ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL TWO

INSTRUCTIONAL GUIDE

SECTION 1

EO M230.01 – DISCUSS AIRCRAFT FLOWN DURING WWI AND WWII

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-802/PG-001, Chapter 4. Specific uses for said resources are identified throughout the Instructional Guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Create presentation slides or handouts of all the figures located at Annex A.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for this lesson to present background material to the cadets and to promote an interest in aircraft flown during WWI and WWII.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to discuss aircraft flown during WWI and WWII, the Battle of the Atlantic, the Battle of Britain and the aircraft flown during those conflicts.

IMPORTANCE

It is important for cadets to know about the aircraft flown in WWI and WWII so that they can better understand Canada's role during these conflicts and to understand the meaning of the parades used to commemorate the fallen men and women who gave their lives during these conflicts.

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Teaching point 1 **Discuss Aircraft Flown During WWI**

Time: 5 min Method: Interactive Lecture

AIRCRAFT FLOWN DURING WWI

Sopwith Triplane

- The Sopwith Triplane was a single-seater Triplane fighter aircraft used by the British in WWI.
- It was nicknamed the Tripe or the Tripehound.
- The Triplane was a successful attempt to produce a fighter with outstanding manoeuvrability and excellent visibility for the pilot.
- Even though the Triplane remained in front-line service for less than a year, it was so successful that it inspired several German Triplane designs.
- The all-Canadian B Flight of No. 10 Squadron, equipped with Triplanes, downed 87 enemy aircraft between May and July 1917.
- The all-Canadian B Flight was called the Black Flight because of the black markings of their airplanes. Their aircraft were named: Black Maria, Black Sheep, Black Prince, Black Roger, and Black Death.



Present slide or distribute handouts of Figure A-1 to the cadets.

Bristol F.2B Fighter “Brisfit”

- The versatile Bristol Fighter (B.F.) was a manoeuvrable, heavily armed two-seater biplane.
- One of the most successful fighters of the war, it got off to a poor start during “Bloody April” when it was introduced to the Western Front by the inexperienced pilots and observers of 48 Squadron.
- In the mistaken belief that the aircraft was structurally weak, pilots were instructed to avoid violent manoeuvres during combat.
- Heeding this advice, the pilots of six B.F. 2B fighters encountered Manfred von Richthofen (The Red Baron) and his flight of five Albatros D.III near Douai (northern France). In a fight that lasted almost 30 minutes, four Bristol Fighters were shot down.



Present slide or distribute handouts of Figure A-2 to the cadets.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What type of aircraft was the Sopwith Triplane?

Q2. What were the names of the aircraft in the Black Flight?

Q3. What plane was the most successful fighter of the war?

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ANTICIPATED ANSWERS

A1. The Sopwith Triplane was a single-seater Triplane fighter aircraft used by the British in World War I.

A2. Black Maria, Black Sheep, Black Prince, Black Roger, and Black Death.

A3. The Bristol F. 2B Fighter was the most successful fighter of the war.

Teaching point 2 **Discuss the Importance of the Battle of the Atlantic**

Time: 5 min Method: Interactive Lecture

DURATION OF THE BATTLE

- The Battle of the Atlantic began on the first day of the war in Europe on September 1, 1939 and continued until May 8, 1945.
- It was the longest campaign of WWII, an extremely bloody one, and the single battle on which the whole outcome of the war depended.
- Only with the delivery of massive North American resources to Britain and Europe could the Allies defeat Hitler's Germany, the most powerful of the Axis nations.
- For six long years the Canadian Navy was one of the principle contenders in what was to be known as the "Battle of the Atlantic."
- Beginning the war with a mere 13 vessels and 3000 men, the Royal Canadian Navy ended the Battle of the Atlantic with 373 fighting ships and over 90 000 men.
- Bridging the Atlantic was the key to strategic supply. To transport as many men and goods as possible, it was necessary to organize and control ship movements and protect ships from enemy attack. Therefore, convoys were formed to regulate ship movements and more effectively provide escorts both by sea and air.
- It was in maintaining the Atlantic lifeline through convoy protection that Canadian seamen and airmen played an increasing vital role.
- The RCAF had been flying patrols from Newfoundland since 1939 and the first Maritime patrol squadron had been stationed at Gander since 1940. It now provided air support to the Newfoundland Escort Force. In the eastern Atlantic region, the convoys were guarded by the RAF Coastal Command which included RCAF squadrons. Thus flying from both sides of the Atlantic and from Iceland, aircraft patrolled the entire route except for a gap of about 483 km in mid-ocean.
- More and more Canadian seamen were crossing the Atlantic to engage in battle closer to the enemy. As they returned to British waters, men of both the Canadian Navy and Air Force showed the benefits of training and hard experience.

