ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL THREE

INSTRUCTIONAL GUIDE

SECTION 2

EO C360.02 – EXPLAIN ASPECTS OF AERODROME LIGHTING

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-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.

INTRODUCTION

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.

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Teaching point 1 **Explain Manoeuvring Lighting**

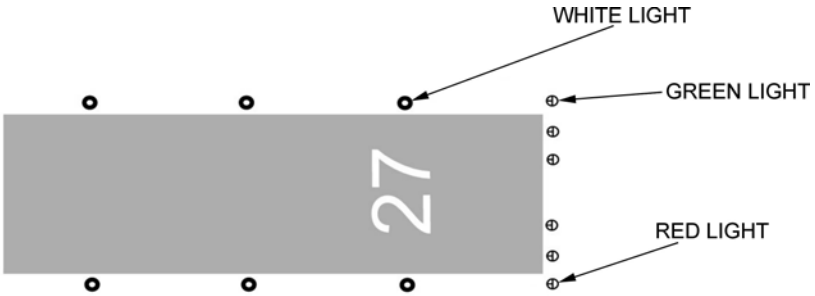
Time: 20 min Method: Interactive Lecture

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 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.

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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 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.

CONFIRMATION OF TEACHING POINT 1

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.

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A3. Yellow.

Teaching point 2 **Explain Navigational Lighting**

Time: 5 min Method: Interactive Lecture

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.

CONFIRMATION OF TEACHING POINT 2

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.

END OF LESSON CONFIRMATION

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.

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Hand out copies of Annex A to each cadet.

CONCLUSION

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.

REFERENCES

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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