ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL ONE

INSTRUCTIONAL GUIDE

SECTION 2

EO M160.02 – IDENTIFY FEATURES OF A RUNWAY

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located at A-CR-CCP-801/PG-001, *Proficiency Level One Qualification Standard and Plan*. 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.



The training aids for this EO can be presented a number of ways, depending on the resources available at the squadron. A model runway can be constructed out of construction paper or Bristol board. If desired, Attachment A can be photocopied and distributed to the cadets.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture method was chosen for TP 1–3 as it allows the instructor to present basic information to the cadets.

An in-class activity was selected for TP4 as it is an interactive way to confirm the cadets' comprehension of the material.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have identified features of a runway.

IMPORTANCE

Understanding the features of a runway will be helpful during tours and familiarization flights. In the aviation industry, pilots and air traffic controllers require this information to perform their jobs.

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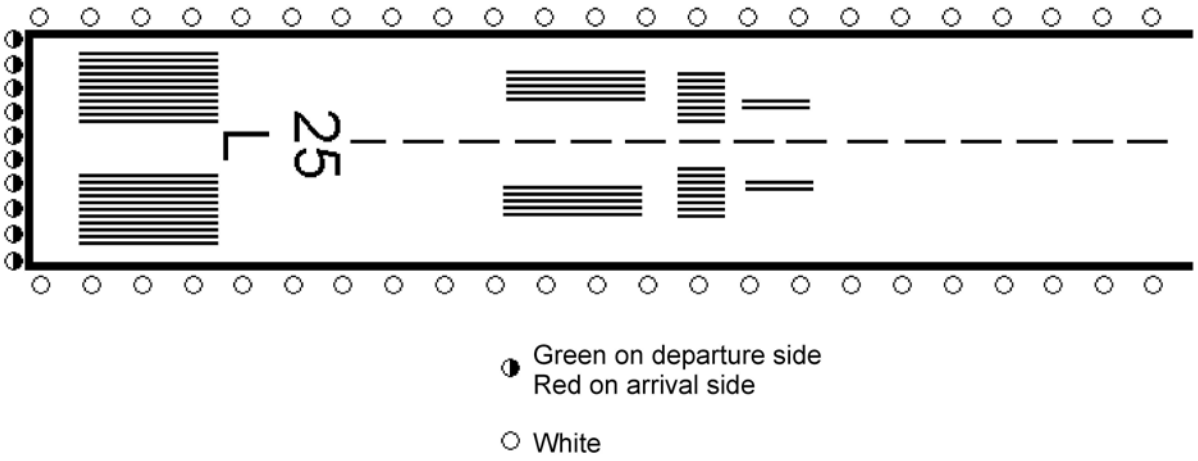
Teaching point 1 **Discuss runway lights.**

Time: 5 min Method: Interactive Lecture

RUNWAY LIGHTS

Both sides of a runway are marked by white lights. These lights are used to indicate the borders of the runway. They also contain red / green lights at the ends of the runway. These lights are double-sided with red on one side and green on the other. The red side of the lights faces toward the runway, or departure side, and indicates the end of the runway. The green side faces away from the runway, or arrival side, and indicates the start of the runway to aircraft that are landing.



Note. Director Cadets 3, 2011, Ottawa, ON: Department of National Defence

Figure 1 Runway Lights

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. What colour lights define the runway on each side?

Q2. What is the importance of the red / green lights?

ANTICIPATED ANSWERS:

A1. White lights.

A2. They indicate the end of the runway (red side) and the start of the runway for the aircraft preparing to land (green side).

Teaching point 2 **Discuss runway numbering.**

Time: 10 min Method: Interactive Lecture

RUNWAY NUMBERING

The runway number is indicated in large print as a two-digit number at the end of the runway. Runways are numbered according to their magnetic direction and are rounded off to the nearest ten degrees. Once rounded,

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the hundreds and tens digits are used to number the runway. For example, a runway that points in the direction of 266 degrees magnetic would be numbered 27. The highest runway number possible is 36 (360 degrees).

