

= Mikoyan @-@ Gurevich DIS =

The Mikoyan @-@ Gurevich DIS (Russian : ??????? ????????????? / Dalnij Istrebitel ' Soprovozhdeniya - " long @-@ range escort fighter ") was a prototype Soviet fighter aircraft of World War II . The service designation MiG @-@ 5 was reserved for the production version of the aircraft . It was also intended to develop reconnaissance and bomber versions , but these plans were disrupted by the German invasion in June 1941 . The project was stymied by the failure of its intended inline engine , the Mikulin AM @-@ 37 , and its performance was disappointing when a second prototype was built later with M @-@ 82 radial engines . It was cancelled in 1943 after at least two prototypes were built .

= = Design and development = =

The NKAP (Narodnyy komissariat aviatsionnoy promyshlennosti ? People 's Ministry of the Aircraft Industry) requested on 7 October 1940 that the OKO (opytno @-@ konstruktorskiy otdel ? Experimental Design Department) of Factory (Zavod) No. 1 , which would later become the Mikoyan @-@ Gurevich design bureau (OKB) begin work on a twin @-@ engined long @-@ range , single @-@ seat escort fighter intended to use the AM @-@ 37 engine , then under development by Mikulin . It also requested that specifications , along with a model , be ready to be discussed on 12 November of that year . Three days later Mikoyan and Gurevich were ordered to produce three prototypes to undergo State acceptance trials on 1 August , 1 September and 1 November 1941 . After the meeting the NKAP broadened its roles to include bombing , torpedo attack , reconnaissance and interdiction .

The DIS was a low @-@ wing , twin @-@ engined , twin @-@ tailed monoplane of mixed construction . The front section was built from duralumin , the middle section was a wooden monocoque and the rear section was steel tubes covered with a duralumin skin . The twin tails were wooden and had an electrically operated variable @-@ incidence horizontal stabilizer . The elevators had duralumin frames , but were covered by fabric . The two @-@ spar wing was made in a three pieces . The center section was metal , but the outer panels were wooden with fabric @-@ covered ailerons and veneer @-@ covered Schrenk flaps . The wing had leading edge slats along two @-@ thirds of its length . The main undercarriage retracted rearwards into the rear of the engine nacelles and the tailwheel retracted into the rear fuselage . The Mikulin AM @-@ 37 inline engines were slung underneath the wings with the engine oil coolers mounted in the outer wing panels . The air intakes for the engine superchargers was located in the wing leading edge . The pilot was provided with a glass panel on the underside of the nose to improve his downward visibility , and he was protected by armor up to 9 millimetres (0 @-@ 35 in) thick at the front , rear , sides and underside of his seat . The fuel capacity was 1 @-@ 920 litres (422 imp gal ; 507 US gal) in two protected tanks behind the pilot and another four in the wings .

The DIS was intended to be armed with a 23 mm (0 @-@ 91 in) VYa cannon with 200 rounds in a pod beneath the nose , but the VVS preferred the Taubin MP @-@ 6 . The DIS was to carry two of them with 120 rounds per gun , but they proved to be a failure and the aircraft reverted to the original VYa cannon . Each wing root was to have a synchronized 12 @-@ 7 mm (0 @-@ 50 in) Berezin UBS machine gun with 300 rounds mounted below a pair of 7 @-@ 62 mm (0 @-@ 300 in) ShKAS machine guns with 1000 rounds per gun . The gun pod could be removed and bombs up to 1 @-@ 000 kg (2 @-@ 200 lb) or a torpedo could be carried instead .

= = Flight testing = =

The first prototype , with the internal designation of T , made its first flight on 11 June 1941 . Its initial flight tests , conducted by the manufacturer between 1 July and 5 October , were a disappointment as it could only reach a speed of 560 km / h (348 mph) at 7 @-@ 500 metres (24 @-@ 606 ft) , 104 km / h (65 mph) slower than estimated . The three @-@ bladed 3 @-@ 1 @-@ metre (10 ft) AV @-@ 5L @-@ 114 propellers were exchanged for four @-@ bladed 3 @-@ 1

