CANADA AVIATION MUSEUM AIRCRAFT

MCDONNELL F2H-3 BANSHEE 126464
ROYAL CANADIAN NAVY (RCN)

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Aircraft History

Introduction

In 1953, the Government of Canada decided to purchase 39 F2H-3 BANSHEE aircraft from the United States Navy. These aircraft were to replace the HAWKER SEA FURY which had been in commission for seven years. This decision was taken coincident with a second decision to acquire a new aircraft carrier, H.M.C.S. BONAVENTURE, a light fleet aircraft carrier with a length of 692 feet.

This narrative outlines the development history of the BANSHEE fighter and its tenure with the Royal Canadian Navy (R.C.N.) between 1955 and 1962. BANSHEE 126464 was the first aircraft to occupy the new Canada Aviation Museum built in 1988. A photograph of the BANSHEE exhibit following restoration is seen below.

Development History

The F2H-3 BANSHEE purchased from the United States Navy in 1955 was a derivative of the FD-1 PHANTOM which was the first aircraft carrier design fighter to be powered by jet engines. The contract had been let to a small, hitherto unknown manufacturer, McDonnell Aircraft Corporation located in St. Louis, Missouri. The first prototype F2H -1 BANSHEE was equipped with dual 3,000 lb. static thrust J34-WE-22 axial flow jet engines mounted in the wing roots of the port and starboard wings. This early variant was equipped with armament consisting of four (4) 20 mm. cannons and was first rolled out on August 13, 1948. Testing continued until May, 1949 when the aircraft completed carrier qualification and suitability trials aboard the USS FRANKLIN D. ROOSEVELT and was declared "fit for duty" as a carrier borne combat fighter aircraft.

The second generation was re-designated F2H-2. This variant included the addition of 177 gallons of internal fuel made possible by stretching the fuselage forward of the wing by twelve inches. Finally, a pair of 200 gallon auxiliary fuel tanks were added to the wingtips. These

additions required that the engines be upgraded to the J34-WE-34 model Westinghouse engines which could generate 3150 lbs of static thrust. The gross weight of the BANSHEE had grown from 7 to 10 tons.

The F2H-2 went into Korean action on 23 August, 1951. This aircraft served well in Korea, both with the Navy and the Marine Corps, not only as a first line fighter, but also in collateral roles of ground support and as a night fighter. From experience gained during the formative stages of the Korean conflict a third version of the BANSHEE was placed under development designated F2H-3.

On March 29, 1952 the F2H-3 BANSHEE made its maiden flight at St. Louis, Missouri. It was eight feet longer than the original aircraft (F2H-1), two tons heavier (empty), and took on a slightly different appearance. The F2H-3 was designed from the beginning as an All-Weather Fighter (AWF) and was therefore equipped with the new APQ-41 radar installed in the nose. The four 20mm. cannons were repositioned further back along the sides to solve previous problems associated with nose crowding. To give the aircraft sufficient range with the upgraded engines space was allocated for fuel which permitted 50 percent increase in internal capacity.
This model saw a production of 250 aircraft.

The general specifications for the F2H-3 were as follows:

Manufacturer	McDonnell Aircraft Corporation, St. Louis Missouri;		
Type	Carrier based fighter;		
Seats	Pilot only;		
Power Plant	Two (2) J34-WE-34 turbojets @ 3250 lbs. thrust each;		
Armament	Four fixed forward-firing canons.		
	Eight underwing pylons capable of carrying up to 8 x 60 lbs H.E. (High explosives), rockets or six x 500 lb. Bombs and 2 x 60 lbs. H.E rockets. In addition SIDEWINDER heat seeking missiles could be mounted on the outer stations of each wing on a special deep pylon.		
Dimensions	Wing Span (Tip Tanks):		45.0 ft.
	Wing Span (No Tip Tanks):		41ft 8.8in.
	Length:		48 ft. 2in
	Height:		13 ft. 11in
	Wing Area:		294.1 sq. ft.
	Weight (Empty):		13,183 lbs.
	Weight (Gross):		28,500 lbs.
	Performance:	Max Speed	527 mph @10,000 ft.
		Cruise Speed	461 mph @ Sea Level.
		Rate of Climb	5,900 ft/min. from Sea Level
		Service Ceiling	46,500 ft.
		Normal range	1,170 st. miles.
		Max. Range	1,716 st. miles.

