



*Kestrel Publications*



**RAYTHEON CT-156 HAVARD II  
ROYAL CANADIAN AIR FORCE SERIAL NUMBERS &  
INDIVIDUAL HISTORIES**



**by T.F.J. Leversedge**

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## **Overview**

This publication is intended to provide a brief overview / summary of individual aircraft histories using information drawn from personal documents / records and other publicly available references identified at the end of the publication. In addition, this information has been further supplemented and / or verified against available RCAF incident / accident reports.

## **About the Author**



Terry Leversedge was born in Moose Jaw, Saskatchewan, while his father was serving at Royal Canadian Air Force (RCAF) Station Moose Jaw. He later graduated from the Royal Military College, Kingston, with a degree in Mechanical Engineering in 1979, and then received a Masters degree in aerospace vehicle design from the Cranfield Institute of Technology in the United Kingdom. His career in military aerospace engineering encompassed a wide number of positions at both field units and within the headquarters of the RCAF, before he retired after 35 years of service at the rank of Brigadier General. Now an aviation consultant and amateur historian, he is the author of other commercially available books on Canadian military aviation subjects and has published numerous articles as the Editor-In-Chief at *Airforce* magazine, the flagship publication of the Royal Canadian Air Force Association.

## **Additional Information**

The information in this serial as accurate and up to date as possible based upon the available public sources. It should not, however, be construed as an "official" list nor 100% accurate. Any errors of commission or omission are solely those of the author. As with all endeavours of this nature, however, the author would be pleased to hear of any additional information and / or corrections. Please provide any details to: Kestrel Publications at [kestrelpubs@gmail.com](mailto:kestrelpubs@gmail.com)

## **Dedication**

This publication is dedicated to all those who fly and maintain these CT-156 *Harvard II* aircraft.

## **Cover Image Notes**

CT-156 #156120 is seen here wearing the wartime colours of one of the original North American *Havards*. - (CF Photo)



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### CT-156 *Havard II* Serials

Serial #	Manufacturer	c/n	variant or model	name
156101	Raytheon	PF-01	CT-156	Harvard II
<p><b>TOS:</b> 2000 - Delivered to CF</p> <p>Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.</p>				
156102	Raytheon	PF-02	CT-156	Harvard II
<p><b>TOS:</b> 2000 - Delivered to CF</p> <p>Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK. On Jan 24, 2014, while conducting an advanced clearhood training sortie, a QFI and student pilot (SP) experienced a hard landing upon completion of a practice forced landing. Recognizing that the approach was not ideal, the QFI took control of the aircraft from the student just as the landing gear contacted the runway. The instructor applied full power and the a/c quickly became airborne again. A chase a/c joined up to visually inspect and photograph the damage. The photos were returned to base which allowed maintenance personnel to confirm that the left main landing gear brace had become detached from the strut. Meanwhile, a second chase a/c joined up with the accident aircraft. Several attempts were made to attain a symmetrical gear up configuration for a possible belly landing; however, a symmetrical configuration was not achieved. Supported by the 15 WComd, the QFI decided that a controlled ejection was the safest option rather than attempting to land the crippled a/c. The QFI and SP successfully ejected suffering minor injuries during the ejection and parachute landing. The a/c was destroyed in the subsequent crash.</p> <p><b>SOS:</b> 24 January 2014 - Cat "A" write-off</p>				
156103	Raytheon	PF-03	CT-156	Harvard II
<p><b>TOS:</b> 2000 - Delivered to CF</p> <p>Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.</p>				
156104	Raytheon	PF-04	CT-156	Harvard II
<p><b>TOS:</b> 2000 - Delivered to CF</p> <p>Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.</p>				
156105	Raytheon	PF-05	CT-156	Harvard II
<p><b>TOS:</b> 2000 - Delivered to CF</p> <p>Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK. On Jan 27, 2017 this a/c was on an instructional flight to practice visual sequences including basic aerobatics. The two crew members consisted of a QFI in the rear seat, and a student pilot (SP) in the front seat, who was the pilot flying. During the pull up into an aerobatic sequence, the QFI was not satisfied with the manoeuvre's progress and instructed the SP to recover. The QFI expected the SP to execute a nose high unusual attitude recovery, however, the SP selected the power control lever (PCL) to idle as per the inadvertent departure from controlled flight checklist. The QFI then took control of the a/c and selected the PCL to full power, to continue with a nose high unusual attitude recovery. Due to the initial nose high attitude and the reduction of the PCL to an idle power setting, the airspeed dropped to 75 kts. The QFI then brought the PCL back to idle to reinitiate the inadvertent departure from controlled flight checklist. As the nose dropped to below the horizon, the QFI continued with a nose low recovery. A low oil pressure caution, followed by an engine CHIP light, illuminated on recovery and coincided with degraded engine performance. With the a/c below a forced landing glide profile for a return to base, an attempt was made to climb to an altitude where such a glide would be possible. The attempt was unsuccessful, and the engine performance continued to degrade, leading the crew to carry out a controlled ejection. One crew member sustained minor injuries during the ejection, and the a/c was destroyed in the subsequent ground impact.</p> <p><b>SOS:</b> 27 January 2017 - Cat "A" write-off</p>				



