

Stealth Aircraft

Stealth technology had first been tried back in World War Two with the German Ho229 flying wing. This had never been deployed in anything other than trials. The US tried to reduce the radar reflection with the U2 spy plane. This attempt however was a failure. Further developments resulted in the SR71 Blackbird which was the first real semi-stealth design. Lessons were carried forward into the B1 which incorporated significant radar cross section reduction elements into the design.



Illustration 1: F117 in an unusual daylight raid targetting a Soviet command bunker outside Lodz 1997

Ironically the breakthrough came in the 1970s with the use of a 1962 theory that had been published in a Russian paper *Method of Edge Waves in the Physical Theory of Diffraction*. Using this mathematicians at Lockheed created a computer program called Echo 1 to allow the prediction of radar reflections off aircraft with faceted (flat) surfaces. This combined with

technologies to reduce the heat signature lead to the development of the F117 Nighthawk. This aircraft, for many years a rumour, came into it's own in the Gulf war of 1991. Despite being classed as a fighter this was in fact a bomber, lacking any armament for self defence, relying on stealth for protection. Used in the initial raids of the war, the sharply angled F117 was frequently used in a raid where a force package of 20+ aircraft would previously have been required (although as it carried its bomb load internally the amount it carried was less than a conventional bomber). Following it's success there were attempts to create a larger stealth bomber, the B2. This was still in development at the start of the war and only prototypes had been completed before the nuclear exchange occurred.

In November 1995 a Chinese request for the sale of stealth aircraft was received by the US Government. After consideration this was refused on the grounds that the US was unwilling to divert the slow production from its own forces. Not stated was the desire to keep the technology in US hands only.



Illustration 2: YF19A undergoing trials, only the date of the photo reveals this to be an A model as the B was externally identical

Another common (although still rare) stealth aircraft was the YF19 Cloudburst. This was a black project that was developed through the late 1980s and early 1990s to create a more flexible aircraft than the F117. A fighter bomber, the YF19 was created in an attempt to develop an aircraft capable of being used in a high threat environment like Central Europe. Looking more like the guesses that had been made for the F117, this used the more advanced computing power then available to create a more rounded aircraft instead of the angular F117. The initial A model was quickly replaced by the B model after trials as the computer fly by wire system was shown to be unable to cope with the stresses of dogfighting (leading to a crash in Nevada that

resulted in a large area being sealed off while parts were recovered). Having a two man crew in a side by side cockpit, the “Frisbee” as it was nicknamed by its crew (after it’s shape) was capable of carrying both air to air and air to ground armament in retractable mounts (to reduce the radar profile of any external stores).

Initial use showed that the aircraft was in need of a last ditch weapon system as it carried no armament other than missiles. A Vulcan 20mm cannon was fitted to the YF19C model although this significantly reduced the fuel capacity (this model is sometimes incorrectly known as the YF/A19C). In order not to reduce the stealth ability this was on a drop down mount that significantly increased the radar cross section when deployed (giving an aircraft that was now far less stealthy, less manoeuvrable and slower than what it was likely to be fighting!). There were still however complaints as the amount of ammo was lower than other aircraft (mainly as this was intended for air to air use only and not ground attack). There were also allegedly problems with the mounting becoming non-zeroed when deployed. This model never reached series production and only four are confirmed as being converted from the B model (none of which ever left the United States).

The YF19 cockpit was very unusual, as the enclosed cockpit that was entered from underneath using a drop down ladder. In addition when the ejection system was activated the whole cockpit ejected (complete with both crew members). Crews who used this often showed an unofficial badge of an egg on a parachute (usually worn under a pocket flap). There was a mechanism built in that on ejection automatically “fried” the electronics and two thermal grenades were provided in the survival kit to destroy what remained. Adding to the science-fiction effect was the blacked out cockpit using one way dark material (the exact composition is not known). This was part of the stealth design.

