



The Night Witches



The Milton Keynes Branch of Air-Britain

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The 'Night Witches', Soviet women pilots whose silent bombing raids in their primitive biplanes terrified the Wehrmacht in WW2.



The Polikarpov Po-2, a general-purpose Soviet biplane used as for ground attack and night bombing. The Shuttleworth collection has an example.



A damaged and abandoned Po-2 forced to land in Ukraine, and subsequently captured by German troops, 1941.

The Polikarpov Po-2

The nearest example of the Po-2 can be found in the Shuttleworth collection (June 2015).

The U-2/Po-2 was designed by N Polikarpov to establish a single Soviet type for a uniform training syllabus. The

emphasis was on a reliable engine coupled with simplicity and cheapness. The original 1927 design was very simple and cheap but flew like a brick, so the requirement for simplicity was relaxed.

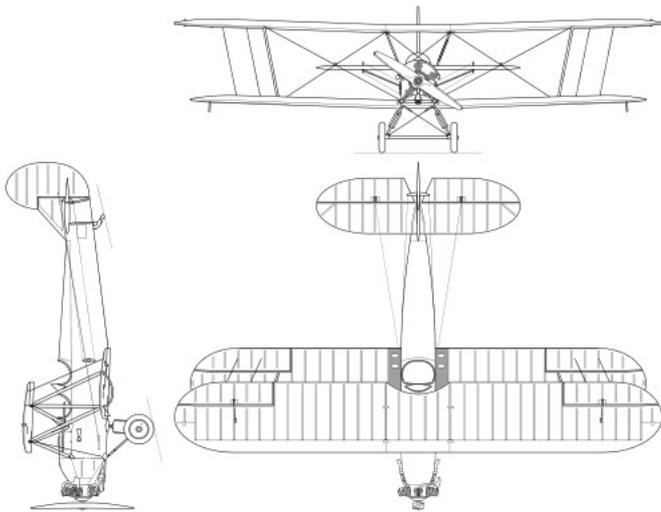
In 1928 the aerodynamically cleaned up U-2 flew to critical acclaim, especially for its positive longitudinal stability and lack of vices. However, the U-2 (which was redesignated Po-2 after Polikarpov's death in 1944) was certainly not used just as a trainer. *[I shall just refer to Po-2 from now on – editor]*

The prototype of the first main variant, a crop duster, appeared as early as October 1927 and there followed many variations on the basic theme, such as floatplanes, cabin versions (seating up to seven in overload conditions!), ambulances, some with stretcher accommodation in pods on each lower wing, one luxury cabin version with exhaust muff heating and wicker passenger chairs, and even a prone-position pilot version to test an interceptor fighter concept (in 1939).

Features showing the simplicity of the design are that both fuel and oil systems are gravity fed. The fuel tank holds 200L but there is no fuel gauge and no fuel pump. The oil system - no filter, just a mesh screen - is turned on by a tap behind the starboard cowl panel, out of reach of the pilot.

The Po-2 was highly manoeuvrable, yet stable and predictable. It was virtually impossible to spin accidentally, and in an induced spin would pull out on its own when control surfaces were put to neutral. When climbing too steeply it would not stall but gently lower its nose to pick up speed again.

Although entirely outclassed by contemporary aircraft, the *Kukuruznik* served extensively on the Eastern Front in World War II, primarily as a liaison, medevac and general supply aircraft. It was especially useful for supplying Soviet partisans behind the front line, and, as we shall see, night bombing.



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|-----------------|---|
| Type of machine | All wood, single engine, two seat biplane |
| Design purpose | Trainer |
| Wing Span | 37 ft 0 in |
| Overall length | 26 ft 7 in |
| Engine | 115 hp Shvetsov M-11D 5 cylinder radial |
| Weight empty | 1,653 lbs |
| Weight loaded | 2,255 lbs |
| Speed (max) | 93 mph |

First trials of arming the aircraft with bombs took place in 1941. During the defence of Odessa, in September 1941, the Po-2 was used as a reconnaissance aircraft and as a light, short-range, bomber. From 1942 it was adapted as a light night ground attack aircraft.

Polikarpov supported the project, and under his leadership a light night bomber series was created. This was fitted with bomb carriers beneath the lower wing, to carry 50 or 100 kg (110 or 220 lbs) bombs up to a total weight of 350 kg (771 lb) and armed with a machine gun in the observer's cockpit.

Wehrmacht troops nicknamed it *Nähmaschine* (sewing machine) for its rattling sound. Finnish troops called it *Hermosaha* (Nerve saw); when as the Soviets flew nocturnal missions at low altitudes sound was described as nerve-wracking, hence the name.