If two runways run parallel to each other they are identified as left or right by adding an L or an R next to the runway number. Two parallel runways heading north / south would be numbered 36L (left) and 36R (right).

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. How are runways numbered?

Q2. If a runway points in the direction of 176 degrees magnetic, how would it be numbered?

Q3. How are parallel runways numbered?

ANTICIPATED ANSWERS:

A1. Magnetic direction.

A2. 18 (Round 176 to 180, and use only the hundreds and tens digits).

A3. By adding L and R next to the runway number.

Teaching point 3 **Discuss runway markings and lights.**

Time: 5 min Method: Interactive Lecture

RUNWAY MARKINGS

Runways have other important markings that have specific purposes.

Centreline. White dashed lines designate the centre of the runway. Pilots use these markings to line up the aircraft to the middle of the runway during landing.

Landing zone markings. Provide the pilot with a general area where it is desirable to touch down.

Threshold markings. Indicate the beginning and the end of the runway using white lines at the threshold.

Danger Markings. Indicate areas that may be dangerous or unserviceable. These areas are signified by large white Xs on the unserviceable runways or taxiways.

Obstruction lights. Identify possible structures that may obstruct a plane while attempting to take off / land.

Windsocks: Lit so pilots can use them at night.

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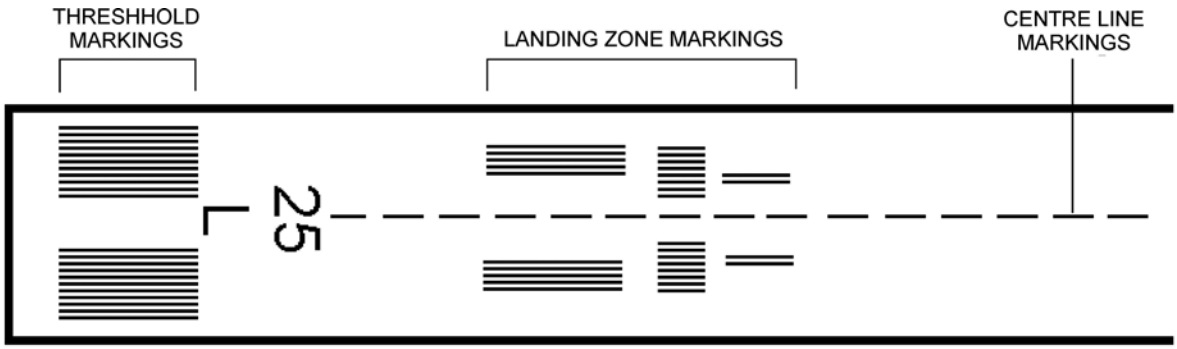
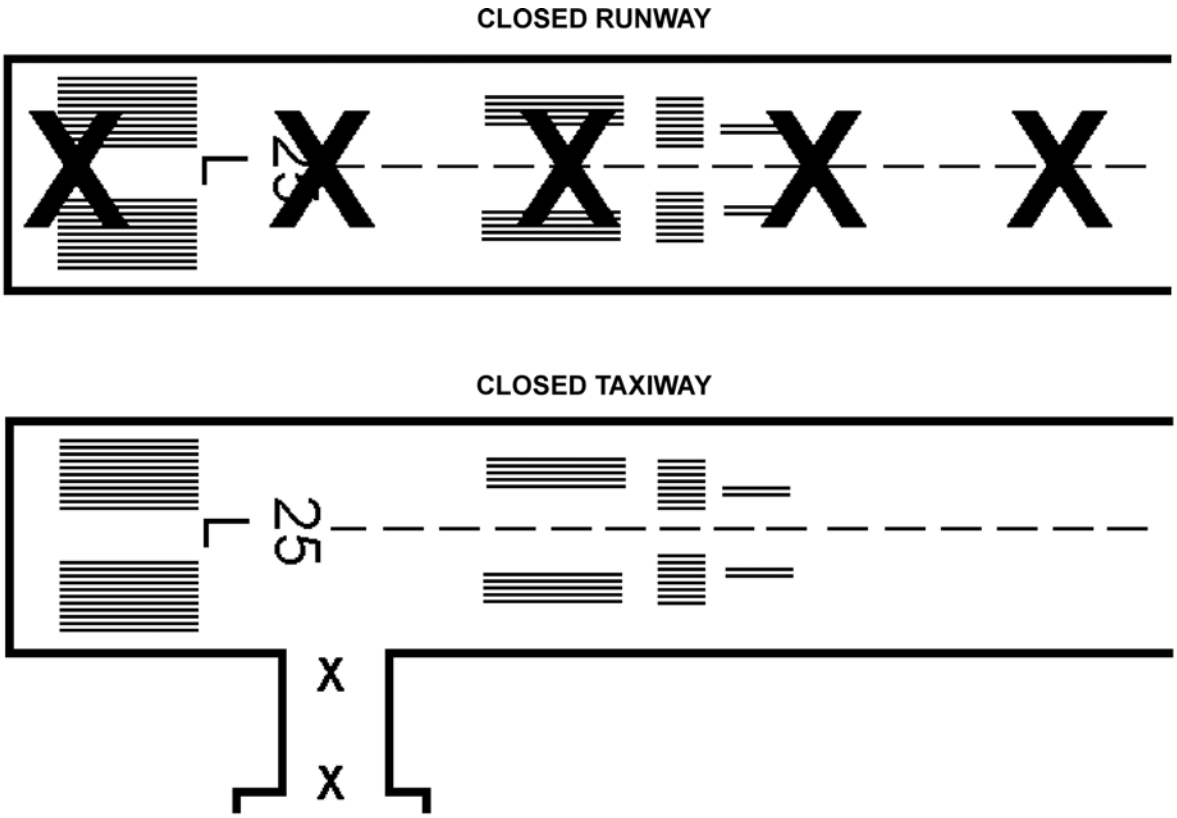


