



WORKSHOP

RISING STAR

A group in the Netherlands hopes to get an F-104G Starfighter flying again — and it came about in part thanks to the air force

WORDS: MIKE SHREEVE



F-104G D-8114 outside at Volkel a couple of years ago, looking every inch the active aircraft it will hopefully become. THEO VAN DEN BOOMEN



In a hangar at the Royal Netherlands Air Force fighter base at Volkel, a volunteer team is heading towards bringing an F-104G Starfighter back to fully operational status, with the eventual aim of flying it once again. The group working on the aircraft consists of around 25 people, including two former F-104 pilots, Hans Ruijgrok and Hans van der Werf. The remainder, in roughly equal parts, are retired Dutch F-104 technicians, present-day personnel assigned to the F-16 Fighting Falcon or F-35 Lightning II fleets — the types presently operated from Volkel — and civilians who worked either in the air force supporting other types or for the manufacturers of the aircraft's sub-systems, such as Litton, which made the F-104G's inertial navigation system.

The project traces its origins back to 1999 when the deputy base commander at Volkel, Lt Col Emile van Duren, wished to have a number of representative types prepared for mounting on poles on the road from the main entrance. The original

plan was for seven aircraft, but only three poles were placed and no progress made. In 2004, the Historische Vliegtuigen Volkel (HVV, Historical Aircraft Volkel) group was formed to see it through. Initially, F-104G serial D-8279 was refurbished for display and the nose of D-8256 prepared to be exhibited in the station museum, the Historical Room Typhoon. Later an F-16A, J-240, and an F-84F Thunderstreak, P-248, were restored and added to the line-up along the road. The last aircraft, the F-84E, was unveiled by Maj Gen van Duren, by now deputy commander of the Koninklijke Luchtmacht (KLu), in 2014. Other, smaller projects have been undertaken including the preparation of a damaged Napier Sabre engine from a crashed Hawker Typhoon for museum display.

The hangar HVV is housed in is itself an interesting historical artefact, a concrete structure built by the Germans in 1942 and known as a Deisel hangar. The airfield was constructed for the Luftwaffe and used by Ju 88s, followed by Me 262 and Ar 234 jets. After liberation by the Allies, RAF Typhoons and Tempests flew from Volkel before it was taken over by the Dutch military post-war.

While the pole-mounted aeroplanes were being tackled, HVV had the idea of refurbishing an F-104 to be kept on the base, preferably in taxiable condition. When the idea was raised with van Duren in 2014 during the F-84F's unveiling, his response was, "why not fly it?" The original airframe obtained from storage at Volkel in 2004 was D-8312, with D-8063 being cannibalised for parts. But it was found that D-8312 was in very poor condition, having spent a

considerable time in outside storage, and it was deemed unsuitable. The search then began for a better aircraft.

D-8114 had been used as an instructional airframe at the technical

“The deputy commander of the air force said, ‘Why not fly it?’”

university in Delft for a number of years after retirement. Returned to the KLu when it was replaced by a retired F-16, it was placed in storage with the then Militaire Luchtvaart Museum at Soesterberg. An initial inspection showed it to be in generally good condition, and the aircraft was handed over to HVV and moved to Volkel in 2013 for restoration.

