



referred to initially as the Istrebitel 90 (Fighter 90). Mikoyan was selected over Sukhoi to develop the aircraft and the designation was changed subsequently to the Mikoyan Article 1.42. The 1980s LFI programme fell by the wayside, with the Soviet air force concentrating on the acquisition of an air-superiority fighter to counter what would eventually emerge as the F-22.

Mikoyan began serious work on its MFI contender around 1985, at which time the first flight of a prototype was projected for around 1990. It was an ambitious project, built around Soviet projections of how advanced the US Air Force's F-15 replacement would be.

For the aircraft's basic configuration, which has yet to be officially revealed by MIG MAPO, the Mikoyan design bureau may have used as a starting point its unsuccessful competitor to the Su-27. This was a large twin-engined fighter, similar in planform to the MiG-31 Foxhound. Given the Soviet requirements for manoeuvrability, it was clear that such a design was unlikely to come close to meeting the air force's needs.

### CANARD CONFIGURATIONS

Throughout the mid-1980s conceptual drawings of advanced US fighters had shown aircraft with foreplanes, and France, Sweden and the four Eurofighter nations were all developing close-coupled delta-canard designs to meet next-generation fighter requirements. Russia followed suite, with the Central Aeronautical Hydrodynamics Institute testing a number of delta-canard configurations.

One such design was to surface eventually as a single-engined multi-role fighter, the Su-37, which was proposed to replace the Su-25 Frogfoot, while foreplanes were also introduced on the Su-27M, variously referred to by Sukhoi as the Su-35 and Su-37. The Mikoyan 1.42 was to emerge as a large canard-delta design.

Lyulka Saturn was tasked with developing an engine for the 1.42 with performance considerably exceeding that of the AI-31 which powers the Su-27. The AI-41, as the engine is designated, proved to be one of the most technically demanding aspects of the development pro-

### *Sukhoi's S-32, more than just a design-bureau pipe-dream?*

gramme, and Mikoyan has blamed project delays on Lyulka Saturn's slow progress on the engine.

Radar development was to prove similarly overambitious, both in terms of the original timescale, and within the timeframe of the delays resulting from problems other areas of the programme. The outcome appears to have been that the 1.42 was planned to enter service with a derivative of the phased-array radar developed for the Su-27M. The aircraft was also intended to have a rearward-facing radar, as does the Su-27M, to provide rear-hemisphere protection and weapons cueing.

The 1.42 configuration has gone through a number of design iterations, likely introducing an increased emphasis on low-observable (LO) characteristics. From the outset, however, Russian design bureaux have maintained an attitude to radar cross-section and infra-red signature reduction markedly different to that to their US counterparts.

Opinion differs as to whether the Russian attitude toward LO is driven primarily by technological limitations or operational doctrine. It may be a mix of the two. Certainly Russian production tolerances on its present-generation of combat aircraft, such as the Flanker and Fulcrum, would have had to be improved greatly if an LO design comparable to the F-22 was to have been developed.

There is considerable speculation as to whether the MFI aircraft was intended to carry an air-to-air missile with a range considerably greater even than that provided by the ramjet derivative of the R-77 (AA-12 Adder) medium-range missile, which is being developed by Vypel. There is some speculation that Vypel's K-37 (AA-X-13) replacement for the R-33 (AA-9 Amos) on the MiG-31M may also have been intended for the MFI project. Development of the K-37 has been prolonged and it now appears unlikely to enter service on the moribund MiG-31M.

The MFI was also intended to be fielded with a new short-range dogfight missile to replace the

R-73 (AA-11 Archer). Vypel has occasionally alluded vaguely to a follow-on to the R-73, although no details have been released.

The MFI underwent high-speed taxi trials at the Zhukovsky flight-test research institute in 1994, with MiG test pilot Roman Taskayev at the controls. At least one, and possibly two, prototypes of the aircraft remain hidden from view in red brick hangers at the site. The prototype aircraft are often referred to as the 1.44 airframes.

It appears now that the programme will go no further in terms of providing the Russian air force with a next-generation combat aircraft. The fall of the Soviet Union, followed by the collapse of the Russian economy, left the majority of its next-generation weapons projects in limbo, at best, if not on the scrapheap.

### CONSIDERING THE NEXT MOVE

With the 1.42 likely to remain only a technology-demonstrator programme, the Russian air force has been left to reconsider its fifth-generation fighter requirements. The air force has undoubtedly continued to watch development of the F-22, its increasing cost and reducing procurement numbers. While the end of the Cold War has certainly changed the Russian air force's threat analysis, it will continue to measure the capabilities of its combat aircraft against the best fielded by the West, and by the USA in particular.

Sukhoi is now promoting its S-32: the only (model) versions of this design so far seen show the aircraft to have close-coupled foreplanes and forward-swept wings. Details of the aircraft remain scant, although a prototype is reputed to be in the final stages of construction.

Against this desire to match the next generation of combat aircraft to be fielded by the West is the reality of having funds which are only a fraction of those allocated by the air force's former Soviet masters. This is coupled with the realisation that, while both the Fulcrum and Flanker could, with relatively limited upgrades, provide an adequate force, the air force's strike capability badly needs improving. □