



**CANADA AVIATION MUSEUM AIRCRAFT  
CANADAIR F-86 SABRE MK.6**



Royal Canadian Air Force (RCAF) 23455

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## INTRODUCTION

When Canada entered the North Atlantic Treaty Organization (NATO) in 1949 it made an agreement to provide a European air contingent. At that time the inventory of RCAF fighter aircraft consisted primarily of obsolete Second World War equipment, therefore a need was identified to provide NATO with an effective and modern aircraft to fulfill the Canadian commitment. The choice fell logically on the best aircraft which existed at that time, the North American Aviation SABRE designated as the F-86. It was decided to build the SABRE under licence in Canada and Canadair Ltd. at Montreal was entrusted with this task.

SABRE MK. 6  
(MUSEUM PHOTO)



*In mid-1952 the Mk. 4 SABRE replaced SABRE 2 production with the first one flown on 28 August 1952.*

## DEVELOPMENT HISTORY

The first SABRE, designated as the CL-13 Mk.1, to come off the production line was produced from US-made components and was flown on 9 August 1950 from the nearby airport of Dorval. As the Cartierville runway was being extended, the aircraft was towed to Dorval for its initial flight. Only one Mk.1 SABRE was built. The second generation of SABRE aircraft built by Canadair was the Mk. 2 and 350 were constructed in 1952/53 and delivered to the RCAF. Additionally in the first half of 1952, 60 Mk. 2s were supplied to the United States Air Force (USAF) for use in the Korean War. The Mk. 2 was essentially similar to the Mk.1 but had one major enhancement. The “all flying tail plane” eliminated many undesirable compressibility effects - especially the loss of control sensitivity at high Mach numbers. Most Mk. 2 SABREs that were delivered to the RCAF were utilized in the air defence role in the NATO European environment. Others were assigned to the training role at bases in Canada.

Both the Mk.1 and 2 were powered by the General Electric J-47 turbojet engines developing 5,000 lb. (2,360 kg.) of static thrust. The initial intent was to install the Avro Orenda engine in all SABREs but it wasn't introduced until the Mk. 5 and 6 were built. The first models of the Orenda engine developed 6,000 lb. (2,724 kg.) of static thrust with later versions producing 7,275 lb. (3,302 kg.) of static thrust. The only other aircraft to be fitted with an Orenda power plant was the Mk. 2 production number 200 and it ultimately became the one and only Mk. 3 SABRE.

Jacqueline Cochran flew this aircraft to a new Women's World Speed Record of 652-mph (1,049 km/h) in May 1953.

In mid-1952 the Mk. 4 SABRE replaced SABRE 2 production with the first one flown on 28 August 1952. Essentially, apart from some minor structural and systems changes, including improved air-conditioning and gun sight; the two variants were identical. Of 438 Mk. 4s built only 10 were delivered to the RCAF. The others went directly to the Royal Air Force (RAF) under a mutual aid programme. Eleven RAF squadrons were equipped with the Mk. 4s with the majority serving in West Germany with NATO. The Mk. 4 SABREs served with the RAF until mid-1965 when they were declared redundant and subsequently overhauled and passed on to the Italian and Yugoslavian air forces.

On 30 July 1953, the first Mk. 5 flew with the Orenda 10 engine, which gave it a clear rate of climb and ceiling advantage over the Mk. 2. Other Mk. 5 improvements included a new oxygen system, improved manoeuvrability and low speed characteristics. These were achieved by increasing the wing chord by 6 in. (15.2 cm.) at the root and 3 in. (7.2 cm.) at the wing tip and by installing a small vertical wing fence. Canadair would produce 370 Mk. 5s with the majority designated for use in the RCAF's Air Division squadrons in Europe to replace the Mk. 2 SABREs. One hundred and seven of the surplus Mk. 2s in the Air Division's inventory were overhauled and donated to the Turkish and Greek air forces.



