

## **CHAPTER 16**

### **PO 360 – RECOGNIZE ASPECTS OF AERODROME OPERATIONS**





**ROYAL CANADIAN AIR CADETS**  
**PROFICIENCY LEVEL THREE**  
**INSTRUCTIONAL GUIDE**



**SECTION 1**

**EO C360.01 – IDENTIFY TYPES OF AERODROMES**

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Total Time:	30 min
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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/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.

**PRE-LESSON ASSIGNMENT**

N/A.

**APPROACH**

An interactive lecture was chosen for this lesson to review, clarify, emphasize and summarize the types of aerodromes.

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**INTRODUCTION**

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**REVIEW**

Review the following from EO M160.01 (Identify Major Aerodrome Components, A-CR-CCP-801/PF-001, Chapter 14, Section 1):

- an aerodrome is any area of land or water designed for the arrival, departure and movement of aircraft; and
- an airport is an aerodrome that possesses a certificate stating it has met all of the airport safety standards.

**OBJECTIVES**

By the end of this lesson the cadet shall have identified types of aerodromes.

**IMPORTANCE**

It is important for the cadets to be able to differentiate types of aerodromes. Aerodrome type is critical as it directly affects all aspects of operations at the aerodrome. The aerodrome type dictates operational requirements in terms of facilities, equipment and human resources.

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**Teaching Point 1****Review the Definitions of Aerodrome and Airport**

Time: 5 min

Method: Interactive Lecture

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**AERODROME**

An aerodrome is defined by the Aeronautics Act (1985) as:

“Any area of land, water (including the frozen surface thereof) or other supporting surface used, designed, prepared, equipped or set apart for use either in whole or in part for the arrival, departure, movement or servicing of aircraft and includes any buildings, installations and equipment situated thereon or associated therewith.”



Any area designated or set aside for aircraft to use can be considered an aerodrome.

**AIRPORT**

An airport is an aerodrome for which a certificate has been issued under Subsection 302 of the Canadian Aviation Regulations (CARs). This is done by ensuring the site is inspected periodically for compliance with Transport Canada standards. Certified aerodromes must also maintain an Airport Operations Manual and conduct operations in accordance with the manual.



An aerodrome that has been certified by Transport Canada is considered an airport.

There are three situations in which an aerodrome must be certified. They include:

- an aerodrome located within the built-up area of a city or town;
- a land aerodrome used for scheduled passenger service; or
- any aerodrome that the Minister of Transportation (the Minister) deems to be of public interest.

The only exemptions are:

- military aerodromes, and
- aerodromes for which the Minister has written an exemption.

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**CONFIRMATION OF TEACHING POINT 1**

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**QUESTIONS**

Q1. What is an aerodrome?

Q2. What is an airport?

Q3. When must an aerodrome be certified?

**ANTICIPATED ANSWERS**

A1. Any area designed, prepared, equipped or set apart for aircraft to use.

A2. An aerodrome that has been certified by Transport Canada.

A3. An aerodrome must be certified if:

- it is located within the built-up area of a city or town;
- it is a land aerodrome used for scheduled passenger service; or
- the Minister of Transportation deems it to be in the public interest.

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## Teaching Point 2

## Explain Types of Aerodromes

Time: 5 min

Method: Interactive Lecture

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### PUBLIC AERODROMES

A public aerodrome is open to the general public for use and does not require prior permission from the aerodrome operator. Most airports operated by any level of government (municipal, provincial, or federal), are open for public use.

### PRIVATE AERODROMES

A private aerodrome may have restrictions on its use, depending on the aerodrome operator. Examples of restrictions include:

- specific aircraft types (eg, ultralights, gliders),
- club members,
- company aircraft, and
- friends.

### Prior Notice Required (PNR)

If an aerodrome is listed as PNR, then the aircraft operator must notify (contact) the aerodrome operator before using the aerodrome. This allows the aerodrome operator to provide the most current information on the aerodrome to the aircraft operator.

### Prior Permission Required (PPR)

If an aerodrome is listed as PPR, then the aircraft operator must receive permission from the aerodrome operator before using the aerodrome. All military aerodromes are listed as PPR for civilian aircraft.



If an aircraft is in distress (experiencing an emergency), any aerodrome may be used for a safe landing – public or private.

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## CONFIRMATION OF TEACHING POINT 2

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### QUESTIONS

- Q1. What is a public aerodrome?
- Q2. What does PNR stand for?
- Q3. What does PPR stand for?

## ANTICIPATED ANSWERS

- A1. An aerodrome that is open to the general public and does not require permission in advance from the aerodrome operator to use.
- A2. Prior Notice Required.
- A3. Prior Permission Required.

### Teaching Point 3

### Explain Canadian Military Aerodromes

Time: 5 min

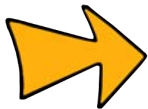
Method: Interactive Lecture

All Canadian military aerodromes require PPR for civilian aircraft, except in the case of an emergency. PPRs may be obtained on an “as needed” basis, or for recurring use by way of a written agreement. Authority to grant the PPR rests with the base/wing commander, although that authority is often delegated further to the base/wing operations officer. Before approving a PPR, the base/wing commander will take into account such factors as:

- impact on flying operations,
- air traffic congestion,
- ramp space availability,
- security risks,
- administrative and technical facilities, and
- competition with civil facilities.



For further details on authorization for civil aircraft to use Canadian military aerodromes, refer to CFAO 55-6 *Authorization for Civil Aircraft to use DND Aerodromes*.



As the operational tempo increases at most Canadian military aerodromes, it is growing more difficult for civilian operators to get permission to land or operate.

As a result of Canada's participation in the British Commonwealth Air Training Plan (BCATP) during WWII, many air bases were built across the country, all with a very similar design (three runways, arranged in a triangle). As the military began disposing of these air bases after the war, many municipalities took over their operations and have kept them operational. In other cases, the air bases were simply abandoned, and in a few cases, private operators took them over.

### CONFIRMATION OF TEACHING POINT 3

## QUESTIONS

- Q1. What do civilian aircraft require prior to landing at a Canadian military aerodrome?
- Q2. Why did the military build many air bases during WWII?

**ANTICIPATED ANSWERS**

A1. Permission.

A2. Due to Canada's participation in the BCATP.

**Teaching Point 4****Explain Types of Civilian Aerodromes**

Time: 10 min

Method: Interactive Lecture

**PRIVATE AERODROMES**

The most common type of aerodrome in Canada is a private aerodrome (often called a farmer's field). Usually consisting of just a single grass runway, these aerodromes can be found in almost every part of the country, often just miles apart. They are primarily used by the owners of light single-engine aircraft. Usually, the owner lives at the aerodrome, making it very convenient to go flying.

These aerodromes generally offer little to no service to visiting aircraft, and are usually listed as PPR or PNR. They are not certified.

**MUNICIPAL AERODROMES**

Many municipalities in Canada (large towns and small cities) are involved in the operation of an aerodrome located in (or just outside) the city limits. These aerodromes usually have a hard-surface runway and provide year-round operations. Generally, a municipal aerodrome is for public use.

A municipal aerodrome typically provides the following types of services:

- aircraft storage,
- fuel sales, and
- a multi-purpose terminal building.

Small aviation businesses may operate from a municipal aerodrome. They may include any of the following:

- flight training unit (FTU),
- air charter operator, and
- aviation maintenance facility.

**REGIONAL AERODROMES**

An aerodrome can be considered to be a regional airport if:

- it has scheduled passenger traffic;
- it is not a national, provincial, or territorial capital; and
- it has a scheduled passenger traffic volume of less than 200 000 passengers per year for three consecutive years.

Regional airports often serve as the starting/ending point in a passenger's air travel. Passengers prefer to fly from the closest regional airport to their home, especially for domestic flights.

## INTERNATIONAL AERODROMES

International airports form the backbone of a country's air transportation system. Many flights that originate from a regional airport terminate at an international airport, where passengers can make connections to other regional airports domestically or to international destinations.

At most international airports, cargo flights are more frequent than at a regional airport.



International airports serve 94 percent of the total annual passenger/cargo traffic in Canada.

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### CONFIRMATION OF TEACHING POINT 4

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#### QUESTIONS

- Q1. Who is the main user of a private aerodrome?
- Q2. What types of services are generally offered at a municipal aerodrome?
- Q3. What types of aviation businesses may be found at a municipal aerodrome?

#### ANTICIPATED ANSWERS

- A1. Owners of small single-engine aircraft.
- A2. The following services are generally offered at a municipal aerodrome:
- aircraft storage,
  - fuel sales, and
  - multi-purpose terminal building.
- A3. The following aviation businesses may be found at a municipal aerodrome:
- flight training unit (FTU),
  - air charter operator, and
  - aviation maintenance facility.

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### END OF LESSON CONFIRMATION

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#### QUESTIONS

- Q1. What is an aerodrome?
- Q2. What do civilian aircraft require prior to landing at a military aerodrome?
- Q3. Who is the main user of a private aerodrome?

#### ANTICIPATED ANSWERS

- A1. Any area designed, prepared, equipped or set apart for aircraft to use.
- A2. Permission.



A3. Owners of small single-engine aircraft.

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### CONCLUSION

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### HOMEWORK/READING/PRACTICE

N/A.

### METHOD OF EVALUATION

N/A.

### CLOSING STATEMENT

Knowing the different types of aerodromes forms the basis of aerodrome operations. The similarities and differences between the different types of aerodromes is a key aspect of appreciating the operational requirements of the aerodrome. This is particularly true when it comes to discerning the requirements for facilities, equipment, and human resources.

### INSTRUCTOR NOTES/REMARKS

N/A.

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### REFERENCES

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- C2-044     Transport Canada. (2007). *Aeronautical Information Manual*. Retrieved October 2, 2007, from <http://www.tc.gc.ca/publications/EN/TP14371/PDF/HR/TP14371E.PDF>.
- C3-147     NAV CANADA. (2007). *Canadian Airport Charts*. Retrieved October 9, 2007, from [http://www.navcanada.ca/ContentDefinitionFiles/Publications/AeronauticalInfoProducts/CanadianAirportCharts/CanadianAirportCharts\\_current.pdf](http://www.navcanada.ca/ContentDefinitionFiles/Publications/AeronauticalInfoProducts/CanadianAirportCharts/CanadianAirportCharts_current.pdf).
- C3-148     (ISBN 0-9739866-0-3) Syme, E. R., & Wells, A. T. (2005). *Airport Development, Management and Operations in Canada: Second Edition*. Barrie, ON: Aviation Education Services.

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**ROYAL CANADIAN AIR CADETS**  
**PROFICIENCY LEVEL THREE**  
**INSTRUCTIONAL GUIDE**



**SECTION 2**

**EO C360.02 – EXPLAIN ASPECTS OF AERODROME LIGHTING**

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Total Time:	30 min
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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/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.

Photocopy the handout located at Annex A for each cadet.

**PRE-LESSON ASSIGNMENT**

N/A.

**APPROACH**

An interactive lecture was chosen for this lesson to clarify, emphasize and summarize aspects of aerodrome lighting.

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**INTRODUCTION**

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**REVIEW**

N/A.

**OBJECTIVES**

By the end of this lesson the cadet shall have explained aspects of aerodrome lighting.

**IMPORTANCE**

It is important for the cadets to know about aerodrome lighting as most aerodromes have some form of lighting in place. Lights indicate the edges of the movement areas and are inspected daily by aerodrome personnel. Approach lighting systems occupy significant space and care must be taken not to cause damage when working near them.

