ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL ONE

INSTRUCTIONAL GUIDE

SECTION 6

EO C130.02 – IDENTIFY INTERNATIONAL AIRCRAFT

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-801/PG-001, *Proficiency Level One Qualification Standard and Plan*, 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.

Prepare PowerPoint presentation or a slideshow with pictures located at Attachment A.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for this lesson to orient the cadets to identifying international aircraft and generate interest.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have identified international aircraft.

IMPORTANCE

Being able to identify international aircraft supports the aim of stimulating an interest in the aviation community. Cadets can use this knowledge when visiting an aerodrome, at a local air show, or while attending a CSTC.

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Teaching point 1 **Describe American aircraft.**

Time: 15 min Method: Interactive Lecture

F/A-22A RAPTOR

The F/A-22A Raptor is the United States Air Force's (USAF) newest fighter aircraft. Its combination of stealth, supercruise, manoeuvrability and integrated avionics represents an exceptional leap in war fighting capabilities. Its primary role is air dominance. The Raptor performs both air-to-air and air-to-ground missions. Also, it produces more thrust than any current fighter. The combination of the increased thrust and its unique aerodynamic design allows the aircraft to cruise at supersonic speeds without using afterburner. The Raptor is manufactured by Lockheed-Martin and is powered by two Pratt & Whitney F119-PW-100 turbofan engines with afterburners.



United States Air Force website, http://www.af.mil

Figure 1 F/A-22A Raptor



United States Air Force website, http://www.af.mil

Figure 2 F/A-22A Raptor

A-10 THUNDERBOLT II

The A-10 Thunderbolt II is the first USAF aircraft specially designed for close air support of ground forces. The A-10 can be used against all ground targets including tanks and other armoured vehicles. Its wide combat

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radius and short takeoff and landing capability permit operations in and out of locations near front lines. The Thunderbolt is distinguished by its 30mm GAU-8/A Gatling gun. This weapon is mounted on the nose, can fire 3 900 rounds per minute and can defeat an array of armoured vehicles. The A-10 is manufactured by Fairchild Republic Company and is powered by two General Electric TF34-GE-100 turbofans mounted high on the rear of the aircraft.



United States Air Force website, http://www.af.mil

Figure 3 A-10 Thunderbolt II



United States Air Force website, http://www.af.mil

Figure 4 A-10 Thunderbolt II

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F-117A NIGHTHAWK

The F-117A Nighthawk is the world's first operational aircraft designed to use low observable stealth technology. This technology allows the aircraft to not be easily detected by radar. This precision strike aircraft penetrates high threat airspace and uses laser-guided weapons systems against critical targets. The Nighthawk created a revolution in military warfare by incorporating low observable technology into operational aircraft. It has a sleek design that allows for its stealth technology to be very effective. The F-117A is manufactured by Lockheed-Martin and is powered by two GE F404 non-afterburning engines.



United States Air Force website, http://www.af.mil

Figure 5 F-117A Nighthawk



United States Air Force website, http://www.af.mil

Figure 6 F-117A Nighthawk

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B-52 STRATOFORTRESS

The B-52 is a long-range heavy bomber that can perform a variety of missions. The bomber is capable of flying at high subsonic speeds at altitudes up to 50 000 feet. It can carry nuclear or precision-guided weapons. The B-52 is a large aircraft with a length of 159 feet 4 inches and a wingspan that measures 185 feet. The Stratofortress is manufactured by Boeing Military Airplane Company and is powered by eight Pratt & Whitney TF33-P-3/103 turbofan engines.



United States Air Force website, http://www.af.mil

Figure 7 B-52 Stratofortess



United States Air Force website, http://www.af.mil

Figure 8 B-52 Stratofortess

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CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. What is distinctive about the A-10 Thunderbolt II?

Q2. What type of weapons systems does the F-117A Nighthawk use against critical targets?

Q3. How long is the wingspan of the B-52 Stratofortress?

ANTICIPATED ANSWERS:

A1. The nose mounted 30mm Gatling gun.

A2. Laser guided.

A3. One hundred and eighty-five feet.

