



McDonnell F-101 Voodoo Canadian two-seat interceptor version

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WIn the third part of the article about the history of the McDonnell F-101 Voodoo aircraft, we will focus on its two-seat versions F-101B and F used as interceptor fighters for air defense by the units of the Royal Canadian Air Force. These units were and still are, along with their American counterparts, part of the North American Aerospace Defense Command (NORAD). For Canadians, the Voodoo somewhat represented a way out of the armament crisis that arose at the end of the 1950s. In June 1957, the Liberal Party of Canada was defeated in the elections, and the conservatives from the Progressive Conservative Party of Canada came to power. John Diefenbaker became the head of the new Canadian government, whose election campaign was partly based on accusing the liberals of spending large sums of money on the project of the supersonic fighter aircraft Avro Canada CF-105 Arrow. Canada had given up on further unpromising modernization of the outdated Avro Canada CF-100 Canuck aircraft in the early 1950s, and all efforts were redirected to the development and production of the CF-105 aircraft. The delta-winged aircraft powered by domestic

engines Orenda Iroquois was a very promising design. It surpassed most contemporary aircraft as well as new projects in the United States. Conventional air-to-air missiles Sparrow II developed in collaboration between Douglas and Bendix Corporation, as well as the nuclear Douglas MB-1 Genie, were selected as armament. The first Arrow Mk.1 took off on March 25, 1957, and immediately during its first flight, it demonstrated excellent flight characteristics and high performance. Additionally, a Mk.2 version promising further improvements was in preparation. Unfortunately, politics intervened, and everything changed. First, there was a change of government in June, and subsequently, in August 1957, Canada signed with the USA

□ A pair of Canadian Voodoo (101025 and 101059) from the 409th Squadron "Night Hawk" escorts a trio of Skyhawks TA-4J from the VC-13 "Saints" US Navy unit during a joint training flight. Voodoo 101025 is an F-101B-90-MC aircraft with serial number 57-0334 originally serving with the 444th FIS USAF. It was taken into RCAF service on February 24, 1971, and subsequently served with the 409th and 416th Squadrons. The aircraft has been preserved to this day and is displayed at the National Aviation Museum in Rockcliffe, Ontario. The second Canadian aircraft (101059) is an F-101B-100-MC (57-0432) with the USAF flying with the 2nd FIS. It was delivered to Canada in July 1971, where it subsequently served with the 409th, 416th, and 425th Squadrons. (Photo: US Navy)

the agreement to establish a joint NORAD air defense command. At that time, the American SAGE system was used to intercept and track enemy bombers, and the ground-based air defense system CIM-10 Bomarc (an acronym from Boeing and Michigan Aeronautical Research Center - MARC) was used to destroy them, in which Canada participated in the development since 1957. The basis of the system was the IM-99 missile, which could be equipped with a conventional warhead or a nuclear warhead W40 with a yield of 7 to 10 kilotons of TNT. It was proposed to deploy these missiles in Canada so that bombers could be intercepted and shot down over sparsely populated areas in northern Canada. The high costs of both armament programs (SAGE and Arrow) led the Canadian government to conclude that financing both at the same time was beyond the country's capabilities. Thus, a controversial decision was made to halt the development of the Arrow aircraft and Orenda engines, which was announced by Canadian Prime Minister Diefenbaker to the House of Commons on February 20, 1959. It was decided that all drawings, five prototypes of version Mk.1 plus four Mk.2, and other materials related to this project would be destroyed. This decision thwarted plans to build a very powerful aircraft at that time and also weakened the entire Canadian aerospace industry for years to come, as some Canadian aerospace experts left for jobs in the United States, Great Britain, and France. Subsequently, it took almost two years for the Canadian government to come to a serious solution to the problem of equipping the squadrons incorporated into the air defense system. Initially, in December 1959, negotiations were initiated regarding possible deliveries of MB-1 Genie missiles, which were initially expected to be incorporated into the armament of the outdated CF-100 Canuck aircraft. A year later, on December 6, 1960, Canada accepted the offer from the United States, which offered the F-101B/F Voodoo. It is a sad truth that the original CF-105 Arrow surpassed the Voodoo in all aspects, but even so, the new aircraft represented a significant qualitative enhancement for the RCAF.