Thirty-nine of the F2H-3 BANSHEES were acquired from the United States Navy, the first in November, 1955, and the last in June, 1958. The first two aircraft flown to the air base located at Shearwater , Nova Scotia were piloted by LCdr. R.H. Falls, Squadron Commanding Officer

and Lieutenant Walter Sloan.

These aircraft served with the R.C.N' s VF 870 and VF 871 fighter Squadrons as well as the Experimental Squadron, VX-10. They were permanently stationed at H.M.C.S. SHEARWATER located near Dartmouth, Nova Scotia embarking from that location to conduct operations from the aircraft carrier H.M.C.S. BONAVENTURE. A photograph of four BANSHEES in formation at low level is seen below. The Museum exhibit, BANSHEE 126464, is seen flying in number four position in the foreground.

Museum Exhibit - History

The USN BANSHEES were built in three production series as follows:

Production Series One 126291 - 126350;
Production Series Two 127493 - 127546; and
Production Series Three 127493 - 127546.

The Museum exhibit, is a product of Production Series Two. A chronological history of the Museum aircraft from first manufacture until acceptance at NAMST is outlined below.

Manufacturing Date:	28 March, 1953
USN - Acceptance Date:	10 April, 1953;

USN, VF-31, Naval Air Station Cecil Field,
Jacksonville Florida with service
as part of VF-31 on the USS Midway.

Cecil Field - (VF-31) N.A.S Cherry Point, North Carolina for Overhaul	10 November, 1954
USN - VF-41, N.A.S. Oceana Service on USN Aircraft Carriers, USS Forestal and USS Bennington	29 February, 1956
USN - Struck off Strength	14 August, 1957
R.C.N.- Taken on Strength, Fairey Aviation of Canada for painting and overhaul	15 August, 1957
Fairey Aviation of Canada	12 February, 1958
R.C.N.- VF-870, Squadron, Shearwater, Nova Scotia	30 October, 1959
Air Maintenance Depot. Shearwater, Nova Scotia	3 August, 1960
Air Maintenance Depot Shearwater, Nova Scotia	25 August, 1960
Air Maintenance Depot Shearwater, Nova scotia	18 October, 1961
R.C.N. VF-870 Squadron Shearwater, Nova Scotia	6 December, 1961
R.C.N.Struck off Strength	12 September, 1962

Operational Use - BANSHEE F2H-3 126464

F2H-3 BANSHEE 126464 was used for all operational flying activities. Several photographs of this specific aircraft are attached; these photographs represent the cross section of flying performed by all R.C.N. BANSHEE pilots.

A most interesting SIDEWINDER heat seeking missile evaluation occurred in November, 1959. BANSHEE aircraft from HMCS BONAVENTURE were detached to the Royal Naval Air Station (RNAS) Yeovilton to participate in a live-fire exercise employing remotely piloted FIREFLY target aircraft. Of six SIDEWINDER heat seeking guided missiles used in the exercise, five found their targets. The FIREFLY aircraft were seen to disintegrate in flight and fall into the sea. A description of this live -fire exercise is contained in Appendix B.

Another photograph of the aircraft flying in close formation with three other aircraft is shown just prior to their recovery on board the Canadian aircraft carrier H.M.C.S. BONAVENTURE. This photograph shows a fifth BANSHEE, seen on the flight deck, having just been brought up from the hangar deck using the aft elevator. This aircraft will be ranged forward on the flight deck for a catapult launch prior to recovering the four aircraft seen in the photo. The search and rescue helicopter located over the ships identification numbers will also be launched prior to the recovery of the four aircraft in the event that an accident should require the rescue of one of the pilots for any reason. BANSHEE 126464 will be the last to recover on board as it is flying in the number four position.

A second spectacular photograph seen on the following page shows the view a BANSHEE pilot would have a few seconds before making an arrested landing on board the aircraft carrier H.M.C.S. BONAVENTURE. Heavy duty arrester wires are strung from port to starboard on the flight deck of the carrier, aft of the island. These wires are engaged by an arrester hook located underneath the rear of the aircraft and extended by the pilot prior to recovery or “landing”. When the arrestor hook grabs a wire the aircraft decelerates 100 to 0 kts in 1bout 125 feet.