The Mk. 6 was the last and considered to be the best Canadian SABRE production version ever built. It was equipped with a two-stage Orenda engine developing 7,275 lb. (3,302 kg.) of static thrust. Its altitude performance and climb rate was again enhanced over the Mk. 5 and the installment of a slotted wing gave it excellent low speed characteristics. The first production model was completed on 2 November 1954 and ultimately 655 were built with production terminating on 9 October 1958. A total number of 390 Mk. 6s went to the RCAF with the majority replacing the existing SABREs at the Air Division squadrons in Germany and France. Additionally, 225 were exported to the West German Luftwaffe, 6 were delivered to the Columbian Air Force and 34 went to the South African Air Force. From 1950 to 1958 a total of 1,815 F-86 SABREs were built at the Canadair plant in Montreal.



SABRE MK. I  
(MUSEUM PHOTO)



*The mission of the SABRE was to gain and maintain control of the air.*

## OPERATIONAL APPLICATION

The method of SABRE delivery to the European theatre which was interesting and complex exercise. The first SABREs to arrive in Europe were those of 410 Squadron which was initially stationed at North Luffenham, England until such time as the airfield facilities were completed in France. These aircraft were transported overseas aboard HMCS Magnificent. Subsequent aircraft were flown by pilots of the # 1 Overseas Ferry Unit from various bases in Canada to either Greenland or Iceland then to Scotland and then on to their respective bases on the continent. The last SABRE squadron to arrive in Europe to complete the Canadian commitment to NATO was 444 Squadron.

The mission of the SABRE was to gain and maintain control of the air. In the Korean War, the main threat was the MiG-15. Despite the fact that the MiG was faster and could out-climb the SABRE, the kill ratio was 11 to 1 in favour of the SABRE. This amazing ratio is due to a large measure to the radar-ranging gun sight and the type of armament needed for fighter versus fighter combat. The extent of its air supremacy role in Korea is best illustrated by the fact that not one United Nations unit, installation or ship was hit by opposing aircraft during the daylight hours.

The second major conflict that involved Canadian SABREs was the Pakistan-India war in 1971. In January 1966 Germany sold 90 of its Canadian Mk. 6 SABREs to Iran. These aircraft were quickly transferred to Pakistan and became the main day fighter of the Pakistan Air Force. In the

ensuing conflict with India, the SABRE quickly established air superiority over the battlefield area. This was accomplished in spite of India's superior aircraft numbers and the acquisition of the new supersonic MiG-21s by the Indian Air Force.

The main air threats to NATO in the 1950s in Central Europe were the early variants of the Soviet MiG. Based on the Korean War experience, the selection of the SABRE to provide an effective opposition to the MiG threat proved to be a logical one. Canada's commitment to NATO was to provide 12 squadrons located at four bases – two in France (Marville and Grostenquin) and two in Germany (Zweibrucken and Baden Soellingen). Initially, the contribution consisted of only SABRE aircraft, however, later it was decided to include the Avro CF-100 aircraft in the defense package to provide a night fighter capability. Accordingly, each Wing was assigned one CF-100 squadron and one SABRE squadron per Wing was returned to Canada. As noted, the role of the SABRE was to provide air defense. On a rotational basis two squadrons kept aircraft and crews on a 5 and 15 minute alert status known as Zulu. Normally, two squadrons, one from Germany and one from France were assigned to hold the alert for a one-week period. Fully armed, the Zulu planes represented a force that could be put into the air at a moment's notice. In actual practice the Zulu crews were scrambled and conducted intercepts and air combat manoeuvres against their sister squadrons. In most scrambles, what would start as a controlled 4 vs. 4 intercept would often end up in a combat melee with up to 20 or more aircraft involving air forces from Germany, France, Belgium