**Teaching Point 1****Explain Manoeuvring Lighting**

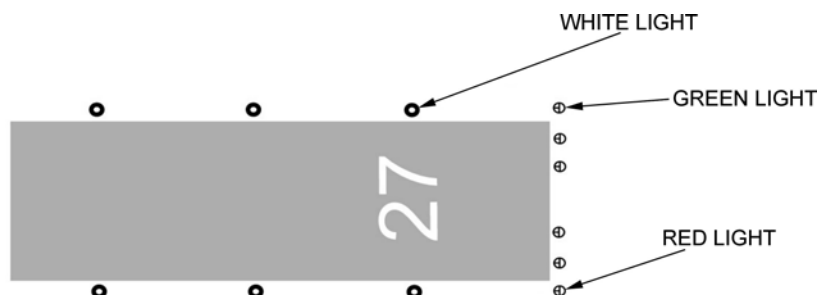
Time: 20 min

Method: Interactive Lecture

**MANOEUVRING LIGHTING****Runway Lighting**

Edge lights are located along the runway. These lights are white in colour (white light bulb with a clear lens) and provide assistance in identifying the edge of the runway. The lights are spaced evenly along each edge with no more than 60 m (200 feet) between the lights. Each row of lights is the same distance from the runway centreline and may be located along the edge of the runway or no more than 1.5 m away from the edge, except in areas that experience significant accumulations of snow. In areas that experience significant accumulations of snow, edge lights may be placed up to 3 m from the runway edge.

The edge lights that cross the beginning of a runway are green while the lights at the end of a runway are red. This is accomplished by using a two-colour filter under the lens. The red side is located on the runway side so that when an aircraft is on the runway looking at the light, a red light is visible. The green filter is on the other side so that when the aircraft is approaching the runway, a green light is visible.



*Director Cadets 3, 2007, Ottawa, ON: Department of National Defence*

Figure 16-2-1 Runway Lighting

**Taxiway Lighting**

Edge lights are placed along taxiways in the same way edge lights are placed along runways. The maximum spacing remains at 60 m (200 feet) and will be closer together along a curved section than along a straight section. Taxiway edge lights are blue in colour. The blue colour is created by using a blue lens instead of a clear lens.

Where a taxiway intersects a runway, two blue lights are placed on each side of the taxiway, adjacent to the runway, to indicate the intersection.

**Apron Lighting**

Apron edge lights are yellow in colour (created by using a yellow lens). Where a taxiway intersects an apron, two yellow lights are placed on each side of the taxiway, adjacent to the apron, to indicate the intersection.

Light Location	Colour
Runway Edge Lights	White
Taxiway Edge Lights	Blue
Apron Edge Lights	Yellow
Runway/Taxiway Intersection	Two blue
Taxiway/Apron Intersection	Two yellow
Runway Threshold (end of runway side)	Red
Runway Threshold (start of runway side)	Green

*Director Cadets 3, 2007, Ottawa, ON: Department of National Defence*

Figure 16-2-2 Runway Lighting Colours

### Unserviceable Area Markings

Certain ground markings indicate the status of aerodromes and pilots are required to comply with these markings.

A large cross, either white or yellow and at least 6.1 m in length, displayed at each end of a runway or taxiway indicates that that runway or taxiway is unserviceable. For night operations, any unserviceable portion of a runway is closed off by placing red lights at right angles to the centerline across both ends. In addition, the runway lights for the unserviceable area are turned off.

If an unserviceable portion of any manoeuvring area or taxiway is small enough that it can be bypassed by an aircraft with safety, red flags are used to outline the area. At night, the area is marked with red lights – sometimes flashing.

### Approach Lighting System (ALS)

An ALS provides additional guidance to aid a pilot in finding the beginning of the runway during periods of low visibility. These lights are used as part of an instrument landing system (ILS) and aid the pilot in transitioning from the instrument portion of the approach to the visual portion.

The aerodrome operator must ensure that the systems are working properly by inspecting them on a regular basis. During the winter, the snow around the systems must be cleared to keep them visible.

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## CONFIRMATION OF TEACHING POINT 1

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### QUESTIONS

- Q1. What colour are runway edge lights?
- Q2. What colour are taxiway edge lights?
- Q3. What colour are apron edge lights?

### ANTICIPATED ANSWERS

- A1. White.
- A2. Blue.

A3. Yellow.

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**Teaching Point 2****Explain Navigational Lighting**

Time: 5 min

Method: Interactive Lecture

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**AERODROME BEACON**

An aerodrome beacon helps a pilot locate an aerodrome amidst all the other ground lights of a community. The beacon is a white light, visible for about ten nautical miles on a clear night, that rotates at a constant speed producing highly visible light flashes at regular intervals of about 2 – 3 seconds. The aerodrome beacon operates continuously during the night.

**OBSTRUCTION LIGHTING**

Obstruction lights are used to mark tall buildings and towers that might be flight hazards. These may be red lights that are either steady or flashing or they may be flashing white strobe lights.

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**CONFIRMATION OF TEACHING POINT 2**

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**QUESTIONS**

- Q1. Why are aerodrome beacon lights used ?
- Q2. How can an aerodrome beacon be recognized?
- Q3. What are the possible colours of obstruction lights?

**ANTICIPATED ANSWERS**

- A1. To help a pilot to locate an aerodrome amidst all the other ground lights of a community.
- A2. An aerodrome beacon is a white light that rotates at a constant speed every 2 – 3 seconds.
- A3. Red, either steady or flashing, or a flashing white strobe light.

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**END OF LESSON CONFIRMATION**

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**QUESTIONS**

- Q1. What colour are runway edge lights?
- Q2. What colour are taxiway edge lights?
- Q3. How can an aerodrome beacon be recognized?

**ANTICIPATED ANSWERS**

- A1. White.
- A2. Blue.
- A3. An aerodrome beacon is a white light that rotates at a constant speed every 2 – 3 seconds.



Hand out copies of Annex A to each cadet.

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### CONCLUSION

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#### HOMEWORK/READING/PRACTICE

N/A.

#### METHOD OF EVALUATION

N/A.

#### CLOSING STATEMENT

Aerodrome lighting can be complex systems that are crucial to the safe operation of the aerodrome. Personnel must know what the lights represent. Lighting systems are inspected daily to keep them in operational condition.

#### INSTRUCTOR NOTES/REMARKS

N/A.

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### REFERENCES

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- C2-044     Transport Canada. (2007). *Aeronautical Information Manual*. Retrieved October 2, 2007, from <http://www.tc.gc.ca/publications/EN/TP14371/PDF/HR/TP14371E.PDF>.
- C3-116     (ISBN 0-9680390-5-7) MacDonald, A. F., & Peppler, I. L. (2000). *From the Ground Up: Millennium Edition*. Ottawa, ON: Aviation Publishers Co. Limited.

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**ROYAL CANADIAN AIR CADETS**  
**PROFICIENCY LEVEL THREE**  
**INSTRUCTIONAL GUIDE**



**SECTION 3**

**EO C360.03 – CONSTRUCT A MODEL OF THE AIRSPACE AT AN AERODROME**

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Total Time:	90 min
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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/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.

Photocopy the handouts located at Annexes B to D for each cadet.

**PRE-LESSON ASSIGNMENT**

N/A.

**APPROACH**

An interactive lecture was chosen for TPs 1–3 to introduce the parts of the Canadian Domestic Airspace (CDA).

An in-class activity was chosen for TP 4 as an interactive way to reinforce concepts of the CDA.

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**INTRODUCTION**

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**REVIEW**

N/A.

**OBJECTIVES**

By the end of this lesson the cadet shall have constructed a model of the airspace at an aerodrome.

**IMPORTANCE**

It is important for the cadets to know about the CDA system as each airspace classification has a set of requirements and operating rules that make it unique. By understanding and adhering to these rules, pilots, ground crew, and aerodrome operations staff can operate safely.

**Teaching Point 1****Explain Parts of the Canadian Domestic Airspace (CDA) System**

Time: 10 min

Method: Interactive Lecture

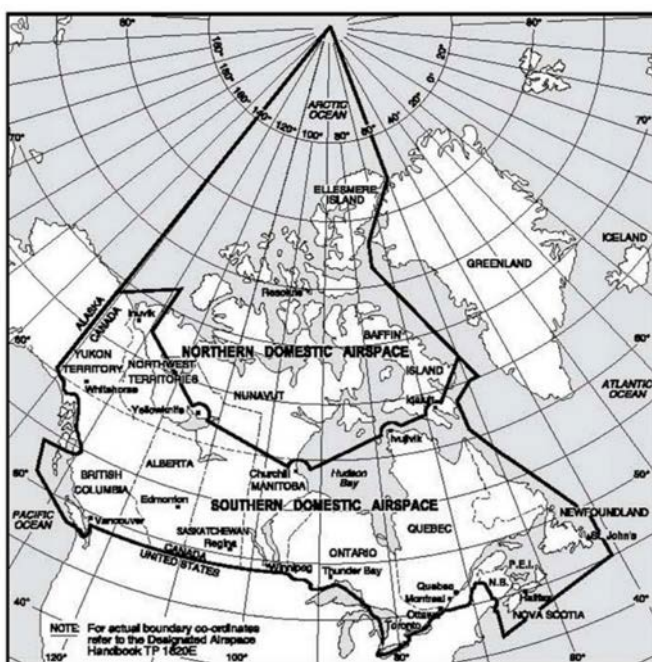


Distribute photocopies of Annex B to the cadets.

**CDA**

CDA includes all airspace over Canadian land mass, the Canadian Arctic, Canadian Archipelago (group of islands) and those areas of the high seas within the airspace boundaries.

CDA is geographically divided into the Northern Domestic Airspace (NDA) and the Southern Domestic Airspace (SDA) (as illustrated in Figure 16-3-1). CDA is also divided vertically into high and low level airspace (as illustrated in Figure 16-3-2).



*Aeronautical Information Manual, Ottawa, ON: Her Majesty the Queen in Right of Canada (p. 182)*

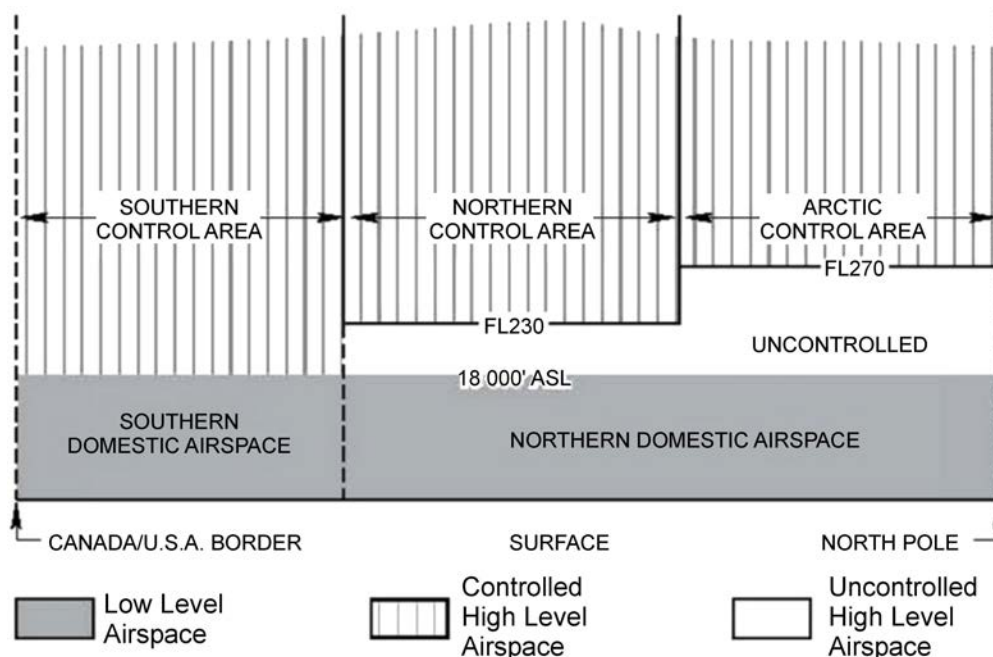
Figure 16-3-1 Boundaries of CDA, NDA, and SDA

**NDA**

The magnetic north pole is located near the centre of the NDA. Near the pole, the lines of magnetic force dip downwards, almost becoming vertical. This causes the horizontal compass needle to produce unreliable readings. In this region, runway headings are given in degrees true, and true track (the direction the aircraft is travelling) is used to determine cruising altitudes.

## SDA

In the SDA, further away from the magnetic north pole, compass readings are reliable as the lines of magnetic force become horizontal. In this region, runway headings are given in degrees magnetic, and magnetic track is used to determine cruising altitudes.