ALLIED FORCES AND AXIS POWERS

- The Battle of the Atlantic was a struggle between the Allied and Axis powers (mainly Britain and Germany) for control of the sea routes between the Americas, Europe and Africa.
- From the very onset of hostilities, Britain faced a second threat to her survival. This menace came from the sea as Germany was determined to starve the British people into submission by destroying their sea communications and cutting them off from overseas supplies.
- Gaining control of the entire coast of Europe from Narvik, Norway to the Pyrenees Mountains in France and Spain, the Germans set out from every harbour and airfield in western Europe to cut the lifelines to Britain.

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- During the six years of the Battle of the Atlantic, the Axis powers lost over 700 U-boats and 32 000 seamen, and the Allied powers lost more than 3000 ships and 40 000 seamen. The vast majority of the Allied losses were merchant ships and the civilian seamen and passengers who sailed in them.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. What were the dates of the Battle of the Atlantic?

Q2. Who was the struggle between?

Q3. How many ships and people were lost in the struggle?

ANTICIPATED ANSWERS

A1. The Battle of the Atlantic began on the first day of the war in Europe on September 1, 1939 and continued until May 8, 1945.

A2. The Battle of the Atlantic was a struggle between the Allied and Axis powers (mainly Britain and Germany) for control of the sea routes between the Americas, Europe and Africa.

A3. During the six years of the Battle of the Atlantic, the Axis powers lost over 700 U-boats and 32 000 seamen, and the Allied powers lost more than 3000 ships and 40 000 seamen. The vast majority of the Allied losses were merchant ships and the civilian seamen and passengers who sailed in them.

Teaching point 3 **Discuss the Aircraft Flown During the Battle of the Atlantic**

Time: 5 min Method: Interactive Lecture

AIRCRAFT FLOWN

B-24 Liberator Bombers

- The B-24 Liberator was a ten-seat long-range bomber/reconnaissance aircraft.
- An unsung hero of the Allied war effort, the B-24 Liberator was actually produced in greater numbers than any other U.S. aircraft during WWII.
- First flown on December 29, 1939, the Consolidated Aircraft Corporation's B-24 Liberator came along more than four years after the famous and popular Boeing B-17 Flying Fortress, and showed somewhat improved range and payload capabilities over the Fortress.
- The Liberator is best known for the daring long-range raids on the oilfields of Ploesti, Romania in 1942 and 1943 and for its effectiveness as a submarine hunter.
- Though instrumental in both the European and Pacific theatres, the B-24's long-range capabilities were particularly effective in the vastness of the Pacific where it excelled as a bomber, reconnaissance platform and as a supply transport.



Present slide or distribute handouts of Figure A-3 to the cadets.

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Curtiss Kittyhawk Mk.1 Fighter-Bomber

- The Curtiss Kittyhawk Mk.1 served initially at Dartmouth, Nova Scotia where it was the only fighter unit available for east coast defence, and subsequentially transferred to Annette Island, Alaska as part of the RCAF reinforcement for the USAAF.
- The pilots made the 644 km trip by air – the first fighter unit to fly from coast to coast.
- The Kittyhawk Mk.1 served with the RCAF from October 9, 1941 to December 16, 1946 before being struck off strength. However, they were used predominantly in the home air defence role, which was reduced during the latter portion of the war.
- The Kittyhawk Mk.1 mounted four .50 cal. machine guns in the wings and had shackles under the fuselage for a 52 U.S. gallon drop tank or a 136-227 kg bomb.
- Racks on the outer wings could also carry six nine kg bombs.



Present slide or distribute handouts of to the cadets.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. What type of plane was the B-24 Liberator?

Q2. What is the B-24 Liberator best known for?

Q3. What were the dates the Kittyhawk served with the RCAF?

ANTICIPATED ANSWERS

A1. The B-24 Liberator was a ten-seat long-range bomber/reconnaissance aircraft.

A2. The Liberator is best known for the daring long-range raids on the oilfields of Ploesti, Romania in 1942 and 1943 and for its effectiveness as a submarine hunter.

A3. The Kittyhawk Mk.1 served with the RCAF from October 9, 1941 to December 16, 1946 before being struck off strength.

Teaching point 4 **Discuss the Importance of the Battle of Britain**

Time: 5 min Method: Interactive Lecture

DURATION OF THE BATTLE

- The Battle of Britain was fought from August 8, 1940 until October 31, 1940.
- The Battle of Britain was the first major battle to be fought wholly in the air, with both sides having roughly the same number of fighter aircraft.
- It was the largest and most sustained bombing campaign yet attempted and the first real test of the strategic bombing theories that had emerged since the previous World War.
- The battle can be roughly divided into four phases:

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- July 10–August 11: Kanalkampf, the Channel battles,
- August 8–August 23: Adlerangriff, the early assault against the coastal airfields,
- August 24–September 6: the Luftwaffe targets the airfields – the critical phase of the battle;
- September 7 onward: the day attacks switch to British towns and cities.