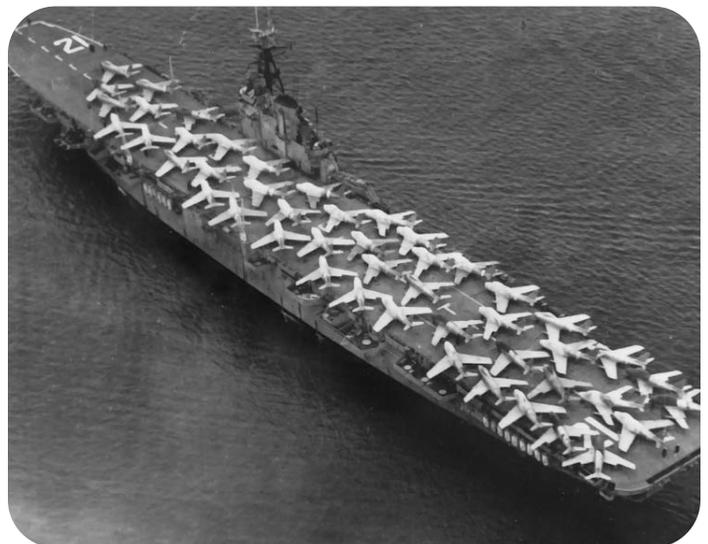


and United States. For several minutes, but what seemed like an eternity, the sky would be full of planes in close proximity milling around in various flight positions and manoeuvres and then suddenly the sky would be completely empty. While many claimed success in these simulated air combat manoeuvres, the final proof of their efforts rested not in the imaginations of the pilots who thought that they had succeeded, but in the black and white cine films captured by their gun cameras.

To practice air-to-air gunnery, approval was obtained to use a French Air Force range on the coastal base near Rabat, Morocco. This facility was used until 1957 when arrangements were made for the use of an air base near the town of Decimomannu on the southern end of the Italian

Mediterranean Island of Sardinia. The base was also used by the Italian and German air forces for gunnery and bombing practice. Approximately every nine months Canadian squadrons would rotate through Decimomannu for air-to-air gunnery practice for a period of three weeks. Live firing, at a target drogue flag towed behind another SABRE aircraft, was conducted off the west coast of the island at altitudes of 20,000 and 30,000 feet. Other operational missions included low level flying (rat and terrier), NATO exercises and squadron exchanges with other NATO air forces but the vast majority of SABRE flying was conducted locally in French and German air space.

HMCS MAGNIFICENT  
(DND)



The squadrons were composed of a mixture of Second World War veterans, postwar and young recent aircrew graduates.

## THE PILOTS

The SABRE pilots came from a wide variety of RCAF backgrounds. The squadrons were composed of a mixture of Second World War veterans, postwar and young recent aircrew graduates thus providing a good cross-section of air experience. All SABRE pilots for the new formations were trained at the 1 (F) Operational Training Unit (OTU) at Chatham, New Brunswick. Accordingly, the first Canadian SABRE to arrive at Chatham to replace the VAMPIRES took place in February 1952 with the changeover completed in April 1952. The first SABRE course began on 7 July 1952. Approximately 18 weeks were spent at the OTU with the first 12 weeks devoted to basic handling, formation, intercepts, instrument and night flying. The last 6 weeks consisted of air-to-air and air-to-ground gunnery. Upon graduation, all pilots proceeded to serve with the Air Division squadrons in Europe, normally for a period of 3 years.



RCAF EUROPEAN  
BASE LOCATIONS



The squadron served as a fighter squadron until it was deactivated on 1 March 1963.

## NO 4 (F) WING SOELLINGEN



444 (F) SQUADRON  
CREST

As the museum aircraft SABRE 23455, was assigned to 4 (F) Wing and specifically to 444 (Fighter) Squadron the following documentation focuses on the history and personnel related to this squadron.

The squadron was reformed as a fighter unit on 1 March 1953 and was initially based at St. Hubert, Quebec. It was the last of the fighter squadrons to be designated as part of the RCAF commitment to NATO. Accordingly, 444 (F) Squadron was to be relocated to 4 (F) Wing at Baden Soellingen, West Germany by 15 August 1953. Due primarily to weather delays, the flight overseas took place between 27 August and 3 September 1953 in Operation Leapfrog IV.