Negotiations fully commenced in the spring of 1961 and were successfully concluded with the signing of the final contract on June 12, 1961, under which 66 F-101B/F aircraft were delivered for five operational squadrons and a training unit of the RCAF. As part of the compensations, Canada took over the complete operation of 16 Pinetree radar warning system stations, which had been operated by the USAF on Canadian territory until then. The second point was to allow the licensed production of Lockheed F-104G Starfighter aircraft in Canada. Disputes and political discussions surrounding this deal, as well as the placement of Bomarc missiles on Canadian territory, were the main reasons for the fall of Diefenbaker's government in 1963. The entire situation primarily benefited the United States, which managed to eliminate competition and sell their aircraft due to the Canadian decision. Further passions on the Canadian side were raised by both the use of nuclear warheads on the IM-99 Bomarc system missiles and the nuclear MB-1 Genie missiles on the Voodoo aircraft. The June 1961 agreement did not address this issue, and the Canadian Voodoo from this delivery was initially armed only with AIM-4 Falcon missiles. The Canadian government took the same stance regarding the warheads for the Bomarc system, which were to be only conventional. This stance was very displeasing to the United States, which feared the weakening of the NORAD system by the removal of nuclear armament from some of the systems involved, and therefore also blocked the Canadian request from October 1962 for the delivery of an additional 22 Voodoo armed only with Falcon missiles. The fall of the conservative cabinet in 1963, to which this nuclear discussion also contributed, brought the liberals to power. The new government led by Prime Minister Lester Pearson signed an agreement with the United States on August 16, 1963, for the supply of nuclear armament to Canada. However, the nuclear warheads were to remain the property of the United States, allowing the Canadian government to somewhat hypocritically claim that it did not own this armament. The use of nuclear armament was contingent upon the joint consent of Canada and the United States within the NORAD system.

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Most of the photographs accompanying this article were taken during the William Tell exercise at Tyndall AFB in Florida from 1976 to 1982. The Canadian side was mostly represented by a mixed unit called the Canadian Forces Composite Group (sometimes also Composite Air Defence Team), whose insignia is also carried by the Voodoo in this image. This photo is from the 1980 exercise when Voodoo (101012/57-0293 and 101042/57-0375) were photographed during a joint flight escorting the American Boeing B-52G Stratofortress from the 97th BW (Bombardment Wing).



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Voodoo 101064 (57-0443) belonging to the 409th squadron in a photo from 1978. The F-101B-100-MC aircraft originally served with the 437th FIS USAF, and from 1968 to 1970 it was stored at Davis Monthan AFB. It was subsequently transferred to the Canadian Air Force on February 19, 1971, where it received the registration number 101064 and as a CF-101B it gradually served with the 416th, 425th, and 409th squadrons until its retirement in 1983.

Strict security requirements, certain modifications to aircraft, necessary staff training, and the construction of storage facilities at bases led to the first W25 nuclear warheads for AIR-2A Genie missiles (the original designation MB-1 was changed to AIR-2 in 1962) being delivered to Canada in June 1965. A total of 50 of these warheads were delivered, which were subsequently placed at operational bases in Chatham (New Brunswick), Comox (British Columbia), and Bagotville (Quebec), plus at the backup airfield in Val d'Or (Quebec). Along with the armament, members of the 425th Munitions Maintenance Squadron USAF were also stationed at Canadian bases, taking care of both the W25 and W40 warheads intended for the Bomarc system. The actual incorporation of the Voodoo into the RCAF was called Operation "Queen's Row" and the first two aircraft were handed over on July 24, 1961, during a ceremonial event at Uplands base (Ontario province). The delivery consisted of aircraft manufactured in 1959: 25 F-101B-115-MC and 31 F-101B-120-MC supplemented by four F-101F-116-MC and six F-101F-121-MC. The machines, fully corresponding to their American counterparts, were designated in Canada as CF-101B/F and received Canadian registration numbers using the last three digits of the American serial number and the prefix 17 (for example, from 59-0391 it became 17391).

