

BOMBER AIRCRAFT LWS-6 ŻUBR

Working at the State Aviation Works (*Państwowe Zakłady Lotnicze, PZL*) at the beginning of the 1930s, Zbigniew Ciołkosz designed a passenger aircraft designated as the PZL-30. The design did not raise the interest of LOT Polish Airlines, which by then had placed an order with US manufacturer Douglas. At that time Polish aircraft makers were working on bomber designs for the air force. As the PZL-30 design was well advanced, and additionally financed by the Ministry of Communication, the Aeronautics Department decided to order a bomber version of the aircraft from PZL. According to its design parameters, it was to have been a two-engine bomber with a crew of four and a bomb capacity of 1,200 kg. (2,640 lbs).

The first prototype, designated PZL-30B/I and powered by two 400/420 hp Wasp Junior TB engines, was test flown in 1936. It was a two-engine top-wing design with an original landing gear retraction system. The landing gear folded into the sides of the fuselage, and its diagonal struts looked like wing struts. During trials conducted in the spring and summer of 1936, it became apparent that the engines used were not powerful enough. Among other problems, this decreased the aircraft's top speed. It was decided to build a second prototype (PZL-30B/II), in which more powerful 650/680 hp WS Pegaz VIII engines were used, the landing gear retraction system was changed to a traditional design, where the wheels folded back into the engine nacelles, and the nose of the fuselage was redesigned slightly. At the same time, a decision was made to begin serial production at the Lublin Aircraft Factory (*Lubelska Wytwórnia Samolotów, LWS*) which resulted in an order from the Air Force Supply Command for 16 aircraft. The aircraft built at LWS was to be designated LWS-6 and bear the military name of Żubr (Bison).

PZL-30/II was test flown in the fall of 1936, and between Sept. 23 and Oct. 28 underwent testing at the Aviation Technology Institute (*ITL*). As it turned out, the prototype needed additional work to correct its directional instability and reduce forces necessary to operate the foot controls. In series production aircraft, the surface area of the vertical stabilizer was increased, which resulted in the large, oval stabilizer characteristic of this design.

As PZL designed the excellent PZL-37 Łoś bomber at the same time, there was no chance for a large order of Żubr planes by the Polish air force. This is why LWS wanted to get other clients, including Romanian authorities, interested in this aircraft. In November 1936, a Romanian air force delegation arrived in Poland to get acquainted with the Żubr. On November 7, a prototype crashed, killing two members of the Romanian team along with the crew and an ITL representative. The accident shattered all hopes of exporting the Żubr to Romania.

In assessing the causes of the accident, it became apparent that it was caused by faulty wing construction, which left it susceptible to twisting.

The accident commission's findings were used in the serial production of the aircraft. The wing construction was strengthened, which increased the plane's weight by 750 kg, in turn decreasing the bomb load from 1,200 to 660 kg. This is why LWS management proposed designing a new metal wing to replace the old wooden one. This would have lightened the plane's weight by about 300-400 kg., increasing the bomb load to about 1,000 kg. This proposal was not accepted, and 16 production aircraft were made with the strengthened wooden wing. The first few series aircraft had "old style" vertical stabilizers, but these were later changed out, and all planes were used with new oval stabilizers.

From the first half of 1938, LWS began to actively search for a foreign client for the aircraft. Negotiations with China were most advanced, but in the end no foreign orders appeared.

Delivery of Żubr aircraft ended in January 1939. It was decided not to assign them to combat units, which began receiving Łoś bombers at that time. The Żubr was treated as a "reserve model". All of the aircraft produced ended up at the 1 PL Training Squadron and the

213th Bomber Training Squadron. Later some of the aircraft were transferred to the 221st and 222nd squadrons, stationed in Małaszewice, as temporary aircraft. The Żubr, despite its earlier problems and its obsolete design, was a safe, friendly aircraft. Until

the outbreak of World War II, only one plane of this type crashed, with no casualties, and this was caused by pilot error. The Żubr's good piloting characteristics are best illustrated by an incident in which two mechanics (sic!) flew one of them from a field airstrip to Warsaw on Sept. 7, 1939.

After Poland's defeat in 1939, a few of these aircraft were captured by the Germans. Several were restored and used for zero-visibility training. This was one of the few instances of Germans using Polish-produced aircraft.

LWS-6 Żubr construction design

This was a two-engine "transitional" design with a crew of four. Two major concepts influenced the design of the Żubr: The "Fokker" concept, in which the plane got a metal fuselage and a wooden wing, and the "French", in which it got a spacious fuselage with turrets and plenty of glazing. At that time, these ideas were already obsolete, so the design could not compete with the PZL-37 Łoś

Fuselage – metal, welded steel tube construction The front part (nearly to the trailing edge of the wing) – semi-monocoque, covered with duralumin sheets. The rear of the fuselage – truss construction covered with fabric from the sides and the bottom, and with duralumin sheet on top.

Wing – three-part wooden construction, covered in plywood, rather advanced mechanization. The upper part of the wing had duralumin interceptors synchronized with the ailerons (they rose when the aileron was raised). The wing was also equipped with flaps. The ailerons and rudders were welded of steel tubes and covered in fabric.

Main landing gear – retractable (electric), from France's Air Equipment company; fixed tail wheel. (As the landing gear retraction system required too much power, all aircraft later had their landing gear blocked in the open position).

Power units – two 650-680 hp PZL WS Pegaz VIIIc engines

Defensive armament – five Vickers F machine guns: two each synchronized in the front and rear turrets, and one on a retractable mount in the bottom of the fuselage. The aircraft could carry a maximum of 660 kg of bombs, which were placed in the fuselage along the pilot's cabin, under the main floor and in the wings.

LWS-6 Żubr technical data (bomber version)

Wingspan – 18.50 m
Length – 15.40 m
Wing surface – 49.50 m²
Empty weight – 4,751 kg
Max. load – 2,049 kg
Max. speed – 330 km/h
Max. altitude – 6,200 m
Range – 1,200 km

This model was prepared in 1:33 scale.

The model is a faithful replica, except for a few elements for which there is no good documentation: the end of the fuselage may have been somewhat different; the pilot's instrument panel is the right shape, but the arrangement of instruments is largely conjectural; as is the method of mounting the main landing gear. Also, the commander's cabin at the front of the fuselage lacks a bombsight and a control stick. Several other items are simplified, including the front turret, which in reality was a closed hemisphere that rotated on its vertical axis, diagonal truss elements in the commander's cabin, etc. Additional parts for detailing this model can be found on our web page, www.modele-kartonowe.com.

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