- The Battle of Britain marked the first time that the Nazis were stopped and that air superiority became clearly seen as the key to the war. Though the battle was small in the number of combatants and casualties, had the Germans won, the war would have taken a very different path.
- The British victory marked the first failure of Hitler's war machine.
- The Royal Air Force lost 375 pilots and 358 pilots were wounded.

ALLIED FORCES AND AXIS POWERS

- The Battle of Britain was between the United Kingdom and Germany and Italy.
- The Battle of Britain is the name commonly given to the attempt by the German Luftwaffe, as part of German Blitzkrieg tactics, to gain air superiority over the Royal Air Force (RAF), before a planned sea and airborne invasion of Britain (Operation Sealion).
- Neither Hitler nor the German Wehrmacht believed it possible to carry out a successful amphibious assault on the British Isles until the RAF had been neutralized.
- Secondary objectives were to destroy aircraft production and ground infrastructure, to attack areas of political significance, and to terrorize the British people with the intent of intimidating them into seeking an armistice or surrender.
- The RAF roll of honour for the Battle of Britain recognizes 510 overseas pilots as flying at least one authorized operational mission with an eligible unit of the Royal Air Force or Fleet Air Arm between July 10 and October 31, 1940. This included pilots from Poland, New Zealand, Canada, Czechoslovakia, Belgium, Australia, South Africa, France, Ireland, the United States of America, Jamaica, Palestine and Southern Rhodesia (Zimbabwe).
- The highest scoring unit during the Battle of Britain is remarkably the No. 303 Polish Fighter Squadron.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

Q1. What were the dates of the Battle of Britain?

Q2. Who was the battle between?

Q3. What were two of the other countries involved in the Battle of Britain?

ANTICIPATED ANSWERS

A1. The Battle of Britain was fought from August 8, 1940 until October 31, 1940.

A2. The Battle of Britain was between the Allied Forces and Axis powers.

A3. Poland, New Zealand, Canada, Czechoslovakia, Belgium, Australia, South Africa, France, Ireland, the United States of America, Jamaica, Palestine and Southern Rhodesia (Zimbabwe).

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Teaching point 5 **Discuss the Aircraft Flown During the Battle of Britain**

Time: 5 min Method: Interactive Lecture

HAWKER HURRICANE MARK I

- The Hawker Hurricane Mark I was a single-seater fighter with a Rolls-Royce Merlin engine.
- It was a low-wing all-metal cantilever monoplane armed with eight Browning machine-guns – four in each wing set to fire forward outside the airscrew disc.
- The maximum speed was 539 km/h.
- The Hurricane was regarded as less ‘twitchy’ than the Spitfire and provided a more stable gun platform.
- The RAF’s preferred tactic was, if possible, to deploy the Hurricane’s awesome fire power against formations of less-agile bombers and to set up the Spitfires against fighter escorts waiting to pounce from a higher altitude.



Present slide or distribute handouts of Figure A-5 to the cadets.

THE SPITFIRE MARK 1

- The Spitfire Mark 1 was a similar single-seater fighter with a Rolls-Royce Merlin engine.
- It was a low-wing all-metal cantilever monoplane armed with eight Browning machine-guns – four in each wing set to fire forward outside the airscrew disc.
- The Spitfire’s one-piece sliding moulded canopy gave the best visibility, the pilot having a better chance of spotting an enemy.
- The maximum speed was 589 km/h.

QUALITIES OF BOTH AIRCRAFTS

- In both these aircrafts the armour in the front and back protected the pilot.
- The Spitfire and Hurricane would out-turn the Bf-109E or Emil (German Aircraft) because the Bf-109 pilots were afraid to push the plane to its limits due to the fact that the Bf-109 did not give the pilot any warning that it was going to stall, unlike the Spitfire and Hurricane, which gave the pilot plenty of warning that the plane was about to stall by shaking violently.
- Both the Spitfire and Hurricane were slower in a power dive and had the drawback of being equipped with a float-type carburetor, which cut out under negative g-forces.
- Both the RAF fighters were easy to fly and forgiving with both rough handling and novice pilots.
- The Hurricane was a superbly steady gun platform and the closely clustered .303 machine guns in each wing proved very destructive.
- A drawback to the Hurricane was the presence of a fuel tank just behind the cockpit firewall, which could catch fire and within a few seconds severely burn the pilot before he managed to bail out.

