

The French "tanker" connection

A French Armée de l'Air Boeing C-135FR Stratotanker deployed to Kleine Brogel airbase for an in-flight refuelling training exercise between 21st and 25th February.



Jos Schoofs caught Boeing C-135FR "93-CC"- s/n 63-8472 of GRV 93 upon its arrival at Kleine Brogel airbase on Monday 21 February 2005.

In-flight refuelling or the practice of transferring fuel from one aircraft to another during flight is very much necessary during extended patrols and long-distance ferry flights or on military missions over hostile territory which cannot be approached via a direct route due to the enemy presence.

The history of air-to-air refuelling (AAR) has seen a variety of technical solutions, two of which are predominant used today. The first and most widely used system is definitely the "probe and drogue" one, developed by Flig Refuelling Ltd in the United Kingdom in 1949. It consists of a flexible drogue trailed from a tanker into which the receiving aircraft plugs a probe. Despite its flexibility the probe and drogue system offers a relatively low fuel flow rate and larger aircraft, such as bombers, strategic transporters or surveillance (AWACS) aircraft would need to spend too much time connected up to the tanker if they were to use this method.



Flight Refuelling Ltd. Mk.32 drogue-type underwing pod on the Armée de l'Air Boeing C-135FR Stratotanker

To alleviate this problem, Boeing developed in the fifties and at the request of the U.S. Air Force, a special "rig boom", which can be steered via two V-shaped stabilizing control surfaces and has a telescopic sprung pipe fitted with a fuel nozzle at the end. Put into service for supporting the Cold War era American strategic bombers, the rig boom system was quickly adopted onto the whole USAF fleet including fighters. Each boom having two sides, the latter system is nevertheless limited to one receiver aircraft at a time and requires a dedicated operator in the tanker to fly the boom into the receiving aircraft.



The rigid boom of C-135FR "93-CC"- s/n 63-8472. Ground crew members are cleaning the boomer's position windows before a mission.

As their USAF counterparts, Belgian Defence Air Component's F-16s have a build-in rigid boom receptacle, located on the top of the fuselage, just ahead of the fin leading edge. It is normally covered by an inward-hinged door when not in use. Since the first deployment of four Belgian F-16s at Nellis airbase (Nevada-USA) in 1984 - in the framework of the famous Red Flag exercise - AAR procedures have become a standard of the Belgian pilot operational training. As Belgium does not own tankers, the required training and recurrent qualification sessions are performed thanks to the help of Allies tankers such as from the US or Dutch Air Forces. Belgian F-16 pilots have already practised AAR in anger, on combat mission over the Adriatic Sea, during the Balkan conflicts.

French tanker force

Ordered in 1962 for supporting the nuclear deterrent Dassault Mirage IV bombers, the French tanker fleet has always belonged to the piloted component of

the Commandement des Forces Aériennes Stratégiques (CFAS), although they are today commonly used by all combat aircraft within the Armée de l'Air. Re-skinned and upgraded in the late seventies as well as being re-engined with CFM56 high bypass-ratio turbofans in the late eighties, the French tankers are grouped since 1993 into a single air refuelling unit, renamed Groupe de Ravitaillement en Vol 9 "Bretagne" (GRV 93 or Flight Refuelling Group 93) on 1st September 2004.

The GRV 93 is based at Istres and fields eleven Boeing C-135FR Stratotanker coming from the original French order as well as three second-hand KC-135R purchased to the U.S. in 1997 and 1998. Originally equipped with a single central refuelling drogue these aircraft offer today either the flying boom - but on request only - or the probe and drogue system. The French Armée de l'Air "discovered" the advantage and the use of the rigid boom in the early nineties when its fuel greedy E-3F Sentry surveillance aircraft (AWACS) were becoming operational. In mid 1993, the fleet started to receive Flight Refuelling Ltd. Mk.32 drogue-type underwing pods considerably augmenting safety and flexibility, permitting a simultaneous refuelling of up to three probe equipped fighters. The GRV 93 aircraft have also a dual capability of air transport and air refuelling. They can perform hauling supplies as cargo and passengers transport. Despite their age the French C-135FR and KC-135R are no doubt a key element of Armée de l'Air projection capabilities.

Mission 901

A French delegation and a Boeing C-135FR Stratotanker (93-CC s/n 63-8472) of the GRV 93 deployed to Kleine Brogel airbase for a five days air-to-air refuelling training exercise with Belgian F-16 pilots between 21st and 25th of February 2004. The purposes of this deployment was on one hand the training and AAR (re-qualification) of the Air Component F-16 pilots and on the other hand the training and the qualification of a handful of French boomer operators (ORV - Opérateur de Ravitaillement en Vol) for the rigid boom in-flight refuelling of lightweight fighters.