Note. Director Cadets 3, 2011, Ottawa, ON: Department of National Defence

Figure 2 Runway Markings



Note. Director Cadets 3, 2011, Ottawa, ON: Department of National Defence

Figure 3 Runway Danger Markings

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. What are the markings that indicate the beginning and the end of the runway?

Q2. What does a large white X signify on a runway or a taxiway?

Q3. What is the purpose of obstruction lights?

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ANTICIPATED ANSWERS:

A1. Threshold markings.

A2. Areas which may be dangerous or unserviceable.

A3. Obstruction lights are used to identify structures that may obstruct a plane while attempting to take off or land.

Teaching point 4 **Have the cadets identify various features of a runway.**

Time: 5 min Method: In-Class Activity

ACTIVITY

OBJECTIVE

The objective of the activity is to confirm the cadets can identify the features of a runway.

RESOURCES

- Flipchart paper, and
- Flipchart markers.

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of four.
2. Give each group a sheet of flipchart paper and flipchart markers.
3. Have each group create a runway using the materials provided. The runways must include:
    a. threshold markings,
    b. red / green lights,
    c. runway numbers,
    d. centre line,
    e. aerodrome landing markings,
    f. danger markings, and
    g. white lights.

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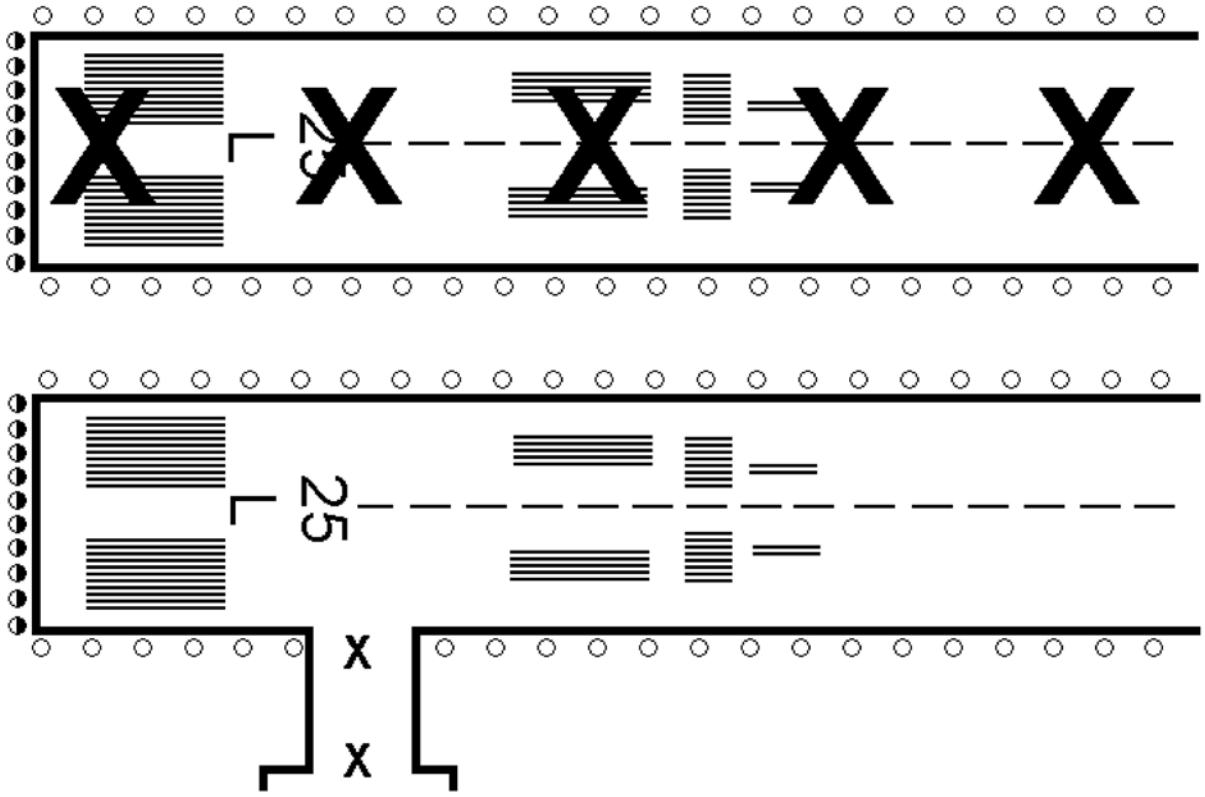

Note. Director Cadets 3, 2011, Ottawa, ON: Department of National Defence

Figure 4 Complete runway markings

4. The groups have five minutes to complete the assignment.

5. Confirm that each group included all the features.

SAFETY

Nil.

CONFIRMATION OF TEACHING POINT 4

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

END OF LESSON CONFIRMATION

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

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

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CLOSING STATEMENT

Being familiar with the various features of runways can assist cadets in a number of areas of training. Understanding the features of a runway enhances cadet knowledge of aerodrome components and gives further insight into the runways' role in take off and landing procedures.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

A3-001 A-CR-CCP-263/PT-001*From the ground up: Millennium edition* (2000). Ottawa, ON: Aviation Publishers Co. Limited