*Aeronautical Information Manual, Ottawa, ON: Her Majesty the Queen in Right of Canada (p. 184)*

Figure 16-3-2 Vertical Divisions of Airspace

### High Level Airspace

High level airspace consists of all airspace above 18 000 feet above sea level (ASL). Aircraft operating in this airspace must be operating in accordance with instrument flight rules (IFR); these are rules that govern the procedures for conducting flight under instrument meteorological conditions (IMC). Traffic operating in accordance with visual flight rules (VFR), which govern the procedures for conducting flight under visual conditions, is excluded from high level airspace.

This is the airspace in which the en route portions of most flights by the following aircraft occur:

- commercial passenger and cargo jets (eg, Boeing 767, Airbus 340), and
- business jets (eg, Citation, LearJet).

### Low Level Airspace

Low level airspace consists of all airspace below 18 000 feet ASL. This is the airspace used by general aviation and most commercial turbo-prop aircraft. This is the general classification of airspace used for takeoffs and landings.

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## CONFIRMATION OF TEACHING POINT 1

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### QUESTIONS

Q1. How is CDA geographically divided?

Q2. How is CDA vertically divided?

Q3. Low level airspace is the airspace below what altitude?

### **ANTICIPATED ANSWERS**

A1. Northern and Southern Domestic Airspace.

A2. High and low level airspace.

A3. Below 18 000 feet ASL.

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### **Teaching Point 2**

### **Explain Types of Airspace**

Time: 10 min

Method: Interactive Lecture

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### **CONTROLLED AIRSPACE**

Controlled airspace is the airspace in which air traffic control service is provided. Depending on the specific classification of the airspace, some or all aircraft may be subject to air traffic control. Types of low level controlled airspace include:

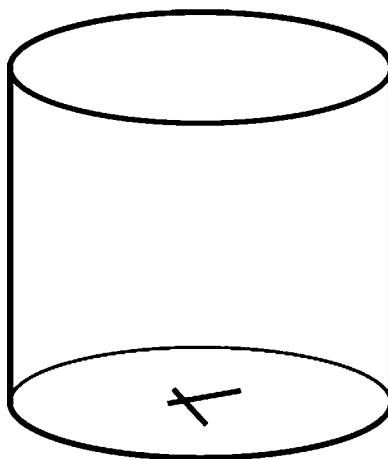
- low level airways,
- control zones,
- terminal control areas,
- transition areas,
- control area extensions, and
- military terminal control areas.

#### **Control Zones (CZs)**

CZs are designated around certain aerodromes to keep IFR aircraft within controlled airspace during approaches and to facilitate the control of VFR and IFR traffic. CZs vary in size, with the most common radii being three, five, or seven nautical miles. They are usually capped at 3 000 feet above aerodrome elevation (AAE). CZs will be classified as B, C, D or E depending on the classification of the surrounding airspace.

Military CZs usually have a 10 nautical mile radius and are capped at 6 000 feet AAE.

One can visualize a CZ as a vertical cylinder, with the base of the cylinder centred on the aerodrome (as illustrated in Figure 16-3-3).



*Director Cadets 3, 2007, Ottawa, ON: Department of National Defence*

Figure 16-3-3 A Control Zone

### **Terminal Control Areas (TCAs)**

TCAs are established at high volume traffic aerodromes to provide an IFR control service to arriving, departing and en route aircraft. The TCA operating rules are established by the classification of the airspace. These rules are based on the level of ATC service that is appropriate for the number and type of aircraft using the airspace as well as the nature of the operations being conducted.

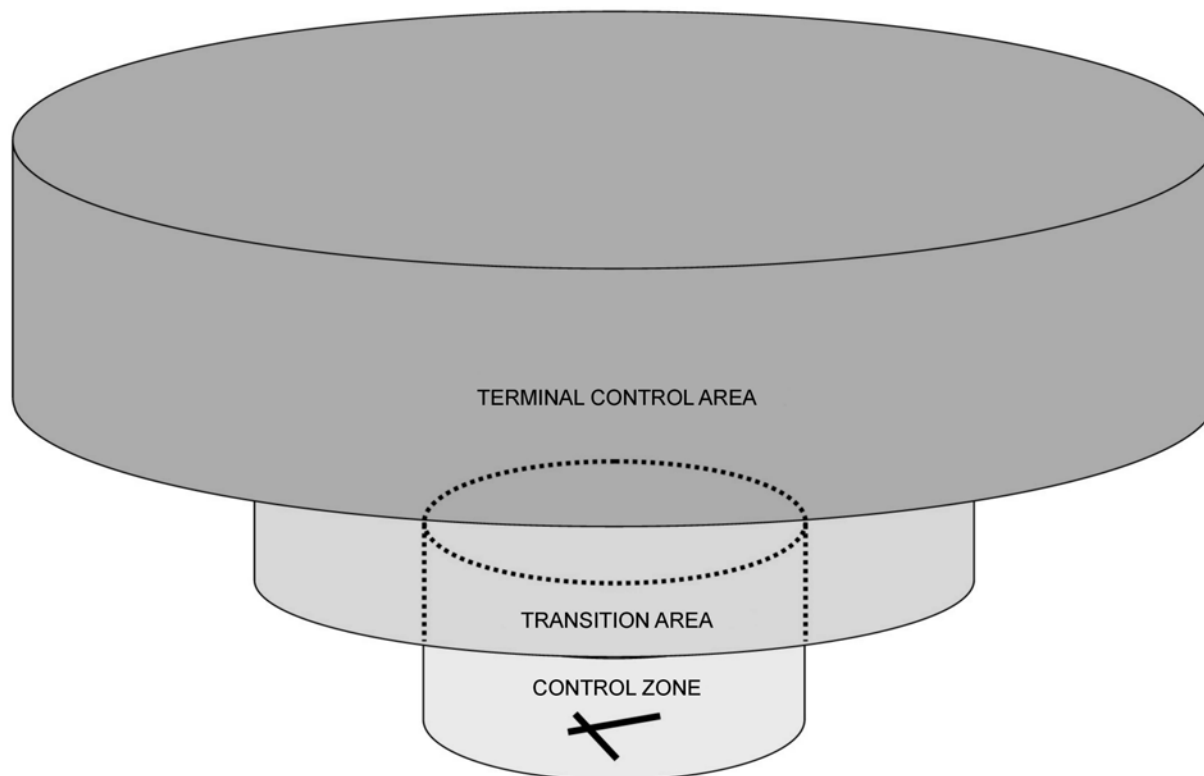
A TCA expands the controlled airspace surrounding a major aerodrome.

### **Transition Areas**

Transition areas are established when it is necessary to provide additional controlled airspace for the IFR operations, specifically to control all of the airspace used by aircraft during takeoff and landing. Transition areas are of defined dimensions, generally based at 700 feet above ground level (AGL), and extend upwards to the base of overlying controlled airspace. The area provided around an aerodrome will normally be a 15 nautical mile radius of the aerodrome centre.



The airspace surrounding an aerodrome is best visualized as an “upside down wedding cake” (as illustrated in Figure 16-3-4).



*Director Cadets 3, 2007, Ottawa, ON: Department of National Defence*

Figure 16-3-4 Control Zone, Terminal Control Area, and Transition Area

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### CONFIRMATION OF TEACHING POINT 2

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#### QUESTIONS

- Q1. What is the typical radius of a CZ?
- Q2. Where are TCAs established?
- Q3. At what height does a transition area usually begin?

#### ANTICIPATED ANSWERS

- A1. Three, five, or seven nautical miles (10 nautical miles for a military control zone).
- A2. At high volume traffic aerodromes.
- A3. At 700 feet AGL.

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#### Teaching Point 3

#### Explain Classes of Airspace

Time: 10 min

Method: Interactive Lecture

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#### AIRSPACE CLASSIFICATIONS

CDA is divided into seven classes, each identified by a single letter: A, B, C, D, E, F, or G. Flight within each class is governed by specific rules applicable to that class.

**Class A**

Class A airspace is designated where an operational need exists to exclude VFR aircraft. All operations must be conducted under IFR and are subject to Air Traffic Control (ATC) clearances and instructions. An ATC clearance gives authorization to proceed within controlled airspace and an ATC instruction is a directive issued by an ATC unit for air traffic control purposes.

All high level controlled airspace is designated as Class A.

**Class B**

Class B airspace is designated where an operational need exists to provide air traffic control service to IFR and to control VFR aircraft.

All low level controlled airspace above 12 500 feet ASL or at and above the minimum en route altitude (MEA), whichever is higher, up to but not including 18 000 feet ASL will be Class B airspace. Control zones and associated terminal control areas may also be classified as Class B airspace.

**Class C**

Class C airspace is controlled airspace in which both IFR and VFR flights are permitted.

Airspace classified as Class C becomes Class E airspace when the appropriate ATC unit is not in operation. Terminal control areas and associated control zones may be classified as Class C airspace.

**Class D**

Class D airspace is controlled airspace in which both IFR and VFR flights are permitted, but VFR flights must establish two-way communication with the appropriate ATC agency prior to entering the airspace.

Airspace classified as Class D becomes Class E airspace when the appropriate ATC unit is not in operation. A terminal control area and associated control zone could be classified as Class D airspace.

**Class E**

Class E airspace is designated where an operational need exists for controlled airspace but does not meet the requirements for Class A, B, C, or D.

Low level airways, control area extensions, transition areas, or control zones established without an operating control tower may be classified as Class E airspace.

**Class F**

Class F airspace is an area in which activities must be restricted, or limitations imposed upon aircraft operations that are not a part of those activities. Typical uses for Class F airspace include:

- military practice areas,
- fire-bombing,
- parachute jumping,
- flight training,
- soaring,
- hang gliders, and
- air shows.

Class F airspace is sometimes known as special use airspace. It may be classified as Class F advisory, or as Class F restricted, and can be controlled airspace, uncontrolled airspace, or a combination of both.

## Class G

Class G airspace is airspace that has not been designated Class A, B, C, D, E or F and in which ATC has neither the authority or responsibility for exercising control over air traffic.



To help the cadets remember:

- Classes A to E are controlled airspace,
- Class F may be controlled or uncontrolled, and
- Class G airspace is uncontrolled.

The difference between Class C and Class D is that an ATC clearance is needed to enter Class C, but two-way communication is all you need to enter Class D.



Distribute photocopies of Annex C to the cadets.

---

### CONFIRMATION OF TEACHING POINT 3

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## QUESTIONS

Q1. What happens to Class C airspace when the ATC unit is not in operation?

Q2. What is another name for Class F airspace?

Q3. Which airspace is uncontrolled?

## ANTICIPATED ANSWERS

A1. It becomes Class E airspace.

A2. Special use airspace.

A3. Class G airspace.

---

## Teaching Point 4

**Have the Cadet, as a Member of a Group of No More Than Four, Construct a Model of the Airspace at an Aerodrome**

Time: 55 min

Method: In-Class Activity

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## ACTIVITY

---

## OBJECTIVE

The objective of this activity is for the cadet to construct a model of the airspace at an aerodrome.

## RESOURCES

- Checklist located at Annex D.



- Coloured construction paper,
- Transparent tape,
- Scissors,
- Coloured markers, and
- Glue.



Other materials may be used in addition to this list if available. The amount of materials that are needed will depend on class size and the number of groups.

### ACTIVITY LAYOUT

Group the tables/desks together to form a large work surface to support the base of the model.

### ACTIVITY INSTRUCTIONS

1. Distribute the checklist located at Annex D to each cadet.
2. Divide the cadets into groups of four.
3. Inform the cadets of the materials available for them to use.
4. Inform the cadets they are all to start with a base of two large pieces of construction paper taped together.
5. Have each group create their own model aerodrome airspace using the checklist located at Annex D, ensuring all the required components are included.



While it is not important for the model to be built exactly to scale, care should be taken to construct items that are the correct size, relative to the other components of the aerodrome.



