= Polikarpov I @-@ 6 =

The Polikarpov I @-@ 6 was a Soviet biplane fighter prototype of the late 1920s . It was designed with traditional wooden construction in comparison with the wood and steel tube construction Polikarpov I @-@ 5 . Its development took longer than planned and the lead designer , Nikolai Polikarpov , was arrested for industrial sabotage , which only further delayed the project . Only two prototypes were built , as the I @-@ 5 was selected for production .

= = Design and development = =

Development of the I @-@ 6 (Istrebitel ' ? fighter) began in September 1928 with a deadline for delivery for the first prototype of 1 August 1929 after the first prototypes of the Polikarpov I @-@ 3 were completed . Although the new fighter shared many of the characteristics of the earlier design , including the staggered sesquiplane , single @-@ bay , layout of the wings , it was a new design which used a nine @-@ cylinder , single @-@ row , air @-@ cooled Bristol Jupiter radial engine rather the water @-@ cooled inline engine of its predecessor . It was designed by the OSS (Russian : Otdel Sookhoputnykh Samolyotov ? Landplane Department) , later redesignated as OPO @-@ 1 (Russian : Opytnyy Otdel ? Experimental Department) of Aviatrest (" Aviation Trust ") under the supervision of Nikolai Polikarpov , head designer of the department . It was originally intended to be compared to the I @-@ 3 , but this was changed to an evaluation of construction methods with the wooden construction I @-@ 6 compared to the mixed construction Polikarpov I @-@ 5 . Both aircraft used the Jupiter VI engine for which a license had recently been negotiated .

The I @-@ 6 had an oval @-@ section semi @-@ monocoque fuselage covered with ' shpon ' , molded birch plywood , with a small headrest faired into the fuselage , although the engine was enclosed in a metal cowling that left the cylinder heads exposed for better cooling . The two @-@ spar wings were covered in plywood and fabric and had a Clark Y profile . Internal bracing wires were fitted to reinforce the wings . The control surfaces were framed in duralumin , but covered in fabric . The duralumin N @-@ type struts that separated the wings , and attached the upper wing to the fuselage , had a teardrop profile . They were reinforced with steel bracing wires . The conventional undercarriage was fixed with rubber shock absorbers . The wooden propeller was given a spinner . The lighter weight of the air @-@ cooled Jupiter engine , which required neither a heavy radiator nor coolant , meant that the I @-@ 6 had an empty weight only 62 % of that of the I @-@ 3 .

Polikarpov was arrested and imprisoned by the OGPU in September 1929 for the crime of industrial sabotage when neither the I @-@ 6 nor the I @-@ 5 projects met their stipulated deadlines , and this delayed the first flight of the I @-@ 6 until 30 March 1930 . The second prototype was completed shortly thereafter and both aircraft appeared in that year 's May Day fly @-@ past over Moscow . Both aircraft likely used imported engines before they were replaced by the Soviet @-@ built copy of the Jupiter , the Shvetsov M @-@ 22 . One I @-@ 6 crashed on 13 June 1930 after the test pilot bailed out , without justification , in the opinion of the Soviet aviation historian Vadim B. Shavrov .

The I @-@ 5 and the I @-@ 6 were virtually identical in performance , although the I @-@ 6 took 15 seconds to complete a full circle versus the 9 @.@ 5 seconds of the I @-@ 5 . Both aircraft were armed with two 7 @.@ 62 mm (0 @.@ 3 in) PV @-@ 1 machine guns , but the production model of the I @-@ 5 was expected to be armed with four , although this proved to impose too great a penalty to the I @-@ 5 's performance . The exact reasons for the selection of the I @-@ 5 over the I @-@ 6 , which was debated for a full year , are not known , but likely relate to both of these factors . Curiously , Polikarpov was not informed of the selection of the I @-@ 5 until his release in 1933 after his initial sentence of death had been commuted to ten years of imprisonment in a labor camp .

= = Specifications = =

Data from Shavrov , Istoriia konstruktskii samoletov v SSSR do 1938 g .
General characteristics
Crew : 1
Length : 6 @.@ 8 m (22 ft 4 in)
Wingspan : 10 m (32 ft 10 in)
Height : ( )
Wing area : 20 @.@ 5 m ² (220 @.@ 7 ft ²)
Empty weight : 868 kg (1 @,@ 914 lb)
Loaded weight : 1 @,@ 280 kg (2 @,@ 822 lb)
Powerplant : 1 × Shvetsov M @-@ 22 radial engine , 313 kW (420 hp)
Performance
Maximum speed : 280 km / h (151 kn , 174 mph)
Range : 700 km (378 nmi , 435 mi)
Service ceiling : 7 @,@ 500 m (24 @,@ 606 ft)
Wing loading : 62 kg / m ² (13 lb / ft ²)
Power / mass : 245 W / kg (0 @.@ 15 hp / lb)
Time to altitude : 10 minutes to 5 @,@ 000 m (16 @,@ 405 ft)
Horizontal turn time : 15 sec
Armament
2 × 7 @.@ 62 mm (0 @.@ 30 in) PV @-@ 1 machine guns