Teaching point 2 **Describe British aircraft.**

Time: 5 min Method: Interactive Lecture

EF-2000 TYPHOON

The Typhoon is an agile, single seat, multi-role aircraft optimized for high altitude supersonic air combat. It is also capable of operating at lower levels in an air-to-ground role. Its low weight and high thrust means it can reach 36 000 feet in less than two minutes from a standing start. The engine intake is mounted on the bottom of the fuselage. A tall sharply swept tail is at the rear of the fuselage with twin-engine pipes directly below. The Typhoon is manufactured by Eurofighter and is powered by two Eurojet EJ200 turbofan engines.



Royal Air Force image website, http://www.defenceimages.mod.uk

Figure 9 EF-2000 Typhoon

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Royal Air Force image website, http://www.defenceimages.mod.uk

Figure 10 EF-2000 Typhoon



Royal Air Force image website, http://www.defenceimages.mod.uk

Figure 11 EF-2000 Typhoon

JAGUAR GR3

The Jaguar is a dual-role advanced operational trainer and tactical support aircraft. It is a fighter-bomber that is capable of using 1 000 lb general-purpose bombs that are guided to their targets by lasers. The Jaguar has a long sleek fuselage with a large swept tail fin and rudder. It has short-span swept wings that are mounted on top of the fuselage. The internal jet engines have intakes on either side of the fuselage behind the cockpit. The raised bubble canopy is set above the sharply pointed nose. The Jaguar is manufactured by Sepecat and is powered by two Rolls-Royce Adour turbofan engines.

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Airliners.net, http://www.airliners.net

Figure 12 Jaguar GR3



Airliners.net, http://www.airliners.net

Figure 13 Jaguar G3

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. Where is the Typhoon's sharply swept tail located?

Q2. Where is the engine intake mounted on the Typhoon?

Q3. Where is the canopy located on the GR3 Jaguar?

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ANTICIPATED ANSWERS:

A1. At the rear of the upper fuselage.

A2. On the underside of the fuselage.

A3. Above the sharply pointed nose.

Teaching point 3 **Describe Russian aircraft.**

Time: 5 min Method: Interactive Lecture

MIG-29 FULCRUM

The MiG-29 Fulcrum is an all weather, single seat fighter interceptor flown by the Russian Air Force. The MiG-29's wings are swept back and tapered with square tips. It is equipped with twin jet engines mounted low and to the sides of the fuselage. Diagonal shaped air intakes give the aircraft a box like appearance. The fuselage is made of a long, thin, slender body. The MiG-29 is manufactured by the Moscow Air Production Organization and is powered by two Klimov / Sarkisov RD-33 turbofans.



Airliners.net, http://www.airliners.net

Figure 14 MiG-29 Fulcrum

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Airliners.net, http://www.airliners.net

Figure 15 MiG-29 Fulcrum

ANTONOV AN-124-100

The Antonov AN-124-100 is a civil certified long-range commercial freighter. It is widely used for the carriage of outsize and very heavy pieces of air cargo that other aircraft cannot accommodate. Pieces of cargo have included the space launcher, satellites, helicopters, large wheeled vehicles and a 109 tonne locomotive. The AN-124 has the largest payload and the largest interior of any airplane in the world. It features a double deck fuselage layout with the upper deck containing the cockpit and personnel compartments. The lower deck is a massive pressurized cargo compartment. The AN-124 is manufactured by O.K. Antonov and is powered by four D-18T series 3 engines.



Airliners.net, http://www.airliners.net

Figure 16 Antonov AN-124-100

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Airliners.net, http://www.airliners.net

Figure 17 Antonov AN-124-100

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. How are the MiG-29 Fulcrum's wings shaped?

Q2. What is the MiG-29's fuselage made of?

Q3. Name one of the large pieces of cargo the AN-124 has carried.

ANTICIPATED ANSWERS:

A1. Swept back and tapered with square tips.

A2. A long, thin, slender body.

A3. The space launcher, satellites, helicopters, large wheeled vehicles and a 109 tonne locomotive.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Cadets have identified American, British and Russian aircraft. Being able to identify these aircraft supports the aim of stimulating an interest in the aviation community. Cadets can use this knowledge when visiting an aerodrome, when at a local air show, or while attending CSTC training.

INSTRUCTOR NOTES / REMARKS

Nil.

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