While cadets are encouraged to be creative with the materials provided, recommend the following:

- Brown or green paper should be used for the base.
- Black or grey paper should be used for pavement.
- Airspace can be created by cutting a strip of construction paper and taping the ends together to create a cylinder.
- Airspace areas can be stacked vertically by cutting and taping a circle of construction paper to the cylinders.
- Different colours of paper should be used for each classification of airspace.
- Coloured markers can be used for adding specific details to components.
- Groups that finish early can improve their model by adding a second aerodrome to the model with airspace that overlaps the first aerodrome's airspace, creating an irregular shape for the airspace areas.

## **SAFETY**

N/A.

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### **CONFIRMATION OF TEACHING POINT 4**

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The cadets' participation in the activity will serve as the confirmation of this TP.

---

### **END OF LESSON CONFIRMATION**

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The cadets' participation in the construction of a model of the airspace at an aerodrome will serve as the confirmation of this lesson.

---

### **CONCLUSION**

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## **HOMEWORK/READING/PRACTICE**

N/A.

## **METHOD OF EVALUATION**

N/A.

## **CLOSING STATEMENT**

Each airspace classification has a set of requirements and operating rules that make it unique. These rules allow pilots, ground crew, and aerodrome operations staff to operate safely.

## **INSTRUCTOR NOTES/REMARKS**

N/A.

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### **REFERENCES**

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C2-044     Transport Canada. (2007). *Aeronautical Information Manual*. Retrieved October 2, 2007, from <http://www.tc.gc.ca/publications/EN/TP14371/PDF/HR/TP14371E.PDF>.



**ROYAL CANADIAN AIR CADETS**  
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**SECTION 4**

**EO C360.04 – IDENTIFY HOW EQUIPMENT IS USED AT AN AERODROME**

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Total Time:	30 min
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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/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 slides of figures located at Annex E.

Photocopy the activity sheet located at Annex F for each cadet.

**PRE-LESSON ASSIGNMENT**

N/A.

**APPROACH**

An interactive lecture was chosen for this lesson to clarify, emphasize and summarize the equipment used at an aerodrome.

---

**INTRODUCTION**

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**REVIEW**

N/A.

**OBJECTIVES**

By the end of this lesson the cadet shall have identified how equipment is used at an aerodrome.

**IMPORTANCE**

It is important for the cadets to be able to identify the equipment at an aerodrome and how it is used to understand aerodrome operations. At most aerodromes each vehicle has a specific purpose and, to carry out specialized tasks, certain vehicles have additional equipment added to them.

**Teaching Point 1****Explain How Trucks Are Used at an Aerodrome**

Time: 15 min

Method: Interactive Lecture

One of the most common vehicles found at an aerodrome is a truck. The trucks found at an aerodrome can be broken down into three general categories:

- pickup truck,
- dump truck, and
- specialty truck.



Show the cadets Figures 16E-1, 16E-2 and 16E-3.

**INSPECTIONS**

Throughout the course of the day, aerodrome operations staff must conduct inspections of the following areas:

- runways,
- taxiways,
- aprons, and
- roads.

Most of the time, the only equipment required to conduct these inspections is a vehicle with a rotating amber beacon and a two-way radio. A car is usually the most economical vehicle for this kind of task.

While most of the regular inspections at an aerodrome can be conducted using a car, pickup trucks are required for some specific inspections. Specifically, the guidelines for conducting runway friction testing require the use of a pickup truck when using a portable decelerometer (a device that measures deceleration).

A pickup truck transports tools and equipment required to correct deficiencies more easily than a car.

There may also be areas of the aerodrome that need inspections, but that do not have proper roads. In these cases, a four-wheel drive pickup truck may be required to safely reach these areas.

**MAINTENANCE**

Pickup trucks are used extensively for ongoing maintenance tasks around an aerodrome. They are well-suited to carry the tools and equipment necessary to perform maintenance. Typical maintenance tasks that might be carried out include:

- replacement and repair of lights,
- fence repairs,
- sign repairs, and
- minor pavement and turf repairs.

## CONSTRUCTION

During construction at an aerodrome, trucks of all shapes and sizes will be used. Flatbed trucks deliver materials and equipment to the site, as well as move them around the facilities. Dump trucks will be used wherever excavations or earth moving occurs. Pickup trucks will be used to move people, smaller tools and equipment around.

While most of these vehicles will not be owned by the aerodrome, the aerodrome operator will be responsible for ensuring that drivers are properly trained, that the vehicles are properly equipped (eg, two-way radio, rotating amber beacon/strobe light), and that the vehicles move about the aerodrome in a safe and efficient manner.

## SNOW REMOVAL

At most Canadian aerodromes, winter is a busy time of year for trucks. All of the snow that falls on the movement areas and the road system has to be cleared in a timely manner to allow operations to continue with minimal disruption.



Show the cadets Figure 16E-4.

Snowplows are often attached to large trucks. Even pickup trucks can have a plow blade attached for clearing small areas. Piles of snow that accumulate can be moved using dump trucks. Dump trucks or pickup trucks may have hoppers in the back that can be used for spreading chemicals for melting ice or grit to increase traction.

## PLATFORMS FOR SPECIALTY EQUIPMENT

Many specialized vehicles at an aerodrome are basic truck frames with the addition of special equipment. Examples of these include:



Show the cadets Figure 16E-5.

- de-icing trucks,
- fuel delivery,
- air stairs,
- rapid response emergency vehicles, and
- ground servicing equipment (eg, catering truck).



Show the cadets Figure 16E-6.

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## ACTIVITY

Time: 5 min

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### OBJECTIVE

The objective of this activity is to have the cadets match the vehicle pictures with the correct name and purpose.

### RESOURCES

- Aerodrome vehicle handout located at Annex F, and
- Pen/pencil.

### ACTIVITY LAYOUT

N/A.

### ACTIVITY INSTRUCTIONS

1. Distribute the handout located at Annex F.
2. Have the cadets complete the handout.
3. Provide assistance and guidance as required.
4. Correct the answers as a group using Annex G.

### SAFETY

N/A.

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## CONFIRMATION OF TEACHING POINT 1

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The cadets' participation in the activity will serve as the confirmation of this TP.

### Teaching Point 2

### Describe Runway Maintenance Equipment and How it is Used at an Aerodrome

Time: 5 min

Method: Interactive Lecture

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There are several important pieces of equipment that are used extensively at aerodromes: sweepers, snowplows and snow blowers.

Equipment designed for aerodrome use is usually designed to be mounted on a special chassis. The chassis has a standardized mounting bracket and common hydraulic connections which allow different types of equipment to be mounted, depending on the task to be done.

### SWEEPERS

Sweepers come in three main configurations:

- self-propelled,
- front mounted, and
- towed.



Show the cadets Figure 16E-7.

When there has been a light accumulation of snow or slush but not enough to require a snowplow, a sweeper can be used. Sweepers remove debris such as dirt or sand, to prevent foreign object damage (FOD) to propellers or turbine engines.

The rotating brush has bristles made of stainless steel or synthetic materials (usually nylon or polypropylene). Steel bristles cut through ice and snow effectively and synthetic bristles move wet snow or slush well.

Some sweepers have hot air blowers, which direct a steady stream of hot air onto the surface being swept. In addition to blowing away any small particles left behind by the brush, the hot air can melt small ice deposits.

### **SNOWPLOWS**

Any aerodrome that expects snow will have a snowplow, either owned by the aerodrome, or contracted by a third party. A snowplow is the most effective way to remove snow from aircraft movement areas.



Show the cadets Figures 16E-8 and 16E-9.

### **SNOW BLOWERS**

When a snowplow pushes snow to the side of a runway, it creates a pile of snow known as a windrow. The preferred method of removing the windrow is with a snow blower. The snow blower can move along the edge of the runway blowing the snow in the windrow over the runway edge lights and away from the runway.



Show the cadets Figures 16E-10 and 16E-11.

Similar to sweepers, snow blowers can be front mounted, rear mounted or self-propelled. The large self-propelled versions have two engines: one for driving, and the other for powering the snow blower. Rear mounted blowers are commonly attached to tractors.

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## **CONFIRMATION OF TEACHING POINT 2**

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### **QUESTIONS**

- Q1. What configurations do sweepers come in?
- Q2. What are the differences between a highway snowplow and an aerodrome snowplow?
- Q3. What is the primary purpose of a snow blower at an aerodrome?

**ANTICIPATED ANSWERS**

- A1. Self-propelled, front mounted or towed.
- A2. An aerodrome snowplow has a wider blade that is reversible (two-way).
- A3. Removing windrows left behind by snowplows.

---

**Teaching Point 3****Describe Refuelling Equipment at an Aerodrome**

Time: 5 min

Method: Interactive Lecture

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**STATIONARY REFUELLING EQUIPMENT**

At most public aerodromes, aviation fuel is available for purchase from the aerodrome operator, or from a third party (or parties at a large aerodrome). Fuel is dispensed in two main ways: from a stationary location or from a mobile refueller. A stationary refuelling system is made up of three main components: tanks, pumps and hoses.



Show the cadets Figures 16E-12 and 16E-13.

**MOBILE REFUELLING EQUIPMENT**

At a large aerodrome, or at an aerodrome with large aircraft, a stationary refuelling system is not a viable option. In these cases, refuelling is carried out by mobile refuelling equipment that brings fuel to the aircraft.



Show the cadets Figure 16E-14.

Commonly, the fuel is stored in large tanks in a remote location (known as a fuel farm) at the aerodrome. The mobile tanker is filled from the bulk tanks, driven to the aircraft and refuelling is carried out. The tanker can then move on to the next aircraft and repeat the process. When the tanker no longer carries enough fuel to service the next aircraft, it returns to the bulk tank and is refilled.

---

**CONFIRMATION OF TEACHING POINT 3**

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**QUESTIONS**

- Q1. What are the two main ways that fuel is dispensed to aircraft?
- Q2. What is the name of the remote location where fuel is stored for mobile refuelling?
- Q3. What are the three main components of a refuelling system?

**ANTICIPATED ANSWERS**

- A1. From a stationary location or from a mobile refueller.
- A2. A fuel farm.



A3. Tanks, pumps and hoses.

---

**END OF LESSON CONFIRMATION**

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**QUESTIONS**

Q1. What are three types of equipment used at an aerodrome?

Q2. Where is fuel stored at an aerodrome?

Q3. For inspection of which aerodrome facilities is a car usually the most economical vehicle?

**ANTICIPATED ANSWERS**

A1. Sweepers, snowplows and snow blowers.

A2. At a fuel farm.

A3. Runways, taxiways, aprons, and roads.

---

**CONCLUSION**

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**HOMEWORK/READING/PRACTICE**

N/A.

**METHOD OF EVALUATION**

N/A.

**CLOSING STATEMENT**

It is important for the cadets to be able to identify the equipment at an aerodrome and how it is used. Each piece of equipment has a specific purpose, and is outfitted with specialized equipment to help it perform the required tasks.

**INSTRUCTOR NOTES/REMARKS**

N/A.

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**REFERENCES**

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C3-148 (ISBN 0-9739866-0-3) Syme, E. R., & Wells, A. T. (2005). *Airport Development, Management and Operations in Canada: Second Edition*. Barrie, ON: Aviation Education Services.

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**ROYAL CANADIAN AIR CADETS**  
**PROFICIENCY LEVEL THREE**  
**INSTRUCTIONAL GUIDE**



**SECTION 5**

**EO C360.05 – IDENTIFY ASPECTS OF EMERGENCY RESPONSE AND AERODROME SECURITY**

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Total Time:	30 min
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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/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.

Review the mandate of the Canadian Air Transport Security Authority (CATSA) at website reference C3-098 and update the information presented in the guide if necessary.

Obtain and photocopy an updated list of permitted and prohibited carry-on items from <http://www.catsa-acsta.gc.ca> for each cadet.

Create a slide of Annex H.

Photocopy the Aerodrome Security Definitions located at Annex I for each cadet.

**PRE-LESSON ASSIGNMENT**

N/A.

**APPROACH**

An interactive lecture was chosen for this lesson to clarify, emphasize and summarize aircraft and aerodrome emergencies, security, the role of CATSA, and types of screening at an aerodrome.

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**INTRODUCTION**

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**REVIEW**

N/A.