The material effects of night bombing missions may be regarded as insignificant, but the psychological effect on German troops was much more noticeable. They were typically attacked by complete surprise in the dead of night, denying German troops sleep and keeping them constantly on their guard. This contributed further to the

already exceptionally high stress of combat on the Eastern front.

Their usual tactics involved the Po-2s flying only a few metres above the ground, rising for the final approach, cutting off the engine and making a gliding bombing run, leaving the targeted troops with only the eerie whistling of the wind in the wings' bracing-wires as an indication of the impending attack.

Luftwaffe fighters found it extremely hard to shoot down the *Kukuruznik* because of three main factors:

- 1) the rudimentary aircraft could take an enormous amount of damage and stay in the air.
- 2) the pilots used the defensive tactic of flying at treetop level.
- 3) the stall speed of both the Messerschmitt Bf 109 and the Focke-Wulf Fw 190 was similar to the Soviet aircraft's maximum cruise speed, making it difficult for the newer aircraft to keep a Po-2 in weapons range for an adequate period of time.

A German pilot told of how he one night spotted a Po-2 as it passed from a dark to a light part of the moonlit landscape below him. He turned his Me109 around, lined up behind the Po-2, and overshot it. He came back round, lowering flaps and gear to try and match speed with the slow biplane, got his aim and fired. The recoil of his guns killed the last of his speed and he stalled and crashed. Back from the infirmary several months later he learned that he had actually been credited for shooting down a Po-2, at the expense of a much more costly and much less replaceable Me109.

The Po-2 was the aircraft used by the 588th Night Bomber Regiment, composed of all-women pilot and ground crews. The unit became notorious for daring low-altitude night raids on German rear-area positions. Veteran pilots, Yekaterina Ryabova and Nadezhda Popova on one occasion flew eighteen such missions in a single night. The women pilots observed that the enemy suffered a further degree of demoralization simply due to their antagonists being female. As such, the pilots earned the nickname "Night Witches".

The unit earned numerous Hero of the Soviet Union citations and dozens of Order of the Red Banner medals; most surviving pilots had flown nearly 1,000 combat missions by the end of the war and had taken part in the Battle of Berlin.

NADEZHDA POPOVA (Obituary)

A natural pilot who made her first solo flight at the age of 16, Nadezhda Popova later graduated from the Kherson Flight School to become one of the celebrated "Night Witches", the female Soviet aviators whose hit-and-run tactical bombing raids undertaken in primitive biplanes

caused a constant headache to German ground forces on the Eastern Front from 1942 until the end of the war.

Nadezhda Popova (standing, hand to head) is shown with two other women pilots of the 46th Guards Air Force Regiment relaxing near a dugout before the evening's bombing mission.



Credit RIA Novosti / TopFoto

The unlikely instrument of the Night Witches' survival as a unit against all the apparent odds, and of their remarkable operational success, was the wood-and-canvas Polikarpov Po-2 biplane. One of the Po-2's great advantages was its extreme slowness, which was well below the stall speed of the Luftwaffe's Messerschmitt 109 and Focke-Wulf 190 interceptor fighters. This made it difficult for even Germany's best aces to nail it in flight.

The female aviators of the 588th Night Bomber Regiment, later honoured with the title of 46th "Taman" Guards Night Bomber Aviation Regiment, exploited this low speed and extreme manoeuvrability, gliding silently into the attack with their engines cut, and only starting them again after they had dropped their bombs. The pilots' nickname, "Nachthexen", was from German soldiers on the ground who likened the whistling of the air through the biplane's wire stays to the whoosh of a passing witch's broomstick.

Although the overall significance of the targets that the Night Witches were able to attack may not have been great, their continuing ability to operate in the night skies over the Wehrmacht in the field over a period of more than three years had a most unnerving effect on enemy troop morale.

Popova was shot down three times but never suffered serious injury. In February 1945 she was made a Hero of the Soviet Union.

Nadezhda Vasilyevna Popova was born in 1921, the daughter of a railwayman. She grew up in the Donetsk coal fields area of Ukraine. As a girl she loved singing and dancing, and her dream was to become an actress, until one day in her teens she saw an aircraft land near her home village. She watched awestruck as its pilot climbed out, revealing himself after all to be a mere man and not some unapproachable superhuman figure, as she ran towards him to touch his uniform.

Ambitions for a stage career were immediately set aside, and from that moment she was determined to become a pilot herself in spite of her parents' opposition. At 15 she joined a flying club and in 1937, aged 16, she made her first parachute jump and went solo.

