ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL TWO

INSTRUCTIONAL GUIDE

SECTION 2

EO M260.02 – IDENTIFY ASPECTS OF BASIC AERODROME OPERATIONS

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

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

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

Visit the CATSA Website for an up-to-date list of packing restrictions for air travellers.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for this lesson to orient the cadets to basic aerodrome operations, to generate interest and to give an overview of it.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to discuss basic aerodrome operations of a civilian aerodrome.

IMPORTANCE

It is important for cadets to discuss basic aerodrome operations at a civilian airport to gain an awareness of the services and facilities present at an aerodrome. This may generate an interest in aerodrome operations and may lead to future opportunities in the Air Cadet Program.

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Teaching point 1 **Discuss Basic Aerodrome Operations**

Time: 5 min Method: Interactive Lecture

Basic operations at a civilian aerodrome are generally divided into three categories. They are air traffic control, ground control and airport maintenance.

AIR TRAFFIC CONTROL

Most people do not give second thought to who is actually in control of the aircraft when it is flying. Most people would say that the pilot has control of the direction and course of the aircraft but they would be mistaken.

The task of ensuring safe operations of commercial and private aircraft falls on air traffic controllers. They must coordinate the movements of thousands of aircraft, keep them at safe distances from each other, direct them during takeoff and landing, direct them around bad weather and ensure that traffic flows smoothly with minimal delays.

GROUND CONTROL

Ground control, sometimes known as Ground Movement Control (GMC) or Surface Movement Control (SMC) is responsible for the airport “manoeuvering” areas, or areas not released to the airlines or other users. This generally includes all taxiways, holding areas, and some transitional aprons or intersections where aircraft have arrived and vacated the runways and departure gates.

AIRPORT MAINTENANCE

Airport maintenance is responsible for a variety of airport field maintenance work, including general maintenance and construction work. They operate equipment and service a variety of power and general maintenance equipment in the upkeep of runways, taxiways, and aprons as well as perform other related duties.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What three categories are basic operations divided into at a civilian aerodrome?

Q2. What does GMC stand for?

Q3. What is airport maintenance responsible for?

ANTICIPATED ANSWERS

A1. Basic operations at a civilian aerodrome are generally divided into three categories. They are air traffic control, ground control and airport maintenance.

A2. GMC stands for ground movement control.

A3. Airport maintenance is responsible for a variety of airport field maintenance work, including general maintenance and construction work.

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Teaching point 2 **Explain the Role of Ground Controllers**

Time: 5 min Method: Interactive Lecture

THE ROLE OF GROUND CONTROLLERS

Once an aircraft has landed, ground controllers provide the pilot with precise taxi information to passenger gates and jetways.

From the cockpit, it is difficult to assure that there is sufficient clearance between the aircraft structure and any buildings or other aircraft. Marshalling personnel are provided to assist aircraft when arriving at and departing from passenger gates and jetways.

While the goal of ground controllers is to maintain aircraft in such a manner as to assure safe flight, they must provide clearance for aircraft-to-taxi on the ground at the aerodrome while creating a safe environment while an aircraft is on the ground.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. What do ground controllers provide once an aircraft has landed?

Q2. Why and when are marshalling personnel provided?

Q3. What is the goal of ground controllers?

ANTICIPATED ANSWERS

A1. Once an aircraft has landed, ground controllers provide the pilot with precise taxi information to passenger gates and jetways.

A2. Marshalling personnel are provided to assist aircraft when arriving at and departing from passenger gates and jetways.

A3. The goal of ground controllers is to maintain aircraft in such a manner as to assure safe flight.

Teaching point 3 **Explain that Ground Facilities and Services Assist With Aircraft Arrivals and Departures**

Time: 5 min Method: Interactive Lecture

Ground facilities and services assist with aircraft arrivals and departures. The following are some of the ground services and facilities that can be found at a basic aerodrome.