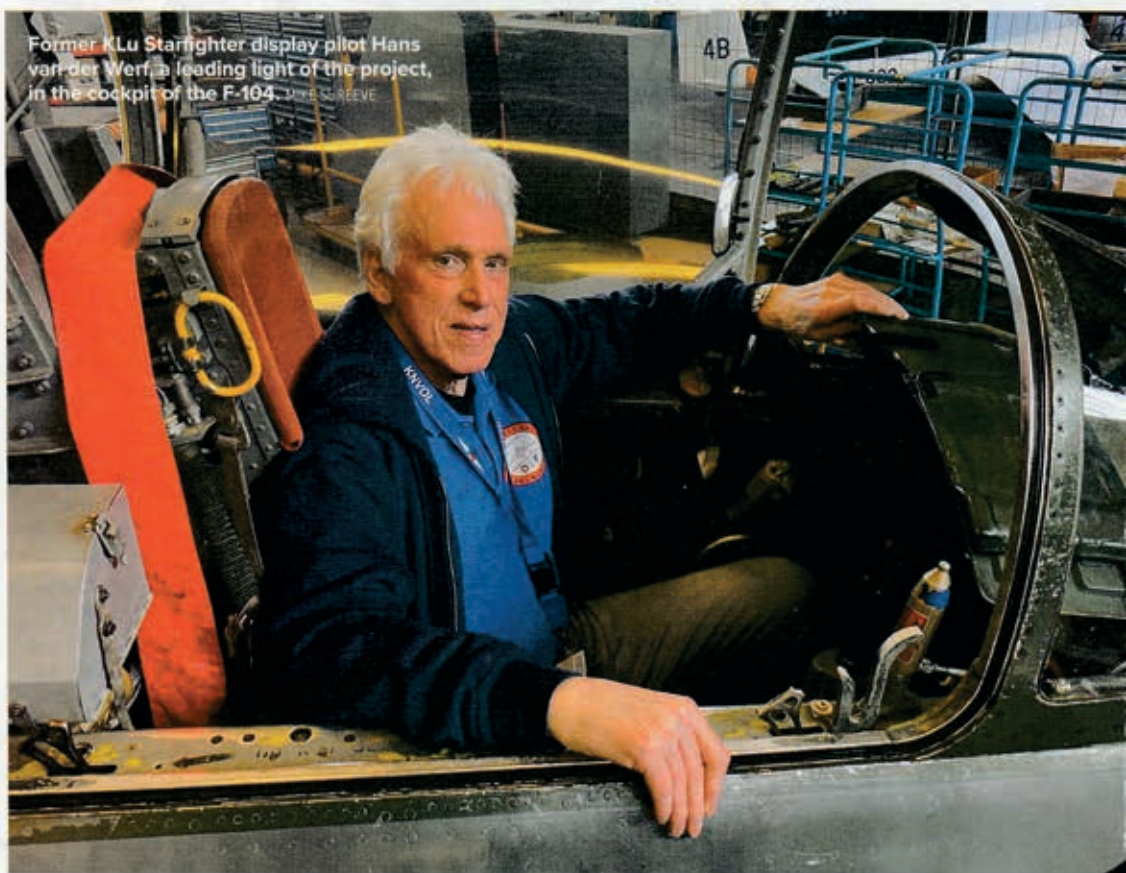
Unfortunately, at some point many of the wiring harnesses had been cut through. This led to a choice as to whether the severed wires should be replaced or repaired. It was decided they would be repaired as complete replacement would be a complex, multi-year task. While the repaired wiring is suitable for ground use, if the decision is taken to fly the aircraft in future the damaged wires will have to be replaced. ●

In the meantime, the airframe of D-8114 has been totally overhauled, with all the electrics and hydraulics being returned to operational status. It is presently configured with underwing and under-fuselage pylons, and replacement tip tanks have been added. Tyres have been sourced from cut-down F-16 examples, and certified for the F-104's high landing speed.

As well as the airframe, many of the sub-systems have been refurbished. These include the Litton LN3 inertial navigation system, of which HVV now has three functional sets — it believes them to be the only currently operational ones anywhere. One is fitted in the aircraft, another is displayed next to it, and the third is held in store. HVV has restored the aircraft's NASARR (North American Search and Ranging Radar) system and its computer, a bulky device situated in the bay behind the cockpit. The General Electric M61 Vulcan 20mm six-barrel cannon has been refitted, with the concession that the connection which would allow it to be made functional has been left off.

The group has an example of the indigenous Orpheus reconnaissance pod, developed as a collaboration between optical company De Oude Delft, the Dutch National Aerospace Laboratory (NLR) and Fokker. This contained a series of daylight optical cameras as well as an infra-red line-scan and was used on RF-104Gs flown by 306 Squadron at Volkel, replacing the original cameras built into the fuselage, and later on the squadron's F-16s. It has been put back to fully operational capability by HVV.

With the plan to return the F-104 to airworthy status, the KLU was approached with the intention of operating it under its auspices as a military aircraft. A business case was presented in September 2015 to fly examples of single- and two-seat Starfighters under such an arrangement. HVV was told this would not be possible, but that a model akin to the Dutch Hawker Hunter Foundation would be considered. At the



Former KLU Starfighter display pilot Hans van der Werf, a leading light of the project, in the cockpit of the F-104. DAVID GREENE



The severing of many of the aircraft's wiring harnesses has posed a problem. THEO VAN DEN BOOMEN



By 2018, significant progress was being made with the restoration. THEO VAN DEN BOOMEN

time the DHHF flew two Hunters, which were civil-registered, from the KLU base at Leeuwarden. With HVV being a military operation and thus not allowed to finance the project, a civilian organisation, the Dutch Starfighter Foundation, was set up in 2018 with Hans van der Werf as chairman in order to provide funding.