**OBJECTIVES**

By the end of this lesson the cadet shall have identified aspects of emergency response and security at aerodromes.

## IMPORTANCE

It is important for cadets to understand the operational requirements of aerodrome emergency response and security. Recognizing the role of CATSA and the types of screening performed will be relevant to cadets who travel through major Canadian aerodromes.

---

### Teaching Point 1

### Discuss Aircraft Emergencies

Time: 5 min

Method: Interactive Lecture

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## AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF)

The primary responsibility of an ARFF service is to provide an escape route for the evacuation of passengers and crew when needed. This service is also known as:

- Crash, Fire and Rescue (CFR), and
- Emergency Response Services (ERS).

## ARFF VEHICLES

ARFF must be able to respond within a specific time frame, carry the types and volumes of specified extinguishing agents (water and foam) and be able to dispense the agents.



Show the cadets Figure 16H-1.

ARFF vehicles are similar to standard fire trucks, but have been built specifically for aerodromes. They can handle rough terrain while accelerating quickly to their top speed. The use of turrets to dispense water and foam allows the operator to drive to the edge of the fire and begin dispensing extinguishing agents immediately. Two turrets (nose and roof) are standard equipment and are controlled by the operator inside the cabin. A turret can be combined with a piercing device on the end of a boom. This boom can be extended to the aircraft to create an opening in the aircraft skin and an extinguishing agent can then be delivered directly into the aircraft.

## STANDBY REQUESTS

**Local Standby.** The level of response when an aircraft has or is suspected to have an operational defect that would cause serious difficulty for the aircraft to achieve a safe landing.

**Full Emergency Standby.** The level of response when an aircraft has or is suspected to have an operational defect that affects normal flight operations to the extent that there is possibility of an accident.

## ON-SITE CRASHES

If a crash occurs at an aerodrome, the primary role of the ARFF service is to suppress any fire and provide a safe evacuation route out of the aircraft for the passengers. Many ARFF departments also include paramedics, vehicles and equipment to provide first aid and triage services to the passengers. In the event of a major crash, additional resources from the local area may be required.

## OFF-SITE CRASHES

If an aircraft crash occurs near an aerodrome with ARFF, the ARFF services from that aerodrome may be dispatched to the scene. If ARFF services from an aerodrome are not readily available, local fire departments

and paramedics will respond. Most aircraft crashes occur during takeoff and landing; the ERS for the municipalities surrounding an aerodrome, such as fire, paramedics and police services, will be prepared to respond to an off-site crash. ERS personnel receive special training on aircraft firefighting and passenger rescue techniques.

## **JOINT RESPONSES**

Aerodromes with ARFF services may have an agreement with the surrounding municipalities to assist in off-site aircraft crashes. The agreement may also cover non-aviation related emergencies near the aerodrome. An example of this would be a fuel tanker crash and fire on a nearby highway. The foam extinguishing agent dispensed by ARFF vehicles can control this type of fire.

---

### **CONFIRMATION OF TEACHING POINT 1**

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#### **QUESTIONS**

- Q1. What does ARFF stand for?
- Q2. How do ARFF vehicles dispense water and/or foam?
- Q3. When do most aircraft crashes occur?

#### **ANTICIPATED ANSWERS**

- A1. Aircraft Rescue and Fire Fighting.
- A2. Through turrets.
- A3. During takeoff and landing.

---

#### **Teaching Point 2**

#### **Discuss Aerodrome Emergencies**

Time: 5 min

Method: Interactive Lecture

---

## **AERODROME EMERGENCIES**

In addition to aircraft emergencies, the aerodrome's emergency plan should include other non-aviation emergencies. Where possible, the ARFF unit is the responding agency. In other cases, local ERS such as fire, paramedics and police would respond. In all cases, simulated emergency exercises are held to test the emergency plan and provide training opportunities for all personnel.

### **Building Fires**

A fire in a terminal building at a large aerodrome would be handled much the same way as a fire in any large building with lots of people (such as a shopping mall). In addition to fire extinguishers throughout the building (designed to put out and control small fires) there are usually water pipes, hoses and standpipe connections. As with any emergency in a location with large numbers of people, preparations to deal with injuries and casualties are necessary.

### **Bomb Threats**

The emergency plan includes a section on bomb threats, both in the terminal and on-board an aircraft. In the terminal, suspicious or unattended baggage is treated seriously. Large international airports usually have personnel and equipment on site to respond. Many state-of-the-art baggage screening systems have isolation chambers that suspicious baggage can be routed to. This chamber is designed to contain an explosion and prevent injuries and damage.



In Canada, making a false declaration that could jeopardize the safety or security of an aircraft or aerodrome can result in a fine up to \$5 000.

### Medical Crises

Heart attacks, panic attacks and allergic reactions are common in areas where large numbers of people congregate. Large aerodromes have paramedics on site to deal with medical crises. Small aerodromes must ensure that aerodrome personnel have the appropriate first aid qualifications and training to deal with common crises until paramedics can arrive. Advances in technology have resulted in the development of Automated External Defibrillators (AEDs). These machines make it possible for non-medical personnel to restore heart rhythms to help save lives.

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## CONFIRMATION OF TEACHING POINT 2

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### QUESTIONS

- Q1. Who can help aerodrome ARFF units respond to emergencies?
- Q2. How much could you be fined for making a false declaration that jeopardizes safety or security?
- Q3. What machine can help increase the survival rate of heart attack victims?

### ANTICIPATED ANSWERS

- A1. Local ERS.
- A2. \$5 000.
- A3. AED.

### Teaching Point 3

### Explain Components of Aerodrome Site Security

Time: 5 min

Method: Interactive Lecture

### AERODROME SECURITY DEFINITIONS



Hand out a copy of Annex I to each cadet.

**Restricted Area.** A portion of an aerodrome where access is only granted to authorized persons.

**Restricted Area Access Point.** A location in a security barrier at which a control system is in place that controls access to a restricted area from a non-restricted area.

**Screening.** The checking, identification, observation, inspection or authorized search of persons, goods and other things in the possession or control of persons.

**Security Barrier.** A physical structure or natural feature used to prevent or deter access by unauthorized persons to a restricted area.

**Sterile Area.** A restricted area, including any passenger loading bridges attached to it. It is used to

separate passengers who have been screened, or are exempt from screening, and other authorized persons from unauthorized persons at the aerodrome.

### **RESTRICTED AREAS**

All aircraft movement areas (runways, taxiways and aprons) are restricted areas and only those who are authorized have access to these areas. Restricted areas also exist inside the terminal building. The area used by passengers between the time they are screened and the time they board the aircraft is a restricted area (specifically a sterile area). Other areas inside the terminal building that will be a restricted area include:

- aerodrome and airline operations,
- baggage-handling areas,
- ATC, and
- emergency response.

### **FENCES**

The fences most commonly used as security measures at an aerodrome are chain-link fences erected around the perimeter of the aircraft movement areas. Access through the fence is provided by gates for vehicles and people or through buildings adjacent to the movement areas.

### **GATES**

The gates found in aerodrome fencing can be categorized in several ways: routine, emergency, or occasional access points and vehicle or personnel access points. Additionally, they can be operated manually or mechanically. Gates designed to be operated mechanically should also be able to be opened manually in case of electrical failure. In all cases, a gate that remains open can become a major security problem.

---

## **CONFIRMATION OF TEACHING POINT 3**

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### **QUESTIONS**

- Q1. What is a restricted area?
- Q2. In addition to identity, what must be confirmed prior to allowing access to a restricted area?
- Q3. How can gates be operated?

### **ANTICIPATED ANSWERS**

- A1. A portion of an aerodrome where access is only granted to authorized persons.
- A2. Authorization.
- A3. Manually or mechanically.

---

**Teaching Point 4****Explain Security Requirements at Different Types of Aerodromes**

Time: 5 min

Method: Interactive Lecture

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**INTERNATIONAL AND REGIONAL AERODROMES**

The security requirements at international and regional aerodromes are governed by Part Three–Aerodrome Security of the Canadian Aviation Security Regulations (CASR). It details identity verification systems and restricted area pass control. CASR Part Three requires that:

- access to restricted areas be controlled by an identity verification system;
- restricted area passes are only issued to those that require them on an ongoing basis, and deactivated when they are no longer required; and
- restricted areas can only be accessed through a restricted area access point.

**MUNICIPAL AND PRIVATE AERODROMES**

The measures that are implemented depend on the resources available, the types of security risks expected by the aerodrome operator and the level of risk that the aerodrome operator is willing to accept. Most aerodromes of this type will implement measures such as fences, gates, signs and locked doors to prevent unauthorized persons from inadvertently accessing restricted areas. Aerodromes with more resources and those that anticipate a higher degree of security related risks and incidents will implement more formal and stringent procedures.

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**CONFIRMATION OF TEACHING POINT 4**

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**QUESTIONS**

- Q1. What part of the CASR pertains only to international and regional airports?
- Q2. How can access to restricted areas be controlled?
- Q3. Where can a restricted area be accessed?

**ANTICIPATED ANSWERS**

- A1. CASR Part Three – Aerodrome Security.
- A2. By an identity verification system.
- A3. At a restricted area access point.

---

**Teaching Point 5****Explain the Role of the Canadian Air Transport Security Authority (CATSA)**

Time: 5 min

Method: Interactive Lecture

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**CANADIAN AIR TRANSPORT SECURITY AUTHORITY (CATSA)**

CATSA's mandate is to protect the public by securing critical elements of the air transportation system as assigned by the government. CATSA was established in April 2002 as part of a comprehensive aviation security initiative. It is a crown corporation that reports to Parliament through the Minister of Transportation. CATSA's



many responsibilities include pre-board screening of passengers and their belongings (PBS), hold baggage screening (HBS) and non-passenger screening (NPS).



Updated information on the role and mandate of CATSA can be found at <http://www.catsa-acsta.gc.ca>.

### **Pre-Board Screening (PBS)**



Distribute the list of permitted and prohibited carry-on items. The list of prohibited items and dangerous goods changes from time to time. An updated list can be obtained from [http://www.catsa-acsta.gc.ca/english/travel\\_voyage/list.shtml](http://www.catsa-acsta.gc.ca/english/travel_voyage/list.shtml).

Passengers and carry-on baggage must pass through screening devices before entering the sterile area. These devices provide a way for screening officers to identify passengers and baggage that should be subjected to a more thorough search. Objects that are not permissible can also be identified with these devices. Passengers and baggage may also be selected at random for a more in-depth search.

### **Hold Baggage Screening (HBS)**

HBS is the screening of checked baggage using explosives detection systems at aerodromes. In 2006 CATSA announced full deployment of HBS at 89 airports across Canada. This state-of-the-art baggage system is multi-level and involves the screening of all checked baggage. HBS is in effect for all domestic and international flights.

### **Non-Passenger Screening (NPS)**

CATSA screens individuals, goods and possessions requiring access to the restricted areas at aerodromes where it is responsible for screening services. Flight crews and airport workers such as caterers, maintenance workers and baggage handlers are randomly selected for screening at Canada's 29 largest airports. Over 1 000 screenings of non-passengers and any goods or possessions occur nationally, at random, on a daily basis.

---

## **CONFIRMATION OF TEACHING POINT 5**

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### **QUESTIONS**

- Q1. What does PBS stand for?
- Q2. What does HBS stand for?
- Q3. What does NPS stand for?

### **ANTICIPATED ANSWERS**

- A1. Pre-board Screening.
- A2. Hold Baggage Screening.
- A3. Non-passenger Screening.

---

## END OF LESSON CONFIRMATION

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### QUESTIONS

- Q1. What are two common types of extinguishing agents carried by ARFF vehicles?
- Q2. What is a restricted area?
- Q3. What are three types of medical crises that are common where large numbers of people congregate?

### ANTICIPATED ANSWERS

- A1. Water and foam.
- A2. A portion of an aerodrome where access is only granted to authorized persons.
- A3. Heart attacks, panic attacks and allergic reactions.

---

## CONCLUSION

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### HOMEWORK/READING/PRACTICE

N/A.

### METHOD OF EVALUATION

N/A.

