-6Bs which can also fire the HARM. The Air Force is not really replacing the Wild Weasels, a one-of-a-kind fleet of old warhorses; but operations will have some protection.

This forecast reflects the program as it has been established, and includes the Air Force cutback of the F-15 project. The Air Force does not really want to terminate MDSEAD; it is too valuable. Budget constraints and the need to find money for such top-priority systems as the F-22 and C-17 have made some less-than-ideal moves necessary, in the minds of planners. Until something new comes along, the front-line forces will have to rely on the F-16 with its HARM Targeting System.

## Ten-Year Outlook

### FORECAST FUNDING LEVELS

(FY95 US \$ Millions)

|                    |                    | <u>High Confidence</u> |           |           |           |           | <u>Good Confidence</u> |           |           | <u>Speculative</u> |           |           | Total        |
|--------------------|--------------------|------------------------|-----------|-----------|-----------|-----------|------------------------|-----------|-----------|--------------------|-----------|-----------|--------------|
|                    |                    | <u>Level</u>           |           |           |           |           | <u>Level</u>           |           |           |                    |           |           |              |
| <u>Designation</u> | <u>Application</u> | <u>thru 96</u>         | <u>97</u> | <u>98</u> | <u>99</u> | <u>00</u> | <u>01</u>              | <u>02</u> | <u>03</u> | <u>04</u>          | <u>05</u> | <u>06</u> | <u>97-06</u> |
| MDSEAD             | RDT&E (USAF)       | 54.72                  | 12.4      | 11.9      | 2.4       | 0.5       | 0.4                    | 0.5       | 0.5       | 0.6                | 0.1       | 0.1       | 29.3         |