One major issue is the lack of an engine. When the aircraft was transported to Volkel it had the afterburner installed but not the General Electric J79 powerplant itself, which was retained by the museum at Soesterberg.

After searching for a suitable replacement, in late 2018 HVV was contacted by Robin Sipe of S&S Turbines in Canada, who offered to provide an ex-KLU J79 free of charge. S&S overhauls J79s and their LM1500 industrial equivalent engines as its main business. It had obtained 21 ex-F-104 units from the Netherlands and kept them in storage ever since. During the transfer, the paperwork for the engines remained with the Dutch military and was later destroyed. S&S offered to perform a full inspect and repair as necessary (IRAN) regime on

the one given to HVV and certify it for 400 hours of operation. The Dutch Starfighter Foundation furnished the funding and it was duly carried out in 2019-20. Unfortunately, permission was refused by the Dutch authorities to import the engine into the country due to the possible presence of hexavalent chromium (chrome 6), a known carcinogen, although HVV has stated it does not have chrome 6 in its design. The Dutch military has told the team the engine will not end up in its inventory, so it looks like the end of this avenue to obtain one.

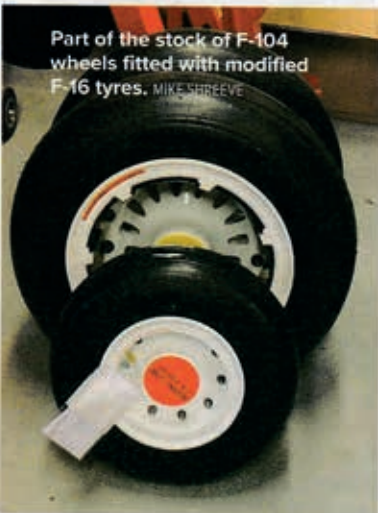


The Vulcan M61 cannon, fitted in the port side of the fuselage. MIKE SHREEVE



North American's Autometrics Division built the Starfighter's NASARR system. MIKE SHREEVE

“A civilian organisation was set up in order to provide funding”



Part of the stock of F-104 wheels fitted with modified F-16 tyres. MIKE SHREEVE



In the Volkel hangar, the F-104G shares space with F-16A J-240, which has been displayed on a pole there. MIKE SHREEVE

Problems such as the possibilities of asbestos and radiation being in the aircraft have been dealt with after proving the case to the relevant bodies. Another is that, as the F-104 is an American aircraft, any transfer of parts falls under the International Traffic in Arms (ITAR) regulations, which complicates matters further. HVV has collected a vast number of manuals and drawings which it has archived and is in the process of digitising.

Adding to the single-seater, the organisation has been offered a complete ex-KLu

two-seat TF-104G. This aircraft, D-5810, was used as an instructional airframe by the aeronautical college at Hoofddorp near Amsterdam for some years after retirement, prior to being returned to the air force. It was later sold privately and exported to the USA. D-5810 is now owned by Steve Alex and has been under restoration in Bangor, Maine since 2013, but was put up for sale a while back. HVV has investors lined up to fund the purchase, but is unable to move forward until it has approval to work in the same way as the Hunter team

did at Leeuwarden. The latest statement from the military is that HVV will not be allowed to operate D-5810 at Volkel. It has asked if it will be allowed to move it to Volkel as a static aircraft, and a reply is awaited.

A project to exchange the pole-mounted F-16 at Volkel is HVV's other present undertaking. The weather has taken its toll on the original aircraft, J-240, over the years, so it has recently been removed from its position and brought into the hangar alongside the F-104. Its replacement will be J-616, the first F-16 delivered to

Volkel when the type entered service there. In the meantime, before J-240 is handed back to the air force any useful parts are being removed for use on J-616.

HVV has tackled many obstacles during the course of the project to put a Starfighter back in Dutch skies. It still has significant hurdles to overcome, but is not giving up on its dream. **A**

Thanks to Theo Rombout, Hans Ruijgrok and Hans van der Werf. For more details, see historicalfighters.com or dutchstarfighterfoundation.nl