### CLOSING STATEMENT

Emergency response and aerodrome security are both necessary to ensure the safety of the travelling public. Both of these areas are complex, with challenges and solutions constantly evolving.

### INSTRUCTOR NOTES/REMARKS

N/A.

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## REFERENCES

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- C2-044 Transport Canada. (2007). *Aeronautical Information Manual*. Retrieved October 2, 2007, from <http://www.tc.gc.ca/publications/EN/TP14371/PDF/HR/TP14371E.PDF>.
- C3-098 Canadian Air Transport Security Authority. (2007). *Mandate*. Retrieved October 10, 2007, from [http://www.catsa-acsta.gc.ca/English/about\\_propos/mandat.shtml](http://www.catsa-acsta.gc.ca/English/about_propos/mandat.shtml).
- C3-148 (ISBN 0-9739866-0-3) Syme, E. R., & Wells, A. T. (2005). *Airport Development, Management and Operations in Canada: Second Edition*. Barrie, ON: Aviation Education Services.



**ROYAL CANADIAN AIR CADETS**  
**PROFICIENCY LEVEL THREE**  
**INSTRUCTIONAL GUIDE**



**SECTION 6**

**EO C360.06 – EXPLAIN ASPECTS OF AIR TRAFFIC SERVICES (ATS)**

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Total Time:	30 min
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**PREPARATION**

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**PRE-LESSON INSTRUCTIONS**

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/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.

Photocopy the handouts located at Annexes J and K for each cadet.

**PRE-LESSON ASSIGNMENT**

N/A.

**APPROACH**

An interactive lecture was chosen for TPs 1 and 3 to clarify, emphasize and summarize aspects of ATS.

An in-class activity was chosen for TP 2 as this is an interactive way to reinforce the difference between ATC clearances and ATC instructions.

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**INTRODUCTION**

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**REVIEW**

N/A.

**OBJECTIVES**

By the end of this lesson the cadet shall have explained aspects of ATS.

**IMPORTANCE**

It is important for cadets to know that ATS is the provision of control and information services and that it is required to maintain a safe and efficient air transport system. Personnel working at an aerodrome need to be aware of the types of services provided at the aerodrome and to be prepared to communicate with the appropriate ATS unit to ensure smooth and safe operations.

---

**Teaching Point 1****Explain Types of ATS**

Time: 10 min

Method: Interactive Lecture

---

**AIR TRAFFIC SERVICES (ATS)**

A wide variety of services are provided to pilots and aircraft. Control and information services are both included in this category.

**Air Traffic Control (ATC)**

ATC service has been established primarily for the prevention of collisions and the efficient flow of traffic. The provision of ATC service will take precedence over the provision of flight information services. ATC service ensures separation between aircraft, especially those that are operating under instrument meteorological conditions (IMC). ATC service is provided to aircraft during all phases of flight and on the ground at busy aerodromes.

**Information Services**

Information that could be relevant to the safety of a flight is provided to pilots as it becomes available. Sometimes, ATC service suggestions are included. It is up to the pilot to make decisions based on a suggestion. Information provided includes:

- severe weather conditions along the proposed route of flight,
- changes in the serviceability of navigation aids,
- weather conditions reported or forecasted at destination or alternate aerodromes,
- changes in the serviceability of navigation aids,
- condition of airports and associated facilities, and
- other items considered pertinent to the safety of the flight.

**Advisory Services**

At uncontrolled aerodromes, the information listed below is provided by advisory services (if appropriate) during initial aerodrome advisory communications:

- active or preferred runway,
- wind direction and speed,
- air traffic that warrants attention,
- vehicle traffic,
- wake turbulence cautionary,
- aerodrome conditions,
- weather conditions, and
- additional information of interest for the safety of flight.

**Alerting Services**

When an aircraft declares an emergency, alerting services notifies the appropriate agency to provide emergency standby services. If an aircraft becomes overdue, search and rescue (SAR) agencies can be

notified. Alerting a responsible authority of any unlawful interference (hijack), bomb threat or inability to communicate is also included in this service.

### Briefing Services

Briefing services, provided by flight service specialists, consult on meteorological and aeronautical information to assist pilots in pre-flight planning. The flight service specialist adapts meteorological information, including satellite and radar imagery, to fit the needs of flight crew members and operations personnel and provides consultation and advice on special weather problems.

### Notice to Airmen (NOTAM) Services

NOTAM services collect information from pilots, aerodrome operators and aeronautical facilities operators and distribute as required and requested. This includes Runway Surface Condition (RSC) reports and Canadian Runway Friction Index (CRFI) information.



Distribute photocopies of Annex J to the cadets.

---

## CONFIRMATION OF TEACHING POINT 1

---

### QUESTIONS

- Q1. What type of ATS has priority over provision of flight information services?
- Q2. What type of service provides such information as active or preferred runway, wind direction and speed, air traffic and vehicle traffic?
- Q3. What type of service assists pilots with flight planning?

### ANTICIPATED ANSWERS

- A1. ATC service.
- A2. Advisory service.
- A3. Briefing service.

---

### Teaching Point 2

### Explain the Difference Between an ATC Clearance and an ATC Instruction

Time: 10 min

Method: In-Class Activity

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### ACTIVITY

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### OBJECTIVE

The objective of this activity is to allow the cadets to explain the difference between an ATC clearance and an ATC instruction.

### RESOURCES

- One sheet of paper for each cadet, and

- Pens/pencils.

## ACTIVITY LAYOUT

N/A.

## ACTIVITY INSTRUCTIONS

1. Distribute one handout of Annex K to each cadet.
2. Organize the cadets into groups of four.
3. Explain to the cadets the following definitions:
  - (a) **ATC Clearance.** An authorization from ATC for a pilot to proceed with a specific action (eg, takeoff or landing) or along a specific route.



Whenever an ATC clearance is received and accepted by the pilot, compliance shall be made with the clearance. If a clearance is not acceptable, the pilot should immediately inform ATC of this fact as acknowledgement of the clearance alone will be taken by a controller as indicating acceptance. A clearance will be identified by the use of the word “clear” in its contents. Example of clearances are:

“You are cleared to the circuit”.

“You are cleared for take off on runway two niner”.

- (b) **ATC Instruction.** A directive from ATC to do something specific (eg, maintain 5 000 feet).



A pilot shall comply with an ATC instruction that is directed to and received by the pilot, provided the safety of the aircraft is not jeopardized. An instruction will always be worded in such a manner as to be readily identified, although the word “instruct” will seldom be included. Pilots shall comply with and acknowledge receipt of all ATC instructions directed to and received by them. An example of an instruction would be:

“Hold on taxiway”.

“Climb to and maintain one three thousand”.

4. Have each group write down examples of ATC clearances or an ATC instructions that might be given to a person operating an aircraft at an aerodrome.
5. Read out each group’s ATC clearance/instruction and have the class identify it as a clearance or instruction.
6. Continue until all of the ATC clearances/instructions have been read or time runs out.

## SAFETY

N/A.

---

### CONFIRMATION OF TEACHING POINT 2

---

The cadets’ participation in the ATC clearance and ATC instruction activity will serve as the confirmation of this TP.

---

**Teaching Point 3****Explain the Functions of ATC**

Time: 5 min

Method: Interactive Lecture

---

**AREA CONTROL CENTRES (ACCS)**

Area control service is provided by ACCs to flights operating within specified control areas. These areas typically consist of high level airspace and serve aircraft operating in the en route phase of flight. Information and advisory services are provided when workloads permit.

**TERMINAL CONTROL UNITS (TCUS)**

Terminal control service is provided by TCUs to flights operating within specified control areas surrounding major aerodromes. The primary purpose is to provide arrival and departure control to aircraft as they transition from the takeoff or landing phase to the en route phase. This type of ATC unit is responsible for sequencing aircraft to ensure an efficient flow of traffic to and from an aerodrome.

**CONTROL TOWERS**

Control towers are located at busy aerodromes to provide ATC services to aircraft during takeoff and landing. Control of aircraft on the ground is also provided. Workloads in most control towers do not usually permit the provision of information and advisory services so aircraft will obtain the required information from another ATS unit on a different frequency or by telephone before making contact with the control tower.

**FLIGHT SERVICE STATIONS (FSSS)**

FSSs provide information, advisory, alerting, briefing and NOTAM services. FSSs are responsible for large areas and provide service for all of the aerodromes in their area. Remote communications systems allow flight service specialists to communicate via radio to aircraft and vehicles hundreds of kilometres away.

FSSs are the initial point of contact for pilots during the pre-flight planning stage. They play a key role in the collection and distribution of NOTAMs. FSSs can be contacted by pilots via radio when in the air (and on the ground where remote communications facilities exist) or by telephone.

Vehicle control service at uncontrolled aerodromes with a mandatory frequency is provided by a FSS. The FSS may be hundreds of kilometres away and providing this service to multiple aerodromes. Personnel operating vehicles at aerodromes in this situation must pay close attention to this fact and be very clear and concise about their intentions and location.

---

**CONFIRMATION OF TEACHING POINT 3**

---

**QUESTIONS**

- Q1. Which unit provides control to aircraft and vehicles on the ground at busy aerodromes?
- Q2. Which unit provides control services to aircraft arriving and departing a controlled aerodrome?
- Q3. Which unit plays a key role in the provision of NOTAM services?

**ANTICIPATED ANSWERS**

- A1. Control tower.
- A2. TCU.
- A3. FSS.

---

## END OF LESSON CONFIRMATION

---

### QUESTIONS

- Q1. What type of ATS has priority over the provision of flight information services?
- Q2. Which ATC communication must a pilot obey provided the safety of the aircraft is not jeopardized?
- Q3. What type of service assists pilots with flight planning?

### ANTICIPATED ANSWERS

- A1. ATC.
- A2. An ATC instruction.
- A3. Briefing service.

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## CONCLUSION

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### HOMEWORK/READING/PRACTICE

N/A.

### METHOD OF EVALUATION

N/A.

### CLOSING STATEMENT

ATS provides the control and information services that support safe operation at busy aerodromes. Personnel working at an aerodrome need to be aware of the types of services provided at the aerodrome and be prepared to communicate with the appropriate ATS unit.

### INSTRUCTOR NOTES/REMARKS

N/A.

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## REFERENCES

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- C2-044 Transport Canada. (2007). *Aeronautical Information Manual*. Retrieved October 2, 2007, from <http://www.tc.gc.ca/publications/EN/TP14371/PDF/HR/TP14371E.PDF>.

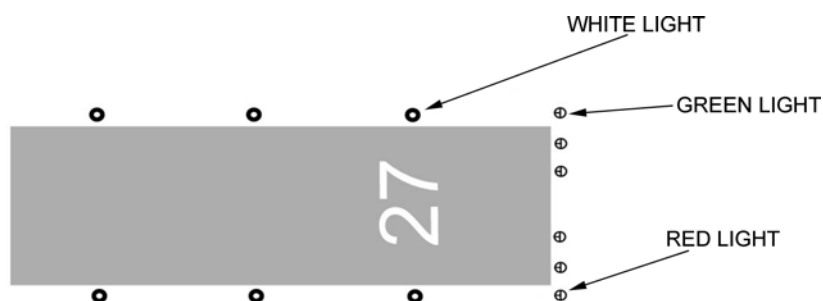


## MANOEUVRING LIGHTING

### RUNWAY LIGHTING

Edge lights are located along the runway. These lights are white in colour (white light bulb with a clear lens) and provide assistance in identifying the edge of the runway. The lights are spaced evenly along each edge with no more than 60 m (200 feet) between the lights. Each row of lights is the same distance from the runway centreline and may be located along the edge of the runway or no more than 1.5 m away from the edge, except in areas that experience significant accumulations of snow. In areas that experience significant accumulations of snow, edge lights may be placed up to 3 m from the runway edge.

The edge lights that cross the beginning of a runway are green while the lights at the end of a runway are red. This is accomplished by using a two-colour filter under the lens. The red side is located on the runway side so that when an aircraft is on the runway looking at the light, a red light is visible. The green filter is on the other side so that when the aircraft is approaching the runway, a green light is visible.