The rearmament of the first unit – the 425th "Allouette" Squadron was initiated on October 15, 1961, at Namao base (Alberta), from where it moved to Bagotville base the following year. The unit initially also served as an operational training unit for other squadrons until its role was taken over by the 3rd All-Weather Fighter OTU (Operating Training Unit) also located at Bagotville base. By the end of 1962, the remaining units designated for Voodoo operations were also rearmed. These included the 409th "Night Hawk" Squadron at Comox base, the 414th "Black Knights" Squadron, North Bay (Ontario), the 410th "Cougar" Squadron, Uplands (Ontario), and the 416th "Black Lynx" Squadron, Chatham. All these squadrons flew with CF-100 Canuck aircraft until 1961 and 1962. Of the above units, four were concentrated on the eastern coast of Canada, and their tasks were as follows. Squadrons number 410 and 425 defended access to the capital city of Ottawa, the 416th squadron defended the easternmost province of Nova Scotia and the entrance to the Gulf of Saint Lawrence, and the 414th squadron defended access from James Bay to the city of Toronto. The only unit defending the west coast was the 409th squadron located on Vancouver Island. The deployment and numbers of units were subsequently altered due to aircraft losses, lack of funds to build storage for the W25 nuclear warheads, and cuts in the defense budget. In the year

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The William Tell exercise in 1978 also included this Canadian Voodoo 101050 (Composite Air Defence Team). Originally, it was an F-101B-95-MC (57-0396) aircraft that served with the USAF in the 62nd FIS. It was delivered to Canada in October 1970 and was subsequently used by the 416th and 409th squadrons.



Voodoo 101066 originally served with the 437th FIS as F-101B-100-MC (57-0451). It was delivered to Canada on March 23, 1971, and subsequently entered service with the 416th "Black Lynx" Squadron. Here it is in a photo from the William Tell exercise with the Composite Air Defence Team insignia on the SOP. Below the insignia is a black inscription "Air Defence Group," which, however, appears only on some aircraft.

In 1964, the 410th Squadron (March 31) and the 414th Squadron (June 30) were therefore disbanded, and their aircraft were redistributed among other units. In 1968, the 3rd OTU was renamed the 410th Squadron, which thus returned to the scene and served as an operational training unit for the Voodoo until 1982. At each base, a flight of Voodoo was constantly kept on standby. The alert positions were located at the end of the main runway so that the departing fighters would not waste time taxiing on the airfield. The crews of the first pair of alert aircraft had to be able to take off and be on their way to a potential target within five minutes of receiving the order. The second pair had to be able to take off within 15 minutes. The record is held by members of the 416th Squadron, who managed to get a pair of Voodoo airborne in 57 seconds from receiving the call. Sharp takeoffs in most cases meant identifying commercial aircraft that had deviated from their course. Only the pilots of the 416th and 425th Squadrons came into contact with Soviet bombers while monitoring Tupolev Tu-95 bombers during their flights to Cuba. Fortunately, the situation never escalated to the point where it was necessary to use weapons. The Canadian Voodoo flew armed just like their American counterparts, with a pair of AIM-4C Falcon missiles, later the AIM-4D version, complemented by a pair of nuclear AIR-2A Genie missiles. The Falcons were programmed to be launched in salvo with a half-second delay between missiles. The controversial stance of Canadians on nuclear armament, along with the necessary secrecy during the Cold War, raises the still unanswered question of whether Canadian Voodoo ever flew with live nuclear munitions. The truth is that crews often trained with AIR-2A Genie missiles, but it is unknown whether these had only training warheads or live nuclear ones. During 1970, the USA and Canada reached a mutually beneficial agreement regarding the exchange of Voodoo between the air forces. USAF

had a significant number of surplus F-101B/F stored at Davis Monthan AFB in Arizona at that time. These were aircraft that had gone through all stages of modernization, primarily the IIP (Improved Interceptor Program), while the Canadian CF-101s flew in the form they were delivered in 1961. In contrast, the Canadian Voodoo belonged to the last manufactured machines (these were production blocks 115 and 120), thus they had a longer lifespan ahead of them and still carried in-flight refueling probes, which was very useful for the USAF for the anticipated conversion of these aircraft to a reconnaissance version. This led to a very interesting exchange operation called Peace Wings. A Canadian commission was sent to Arizona, which selected sixty-six F-101B/F with a production date of 1956 and 1957 (production blocks 85 to 100). The aircraft were made operational, test-flown, and then flown by American crews to Bristol Aerospace Ltd. in Winnipeg. The company's technicians removed the engines along with the afterburner chambers, ejection seats, survival containers, communication and navigation equipment from the aircraft. These components were reinstalled on the 564 surviving CF-101B/F (year of production 1959), which returned to the USA. Conversely, equipment from the original Canadian aircraft was sent in the opposite direction and was installed on the 'new' aircraft. Subsequently, Canadian crews flew them to South Carolina to Ling-Temco-Vought, where they underwent modifications to the MG-13 fire control system to the latest USAF standard, and the MB-5 autopilot was also modified. Ten aircraft, for which Canadian components were not available, underwent complete modernization, including the installation of an infrared sensor. Finally, the aircraft were given a new paint scheme, returned to Canada between November 1970 and October 1971, and assigned to the same units. The serial numbers no longer corresponded in any way with the production numbers and rather reflected how the individual aircraft were handed over to the new operator (CF-101B –

