



X-31 turned tail at high altitude to delude flight-control computers

Rockwell and DASA fly 'tailless' X-31

The Rockwell International/Deutsche Aerospace (DASA)-built X-31 Enhanced Fighter Maneuverability aircraft successfully emulated flight without a tail at supersonic speeds, on 17 March, according to the Pentagon.

Aircraft number one climbed to an altitude of 38,000ft

Sagem UAV goes Dutch

French defence-electronics manufacturer Sagem has been added to the list of contenders pre-selected by the Netherlands Government to bid for the unmanned-air-vehicle (UAV) requirement for the Dutch army.

The French company, which is already contracted to supply its Crecerelle (Kestrel) battlefield-surveillance system to the French army, is entering a version of its autonomous tactical attack and observation System (ATAOS) to the Dutch competition. It is competing against GEC-Marconi, offering its Phoenix, Italian manufacturer Meteor, with its Mirach system, and Israel Aircraft Industries, which is bidding the Pointer.

An ATAOS system has a three-man control mobile unit, catapult launcher and a recovery vehicle. The propeller-driven drones have a range of 70km (40nm) and a loitering-inclusive duration of 4h. They carry up to 37kg of avionics. □

(11,600m) above Edwards AFB, California, and accelerated to Mach 1.2 on engagement of a special control mode which eliminates the stabilising influence of the vertical tail.

The pilot successfully demonstrated stability and control of flight, using only engine thrust-vectoring techniques during high-speed and straight-and-level runs, as well as during gentle turns.

To cancel vertical tail control, other conventional control surfaces on the aircraft were used to counteract the stabilising influence of the tail, making the aircraft appear tailless to the flight-control computers. Thrust-vectoring vanes then took over and provided the same functions as those which the vertical tail could in conventional flight.

All current supersonic aircraft require a vertical tail, but subsonic aircraft, such as the Northrop B-2 stealth bomber, can fly without one. The control of tailless aircraft at supersonic speeds had not been achieved before this record-establishing flight.

With this test, project officials believe that it is possible to replace conventional aircraft tail surfaces with a vectored-thrust capability. Reductions in supersonic-aircraft weight, aerodynamic drag, fuel consumption and radar signature would follow. □

Indonesia/Singapore open range

Indonesia and Singapore have opened a joint air-combat manoeuvring range (ACMR) in Pekan Baru, central Sumatra.

The ACMR will allow pilots from both countries' air forces to perform simulated combat exercises and weapons training, using aircraft-mounted instrumentation pods. The range will be operated by Singapore Aerospace, under the control of a joint Indonesia-Singapore training committee.

The range costs between \$15-\$16 million and incorporates the 10,800ha (2,700 acres)

Siabu Air Weapons Range, also developed jointly for the two air forces. Singapore, which is chronically short of airspace, trains pilots in Australia and the USA and has conducted joint exercises with the Indonesians since the mid-1970s.

The Pekan Baru ACMR is the first in the world to use satellite datalink to relay aircraft position and performance data to the ground monitoring system. Simulated air battles can be recorded and played back for later analysis of tactics and weapons delivery. □

Martin Marietta wins USAF upgrade

Martin Marietta has won a \$33 million contract to upgrade US Air Force Rockwell B-1, Northrop B-2 and McDonnell Douglas F-15E simulators with common sensor- and visual-simulation systems. The company's Information Systems division will upgrade the simulators with Compu-Scene PT3000/4000 image generators.

The Interoperable Visual and Sensor Simulation for Air Combat Command (IVACC) programme is the first USAF procurement of common-image generators for different simulators. The B-1B, B-2 and F-15E simulators are not interoperable, as databases developed for one training programme are incompatible with the image

generators used in the others.

Martin Marietta will supply high-fidelity image generators and databases for the simulation of out-of-the-window scenes and infra-red, low-light-television and radar images. Use of a common-image generator will ensure correlation between the visual and sensor databases, which will be interchangeable between the B-1, B-2 and F-15E simulators.

Other bidders for the five-year IVACC programme included CAE-Link and Hughes Training. Leading visual-system supplier Evans & Sutherland elected not to bid, arguing that Martin Marietta (formerly GE Aerospace) "...was too close to the customer". □

US Army selects Texas for sensor

An \$8.9 million deal has been won by Texas Instruments (TI) Defense Systems and Electronics Group for the US Army's Communications-Electronics Command, to design and demonstrate an Advanced Helicopter Pilotage-Sensor (AHP-S) for battlefield-attack helicopters.

The first phase of the AHP-S programme will last 22 months and involve TI in designing and demonstrating a prototype system. This will consist of a 30° x 50° field-of-view (FoV) forward-looking infra-red sensor and an image-intensified television

camera mounted in a head-tracked turret. Six-month-long flight trials will be conducted using a McDonnell Douglas AH-64 Apache.

The current AHP-S contract also includes a \$2.8 million second-phase option which, if taken up, will see the system's FoV increased to 40° x 80°.

AHP-S phase two is scheduled to be a two-year programme, culminating in flight testing of the improved system aboard a Bell AH-1 Cobra helicopter. Additional options could bring the total AHP-S programme value to more than \$12 million. □