*Director Cadets 3, 2007, Ottawa, ON: Department of National Defence*

Figure 16A-1 Runway Lighting

### TAXIWAY LIGHTING

Edge lights are placed along taxiways in the same way edge lights are placed along runways. The maximum spacing remains at 60 m (200 feet) and will be closer together along a curved section than along a straight section. Taxiway edge lights are blue in colour. The blue colour is created by using a blue lens instead of a clear lens.

Where a taxiway intersects a runway, two blue lights are placed on each side of the taxiway, adjacent to the runway, to indicate the intersection.

### APRON LIGHTING

Apron edge lights are yellow in colour (created by using a yellow lens). Where a taxiway intersects an apron, two yellow lights are placed on each side of the taxiway, adjacent to the apron, to indicate the intersection.

Light Location	Colour
Runway Edge Lights	White
Taxiway Edge Lights	Blue
Apron Edge Lights	Yellow
Runway/Taxiway Intersection	Two blue
Taxiway/Apron Intersection	Two yellow
Runway Threshold (end of runway side)	Red
Runway Threshold (start of runway side)	Green

*Director Cadets 3, 2007, Ottawa, ON: Department of National Defence*

Figure 16A-2 Runway Lighting Colours

### UNSERVICEABLE AREA MARKINGS

Certain ground markings indicate the status of aerodromes and pilots are required to comply with these markings.

A large cross, either white or yellow and at least 6.1 m in length, displayed at each end of a runway or taxiway indicates that that runway or taxiway is unserviceable. For night operations, any unserviceable portion of a runway is closed off by placing red lights at right angles to the centerline across both ends. In addition, the runway lights for the unserviceable area are turned off.

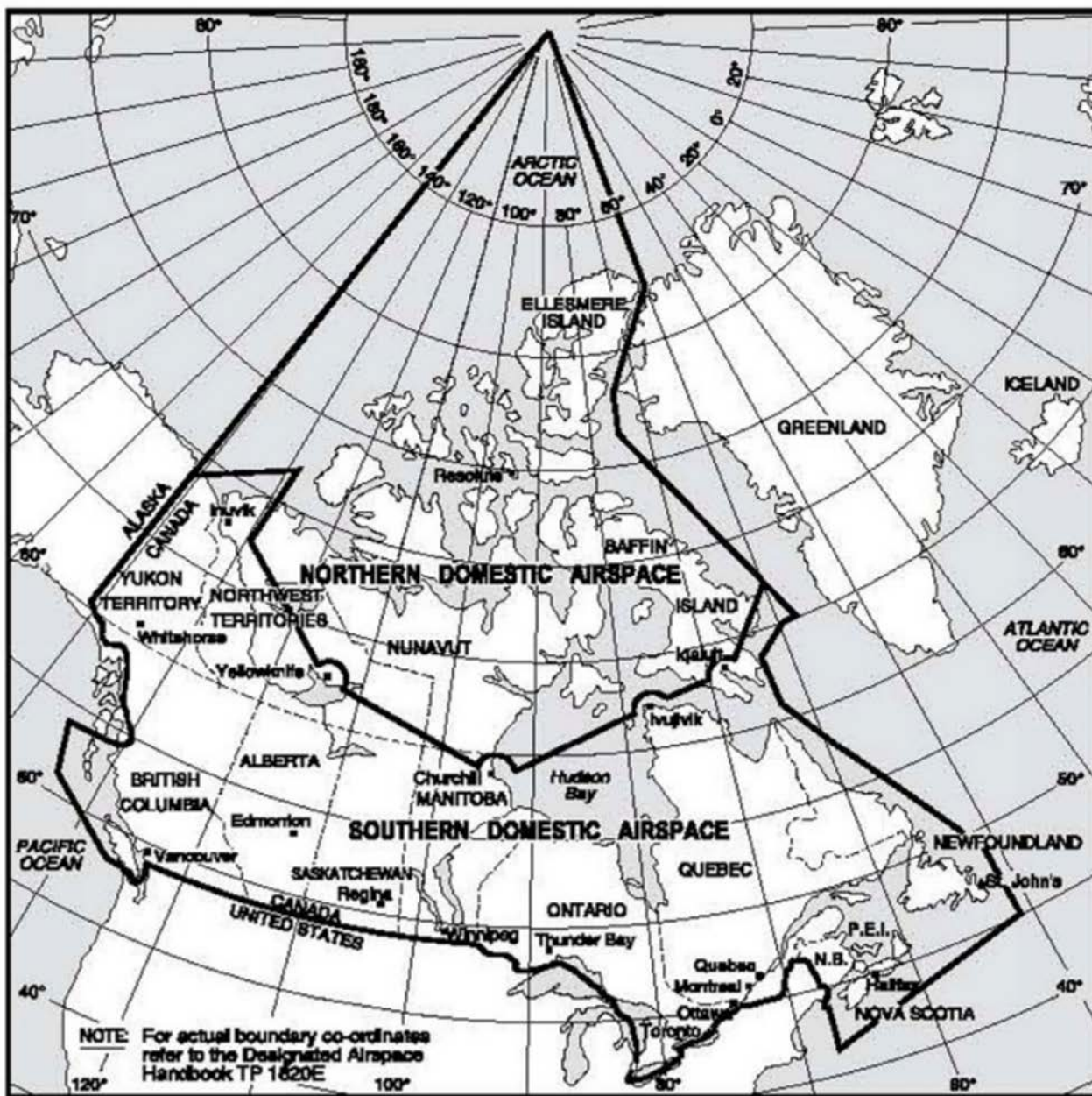
If an unserviceable portion of any manoeuvring area or taxiway is small enough that it can be bypassed by an aircraft with safety, red flags are used to outline the area. At night, the area is marked with red lights – sometimes flashing.

### APPROACH LIGHTING SYSTEM (ALS)

An ALS provides additional guidance to aid a pilot in finding the beginning of the runway during periods of low visibility. These lights are used as part of an instrument landing system (ILS) and aid the pilot in transitioning from the instrument portion of the approach to the visual portion.

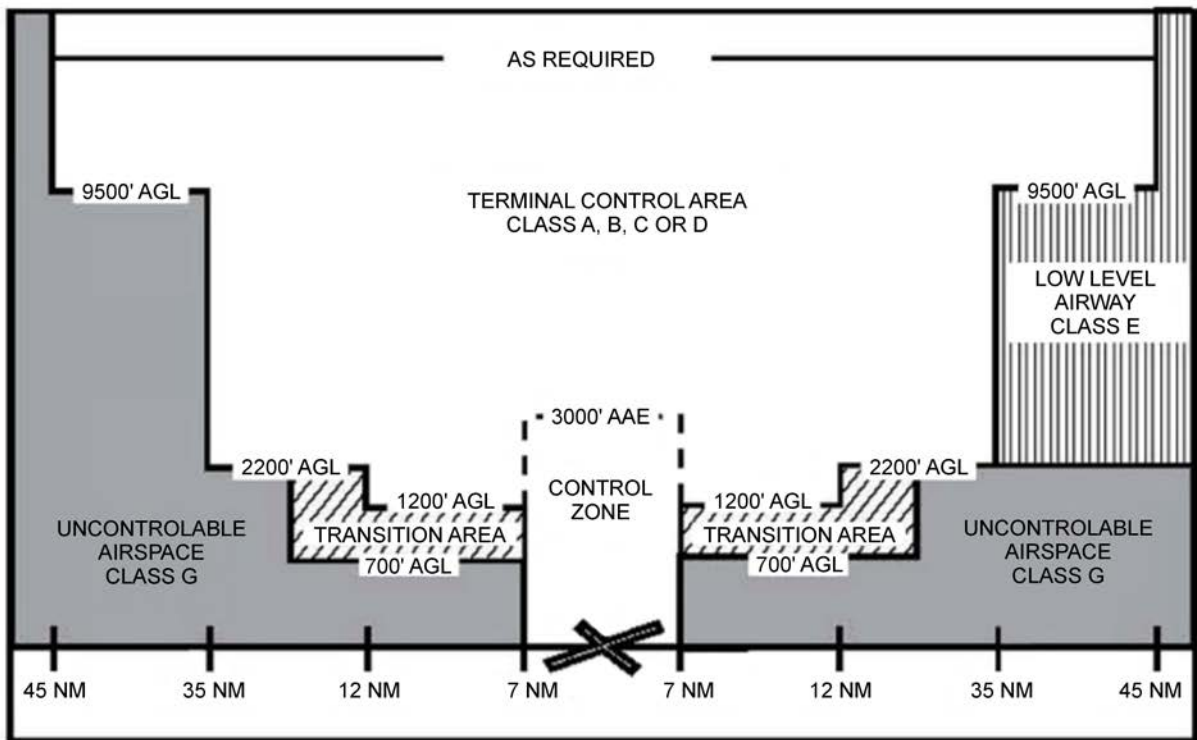
The aerodrome operator must ensure that the systems are working properly by inspecting them on a regular basis. During the winter, the snow around the systems must be cleared to keep them visible.

## CANADIAN DOMESTIC AIRSPACE



*Aeronautical Information Manual, Ottawa, ON: Her Majesty the Queen in Right of Canada (p. 182)*

Figure 16B-1 Boundaries of CDA, NDA, and SDA



*Aeronautical Information Manual, Ottawa, ON: Her Majesty the Queen in Right of Canada (p. 186)*

Figure 16B-2 Typical Airspace Surrounding an Aerodrome

## **AIRSPACE CLASSIFICATIONS**

CDA is divided into seven classes, each identified by a single letter: A, B, C, D, E, F, or G. Flight within each class is governed by specific rules applicable to that class.

### **CLASS A**

Class A airspace is designated where an operational need exists to exclude VFR aircraft. All operations must be conducted under IFR and are subject to Air Traffic Control (ATC) clearances and instructions. An ATC clearance gives authorization to proceed within controlled airspace and an ATC instruction is a directive issued by an ATC unit for air traffic control purposes.

All high level controlled airspace is designated as Class A.

### **CLASS B**

Class B airspace is designated where an operational need exists to provide air traffic control service to IFR and to control VFR aircraft.

All low level controlled airspace above 12 500 feet ASL or at and above the minimum en route altitude (MEA), whichever is higher, up to but not including 18 000 feet ASL will be Class B airspace. Control zones and associated terminal control areas may also be classified as Class B airspace.

### **CLASS C**

Class C airspace is controlled airspace in which both IFR and VFR flights are permitted.

Airspace classified as Class C becomes Class E airspace when the appropriate ATC unit is not in operation. Terminal control areas and associated control zones may be classified as Class C airspace.

### **CLASS D**

Class D airspace is controlled airspace in which both IFR and VFR flights are permitted, but VFR flights must establish two-way communication with the appropriate ATC agency prior to entering the airspace.

Airspace classified as Class D becomes Class E airspace when the appropriate ATC unit is not in operation. A terminal control area and associated control zone could be classified as Class D airspace.

### **CLASS E**

Class E airspace is designated where an operational need exists for controlled airspace but does not meet the requirements for Class A, B, C, or D.

Low level airways, control area extensions, transition areas, or control zones established without an operating control tower may be classified as Class E airspace.

### **CLASS F**

Class F airspace is an area in which activities must be restricted, or limitations imposed upon aircraft operations that are not a part of those activities. Typical uses for Class F airspace include:

- military practice areas,
- fire-bombing,
- parachute jumping,
- flight training,
- soaring,
- hang gliders, and

- air shows.

Class F airspace is sometimes known as special use airspace. It may be classified as Class F advisory, or as Class F restricted, and can be controlled airspace, uncontrolled airspace, or a combination of both.

### **CLASS G**

Class G airspace is airspace that has not been designated Class A, B, C, D, E or F and in which ATC has neither the authority or responsibility for exercising control over air traffic.

To help remember:

- Classes A to E are controlled airspace,
- Class F may be controlled or uncontrolled, and
- Class G airspace is uncontrolled.

The difference between Class C and Class D is that an ATC clearance is needed to enter Class C, but two-way communication is all you need to enter Class D.