RUNWAY MAINTENANCE

Runway maintenance is responsible for the runway upkeep within the airport grounds. Duties range from tarmac servicing to keeping the runways in good condition. During the winter, the main focus of the work is on runway and taxiing area maintenance.

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RUNWAY LIGHTING

Runway lighting is used at airports which allow night landings. Seen from the air, runway lights form an outline of the runway. A particular runway may have some or all of the following:

- **Runway End Identification Lights (REIL).** Unidirectional (facing approach direction) or omni-directional are a pair of synchronized flashing lights installed at the runway threshold, one on each side.
- **Runway End Lights.** Rows of lights on each side of the runway on precision instrument runways, these lights extend along the full width of the runway. These lights show green when viewed by approaching aircraft and red when seen from the runway.
- **Runway Edge Lights.** These are white elevated lights that run the length of the runway on either side. Taxiways are differentiated by being bordered by blue lights. On precision instrument runways, the edge-lighting becomes yellow in the last 2000 feet of the runway.
- **Runway Centreline Lighting System (RCLS).** These are lights embedded into the surface of the runway at 50 foot intervals along the runway centreline on some precision instrument runways. The lights are white except for the last 3000 feet. For the last 3000 feet, the lights alternate white and red for 2000 feet and red for the last 1000 feet.
- **Touchdown Zone Lights (TDZL).** This consists of rows of white light bars (with three in each row) on either side of the centreline over the first 3000 feet (or to the midpoint, whichever is less) of the runway.
- **Taxiway Centreline Lead-off Lights.** These are installed along lead-off markings. They are alternating green and yellow lights that are embedded into the runway pavement. They start with green lights branching off the runway centreline to the position of the first centreline light beyond the holding position on the taxiway.
- **Taxiway Centreline Lead-on Lights.** These are installed the same way as the taxiway centreline lead-off lights.
- **Land and Hold Short Lights.** These are a row of white pulsating lights installed across the runway to indicate the hold short position on some runways.
- **Approach Lighting System (ALS).** A lighting system installed on the approach end of an airport runway, it consists of a series of light bars, strobe lights, or a combination of the two that extend outward from the end of the runway.

BAGGAGE HANDLING

Baggage handlers work both indoors and outdoors at an aerodrome. They are responsible for making sure that not only does the mail, freight and luggage get onto the right aircraft but also that it gets there on time.

FUEL STORAGE SYSTEMS

Most of the large airports that service transport category aircraft have underground storage tanks and buried fuel lines. This arrangement allows the aircraft to be fuelled without having to carry the fuel to the aircraft in fuel trucks. Most aircraft that are fuelled from this type of system use under wing fuelling.

DE-ICING/ANTI-ICING

The successful treatment of ice and snow deposits on airplanes on the ground is an absolute necessity for safe winter operations. A flight that is expected to operate in known ground icing conditions shall not takeoff unless the aircraft has been inspected for icing and, if necessary, has been given the appropriate de-icing/anti-icing treatment. Accumulation of ice or other contaminants shall be removed so that the aircraft is kept in an airworthy condition prior to takeoff.

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CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. What are five ground services or facilities that assist aircraft during arrivals and departures?

Q2. What lights may a particular runway have?

Q3. What is an absolute necessity for airplanes on the ground in winter operations?

ANTICIPATED ANSWERS

A1. Ground services or facilities that assist aircraft during arrivals and departures are:

- runway maintenance,
- runway lighting,
- baggage handling,
- fuel storage systems, and
- de-icing/anti-icing.

A2. A particular runway may have some or all of the following lights :

- REIL,
- runway end lights,
- runway edge lights,
- RCLS,
- TDZL,
- taxiway centreline lead-off lights,
- taxiway centreline lead-on-lights,
- land and hold short lights, and
- ALS.

A3. The successful treatment of ice and snow deposits on aircraft on the ground is an absolute necessity for safe winter operations.