FA-128-Call Sign "Matrix 64", a N° 350 Squadron Lockheed F-16AM cautiously approaching the boom of the Stratotanker

This AAR training session was organized in the framework of the French-Belgian bilateral agreement of last year covering the use of the Armée de l'Air Stratotankers by the Air Component F-16s. This agreement is a result of the multilateral Air Transport and Air-to-air Refuelling Exchange of Services (ATARES) programme, initiated under the auspices of the European Air Group (EAG), where the Armée de l'Air has proposed the rigid boom system of its tankers to enable AAR of USAF-type aircraft in service with many of the EAG-partners. France has signed similar agreements with Italy and Norway, two other F-16 operators.



The rather cramped rigid boom operator's (ORV) position in the lower back of the C-135FR.

Coded named Mission 901, this French deployment involved two fully qualified tanker crews or eight men, three ORVs on rigid boom qualification and about ten support personnel. For the sake of convenience they were hosted alternatively by 349th "Goedendag" and 31 "Tiger" Squadrons. A total of eight AAR missions were performed including two night missions on Tuesday 22nd and Wednesday 23rd. Mainly used operating areas were NATO air to-air refuelling tracks "Jojo", near Nörvenich and Mönchengladbach, close to the Dutch border, and "Virgin", over Ramstein airbase. Each mission involved the tanker as well as 10 to 20 fighters coming from N°10 Wing of Kleir Brogel and N°2 Wing of Florennes. On Tuesday 22nd, the C-135FR 93-CC was temporarily grounded at Kleine Brogel and was immediately replaced for two days by another one, 93-CA.

A typical daylight mission was the one performed on 24th February afternoon when the French tanker, orbiting over Ramstein, trained two ORVs in rigid boom operations through the refuelling of no less than thirteen F-16s of 3rd "Ambiorix" and 31 "Tiger" Squadrons. Even performed on a regular basis, being a rigid boom ORV is no easy job. As they do not use any computers to guide the boom, acquiring the required skill is truly an on-the-job experience. During refuelling operations, the tanker flew in the Virgin track at 29.000 feet and at constant speed, while the receiver F-16 arrived starboard, from behind, and took a stand-by right observation position flying formation along the same line as the tanker wing.



F-16BM FB-21-Call Sign "Matrix 63" of 350 Squadron, taking up a starboard observation position flying formation along the same line as the tanker wing.

After a clear and concise radio contact with the boomer he lined up below the tanker into precontact position. The fighter came then slowly into contact position guided by a set of green, amber and red lights situated under the tanker front underfuselage. Laid down on his pallet and looking out the control window, the ORV unlatched the boom from its stowage position, and directed it towards the receiver by "flying" it with the attached wings. The telescoping section was then hydraulically extended until the nozzle fits into the F-16. When the electrical signal passed between the boom and receiver, both valves were hydraulically opened, and pumps on the tanker drove fuel through the shaft of the boom, and into the receiver.



The French "tanker" Connection, FA-81-Call Sign "Tiger 42" of, ... you guessed it, 31 "Tiger" Squadron taking on fuel.

When refuelling was completed, the valves closed and the boom automatically retracted. As soon as disconnect the F-16 skids to the tanker's port side, flying formation before vanishing in the sky. The whole operation took about five minutes. Some fighter pilots repeated two or three times the - French - connection procedure.



Their fuel tanks topped-up, Lockheed F-16AM FA-72 and FA-125 of 350 Squadron bank away from the tanker to continue their mission.

On the afternoon of Friday 25th February, mission accomplished, the GRV 93 delegation returned to its homebase not without having fixed an appointment with the Belgian pilots for next 31 March. On that day French tankers were for the first time supporting a Cross Continental Deployment of ten or so Air Component F-16s to NAS El Centro (California-USA) and later to Cold Lake CFB in Canada for operational training. This perfectly illustrated the slow but surely advancing integration of European air arms through a fair and effective mutualisation of the various national assets.

We leave the concluding word to the boss of the French detachment, Captain Alexandre Vidal, who, during the traditional exchange of thanks and presents, underlined the very professional dimension of his interlocutors and the Belgian pilots' perfect control of the in-flight refuelling art.



The sympathetic crew of Armée de l'Air Boeing C-135FR "93-CC"- s/n 63-8472 of GRV 93.
Detachment leader Captain A. Vidal is fourth from left.

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