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In addition to flying operations conducted from the aircraft carrier H.M.C.S. BONAVENTURE, BANSHEE pilots retained proficiency in a wide range of other operational tasks. These included:

- Support to Land Forces (Rivers, Manitoba and Gagetown, New Brunswick)
- Night Fighter All Weather Training, Jacksonville Florida;
- North American Air Defence (N.O.R.A.D.) Support; and
- North Atlantic Treaty Organization (N.A.T.O.) Support.

A listing of the BANSHEE Squadron Commanding Officersis attached as Appendix A.. R.C.N. Naval Aviators who flew the F2H-3 BANSHEE are attached to this synopsis as an Appendix C. As a memorial to those Naval Aviators who lost their lives flying this aircraft a Appendix D is included listing their names separately.

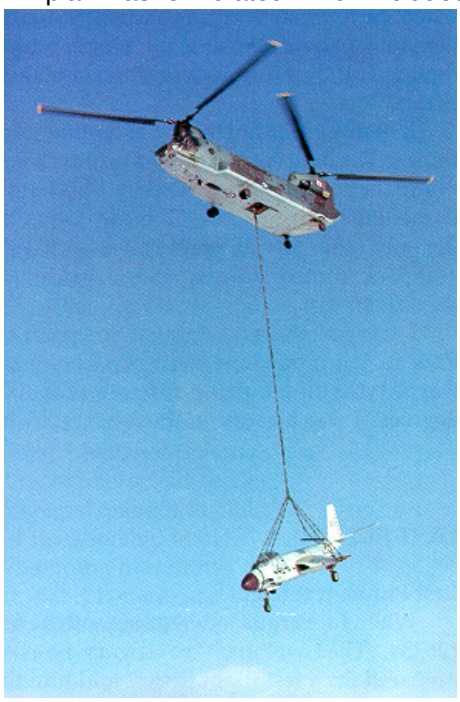
Of the 39 fighter jets purchased by the R.C.N., 12 were destroyed or lost at sea, 15 were cut up for scrap, 9 were used for fire practice and 3 survived. Of the three that survived one is located at the Calgary Museum, the second at the Shearwater Naval Aviation Museum and the last, 126464, is on display at the Canada Aviation Museum in Ottawa at the Rockcliffe location.

The Museum Exhibit - Restoration

BANSHEE 126464 sat outside at Shearwater for a number of years until it was acquired by the National Aeronautical Collection. In July, 1977, the aircraft was stripped down, the wings were removed, and the aircraft carefully loaded sideways on a low bed Canadian National Railways (CNR) flat car for the journey to the Collection's restoration facility located at the former RCAF base at Rockcliffe, in Northeast Ottawa.

Unfortunately the Collections' small staff of dedicated restorers had many projects ahead of the Banshee, so the aircraft was again parked outside for a number of years. The photograph of BANSHEE 126464 prior to restoration is shown in the adjacent photograph.

It was while in this condition that the aircraft came to the attention of CWO Wylie and WO Kevin Lockie of 400 Air Reserve Squadron located in Toronto. A plan was formulated which included restoration of the aircraft as a voluntary spare time project by members of his unit who would also gain invaluable expertise in aircraft restoration. Upon completion of the project the aircraft would be placed on display at the Canada Aviation Museum proper.



The next problem to be overcome was how the aircraft was to be relocated to Canadian Forces Base (CFB) Downsview in Toronto. This challenge was soon overcome when the Department of National Defence agreed to airlift BANSHEE 126464 using one of its' heavy lift helicopters, the CH-147 CHINOOK. Suitable arrangements were made and on 15 January, 1976 the main fuselage was flown to CFB Downsview suspended underneath a CHINOOK from 450 Squadron then located at CFB Uplands.

Following inspection it was obvious that BANSHEE 126464 was in an advanced state of deterioration. The aircraft arrived with no engines and many parts were missing.

The McDonnell Douglas plant in St. Louis was contacted and the Company made available microfilm drawings as a reference point for the restoration. When parts could not be located and refurbished they were fabricated from scratch. These included the intake ducts as well as the rubber tail bumper and a myriad of components, all of which were built in strict accordance with the McDonnell F2H-3 specifications. Between 1976 and 1982, successive challenges were overcome by 400 Reserve Squadron with assistance from 411 Squadron and Regular Force Support personnel.