### AIRSPACE MODEL CONSTRUCTION CHECKLIST

Use this as a guide to ensure that your model has all the required components. As you add each component to the model, you can check it off the list. If you add something to the model that is not on the list below, write it in the extra spaces provided.

Primary runway

Secondary runway

Control zone

Terminal control area

Transition area

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## VEHICLES USED AT AN AERODROME



*Enfield Auto Body, Major Clients and Services. Retrieved November 15, 2007, from <http://www.enfieldautobody.com/majorclients.htm>*

Figure 16E-1 Pickup Truck Used at an Aerodrome



*NRRA, Airport Vehicles. Retrieved November 15, 2007, from [http://www.nrairport.com/equipment/airport\\_vehicles.htm](http://www.nrairport.com/equipment/airport_vehicles.htm)*

Figure 16E-2 Dump Truck Used at an Aerodrome



*Bosserman Aviation Equipment, New Refuelers. Retrieved November 19, 2007, from <http://www.bossermanaviationequip.com/refuelers.htm>*

Figure 16E-3 Mobile Tanker Used at an Aerodrome



*Sioux Gateway Airport, Photo Gallery. Retrieved November 15, 2007, from [http://www.flysiouxgateway.com/index.php/gallery/image\\_full/107/](http://www.flysiouxgateway.com/index.php/gallery/image_full/107/)*

Figure 16E-4 A Snowplow Used at an Aerodrome



*Chisholm/Hibbing, 2007, Airport Deicing Service, Copyright 2007 by Chisholm/Hibbing Airport.  
Retrieved November 15, 2007, from <http://www.hibbingairport.com/services/deicer.php>*

Figure 16E-5 A De-Icing Truck Used at an Aerodrome



*Stinar Corporation, Stinar Lavatory and Water Trucks. Retrieved November 19, 2007, from [http://www.stinar.com/lav\\_water\\_trucks.shtml](http://www.stinar.com/lav_water_trucks.shtml)*

Figure 16E-6 A Ground Servicing Truck (Potable Water) Used at an Aerodrome





*NRRA, Airport Vehicles. Retrieved November 15, 2007, from [http://www.nrairport.com/equipment/airport\\_vehicles.htm](http://www.nrairport.com/equipment/airport_vehicles.htm)*

Figure 16E-7 Front Mounted Sweeper



*Viking Cives, Photo Gallery. Retrieved November 16, 2007, from <http://vcl.vikingcives.com/ViewPage.aspx?pg=35>*

Figure 16E-8 One-Way Snowplow Blade Mounted on a Truck



*Patria, Airport Equipment. Retrieved November 16, 2007, from <http://patria.fi/products/PatriaProductsPublic/search.aspx?selectedcategory=CD498>*

Figure 16E-9 Two-Way Snowplow Blade Mounted on a Special Chassis



*NRRA, Airport Vehicles. Retrieved November 15, 2007, from [http://www.nrairport.com/equipment/airport\\_vehicles.htm](http://www.nrairport.com/equipment/airport_vehicles.htm)*

Figure 16E-10 Front Mounted Snow Blower (Mounted on a Tractor)



*Eagle Airfield, Used Equipment Inventory. Retrieved November 16, 2007, from <http://www.eagleairfield.com/Used.html>*

Figure 16E-11 Self-Propelled Snow Blower



*Velcon Canada, 2003, Engineered Products and Systems, Copyright 2003 by Velcon Canada.  
Retrieved November 19, 2007, from <http://www.velconcanada.ca/specialprojects.html>*

Figure 16E-12 Above Ground Tank and Refuelling Cabinet





*Velcon Canada, 2003, Engineered Products and Systems, Copyright 2003 by Velcon Canada.  
Retrieved November 19, 2007, from <http://www.velconcanada.ca/specialprojects.html>*

Figure 16E-13 Refuelling Cabinet



*Bosserman Aviation Equipment, New Refuelers. Retrieved November 19, 2007, from <http://www.bossermanaviationequip.com/refuelers.htm>*

Figure 16E-14 Mobile Tanker



## VEHICLE IDENTIFICATION

Match the pictures with the most correct name or purpose. Each picture has a matching name and a matching purpose. Not all names or purposes have a matching picture.

A



B



C



D



E



F



### Name

- \_\_\_\_\_ Pickup truck
- \_\_\_\_\_ Snowplow
- \_\_\_\_\_ Fire truck
- \_\_\_\_\_ De-icing truck
- \_\_\_\_\_ Ground servicing truck
- \_\_\_\_\_ Mobile tanker
- \_\_\_\_\_ Dump truck
- \_\_\_\_\_ Aircraft tow tractor
- \_\_\_\_\_ Snow blower

### Purpose

- \_\_\_\_\_ Push snow.
- \_\_\_\_\_ Respond to aircraft emergencies.
- \_\_\_\_\_ Spray aircraft to remove/prevent ice.
- \_\_\_\_\_ Move aircraft around on apron.
- \_\_\_\_\_ Blow snow.
- \_\_\_\_\_ Deliver supplies to aircraft on the apron.
- \_\_\_\_\_ General aerodrome use.
- \_\_\_\_\_ Carry loads of snow and grit.
- \_\_\_\_\_ Deliver fuel to aircraft.

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# ANSWER KEY

A



B



C



D



E



F



## Name

- F     Pickup truck
- B     Snowplow
- Fire truck
- D     De-icing truck
- C     Ground servicing truck
- A     Mobile tanker
- E     Dump truck
- Aircraft tow tractor
- Snow blower

## Purpose

- B     Push snow.
- Respond to aircraft emergencies.
- D     Spray aircraft to remove/prevent ice.
- Move aircraft around on apron.
- Blow snow.
- C     Deliver supplies to aircraft on the apron.
- F     General aerodrome use.
- E     Carry loads of snow and grit.
- A     Deliver fuel to aircraft.

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## ARFF TRUCK



*Oshkosh Truck Corporation, 2007, Striker 4500, Copyright 2007 by Oshkosh Truck Corporation.  
Retrieved November 28, 2007, from [http://www.oshkoshtruck.com/pdf/Oshkosh\\_Striker4500.pdf](http://www.oshkoshtruck.com/pdf/Oshkosh_Striker4500.pdf)*

Figure 16H-1 ARFF Truck

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## **AERODROME SECURITY DEFINITIONS**

**Restricted Area.** A portion of an aerodrome where access is only granted to authorized persons.

**Restricted Area Access Point.** A location in a security barrier at which a control system is in place that controls access to a restricted area from a non-restricted area.

**Screening.** The checking, identification, observation, inspection or authorized search of persons, goods and other things in the possession or control of persons.

**Security Barrier.** A physical structure or natural feature used to prevent or deter access by unauthorized persons to a restricted area.

**Sterile Area.** A restricted area, including any passenger loading bridges attached to it. It is used to separate passengers who have been screened, or are exempt from screening, and other authorized persons from unauthorized persons at the aerodrome.

### **RESTRICTED AREAS**

All aircraft movement areas (runways, taxiways and aprons) are restricted areas and only those who are authorized have access to these areas. Restricted areas also exist inside the terminal building. The area used by passengers between the time they are screened and the time they board the aircraft is a restricted area (specifically a sterile area). Other areas inside the terminal building that will be a restricted area include:

- aerodrome and airline operations,
- baggage-handling areas,
- ATC, and
- emergency response.

### **FENCES**

The fences most commonly used as security measures at an aerodrome are chain-link fences erected around the perimeter of the aircraft movement areas. Access through the fence is provided by gates for vehicles and people or through buildings adjacent to the movement areas.

### **GATES**

The gates found in aerodrome fencing can be categorized in several ways: routine, emergency, or occasional access points and vehicle or personnel access points. Additionally, they can be operated manually or mechanically. Gates designed to be operated mechanically should also be able to be opened manually in case of electrical failure. In all cases, a gate that remains open can become a major security problem.

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## EXAMPLE OF A NOTAM FILE

Aerodrome NOTAM file CYYZ

070620 CYYZ TORONTO/LESTER B.PEARSON INTL  
CYYZ RWY 15L/33R CLSD DUE CONST DLY 1230/2230 0711291230 TIL 0711302230

061070 CYYZ TORONTO/LESTER B.PEARSON INTL  
CYYZ THR 23 DISPLACED 685 FT (200 FT BEYOND PUB DISPLACEMENT OF 485 FT) DUE OBST 615 FT NE OF THR 23, 38 FT AGL, 592 MSL. MARKED BY ORANGE MARKERS AND WING BAR LGT EITHER SIDE OF RWY. FOR RWY 23 DEP, ACFT REQUIRING FULL LEN MUST NOTIFY GROUND CTL UPON INITIAL CTC.  
DECLARED DIST:  
RWY 05: TORA 11120 TODA 11435 ASDA 11120 LDA 10985  
RWY 23: TORA 11120 TODA 12120 ASDA 11120 LDA 10435  
CAP 4 ILS OR NDB RWY 23 TCH TO READ 45 FT VICE 55 FT  
TIL APRX 0712312000

070270 CYYZ TORONTO/LESTER B.PEARSON INTL  
CYYZ CRANE 7353 FT BFR THR 15L AND 131 FT LEFT EXTENDED RWY CL, 115 FT AGL 686 MSL LGTD, 1100/2100 DLY 0706091100/0711032100 AND 1200/2200 DLY 0711041200 TIL 0712072200

070449 CYYZ TORONTO/LESTER B.PEARSON INTL  
CYYZ AMEND PUB:  
6 SMOKE STACKS WITHIN AN AREA BOUNDED BY 434449N 794048W 434448N 794046W 434446N 794049W 434447N 794050W TO POINT OF ORIGIN (CENTRED APRX 5 NM NNW AD) 215 FT AGL 811 MSL. LGTD, NOT PAINTED

070584 CYYZ TORONTO/LESTER B.PEARSON INTL  
CYYZ PARKING AREAS: TML 1:  
TAXILANE 9E AND 9W CLSD.  
NEW TAXILANE 10 OPN 246 FT/75 M EAST OF TAXILANE 9, EQUIPPED WITH CL LGT.  
UNLGTD OUTER LOOP JOINING TAXILANE 9 TO 10 PAINTED WITH DASHED CL AND RESTRICTED TO ACFT WINGSPAN 118 FT /35.9 M OR LESS.  
TIL APRX 0711292000

070592 CYYZ TORONTO/LESTER B.PEARSON INTL  
CYYZ CAT III APCH 06L NOT AUTH PENDING INITIAL CERTIFICATION TIL 0802191700

*Nav Canada, AWWWS - NOTAM Page. Retrieved November 29, 2007, from [http://www.flightplanning.navcanada.ca/cgi-bin/CreePage.pl?Langue=anglais&NoSession=NS\\_Inconnu&Page=Fore-obs%2Fnotam&TypeDoc=htmls](http://www.flightplanning.navcanada.ca/cgi-bin/CreePage.pl?Langue=anglais&NoSession=NS_Inconnu&Page=Fore-obs%2Fnotam&TypeDoc=htmls)*

Figure 16J-1 A NOTAM File

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## AIR TRAFFIC CONTROL CLEARANCES AND INSTRUCTIONS



Whenever an ATC clearance is received and accepted by the pilot, compliance shall be made with the clearance. If a clearance is not acceptable, the pilot should immediately inform ATC of this fact as acknowledgement of the clearance alone will be taken by a controller as indicating acceptance. A clearance will be identified by the use of the word “clear” in its contents. Example of clearances are:

“You are cleared to the circuit”.

“You are cleared for take off on runway two niner”.

### EXAMPLE OF AN ATC CLEARANCE

“Cleared for takeoff on runway zero four.”

Write down an example of an ATC Clearance:

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A pilot shall comply with an ATC instruction that is directed to and received by the pilot, provided the safety of the aircraft is not jeopardized. An instruction will always be worded in such a manner as to be readily identified, although the word “instruct” will seldom be included. Pilots shall comply with and acknowledge receipt of all ATC instructions directed to and received by them. An example of an instruction would be:

“Hold on taxiway”.

“Climb to and maintain one three thousand”.

### EXAMPLE OF AN ATC INSTRUCTION

“Hold short of taxiway.”

Write down an example of an ATC Instruction:

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