The first serving squadron of 12 YF19Bs, the 626th “Ghost Riders” was rushed to the UK in mid 1997 where they undertook further training before deploying to Germany in October. Used mainly in a bombing role to attack Pact high value rear echelon targets they quickly gained a reputation for daring attacks. The first loss sustained was on 1st November, Major Hastings and Captain Williams were killed when their YF19 was hit by ground fire as they attacked the Preiner Gscheid Pass in Austria. Two days later, the second YF19 was lost when it collided with an Italian Tornado in the same area (the crew Captain Chavez and Lieutenant Mitchell ejected and were reported as captured a week later). The next week a third YF19 was lost when it hit the ground in a low level attack over Aviano Airbase, the exact cause is not known but is believed to be low calibre anti-aircraft artillery fire. By April, the squadron had lost ten aircraft and received two replacements. Two of these four aircraft were destroyed in a raid on the airbase by SU27s (although parts from one were used to keep the last two flying). The last two were destroyed in a strike on the airbase in July 98.



Illustration 3: YF19B of the Ghostriders en route to "a target somewhere in occupied Austria" (US Air Force)

The second squadron of 10 YF19s the 701st “Silent Menaces” were deployed to Lechfeld in Germany in October 97. This squadron lost one aircraft in a refuelling accident over the Atlantic while ferrying (the range of the aircraft required multiple



Illustration 4: Wreckage of a 701st YF19 believed to be that of Lt Gillian South and Lt Tol Heimdal. The original Soviet caption reads "the Americans forgot to tell our heroic air defence gunners that it was invisible to them." SovPhoto

refuelling even with external non stealthy drop tanks). The 701st pioneered the use of the YF19 in recon and SAM suppression roles. Used in a recon role the YF19 was not ideal, the aircraft did not have the best optics and if a dedicated pod was fitted the aircraft would lose its stealth ability (it was proposed that a stealth pod be developed but this never occurred). It did however excel at performing the role against areas that were normally inaccessible to non-stealth aircraft. In the SAM suppression role it was often paired with a non-stealth aircraft (usually an EF111 or EF4G) which would attract the attention of the SAMs while the nearer YF19 attacked with anti-radiation missiles. Two more aircraft belonging to the 701st were lost in an attempt to strike the bridges over the Vistula on 4th December. One was lost in a dogfight

with a Mig 29 on the 6th. By the 9th March the unit was shown as having a strength of just one aircraft (the records between these dates are lost so no information of these losses is available). The final aircraft was grounded on the 12th when spares were no longer available.

There are reports that a squadron of YF19s were deployed to Korea in January 1998. The source for this however has never been revealed and no confirmation has ever been found. Most authors regard it as a propaganda ploy to force increased air defence measures or possibly ordered in the confusion of the post-Thanksgiving Day Massacre and never carried through (possibly due to a lack of airframes). One source suggests that the unit was to be the 717th “Ghostbusters” but no records exist of this squadron being formed or equipped with YF19s.

The Soviets too created a stealth aircraft, the first attempt was the Mig29K which by using special coatings reduced the radar cross section by 75-80% of the normal model's. This was a carrier based version of the Mig29M intended for the Kreml class carriers but was almost a completely different aircraft. Few were produced as once the war started production was shifted to standard versions of the Mig29.

The Mig 1.44 and SU47 were designs that the west spent some time in chasing down details. It appears that they were only technology demonstrators that were eventually used to develop the Mig 35.

The final Soviet stealth design and the only one known to seen combat was the Mig 35. This design, unlike the American designs was a pure fighter aircraft intended to be used in attacks on NATO AWACS aircraft (a role that the Russians had previously given to the Backfire bombers and Mig23-98A Flogger fighters firing the previously unknown AA14 Avalanche HARM missile at long range). This was quickly (and with

a quirky sense of humour) called the “Firefox” by the West, the Russian name is unknown. Looking similar to the Mig25 but made of a black radar absorbing material, only two prototypes are known to have been made. One of these is believed to have been destroyed in a nuclear strike on the site developing the design and the second was reported as lost in action over Finland in late 1997. It is rumoured that a new design, the Mig37 was nearly ready for test flights and articles about it appeared in a number of Soviet Air Force publications but many analysts believe this was just a propaganda ploy.



Illustration 5: The Mig37 as depicted in Soviet Air Force magazines (SovPhoto)

In Europe the Germans had developed the MBB Lampridae (Firefly) in the 1980s. Tests showed that it had about the same radar cross section as the F117. For reasons unknown the project was cancelled in 1989. Rumours that it was continued as a secret project and that some Lampyridae flew in the Twilight



Illustration 6: Believed to be a mock up, some commentators believe that this photo shows that limited production occurred. Note the longer nose on this compared to the original design.

War continue to circulate however. No proof has ever been offered for this.