As the project neared completion Mr. John Griffin, a noted Canadian aviation historian, provided the project team with detailed R.C.N. paint specifications and these were, in turn, copied exactly by Tower Chemicals, a paint supplier to deHavilland aircraft at Malton, Ontario. The Company also supplied solvents for paint stripping as well as donating the paint for the painting of the aircraft itself. Dehavilland Aircraft of Canada Ltd. then volunteered their facilities to do the actual spray and repainting of the two-tone grey fuselage, wings and tail, rudder markings, roundels and larger numbers and lettering.

The reservists did all the metal work, paint stripping, cleaning, photographing, research, re-stenciling after painting and final assembly. With the painting of the BANSHEE in its original Royal Canadian Navy colour scheme in late 1982 by the deHavilland paint shop, and the completion of the detailed stenciling by the Air Reserves, the 6 year project came to an end.

In June 1987, the fuselage was again transported to the Canada Aviation Museum at Rockcliffe by CHINOOK helicopter. Mated with the wings which had arrived independently BANSHEE 126464 became the first aircraft to enter the new museum building. A photograph of this event is reflected in the final photograph of the series.

F2H-3 BANSHEE 126464 serves as a reminder of an era in Canadian Naval Aviation that is now lost forever.

Appendix A

Commanding Officers of F2H-3 BANSHEE Air Squadrons

VF 870

Lieutenant Commander R.H. Falls, CD, RCN	Nov, 1955	Dec, 1957
Lieutenant Commander W.J. Walton, CD, RCN	Jan, 1958	Apr, 1960
Lieutenant Commander K.S. Nicholson, CD, RCN	Apr, 1960	Sep, 1962

(Squadron Disbanded)

VF 871

Lieutenant Commander R. A. Laidler, CD, RCN	Jan, 1956	Jul, 1957
Lieutenant Commander J.J. Harvie CD, RCN	Jul,1957	Mar, 1959

(Squadron Amalgamated with VF 870)

Sidewinder Infra-Red Air-To-Air Guided Missile
Live-Fire Exercise at the Cardigan Bay Missile Range,
United Kingdom - 1959

Background

The Royal Canadian Navy became interested in the SIDEWINDER guided missile while it was under development by the United States Navy in the mid 1950 period. In January 1958 an RCN Trials Team carried out SIDEWINDER separation trials employing two RCN BANSHEE aircraft at Chincotique Virginia. The outer wing station on each aircraft was chosen to mount the SIDEWINDER on its special deep pylon. Two missiles were intentionally not used during the trial and were used for acquisition training during 1958. The main block of SIDEWINDERS arrived in Canada by 1959, enabling VF 870 to achieve the highest intercept and "kill" success rate among Canadian Squadrons in NORAD exercises, mostly against Strategic Air Command (SAC) bombers at night.

In order to make this assessment the SIDEWINDER acquisition signal was transmitted to the ground radar station by the BANSHEE aircraft employing the UHF radio. The radar station, using the SIDEWINDER firing envelope, could ascertain if the BANSHEE was in firing range which could be at ranges of up to four miles.

Live-Fire, Cardigan Bay Missile Range, U.K.

Methodology

In November, 1959 arrangements were made for a live-fire exercise employing six FIREFLY remotely controlled drone aircraft as SIDEWINDER targets. These targets were supplied by the Royal Navy at RNAS Yeovilton. The BANSHEES of VF 870 were subsequently detached to RNAS Yeovilton from HMCS BONAVENTURE. The price agreed to between the RCN and RN for the use of these drone aircraft was the cost of the aviation fuel used. The FIREFLIES were were fitted with infra-red sources located at their wingtips and were flown at about 15,000 feet over the Cardigan Bay Missile Range.

Range Safety Procedures

The BANSHEES pilots from VF 870 were required to provide a safety trace to ensure the range officers that a missile could not reach shore if, for any reason, it malfunctioned. Extensive briefings were held on range procedures and a SIDEWINDER missile was static demonstrated to range safety officers. The SIDEWINDER was 9 ft. long and weighed 156 lbs.

The range safety procedures were extensive as there were commercial airways in close proximity to the Cardigan Bay Missile Range and often cloud cover of varying amounts. This required that the target be positively identified visually by the pilot on each and every run. The target was remotely flown around a triangular course with the attacking aircraft vectored in as the target entered the "base" leg. On two runs the target aircraft entered cloud prior to being fired upon so these runs were repeated. As the attacking BANSHEE was vectored by ground control he would acquire the target on his own radar, counted down by radio for the range officer who would activate the target's heat source. At a range of about two miles the SIDEWINDER would acquire the target and the BANSHEE pilot would then fire the missile. The BANSHEES flew in pairs, the number two to observe.