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The Canadian Voodoo during the William Tell exercise on a ramp with American F-106A Delta Darts from the 159th FIS, Florida ANG.



□ Another shot from the Florida base Tyndall, this time of aircraft 101008. This is an F-101B-85-MC (57-0268) delivered to Canada on August 17, 1971. During its service with the Canadian Air Force, it passed through the ranks of the 416th and 425th Squadrons. It is now on display at the Air Force Headquarters Museum at Winnipeg base (Manitoba).



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101008 to 101021, 101023 to 101051, 101053 to 101066; CF-101F - 101001 to 101007, 101022, 101024 and 101052). With the "new" Voodoo, the Canadians also participated in the regular William Tell exercises at the Florida base Tyndall AFB. Here they won the Top Gun award for best crew three times (1972 captains Lowell Butters and Douglas Danko - 425 Squadron, 1978 captains Earl G. Robinson and Brian J. Salmon - Canadian Forces Composite Group, and 1980 major Bob Worbets and captain Bill Ricketts - 409 Squadron). Canadian flight controllers regularly excelled in the exercises, ground teams also performed excellently, and the only thing they missed was the award for best unit. The only significant placement for the unit was third place for 409 Squadron in 1980. However, even so, Canadian crews matched their American counterparts and in some areas, such as flying in all weather, they surpassed them. The excellent performances of Canadian crews in the William Tell exercises were all the more significant as the Canadian Voodoo community was gradually affected by various factors that negatively impacted its operation. The economic recession along with the oil crisis in the early 1970s led to a 10 percent reduction in flight hours per unit in 1972 and further to a temporary, but from 1973 a permanent extension of the launch time for the second alert pair from 15 minutes to one hour. Also, a certain warming of relations between NATO and the Warsaw Pact states (sometimes referred to by the French word *Détente*) led to the increasing unlikelihood of using nuclear warheads, whether as armament for Voodoo or as part of other weapon systems. Therefore, in 1975, further austerity measures followed. First, on January 17, the Canadian government of Prime Minister Pierre Trudeau cut the number of operational Voodoo from 56 aircraft to 44. Consequently, 416 and 425 Squadrons retired six aircraft each, stabilizing their number of Voodoo at 12 units. The only unaffected squadron was 409 on the west coast. Following this, the backup airfield in Val d'Or was also abandoned, including the closure of the nuclear warhead storage. The last detachment of 425 Squadron operated here until March 23. The alternative airfield for 425 Squadron became North Bay. A week later, the nuclear warhead storage at Chatham base was closed, and these were either retired or relocated to Comox and Bagotville bases. As a result, Voodoo 416 Squadron had to fly to Bagotville for nuclear munitions in case of a crisis. Furthermore, from April 1, 1975, the armament of the alert aircraft was also changed, which began to fly only with a pair of AIM-4D Falcons.

