

X-31 thrust-vectoring option for Eurofighter

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IN LOS ANGELES

A mid-life upgrade to the Eurofighter 2000 fighter is likely to include a thrust-vectoring capability, according to senior German officials.

Technology developed for the Rockwell/Deutsche Aero space (DASA) X-31 high angle-of-attack demonstrator project could be drawn on as the basis for the introduction of thrust-vectoring during what the Germans call the Eurofighter 2000 "Kampfwertsteigerung," which translates as combat-improvement programme.

Oskar Friedrich, managing director of Tornado developer Panavia, says that the main parts of the X-31 programme which should eventually reach the Eurofighter 2000 include the thrust-vectoring capability. "Eventually it will find its way into Eurofighter. We had looked at it in the early stages of the programme but the technology was not considered to be 'ripe'. For now it must be kept in the background."

Senior officials from Eurojet, the consortium manufacturing the EJ200 turbofan engine for Eurofighter, say that there is no official requirement yet. They add that German Eurojet partner MTU had suggested including thrust vectoring in the European Staff Requirement-Draft.

DASA is already working on an alternative flight-control system (FCS) model for the Eurofighter based on its experience of developing the flight-control laws and software for the X-31 (Flight International, 20-26 April).

German flight-control specialists working on the US-German X-31 programme say that parts of their work could be used in the Eurofighter 2000, but add that a "switchover" to a complete X-31-based system is not feasible.

DASA X-31 flight-control

specialist, Peter Huber, says: "The experience we have on the X-31 will flow into Eurofighter, but how much depends on many things in the future."

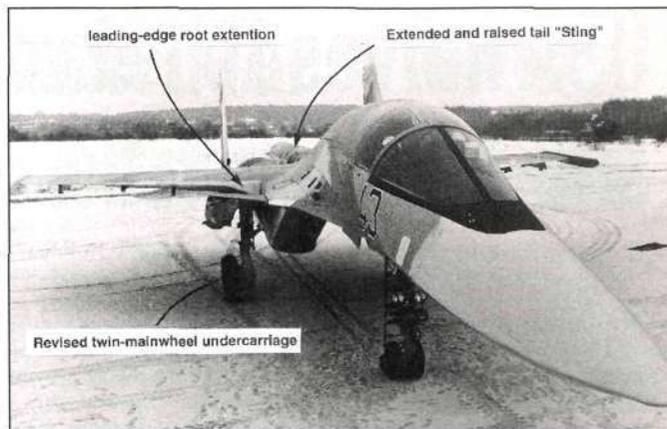
Friedrich, who was closely involved with the earlier years of the X-31 programme, says that the transfer of flight-control elements to the EF2000 is conceivable "...in principle yes, but in practice it's not really possible".

Flight-control experts say that the Eurofighter's digital FCS is significantly different to that of the X-31. One such difference is that it was designed in a "conventional" manner to reduce risk, whereas the X-31 was designed using a relatively new approach known as optimal control theory.

The other major difference is that much of the FCS architecture is based around feedback gains geared to high alpha (angle-of-attack) flying in the post-stall (PST) regime. The X-31 flight-control laws do, however, have a conventional mode which limits alpha to 30°, and which can be flown with thrust vectoring on or off.

X-31 team members are, meanwhile, planning a further series of "quasi-tailless" flights in the second half of 1994, which could lead to totally tailless flights in late 1995. □

X-31 thrust vectoring is targeted



Sukhoi Su-34 on the ramp at Zhukovsky

Archer is aimed at Su-34

Russia's Sukhoi Su-34 strike aircraft is emerging as one of the main candidates to be equipped with the rearward-firing variant of the R-73 (AA-11 Archer) missile produced by Vympel (Flight International, 30 March-5 April).

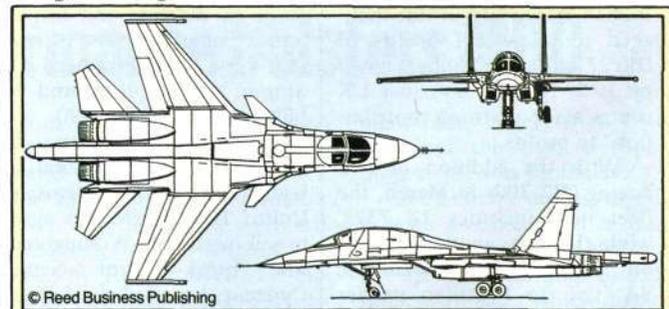
A pre-production aircraft, designated number 43 at the Zhukovsky flight-test centre outside Moscow, shows a series of changes compared with the prototype, in particular a radically altered tail section.

The rear section has been altered, with a "sting" extended and raised to form a spine along the length of the rear

fuselage. This is thought to house a rear-facing radar to act as an approach warner, and also potentially to cue the R-73 on target.

The aircraft also has a revised main undercarriage structure, with two main wheels. The twin-wheel configuration also appears to have resulted in the addition of a leading-edge wing extension to the rear of the canard. The central fuselage wing-box area may also have been considerably revised.

The Su-34 will replace the Russian air force's Su-24 Fencer in the strike role. □



Sukhoi Su-34 pre-production aircraft

Dutch release Orion update request

The Dutch defence ministry has released a request for information (RFI) to industry covering a potential upgrade programme for its fleet of 13 Lockheed P-3C Orion maritime patrol aircraft.

The RFI has gone to several companies including, it is

believed, Lockheed, E-Systems, Martin Marietta, Rockwell-Collins, GEC-Marconi Avionics and Unisys from interested contracting teams.

Responses are due by June, with the upgraded aircraft due to enter service by around the turn of the century. □