Results

A total of six SIDEWINDERS were live-fired by BANSHEES over the Cardigan Bay Missile Range. The first missile did not acquire the target, passed below it and self destructed in the air after 31 seconds. This self destruct feature was built into the missile and operated as programmed.

The remaining five missiles all successfully intercepted, hit and destroyed five drone targets; they were all seen to crash into the sea.

R.C.N Naval Aviators Who Flew the F2H-3 BANSHEE

Surname	*Given Name(s)*
Allan,	Thomas Steele
Anderson,	Alexander James
Arnold,	John Martin
Atkinson,	William Henry Isaac
Baird,	Robert David
Barker	Jim
Beach,	Robert Aloysius
Bell-Irving,	Brian
Birks,	John H.
Bissett,	Conrad Robert
Brayman,	Martin H.
Chandler,	Donald Stephen
Cook,	Donald Glenn
Cooper,	Howard Gilbert
Copeland,	Thomas Henry
Craig,	Earle (USN)
Craven,	Geoffrey Hugh
Dawson,	James Keith
deNevers,	Roy Olaf
Edwards,	Gordon Lewis
Fairbairn,	Sidney John
Falls,	Robert Hilborn
Fearon,	William Henry
Ferguson,	Ian Robert McKenzie
Ferguson,	Robert Ernest
Fischer,	Hugh Carl
Forman,	George Edward
Forsythe,	Cameron Craig
Fox,	Alexander Edward
Fuoco,	William John
Goodfellow,	Fredrick William
Grimson,	Joseph Leslie Louis
Grossmith,	Seth Walter
Hallett,	Edward R. (USN)
Harvie,	Jeffrey James
Heath,	Ron
Herrington,	Frank (USN)
Holmes,	Alfred James William
Hunter,	Hubert James
Kennedy,	John Kinross
Laidler,	Robert Arthur
Logan,	John Wellington
Lomheim,	Gary Leon
Mead,	Bert William
McArthur,	Gabriel Eyrle Craven

R.C.N. Pilots Who Flew the R.C.N. F2H-3 BANSHEE

Surname	*Given Name(s)*
McGreevy,	Jeremy George Irvine
McNicol,	Donald Herbert
Mills,	Barry
Moore,	RobertThompson
More,	Gerald Arthur
Murray,	Willliam Henry
Nicholson,	Kenneth Samuel
Oxholm,	Bendt Alexander
Park,	William George
Prout,	Derek A.
Rassow,	Knudd
Rogers,	Robert Lionel
Rosenthal,	Leslie Charles
Rowell,	Sheldon MacDonald
Schellinck,	Anton Albert
Searle,	John Victor
Sherman,	Maklem Douglas
Sloan,	John Charles
Sloan,	Walter Small
Sosnkowski,	Joseph
Tate,	David Henry
Trzcinski,	Edward K. (USN)
Troy,	William Thomas Barry
Truran,	John McKay Jameson
Verronneau,	Jean Joseph Jules
Verronneau,	Louis Joseph
Walton,	William Jones
Wardrop,	Donald Austin
Waterman,	Kenneth Donald
White,	Edward
Williams,	David Frederick
Willis,	Frank Cecil
Woods,	Alan John
Zbitnew,	Leonard Thomas

Appendix D

F2H-3 BANSHEE Pilots “In Memorium”

Surname	*Given Name(s)*	*Rank*	*Aircraft*	*Date*
Wardrop	Donald Austin	Lieutenant	126330	22 Apr, 1956
Bissett	Conrad Robert	Sub Lieutenant	126310	14 May, 1957
Prout	Derek A.	Lieutenant	126313	31 May, 1957
Trzcinski	Edward K.	Lieutenant (USN)	126306	27 Aug, 1957
Cooper	Howard Gilbert	Lieutenant	126403	2 Oct, 1957
Troy	William T. Barry	Lieutenant	126428	25 Feb, 1958
Bell-Irving	Brian	Lieut. Commander	126333	4 Mar, 1958
Rassow	Knudd	Sub Lieutenant	126434	16 Jun, 1961