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with two additional tanks. The Genie was to be used only in case of extreme crisis. This last occurred on November 9, 1979, when a computer error at the NORAD operations center (Cheyenne Mountain complex in Colorado) caused a false alarm. Air defense units, including Canadian ones with F-101B, were gradually put on the highest alert level to protect the North American continent from an attack by Soviet bombers and intercontinental missiles. Fortunately, it quickly became clear that it was a computer error followed by a false alarm, and thus the situation could quickly return to normal. However, time was relentless even for the Canadian Voodoo, and by the late seventies, it became clear that it would be necessary to start looking for successors for both them and the CF-104 Starfighter and Canadair CF-5 aircraft. Companies Grumman (F-14 Tomcat), McDonnell Douglas (F-15 Eagle and F/A-18 Hornet), General Dynamics (F-16 Fighting Falcon), Panavia (Tornado), and Dassault (Mirage F.1 and Mirage 2000) entered the competition for a new aircraft announced in 1977. The F-16 and F/A-18 aircraft made it to the shortlist, with the latter winning in April 1980 and becoming the main combat aircraft of the Canadian Air Force with a total of 138 units. The first to be re-equipped with Hornets in 1982 was the operational training 410 Squadron, which also moved from Bagotville to Cold Lake base (Alberta). However, even before their retirement, the alert Voodoo belonging to the 425 Squadron operated from forward bases in Gander (Newfoundland) and Loring AFB, Maine, as part of Operation Cold Shaft since 1982. Their main task was to intercept Soviet Tu-95 bombers coming from the northeast, whose crews tested the reaction times of interceptors, radio communication, NORAD electronic systems, and the responses of NATO naval units in the North Atlantic. In the event of war, the Tu-95 were to mark possible arrival routes for the Tu-16K and Tu-22K armed with anti-surface or anti-ship missiles. Operation Cold Shaft ended in June 1984 when the 425th, together with the 409th Squadron, retired the Voodoo and gradually began transitioning to Hornets. The last unit equipped with Voodoo (416th Squadron) ended its alert on December 31, 1984, at 9 PM and moved the following year from Chatham base to Cold Lake base, where it also replaced the Voodoo with new Hornets. The retirement of the Voodoo from operational service also meant the resolution of a long-standing controversy, as the nuclear Genie missiles were returned to the USA from their arsenal (the last in November 1984). Even after the retirement of most CF-101s from operational service.

□ Shortening landing using a parachute by Voodoo 17408 from the 416th Squadron. This is an F-101B-115-MC (59-0408) serving in Canada from 1962 to 1971. After being returned to the USA, it was stored at Davis Monthan AFB until its retirement in 1984.

□ Training launch of the AIR-2 Genie surface-to-air missile during the William Tell exercise 1982 from the Canadian Voodoo of the 409th Squadron.

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two Voodoo aircraft continued to fly in Canada for some time. One was a machine modified for electronic jamming and named EF-101B (also known as "Electric Voodoo") and one training CF-101F belonging to the 414th squadron in North Bay. We have already encountered this unit in this text in connection with its short-term use of the Voodoo fighters. In September 1967, it was re-established at St. Hubert base (Quebec) as an electronic warfare squadron and its training with CF-100 Cannuck aircraft. In August 1972, it was moved to North Bay base, where it operated for another twenty years with CF-100, CC-117 (the Canadian designation for Dassault Falcon 20) and the pair of aforementioned Voodoo. EF-101B (58-0300, Canadian number 101067) was created in the United States from a standard F-101B by installing an electronic jamming system from the EB-57E Canberra aircraft (jammers ALT-13 D/E and ALQ-83 along with ALE-2 decoy dispensers). After modifying a single aircraft, the program was canceled and EF-101B was leased to Canada in 1982. It flew here until April 7, 1987, when it was permanently grounded and subsequently returned to the United States.5) Its colleague training CF-101F (101006) flew until April 19, when it was transferred to Cornwallis base in Nova Scotia and displayed as a monument. The Voodoo enjoyed considerable popularity in Canada, and their pilots participated in many air days both on home territory and in the USA. In 1967, the CF-101B aircraft (17459) along with one CF-104 and a pair of CT-33s was assigned to the demonstration team Golden Centennaires made up of nine CT-144 Tutors. The group was formed on the occasion of the 100th anniversary of Canada as an independent state and later renamed to the more well-known Snowbirds. Another interesting variation came in 1984 when each squadron, in connection with the retirement of the Voodoo, selected one aircraft that received an interesting color scheme according to the unit's name - the 416th squadron chose aircraft 101043 and named it "Lynx Squadron Canada", the 425th had aircraft 101014 "Lark One Canada / Alouette Un Canada". The most interesting situation occurred

at the 409th squadron, where aircraft 101057 was selected and named "Hawk One Canada". In this case, it was already the second aircraft with the same color scheme and name. The original "Hawk One Canada" (101012) was given anniversary coloring in 1977 on the occasion of the 409th squadron's founding anniversary. After moving to the 425th squadron in 1979, the aircraft was returned to the standard gray coloring of Canadian Voodoo. The end of the CF-101 Voodoo aircraft operations in Canada concluded the third part of the series about this interesting machine. In the next issue of REVI, we will continue with a description of the origin and development of its reconnaissance versions, including their subsequent operational service on the continental territory of the USA and in Europe.

