

Navy awards AAAM contracts

by Peter Middleton

Two competing industrial teams have been awarded the first \$6 million increments of \$110 million, 52-month demonstration and validation contracts for the US Navy's next-generation long-range advanced air-to-air missile (AAAM).

They are Hughes/Raytheon (with McDonnell Douglas Astronautics as prime subcontractor) and General Dynamics/Westinghouse.

At the end of the four-year competitive phase, the Navy will select one design and award a full-scale engineering development contract for construction and testing of prototypes, plus production preparations. The two members of the winning team will compete annually for the majority share of production, which is not expected to begin until 1989, even though the Hughes AIM-54 Phoenix, which AAAM will replace, goes out of production in 1992.

The Hughes/Raytheon AAAM design will feature integral rocket/ramjet propulsion in a Sparrow-sized (12ft long) airframe. Its multimode guidance system will combine a Hughes imaging-infrared sensor and a Raytheon active-radar seeker.

The GD/Westinghouse missile will use a rocket booster plus a "pulsed" restartable

sustainer rocket with thrust-vector control. The missile will use common-aperture multimode electro-optical/semi-active-radar guidance in a 5in-diameter airframe, also the same length as Sparrow, but featuring ultra-low-aspect-ratio cruciform wings. At 400lb it will be only two-thirds the weight of Sparrow and less than half that of Phoenix.

The GD/Westinghouse design uses "interrupted continuous wave" technology to allow radio-frequency energy on target to be "time managed" to facilitate multiple target tracking with one aircraft-based illuminator. (Westinghouse builds the only electronically steerable airborne antenna currently in production, for the B-1B.)

General Dynamics says that ground tests have proved the time-managed guidance technology during a 12-year demonstration programme aimed at allowing the company to diversify from pre-eminence in US naval surface-to-air missiles into air-to-air weapons where Hughes and Raytheon (working separately) have dominated the US market.

Thrust-vector control has been demonstrated successfully in ground tests, says GD, while warheads have been tested against RA-5 Vigilante-sized targets. Day/night electro-optical lockdown capability has

also been proved (a GD diagram implies that this was carried out against static Styx/Silkworm-type cruise missiles).

General Dynamics says that its time-managed semi-active guidance system will endow fighters with genuine "launch, manoeuvre" capability, but it is unclear from company literature whether existing aircraft, such as the F-14, F-18, and A-6 would need new electronically steered radar antennae to take full advantage of the missile's capabilities.

The AAAM programme is designed primarily to upgrade the US Navy's capability to protect vessels from "high density" threats beyond the radar horizon in all weathers, day and night. Like Phoenix, AAAM will climb rapidly to high altitude to facilitate high-speed cruise to the target, but it is also required to perform short-range high-maneuvrability interceptions.

The missile will be compatible with existing and proposed US Navy and US Air Force aircraft, but the Air Force proposes eventually to upgrade its existing Amraam, and the Department of Defence has expressed concern about potential duplication of work—calling for the two Services' programme offices to produce a "joint-Service air-to-air missile roadmap" for annual review by the Pentagon.

ORDERBOOK

Privately owned Austrian carrier **Lauda Air** has ordered another **Boeing 767-300** valued at about \$74 million. The Pratt & Whitney PW4060-powered aircraft will be delivered in November 1989, joining the airline's first 767, which entered service last May on routes to the Far East and Australia.

KLM has ordered six **Saab 340Bs** for its regional subsidiary **Netherlines**. Delivery is scheduled for early 1990. Until the 340Bs arrive, three 340As are being leased through Saab, replacing some of its British Aerospace Jetstreams.

Australian Aircraft Sales has bought Australian Airlines' remaining five **McDonnell Douglas DC-9s**, increasing the number bought from the carrier to 12.

National Commuter Airways of Southend, England, has bought an **Embraer EMB-120 Brasilia** and has taken an option on an additional Brasilia. When delivered next February it will become the first of the 30-seat regional turboprops operating in the UK.

Mexican carrier **Noroeste** has ordered two **Aerospatiale/Aeritalia ATR42-320s** for delivery in September and December 1990, becoming ATR's 40th customer. **Noroeste** will operate the aircraft from its Hermosillo, north-west Mexico, base on national routes and to the USA.

Icelandair has ordered two Rolls-Royce RB.211-535E4-powered **Boeing 757s**, with an option on a third. The \$100 million order is for deliveries in February and March 1990, with the option for 1991.

Alaska Airlines has ordered six **McDonnell Douglas MD-80s** for about \$180 million, including spares. Delivery will be from September 1990 to January 1991, and will increase the carrier's fleet of MD-80s to 26. Alaska starts its first international services next month, with flights to Mazatlan and Puerto Vallarta in Mexico.

Sled tests mini-missiles

Rocket-powered sleds have been used to test the deployment of submissiles from the terminal guidance warhead under development for the multiple launch rocket system (MLRS). The warhead is designed to release three terminally guided submunitions at supersonic speed. Each of the submissiles has a millimetre-wave radar seeker enabling it to locate and destroy armoured vehicles autonomously. The MLRS terminal guidance warhead is under development by MDTT, an international consortium comprising Martin Marietta, Diehl, Thomson-CSF, and Thorn-EMI.