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Present slide or distribute handouts of Figure A-6 to the cadets.

CONFIRMATION OF TEACHING POINT 5

QUESTIONS

Q1. What was the maximum speed of the Hawker Hurricane?

Q2. What was the maximum speed of the Spitfire Mark 1?

Q3. What was a drawback to the Hurricane?

ANTICIPATED ANSWERS

A1. The maximum speed of the Hawker Hurricane was 539 km/h.

A2. The maximum speed of the Spitfire Mark 1 was 589 km/h.

A3. A drawback to the Hurricane was the presence of a fuel tank just behind the cockpit firewall, which could catch fire and within a few seconds severely burn the pilot before he managed to bail out.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. What were the nicknames of the Sopwith Triplane?

Q2. What was the longest campaign of WWII?

Q3. Which plane was less twitchy than the Spitfire?

ANTICIPATED ANSWERS

A1. The Tripe or the Tripehound.

A2. The Battle of Britain was the longest campaign.

A3. The Hawker Hurricane.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

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CLOSING STATEMENT

It is important for cadets to know about the aircraft flown in WWI and WWII so that they can better understand Canada's role during these conflicts and to understand the meaning of the parades used to commemorate the fallen men and women who gave their lives during these conflicts.

INSTRUCTOR NOTES/REMARKS

If the squadron is participating in the parades listed in TPs 2 and 4 this EO should be conducted prior to the parade dates.

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A3-038 VAC Canada Remembers. (1998). *The Battle of the Atlantic.* Retrieved 19 February 2007, from http://www.vac-acc.gc.ca/remember/sub.cfm?source=history/secondwar/canada2/batat1.

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C3-079 Canadian War Museum. (2004). *The Battle of the Atlantic.* Retrieved 9 February 2007, from http://www.warmuseum.ca/cwm/newspapers/operations/atlantic_e.html.

C3-103 Ace Pilots. (2007). *Legendary Aviators and Aircraft of World War One.* Retrieved 26 February 2007, from http://www.acepilots.com/wwi/main.html.

C3-122 *The Battle of Britain August-October 1940.* (1941). Published by his Majesty's Stationary Office, London: Crown Copyright Reserved.

C3-123 The Aviation History On-Line Museum - Aviation History. (2006). *The Sopwith Triplane.* Retrieved 20 March 2007, from http://www.aviation-history.com/sopwith/triplane.html.

C3-124 Aces and Aircraft of World War I. (2007). *The Aerodrome: Bristol F.2b Fighter.* Retrieved 20 March 2007, from http://www.theareodrome.com/aircraft/gbritain/bristol_f2b.php.

C3-125 Beehive Hockey Photos. (2006). *Consolidated B-24 Liberator Bomber.* Retrieved 20 March 2007, from http://www.beehivehockey.com/photo_18liberator.htm.

C3-129 Spaight, J. M. (1941). *The Battle of Britain 1940: The Interceptors Take Off.* Strand London: Geoffrey Bles.

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AIRCRAFT FLOWN DURING WWI AND WWII



Aviation History, The Sopwith Triplane – Great Britain. (2006). The Aviation History On-Line Museum. Retrieved 20 March 2007, from http://www.aviation-history.com/sopwith/triplane.htm

Figure A-1 A Sopwith Triplane



Aces and Aircraft of World War I, 2007, The Aerodrome. Bristol F.2B Fighter. Retrieved 20 March 2007, from http://www.theaerodrome.com/aircraft/gbritain/bristol_f2b.php

Figure A-2 Bristol F.2B Fighter

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"Consolidated B-24 Liberator Bomber", Beehive Hockey Photos (2006). Retrieved 20 March 2007, from http://www.beehivehockey.com/photo_18liberator.htm

Figure A-3 B-24 Liberator

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Department of National Defence. (2006). Canadian Forces Aircraft. Retrieved 20 March 2007, from http://www.airforce.forces.gc.ca/equip/grfx/equip_gallery/historic_gallery/wallpaper/harvarda9.jpg

Figure A-4 Curtiss 87A Kittyhawk

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Department of National Defence. (2006). Canadian Forces Aircraft. Retrieved 20 March 2007, from http://www.airforce.forces.gc.ca/equip/grfx/equip_gallery/historic_gallery/wallpaper/harvarda9.jpg

Figure A-5 The Hawker Mark 1 Hurricane

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Department of National Defence. (2006). Canadian Forces Aircraft. Retrieved 20 March 2007, from http://www.airforce.forces.gc.ca/equip/historical/spitfirelst_e.asp

Figure A-6 The Spitfire

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