A new squadron badge was approved in November 1954 depicting a Cobra in a position ready to strike with the motto "Strike Swift, Strike Sure".

The squadron served as a fighter squadron until it was deactivated on 1 March 1963 and reformed in the nuclear strike role on 27 May 1963 equipped with CF-104 aircraft. The squadron SABREs (24 in total) were flown to Prestwick, Scotland in Operation Sal Siesta where most were ultimately scrapped. One aircraft (23455) escaped the scrap pile and ultimately became the Canada Aviation Museum's SABRE display model.



The mission of the SABRE was to gain and maintain control of the air.

## 444 (F) SQUADRON

### COMMANDING OFFICERS

Squadron Leader E.R. Heggveit CD	March 1953	July 1953
Squadron Leader J. MacKay DFC and Bar	July 1953	September 1953
Wing Commander H.F. Darragh AFC	January 1954	March 1954 (KIFA)
Squadron Leader J.B. Lawrence CD	May 1954	June 1957
Squadron Leader D.F. Archer CD	July 1957	January 1959
Squadron Leader L.E. Garry CD	January 1959	September 1960
Wing Commander R.V. Smith CD	September 1960	February 1961 (KIFA)
Squadron Leader J. Regan	February 1961	June 1961
Wing Commander J.L.A. Roussel DFC, CD	August 1961	March 1963

MACH BUSTER'S  
CERTIFICATE



## PILOTS

The following list of pilots was taken from the membership directory of an organization titled, "SABRE Pilots Association of the Air Division Squadrons" (SPAADS):

Egan Agar	Lea Archer	Peter Armstrong	Alfred Arnold
Arnie Bauer	Brian Bell	Trevor Boyer	Alan Brown
Paul Charles	Ron Clarkson	Richard Colling	Leonard Cook
Neil Coward	Robert Dahl	Douglas Dargent	Peter Davis
George Dennis	Bryon Doyle	Herb Elgie	George Ellerbeck
Glenn Fenton	Len Fitzsimmons	E. Garry	Gorden Gibson
Evan Gill	Ronald Glen	N.S. Granley	James Hanna
R.K. Heard	Mel Henderson	Donald Hindle	Ray Hodgins
Gorden James	Ron Jenkins	E.C. Johnson	Malcom Joyce
F/O Longene	Walter Kasper	Terry Kuch	Harvey Kuszmaniuk
J.B. Lawrence	N.C. Lewis	Robert Longhouse	Jonathan Mackay
Donald Mair	Robert Massier	Gorden Mcleod	Ken Mcleod
Donald Miller	Donald Murchie	Jake Newlove	Len Novakowski
Dennis Paproski	William Paterson	Robert Porter	Les Price
Richard Racey	M.C. Randall	Pete Russell	Rene Serrao
Barry Smith	G.N. Smith	Rigby Stamison	Jim Strang
Edward Tann	Bill Tibbit	Clement Tonner	John Ursulak
Rod Violette	F/O Gorden	James Wendover	Tom Wheler
Trevor White	Frank Willis	Willy Wilson	

Non-444 (F) Squadron personnel who flew the SABRE 23455 include Neil Lakins on 3 June 1959 at Zweibrucken, Germany and Tony Gunter-Smith on 18 February 1959 at Scottish Aviation at Prestwick, Scotland.