<b>156106</b>	Raytheon	PF-06	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			
<b>156107</b>	Raytheon	PF-07	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			
<b>156108</b>	Raytheon		CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			
<b>156109</b>	Raytheon	PF-09	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			
<b>156110</b>	Raytheon	PF-10	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			
<b>156111</b>	Raytheon	PF-11	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			
<b>156112</b>	Raytheon	PF-12	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK. On April 4, 2007, a student pilot accidentally ejected from aircraft while parked on the ramp at 15 Wing Moose Jaw, SK. Minor injuries to both crew, minor damage to airframe. The investigation indicated that a communications cord had been routed through the ejection handle. This was to be student's first flight in a CT-156.			
<b>156113</b>	Raytheon	PF-13	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK. No. 2 CFFTS, 15 Wing Moose Jaw, Sask. Suffered an in-flight engine failure, on Aug 14, 2000, while in circuit. The pilot accomplished a successful dead stick landing.			
<b>156114</b>	Raytheon	PF-14	CT-156	Harvard II
	<b>TOS:</b> 2000 - Delivered to CF			
	Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.			



<b>156115</b>	<b>Raytheon</b>	<b>PF-15</b>	<b>CT-156</b>	<b>Harvard II</b>
<b>TOS:</b> 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK. On Feb 12, 2016, two IPs in this a/c were conducting a night cross country proficiency flight to Hillsboro Airport in Oregon, USA. On final approach to Hillsboro Airport, IP2 selected the landing gear down and noticed the Nose Gear (NG) and Right Gear (RG) indicated down and locked, but the Left Gear (LG) did not indicate down and locked. A low approach was flown, and a climb was initiated in order to trouble shoot the landing gear problem. With the landing gear selected down the pilots noted that the Angle of Attack (AOA) indexer lights did not illuminate, (a secondary way to confirm gear down and locked). The pilots were not able to ascertain if the landing light or taxi light were illuminated (a tertiary way to confirm gear down and locked). The pilots did confirm the landing gear circuit breakers (CB) were in. The pilots then performed a landing gear lamp test for the NG, LG and RG, and observed all landing gear lights tested serviceable (three green) in both front and rear cockpits. The landing gear was cycled up, then down, resulting in the same unsafe LG indication. The Landing Gear Malfunction Checklist (LGMC) was completed in its entirety with IP2 reading the LGMC while IP1 flew the aircraft and carried out the actions, but at no time did the LG indicate down and locked. As per the LGMC, the landing gear was then cycled up, and all gear did indicate up and locked. In such situations, the LGMC recommends a gear up landing. IP2 made an emergency call to Portland Approach Control who then alerted emergency services. IP1 flew the gear up landing in a full flap configuration, and during the flare the Power Control Lever (PCL) was selected to off to reduce both propeller and engine damage. The landing was completed successfully at Hillsboro airport. The a/c slid 1,050 feet down the runway before coming to a stop. IP1 and IP2 egressed the a/c while emergency services arrived on scene. The investigation determined that the LG uplock switch failed internally, preventing completion of the electrical circuit to ground. A failure of this switch in the open position would not allow a LG down and locked indication, even though all gear actually were down and locked. The a/c suffered relatively minor Cat "D" damage. It was subsequently repaired and returned to service.				
<b>156116</b>	<b>Raytheon</b>	<b>PF-16</b>	<b>CT-156</b>	<b>Harvard II</b>
<b>TOS:</b> 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
<b>156117</b>	<b>Raytheon</b>	<b>PF-17</b>	<b>CT-156</b>	<b>Harvard II</b>
<b>TOS:</b> 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
<b>156118</b>	<b>Raytheon</b>	<b>PF-18</b>	<b>CT-156</b>	<b>Harvard II</b>
<b>TOS:</b> 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
<b>156119</b>	<b>Raytheon</b>	<b>PF-19</b>	<b>CT-156</b>	<b>Harvard II</b>
<b>TOS:</b> 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				



156120	Raytheon	PF-20	CT-156	Harvard II
TOS: 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK. In 2016, as part of the 75th anniversary celebrations of the creation of the British Commonwealth Air Training Plan (BCATP) during the Second World War, this a/c was repainted in an overall yellow BCATP paint scheme. The a/c was painted to resemble an a/c flown by Pilot Officer John Gillespie Magee, Jr., the famed author of "High Flight". Pilot Officer Magee completed his wings training on BCATP Harvards in June 1941 as a student at No. 2 Service Flying Training School, RCAF Station Uplands (Ottawa).				
156121	Raytheon	PF-21	CT-156	Harvard II
TOS: 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
156122	Raytheon	PF-22	CT-156	Harvard II
TOS: 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
156123	Raytheon	PF-23	CT-156	Harvard II
TOS: 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
156124	Raytheon	PF-24	CT-156	Harvard II
TOS: 2000 - Delivered to CF				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
156125	Raytheon	PF-25	CT-156	Harvard II
TOS: 2002 - Order placed for additional aircraft				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				
156126	Raytheon	PF-26	CT-156	Harvard II
TOS: 2002 - Order placed for additional aircraft				
Owned by MilitAir Inc.; leased to CF. Used by No. 2 CFFTS at 15 Wing Moose Jaw, SK.				