Teaching point 4 — **Explain What the Canadian Air Transport Security Authority (CATSA) Is and Outline its Duties**

Time: 10 min — Method: Interactive Lecture

CANADIAN AIR TRANSPORT SECURITY AUTHORITY (CATSA)

CATSA is a crown corporation based in the national capital region and it reports to Parliament through the Minister of Transport. It works with ground control to protect the public by securing critical elements of the air transportation system as assigned by the government. CATSA ensures passengers are aware of packing restrictions.

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CATSA DUTIES AND RESPONSIBILITIES

CATSA is responsible for the following:

- Pre-Board Screening (PBS) of passengers and their belongings at Canada's major airports must be conducted before every flight.
- Acquiring, deploying, operating, and maintaining Explosive Detection Systems (EDS) equipment at designated airports which covers 99 percent of air travellers in Canada.
- Contracting for RCMP policing services and implementation of the Canadian Air Carrier Protective Program. Working with the RCMP for the provision of on-board security services under the Canadian Air Carrier Protective Program. This program covers selected domestic, trans-border and international flights, and all flights to Reagan National Airport in Washington, DC.
- The implementation of a restricted area identification card. CATSA has implemented an enhanced restricted area identification card for non-passengers which includes the use of biometric identifiers. This card is issued by the airport authority and enhances the security of restricted areas at major Canadian airports. The program includes a national database authenticating the validity of the identification card.
- Non-Passenger Screening (NPS) entering airport restricted areas. NPS has been regulated by Transport Canada since February 2004 in order to add another layer of security to Canada's air transport security system. The purpose of NPS is to enhance both airport and civil aviation security by operating random and unpredictable security screening checkpoints at entry points to or within airport restricted areas.
- Supplemental airport policing service contributions. Contributions toward airport policing costs: in the aftermath of September 11, 2001, new measures were implemented at airports to increase police presence. The Government of Canada, through CATSA, has committed to assisting selected airports with these additional costs.

Note: Refer to the CATSA Website at www.catsa-acsta.gc.ca for an up-to-date list of baggage packing restrictions for air travellers.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

Q1. What does CATSA stand for?

Q2. What are three duties and responsibilities of CATSA?

Q3. What item has CATSA implemented that includes the use of biometric identifiers?

ANTICIPATED ANSWERS

A1. CATSA stands for Canadian Air Transport Security Authority.

A2. Three duties and responsibilities of CATSA are (any three of the following):

- pre-board screening of passengers and their belongings;
- acquisition, deployment, operation and maintenance of explosive detection systems (eds);
- contracting for RCMP policing services on selected flights and all flights to Reagan National Airport, Washington, DC;
- the implementation of a restricted area identification card;
- the screening of non-passengers (nps) entering airport restricted areas; and
- making contributions for supplemental airport policing services.

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A3. CATSA has implemented an enhanced restricted area identification card for non-passengers which includes the use of biometric identifiers.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. What does SMC stand for?

Q2. What is runway maintenance responsible for?

Q3. What does NPS stand for?

ANTICIPATED ANSWERS

A1. SMC stands for surface movement control.

A2. Runway maintenance is responsible for the runway upkeep within the airport grounds.

A3. NPS stands for non-passenger screening.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

CLOSING STATEMENT

Discussing basic aerodrome operations at a civilian airport helps the cadet gain an awareness of the services and facilities present at an aerodrome. This may generate an interest in aerodrome operations and may lead to future opportunities in the Air Cadet Program.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

C3-098 Canadian Air Transport Security Authority (CATSA). (2007). *Canadian Air Transport Security Authority: Mandate.* Retrieved 19 February 2007, from http://www.catsa-acsta.gc.ca/english/about_propos/.

C3-099 Airport Innovation. (2007). *Airport Ground Control Equipment.* Retrieved 21 February 2007, from http://www.airportinnovation.com/airport_ground.php.

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