Notes:

1) The Royal Canadian Air Force (in English Royal Canadian Air Force/RCAF or in French Aviation Royale du Canada) was established on April 1, 1924, and operated under this name until February 1, 1968. After that, all branches of the Canadian military (navy, air force, and army) were merged into the Canadian Forces. For the air force, the controversial merger resulted in a breakdown into several essentially independent commands: 1. Air Division operating in Europe under NATO wings with squadrons equipped with CF-104 Starfighter fighter-bombers; Air Defence Command responsible for air defense.

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Canadian Voodoo 101066 with the American target aircraft Teledyne Ryan BQM-34F Firebee II, which were used during the William Tell exercise (in this case, in 1976).



Illustrations/color profiles:
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□ The "farewell" aircraft of the 416th Squadron "Black Lynx" was in 1984 aircraft 101043 named "Lynx Squadron Canada". The coloring consisted of white on all surfaces with black accents and a stylized lynx head on the nose under the cockpit. The aircraft, built as an F-101B-95-MC (57-0380), was first used by the 62nd FIS USAF and was stored at Davis Monthan base from 1968 to 1971. It was then transferred to Canada and served with the 425th and 416th Squadrons until its retirement in 1984. The aircraft is now displayed at the Atlantic Canada Aviation Museum (Halifax, Nova Scotia). Note - do not confuse it with the similarly colored aircraft displayed at the Reynolds-Alberta Museum (Wetaskawin, Alberta), which is aircraft 101038, which never flew in this form.

□ At the end of its career, the Canadian Voodoo had a very shiny light gray paint (Alumigrip Light Grey corresponding to FS 36492) on all surfaces, complemented by red and white accents, insignia, and the unit's emblem on the SOP. This version represents aircraft 101033 from the 425th Squadron "Allouette" from Bagotville base. Originally, it was an F-101B-95-MC (57-0360) that flew with the 60th FIS USAF and was delivered to Canada on October 19, 1970. It served here for a full 10 years until the crash on September 29, 1980, during which it was completely scrapped. Fortunately, the crew escaped using parachutes.



□ The oldest form of the Canadian Voodoo is represented by aircraft 17404 (F-101B-115-MC, 59-0404) belonging to the 410th Squadron "Cougar" from Uplands base in Ontario. In the first half of the 1960s, the Canadian Voodoo flew on all surfaces without paint in a metallic color with prominent red and white accents and the inscription Royal Canadian Air Force, which was complemented on the tail by the then Canadian flag (valid until 1965). The affiliation to the 410th Squadron is evidenced by the red and white stripes on the fin. In Canada, it later flew with the 416th Squadron and was returned to the USAF in August 1971. It was then converted to the reconnaissance version RF-101B and served with the 192nd TRS, Nevada ANG. The aircraft was retired in 1975 and scrapped five years later.



□ One of the most popular Canadian Voodoos was the CF-101B 101012 named "Hawk One Canada" from the 409th Squadron. It is originally an F-101B-85-MC (57-0293) that served until 1968 with the 445th FIS USAF, then it was stored for three years at Davis Monthan base and delivered to Canada in 1971. Here it served with the 409th Squadron. In 1977, this unit was given anniversary coloring based on the falcon motif in the squadron emblem on the occasion of the assignment of a battle flag to the unit. The crew of this aircraft transported the flag received in Ottawa to the home base of Comox. After moving to the 425th Squadron in 1979, the aircraft was returned to the standard gray coloring of Canadian Voodoos. To this day, only the cockpit of the aircraft has been preserved, owned by a private individual in the town of Uxbridge (Ontario). The aircraft displayed as a memorial at the entrance to Comox base is the second "Hawk One Canada" adorned with the same coloring on the occasion of the retirement of the Voodoo from service in 1984.

