

I had the pleasure recently of sitting down with two friends and colleagues to discuss a unique part of the Canadian Air Forces' electronic warfare (EW) history. Col (Ret'd) Dave Peart and BGen (Ret'd) Joe Sharpe were both CF-101 Voodoo "back-seaters" (navigator/radar officers/weapon systems operators (a.k.a. GIBs or Guy In the Back) in their flying days. We had gathered to share their recollections of a unique and distinctive black Voodoo once flown by No. 414 (Electronic Warfare) Squadron in North Bay, Ontario.

The CF-101 Voodoo was a big, brute of an aircraft. The Voodoo had originally been conceived as a long-range escort for United States Air Force (USAF) Strategic Air Command (SAC) missions but it was instead converted into a tactical attack and reconnaissance aircraft as a single-seater. Equipped with two-seats and the requisite equipment, the design also became a high-speed interceptor, designed to stop attacks by manned bombers. In its day, Voodoos were the most powerful interceptors in the world. They could climb from sea level to 30,000 feet in less than two minutes, and, at full afterburner power, they could approach twice the speed of sound. These interceptor versions, as used by Canada, were the only aircraft used by the Royal Canadian Air Force and the Canadian Armed Forces to be armed with nuclear rockets — the "Genie" unguided rocket. The first Voodoo aircraft were delivered to USAF squadrons, and, in 1961, Canada received 66 of the former Air Defence Command (now Air National Guard) aircraft. In RCAF and CAF service, the Voodoo had a good safety record, and, in 1970, after nine years of operation within Canada, the original 58 surviving RCAF aircraft were exchanged

for 66 improved models. Until they were later replaced by the CF-18 Hornet fighters beginning in 1984, the CF-101 Voodoo was the only all-weather fighter used by Canada.

In 1987, the remaining two Voodoos still flying in the CAF (and also in the world) made their last flights, capping a service career for the type that fell only one month short of a full 30 years in the two North American air forces. The subject



of this discussion, was one of these last two Voodoo aircraft. Known by a variety of nicknames, the 'One-Oh-Wonder,' or, the 'Electric Jet,' and/or, the 'Electric Voodoo,' was the sole electronic warfare variant of the type in CAF service. This Voodoo, also known by its Canadian identification number, 101067, was unique in more ways than one. In addition to the special electronic gear fitted into the fuselage, it was one of the more striking airplanes in appearance eventually being painted in in overall black finish with low visibility markings

(most other Canadian Voodoos having been painted in an overall silver or grey finish).

This aircraft had originally been retired by the USAF to Tyndall Air Force Base (AFB), to be used as a radio-controlled, target aircraft. By that time, the USAF was no longer interested in the Voodoo as a front-line aircraft and they were going to be expended as targets. But the USAF decided it was also short of EB-57 electronic counter-measures (ECM) targets. The relatively slow EB-57 ex-bomber aircraft were used to train interceptor pilots, who had to try to overcome the Soviet-patterned ECM to accurately pursue their targets. The USAF were originally going to modify eleven Voodoo aircraft into high-speed ECM capable targets, but #101067 (known in USAF service as #580300) was the only aircraft actually completed before competing priorities terminated the remainder of the program. #580300 had all of its original wiring removed, replaced and specially-designed jammers, working on the Soviet "brute force" methodology, were installed. Three separate jamming systems formed the basis of the design. From 1979 until 1982, this sole "Electric Voodoo" was used by the USAF's 475th Test Squadron as an EW test bed for the original concept and later to train interceptor pilots, radar operators and anyone else who might someday have to face this type of jamming.

Then, in 1982, the USAF was going to retire this EF-101 airframe. According to Dave Peart, Major Don Wenzel (the Staff Officer Ops and Training 5 in the old Air Defence Group (ADG) structure) was in Tyndall running the CAF's annual participation at Exercise Combat Pike

in summer 1981 (or it could have even been in early June 1982) at the end of ADG days. Don learned of the USAF decision to terminate the Voodoo and he casually asked if we could have #580300 to bolster our own EW capability. The answer he received was that it seemed possible so he wrote up the request to NDHQ/DAOT and, if Dave Peart recalls correctly, it was LCol Gene Lukan, who was in the desk at the time. Lukan then worked the request along with the Canadian Defence Liaison Staff in Washington and it magically unfolded through official channels. The aircraft was formally leased from the USAF to the CAF for a lengthy period until July 1988. As the Staff Officer Electronic Warfare in Fighter Group, then Major Dave Peart travelled (along with Major Doug Evans as the pilot) to Tyndall AFB on 24 September 1982 to have some familiarization flights in this unique aircraft and to sign the appropriate paperwork for the lease transfer. In fact, he still has the invoice that he signed as a handover document officially transferring the aircraft to the CF.

He recounted in an email to the author:

It is a bit humorous now to see that I signed separately for two engines and two afterburner engines, a left, right and nose wheel assembly and travel pod. The interesting part is in the section called "classified material installed on aircraft," it notes the three main jammers (AN/ALT-13), a separate jammer - AN/ALQ 83 that to my memory was supposed to be an angle deception jammer that never worked very well and only beamed in the aft quadrant; and, two receivers - AN/APS-54, AN/APR-9. Also listed was a QRC-218A which is also a jammer but for the life of me I can't remember what it covered or did - or if it ever worked very well. Certainly the AN/ALT-13s were the work horses that were tuneable and covered the "I"-[frequency] band. They could be stacked or cover three separate narrow parts of the [frequency] band and had a ton of power for our purposes. The APR-9 receivers were the same kit as we carried in the [CP-107] Argus so I had a good bit of familiarity from staring at that for five years. It was very limited in that you could only look at a tiny bit of the spectrum at a time and hope the interceptor radar would be nice enough to stay in the narrow band.