AV 9B L 149 propellers and the engine installation was redesigned after wind tunnel tests by TsAGI (Central Aero and Hydrodynamics Institute) revealed that the poorly designed engine accessories were the major cause of the excess drag . After modifications the aircraft reached 610 km / h (380 mph) at an altitude of 6 800 metres (22 310 ft) . Its time to 5 000 metres (16 404 ft) was 5 @ 5 minutes . Even with the improvements the LII (Lyotno @ Issledovatel 'skiy Institoot ? Flight Research Institute) did not recommend production , but recommended that development and testing should continue . The German advance on Moscow in October 1941 forced the Institute and the DIS to evacuate to Kazan while the OKO and its factory went to Kuibyshev . The failure of the AM @ 37 to enter production doomed the project , albeit temporarily .

The OKO , along with all other aircraft designers , had been directed to use the Shvetsov ASh @ 82 radial engine as a backup engine for their products in May 1941 , but the evacuation disrupted the production of this version , known internally as the IT and it was not built until the autumn of 1942 . Aside from the engines it differed from the T in small respects . Its tailcone was split vertically to use as an air brake and the armament was revised to consist of two VYa cannon in the undernose pod with 150 rounds each and four Berezin UBK machine guns mounted in the wing roots . It made its first flight on 28 January 1943 and demonstrated a top speed of 604 km / h (375 mph) and a time to 5 000 meters of 6 @ 3 minutes . Flight testing was stopped on 10 February when the floatless carburetors had to be sent to TsIAM (Tsentral 'nyy Institoot Aviatsionnoy Motorostroyeniya ? Central Institute of Aviation Motors) for adjustment . There were continuous problems with these and they delayed the entire project until it was cancelled in October 1943 .

The service designation MiG @ 5 was reserved for the production version of this aircraft , as demonstrated in the NKAP order of 2 October 1941 that instructed Zavod No. 1 to begin manufacture of the MiG @ 5 after the completion of its State acceptance tests . Other known designations for the aircraft include the DIS @ 200 and Idzeliye 71 , its factory designation . The bomber version , if it had entered production , might have been known as the MiG @ 2 .

Two prototypes are known to have been built , but some records suggest that others were built as well . The original order called for three aircraft and was amended later for two additional aircraft with M @ 82 engines . Some sources quote dates for the latter version 's first flight of January 1942 and 15 October 1941 , which could be an indication that two of the latter version were completed , or they could simply be clerical errors .

= = Specifications (T) = =

Data from Gordon and Komissarov , OKB Mikoyan : A History of the Design Bureau and its Aircraft
General characteristics

Crew : 1

Length : 11 @ 2 m (36 ft 9 in)

Wingspan : 15 @ 3 m (50 ft 2 in)

Height : 3 @ 4 m (11 ft 2 in)

Wing area : 38 @ 9 m² (419 sq ft)

Airfoil : Clark YH

Gross weight : 8 @ 060 kg (17 @ 769 lb)

Fuel capacity : 1 @ 920 kg (4 @ 230 lb)

Powerplant : 2 x Mikulin AM @ 37 supercharged , liquid @ cooled , V12 engines , 1 @ 044 kW (1 @ 400 hp) each

Propellers : 4 @ bladed AV @ 9B @ L @ 149 , 3 m (9 ft 10 in) diameter

Performance

Maximum speed : 610 km / h (379 mph ; 329 kn) at 6 @ 800 m (22 @ 310 ft)

Range : 2 @ 280 km (1 @ 417 mi ; 1 @ 231 nmi)

Service ceiling : 10 @ 900 m (35 @ 761 ft)

Time to altitude : 5 @ 5 minutes to 5 @ 000 m (16 @ 404 ft)

Wing loading : 207 @. @ 2 kg / m² (42 @. @ 4 lb / sq ft)

Armament

Guns : 1 x 23 mm VYa cannon

2 x 12 @. @ 7 mm BS machine guns

4 x 7 @. @ 62 mm ShKAS machine guns

= = Comparable aircraft = =

de Havilland Mosquito

Tupolev Tu @- @ 2

Petlyakov Pe @- @ 2

Focke @- @ Wulf Fw 187

Lockheed P @- @ 38 Lightning

Messerschmitt Bf 110

Nakajima J5N

Westland Whirlwind