She graduated from the military flying school at Kherson, and became a flying instructor because there were no female flying units in the Red Air Force at that time. The invasion of the Soviet Union by Germany in the summer of 1941 changed that. In 1941, three women's squadrons were created: 586 Regiment of Yak fighters, 587 Regiment of twin-engine dive-bombers and 588 Regiment of night bombers. No 588's later title, which was granted in 1943, referred to its participation in the Red Army's expulsion of the Wehrmacht from the Taman peninsula that year.

Popova opted for night bombers and, after training, began her own operational career in 1942, flying bombing sorties against German troops in her home area of the Donetsk basin. Because the Po-2 could carry only 500lb of bombs the Night Witches found themselves flying numerous sorties each night — sometimes into double figures. Her final tally of ops by the end of the war was probably about 800. She had several narrow escapes, one on a daytime mission in which the slow-flying Po-2 was especially vulnerable to ground fire and enemy aircraft.

While carrying out a day reconnaissance she was attacked by Luftwaffe fighters and had to make a crash landing. As she walked back towards what she fondly hoped was the direction of Soviet lines, trying to locate her unit, she fell in with a motorised column carrying battle casualties to the Russian rear. Among the wounded was her future husband, a fighter pilot, Semyon Kharlamov. They were to keep in touch, and they met several times thereafter during the war. They were married soon after it ended in 1945.

By the standards of the operational careers of pilots among the Western Allies, Popova's was a long and gruelling stretch of frontline service. As the Red Army went on to the offensive after the battles of Kursk and Orel in 1943 she and her comrades followed in their wake, continually harrying Wehrmacht units as they retreated through Ukraine, Belarus and Poland towards the eastern frontier of the Reich. She was still serving with the 46th Taman Guards Night Bombers

when the Red Army entered Berlin, where she was reunited with her husband-to-be.



She ended the war with the rank of lieutenant-colonel, and with numerous other decorations and campaign medals, including the Soviet Medal of Honour, the Order of Lenin, the Order of the Red Banner (three times), the Order of the Patriotic War 1st Class (twice) and the Order of the Patriotic War 2nd Class.

On her return home she was given a hero's welcome and made an honorary citizen of Donetsk. She continued to serve as a flight instructor for 20 years after her marriage. Her husband, who died in 1990, became a major-general in the Soviet Air Force. Their son also achieved senior rank, in the air force of Belarus.

Nadezhda Popova was born on December 17, 1921. She died on July 8, 2013, aged 91

The Polikarpov Po-2 in North Korea

The wartime career of this primitive biplane did not end with WW2. North Korean forces used it in a similar role in the Korean War. A significant number of Po-2s were fielded by the Korean People's Air Force, inflicting serious damage during night raids on Allied bases. On 28 November 1951, at 0300 hours, a lone Po-2 attacked Pyongyang airfield in north-western Korea. Concentrating on the 8th Fighter-Bomber Group's parking ramp, the Po-2 dropped a string of fragmentation bombs squarely across the Group's line-up of F-51 Mustangs. Eleven Mustangs were damaged, three so badly that they were destroyed when Pyongyang was abandoned several days later.

On 17 June 1951, at 01:30 hours, Suwon Air Base was bombed by two Po-2s. Each biplane dropped a pair of fragmentation bombs. One scored a hit on the 802nd Engineer Aviation Battalion's motor pool, damaging some equipment. Two bombs burst on the flight line of the 335th Fighter Interceptor Squadron. One F-86A

Sabre (FU-334 / 49-1334) was struck on the wing and began burning.

The fire took hold, gutting the aircraft. Prompt action by personnel who moved aircraft away from the burning Sabre preventing further loss. Yet eight other Sabres had been damaged in the brief attack, four seriously. One F-86 pilot was among the wounded.

UN forces named the Po-2's night time appearance 'Bedcheck Charlie' and had great difficulty in shooting it down. Even though night fighters had radar as standard equipment in the 1950s, the wood and fabric construction of the Po-2 gave only a minimal radar echo, making it hard for an opposing fighter pilot to acquire his target. As Korean war U.S. veteran Leo Fournier remarks about 'Bedcheck Charlie' in his memoirs later on: "... no one could get at him. He just flew too low and too slow." On 16 June 1953, a USMC AD-4 shot down a Po-2 biplane, the only documented Skyraider air victory of the war. One Lockheed F-94 Starfire was lost while slowing to 110 mph trying to intercept of a Po-2 biplane.

Footnotes

After WW2 the Po-2 continued as a Soviet Jack of all Trades with production ceasing in 1951 (1955 in Poland). There were enough spares to allow the last aircraft of the approximate 33,000 total to be built up to 1959. By then this primitive aircraft had been in production for 31 years.