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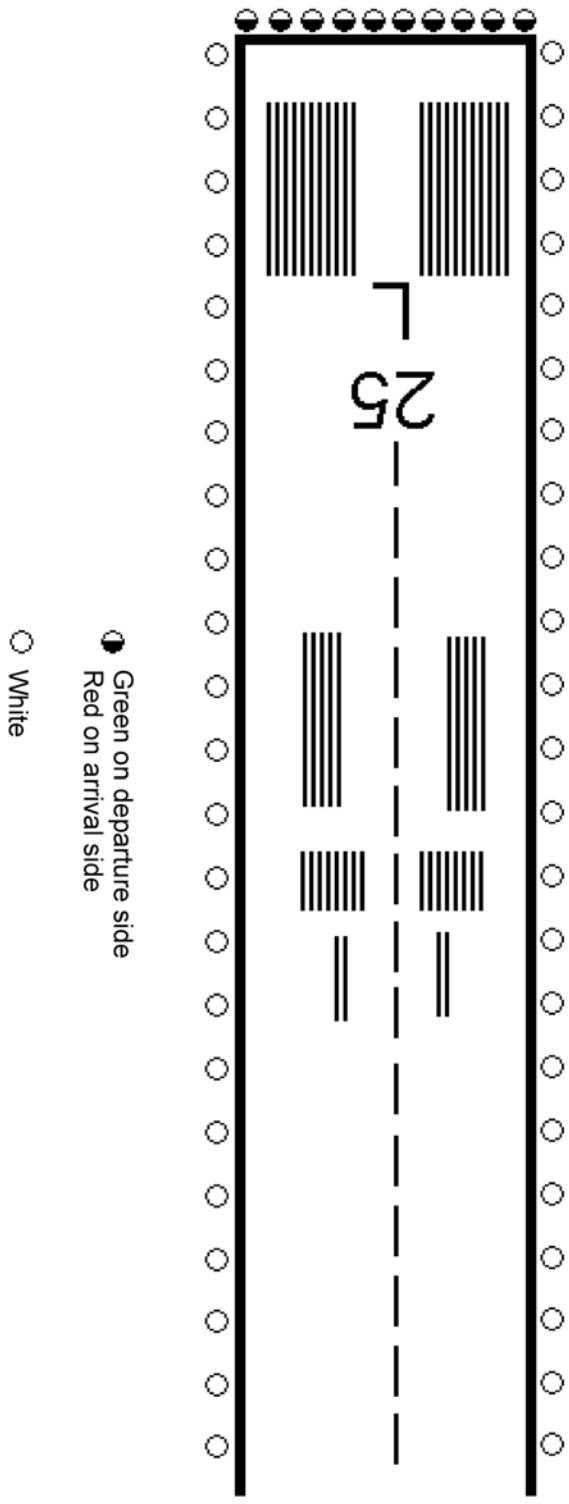

RUNWAY LIGHTS

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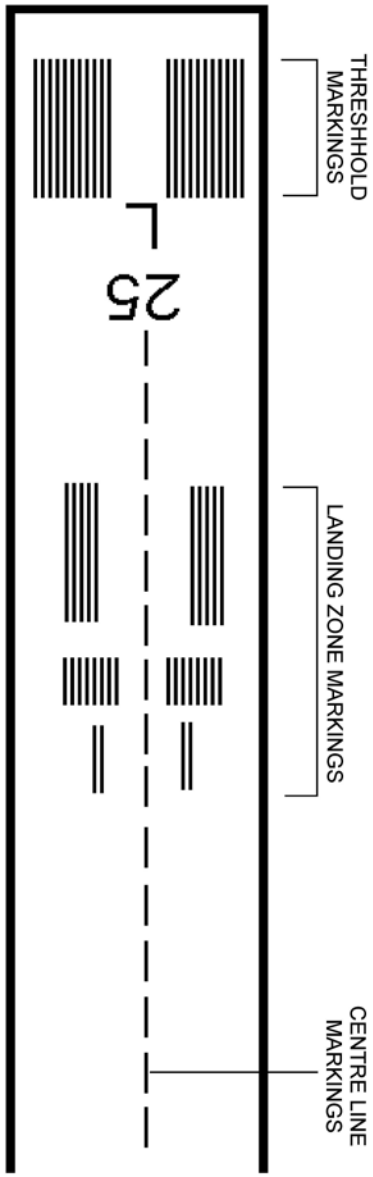