*The SABRE earned its reputation and can be classified as one of the world's great fighter aircraft*

## THE SABRE ERA ENDS

With the phasing out of the SABREs in Europe, the role of the 1 OTU at Chatham, New Brunswick also changed in that there was no longer a need for SABRE trained pilots. The RCAF was faced with a dilemma in that the SABRE still had a long operational life but with no apparent use. However, a need was identified for a high performance aircraft to provide a transition between the T-33 used in advanced flying training for pilots and the new CF-104 program being introduced at RCAF Station Cold Lake, Alberta. This gap was filled by the F-86 SABRE and the SABRE Transition Unit (STU) was formed in November 1961 at Chatham. This role continued until 1968 when it was decided that the SABRE training would be discontinued at Chatham and replaced by the CF-5 squadron stationed at Cold Lake. The SABREs would be finally retired from service in December 1968 marking the end of the significant flying era in Canadian aviation history. It had been in contin-

uous service for 17 years by the RCAF and Canadian Forces in Canada and Europe. However, it was to be used by a variety of air forces around the world for a number of years thereafter. The Canadian built SABREs served under many flags and parts of the world and earned an excellent reputation in terms of performance and dependability. Its flying characteristics at that time (1952-1953) were unmatched and those pilots who flew it operationally can only dream of the past with fond memories when this aircraft made them the undisputed masters of the skies.

The SABRE earned its reputation and can be classified as one of the world's great fighter aircraft and can be placed in the same category as other historic fighters such as: CAMEL, FOKKER TRIPLANE, SPITFIRE, ZERO, HURRICANE, SEA FURY and MUSTANG.



## F-86 SABRE MK. 6 SPECIFICATIONS

Manufacturer	Canadair Ltd. Montreal Canada	
Type	Single seat, land-based, day fighter	
Power Plant	One Avro Canada Orenda axial flow at 7,275 lb (3,302 kg) thrust	
Armament	6 – 50 cal. (12.7mm) machine guns	
Dimensions	Wing span:	37 ft 11 1/2 in (11.6 m)
	Height:	14 ft 9 in (11.4 m)
	Wing area:	302.3 sq.ft (28.1 sq.m)
	Weight (Empty):	10,618 lb (4,816 kg)
	Weight (Gross):	14,613 lb (6,628 kg)
	Speed (Max.):	606 mph (975 km/h) at sea level
	Speed (Cruise):	489 mph at 45,000 ft (787 km/h at 13,720 m)
	Climb:	35,000 ft (10,670 m) / 4 min 42 sec
	Service ceiling:	54,000 ft (16,460 m)

The maximum speed listed at 606 mph (975 km/h) is in level flight, however, the SABRE could exceed the speed of sound (760 mph [1,224 km/h] at sea level and 660 mph [1,061 km/h] at 36,000 ft). This was accomplished by flying to an altitude of approximately 45,000 ft (13,720 m) and with full power applied accelerating to the maximum level flight speed. The aircraft would then be rolled to inverted flight and pulled down until it was pointing straight down at the ground at full power and allowed to accelerate until it was supersonic (Mach 1). Minor buffeting would occur and supersonic flight would be momentarily achieved at approximately 35,000 ft (10,670 m). This flight profile was included as one of the training trips at the OTU at Chatham. Canadair presented all successful OTU candidates with a Mach Buster's pin and certificate to denote this achievement.



## MUSEUM AIRCRAFT HISTORY

A chronological history of the Museum aircraft, 23455, is outlined as follows:

Type:	Canadair CL-18B (F-86) SABRE Mk. 6
Construction Number:	12455
Engine:	Orenda 14 Serial Number 2180
Manufacture Date:	16 February 1955
Manufacturers Test Flight:	24 March 1955
RCAF Acceptance Flight:	25 March 1955
Taken on RCAF Strength:	20 June 1955
Taken on Strength No. 4 (F) Wg. Germany:	04 July 1955
Scottish Aviation Prestwick, Scotland:	26 September 1958
Cocooned No. 3 (F) Wg. Germany:	23 October 1959
Aircraft decocooned:	17 April 1961
Scottish Aviation Prestwick, Scotland:	15 August 1961
No. 6 Repair Depot London, Ontario:	21 November 1961
No. 6 Repair Depot Trenton, Ontario:	29 January 1964
Transferred Aeronautical Collection, Ottawa:	08 April 1964
Total Flying Time:	1017.40 hours