Major Dave Evans had to return to Fighter Group in North Bay before the transfer was complete, so Major Mike Dolan



Major Mike Dolan (left) and Major David Peart (right) preparing to board their Voodoo.

came down to return both Dave Peart and the aircraft to Canada. The aircraft was first flown to North Bay (via Wright Patterson AFB). The aircraft was then delivered to CFB Chatham for conversion to Canadian standards (along with originally a standard overall light grey colour scheme) and for various modifications to the ejection seats and oxygen systems in particular on 26 September 1982. The maintenance staff found a large number of things that they had to repair or replace due to maintenance practice differences between the USAF and CAF. One particular detail was the cable to release the drag chute was all frayed, close to the point of failure. That caused them to look over everything very closely. The repairs and modifications completed, the airframe was finally ready for operations by 20 December 1982. Dave Peart also commented: "They [always] did a great job in keeping it flying."



Voodoo #067 then arrived at 414 (EW) Squadron North Bay in late December 1982 and it was accompanied by another unmodified (standard) Voodoo being used as a training aircraft (#101006) for the unit. While with 414 Sqn, #101067 later acquired its more unique (and sinister) black colour scheme. With the impending arrival of more sophisticated electronic warfare versions of the CE-144 Challenger, not withstanding the lease

arrangement, the Electric Jet was originally only to be used by the CAF until January of 1985. However, because of delays in the availability of the replacement aircraft and equipment, the operation was first extended to the end of 1986, then for a further three months, until the end of March 1987.

Fighter pilots feared the One-Oh-Wonder. Whenever either Canadian and American fighter pilots saw the distinctive black Voodoo, they knew they were in for a rough time. Other crews had a great deal of respect for it because it was a formidable foe, resulting in a lot of missed intercepts. Basically, the jamming equipment carried in #067 relied on "brute force" to avoid being found. The equipment simply overwhelmed the intercepting radar, making a successful interception a difficult feat. Even more sophisticated, "state-of-the-art" equipment had difficulty counteracting this "brute force" approach.

Dave detailed how the Electric Jet was first employed:

During the first six months of its operation, until July 1983, we worked almost exclusively with the Voodoo squadrons. Thereafter there were few occasions when we worked with others: for example, once when we worked with the CP-140 Aurora crews to give them a taste of how jamming affected their radar; another occasion when we returned to Tyndall in June 1983 to work with the USAF at 2 FWS against the F-106 students. (They never saw a thing or got even a sniff of an intercept). And finally, we worked with 410 Sqn in Cold Lake for the first time against the CF-18 Hornet in January 1983. I'm sure there were lots



of times against the Hornet thereafter. The interesting part about the aircraft in Op Evals and other multi-target exercises was that the jammers could provide cover for other non-emitting aircraft, especially T-Birds. It was always revealing how many reports there were of jamming from non-emitters during debriefs.

In the discussion with both Dave Peart and Joe Sharpe, the basic qualities of the CF-101 (and the EF-101) were also well-remembered. One of the distinctive features of the Voodoo was the "hard-light" afterburner. Unlike most later fighter jets, the afterburner in the Voodoo lit off in a blistering single-stage. When you cut in the afterburner, you went instantaneously from 20,000 pounds thrust to in excess of 33,000 pounds of thrust. You got this great big kick in the butt — acceleration — and it just took off like crazy.

Another well-remembered feature was the large and spacious cockpit for even the largest of aircrew. Even at 35,000 feet, the pressure inside the roomy cockpit was still very comfortable. The cockpit was laid out very well, and outside visibility was better than average. It could climb to 35,000 feet from ground level in less than two minutes, fly at Mach 1.73, and operate, if necessary, at more than 50,000 feet.

But at speed, the aircraft would take a long time to turn around. It wasn't the most maneuverable aircraft. And the Voodoo could also "bite you" if the pilot wasn't careful. At certain angles of flight, it had a nasty "pitch-up" characteristic. The aircraft would then depart from controlled flight and often break


into an inverted spin taking up to 15,000 feet of altitude to recover from the pitch-up. [See the associated story "The 45,000 lb Rock" by Joe Sharpe for further details in this issue]. Still, both Dave and Joe agreed that it performed its role very well and that it was very capable at its jobs.

Dave Peart also remembers #067 as being particularly fast with its unique modifications:

#067 was quite a low-time airframe (somewhere around 3,000 hrs if I recall) compared to our fleet so the airframe was very straight by comparison. We always flew with double tanks and it was still no problem getting it to the tank limit of somewhere around Mach 1.3. Certainly it was not a problem out-running the interceptors if they were in a tail chase. This happened often since it was almost impossible for anyone to hold a lock for a front shot and they had to roll around to the stern for an attempt at a rocket or missile shot.

After the retirement of #067 from CAF service, the actual "Electric Jet" airframe was returned to the United States, where it was stripped of all its EW gear, repainted into USAF colours as a memorial aircraft for the Minnesota Air National Guard Museum at the Minneapolis-St. Paul International Airport. But, at the official retirement ceremony of the Voodoo from CAF service, at the entrance to CFB North Bay, a nine-ton CF-101 (actually #101054) resting on a 10-foot-high concrete pedestal was unveiled painted in the distinctive black colours and numbering of #067. The ground crew had also taken great pains

to incorporate the various antennas and other modifications unique to #067 into the pedestal aircraft. A plaque dedicated "to all those who through their efforts made the terms 'Voodoo' and 'CF-101' synonymous with excellence," was placed at the base of this aircraft monument.



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