RUNWAY MARKINGS

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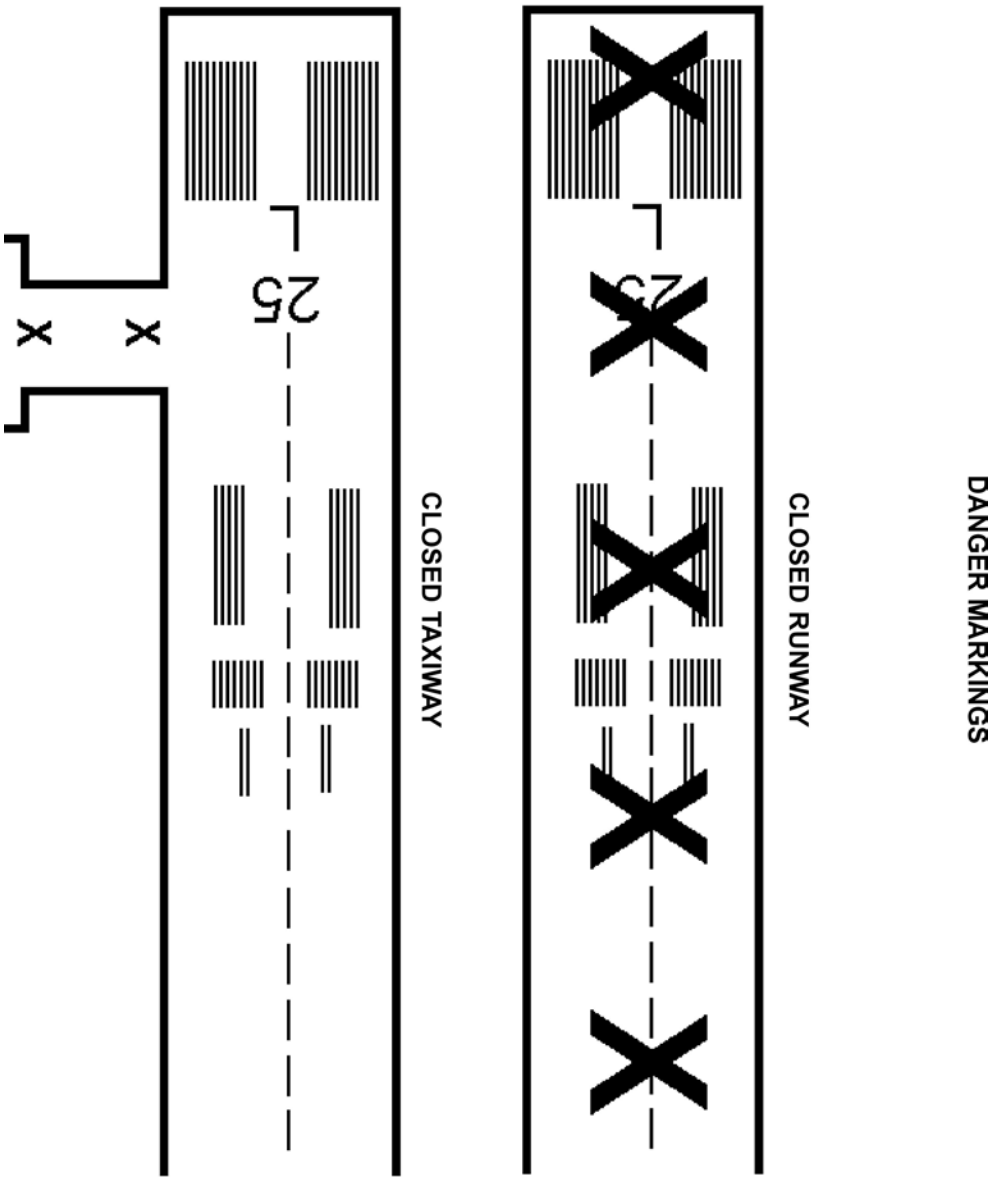

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