#### **Additional Notes:**

In 1996, National Defence obtained Cabinet approval to enter into a 20-year, \$2.8 billion solesource contract with Bombardier Inc. to provide support to the NTFC. The legal relationships underlying this arrangement are complex and interdependent. The flight training takes place at 15 Wing Moose Jaw and 4 Wing Cold Lake. The government had licensed the use of these bases to MilitAir Inc., an independent nonprofit organization incorporated for the sole purposes of the flight training program. The organization was not subject to control by either Canada or (originally) Bombardier Inc. MilitAir Inc. purchased the planes, flight simulators and other equipment with the proceeds of a \$720 million bond offering. Bombardier Inc. had been appointed MilitAir Inc.'s agent for the negotiation and purchase of the equipment. In addition, MilitAir Inc. had granted Bombardier Inc. the right to use the facilities at the bases for flight training. By way of a separate agreement, MilitAir Inc. had leased the equipment to Bombardier Inc. Under the Canada Services Agreement, Bombardier Inc. provided certain groundbased training and maintains the planes, equipment and base facilities; while Canada pays tuition fees. The Bombardier portion of the contract has since been acquired and assumed by CAE Inc. and the contract has been extended by at least another 5 years.



## Operating Units

The following units are using or have flown CT-156 *Harvard II* trainers:

- No. 2 Canadian Forces Flying Training School, Moose Jaw, SK



## Aircraft (or Air Vehicle) Damage Level (ADL) Categories: <sup>1</sup>

The RCAF's ADL is a qualitative categorization system used to determine the level of damage sustained by an aircraft / air vehicle during an occurrence. The following damage level definitions are used to reflect the degree of damage:

**Cat "A"** = Destroyed / missing: The aircraft has been totally destroyed, is assessed as having suffered damage beyond economical repair or is declared "missing";

**NB** - Aircraft totally destroyed are normally written off the inventory. Accidents with a lower ADL may also subsequently result in administrative write-off of the aircraft for reasons (primarily economic) not directly related to the original damage assessment.

**Cat "B"** = Very Serious: The aircraft has sustained damage to multiple major components;

**Cat "C"** = Serious: The aircraft has sustained damage to a major component;

**Cat "D"** = Minor: The aircraft has sustained damage to non-major components; and

**Cat "E"** = Nil: The aircraft, including the power plant, has not been damaged.

**Number of CF CT-156 *Harvard II* Cat "A" write-offs = 2** (~ 8% of the total fleet)

## ABBREVIATIONS

a/c	=	aircraft
Cat	=	Category
CF	=	Canadian Forces
CFB	=	Canadian Forces Base
C/N	=	Construction Number
ft	=	feet
IP	=	Instructor Pilot
kts	=	knots
NATO	=	North Atlantic Treaty Organization
OTU	=	Operational Training Unit
QFI	=	Qualified Flying Instructor
RAF	=	Royal Air Force
RCAF	=	Royal Canadian Air Force
RTB	=	Returned To Base
SK	=	Saskatchewan (Canada)
SP	=	Student Pilot
S/N	=	Serial Number
Sqn	=	Squadron
SOS	=	Struck Off Strength
TOS	=	Taken On Strength
UK	=	United Kingdom

## (Current) RCAF RANKS

Aviator	-	Avr
Corporal	-	Cpl
Master Corporal	-	MCpl
Sergeant	-	Sgt
Warrant Officer	-	WO

<sup>1</sup> Drawn from: A-GA-135-001/AA-001 *Manual of Flight Safety for the CF*



Master Warrant Officer	-	MWO
Chief Warrant Officer	-	CWO
Officer Cadet		Ocdt
2nd Lieutenant	-	2nd Lt
1st Lieutenant	-	Lt
Captain	-	Capt
Major	-	Maj
Lieutenant Colonel	-	LCol
Colonel	-	Col
Brigadier General	-	BGen
Major General	-	MGen
Lieutenant General	-	LGen

**REFERENCES:**

**Government Reports:**

- Canadian Forces Flight Safety Investigation Reports - <http://www.rcaf-arc.forces.gc.ca/en/flight-safety/investigation-reports.page>

**Articles**

- <http://www.rcaf-arc.forces.gc.ca/en/article-template-standard.page?doc=yellow-birds-return-to-moose-jaw/iqqt5y2>

**Websites**

- <http://www.rwrwalker.ca>

