ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL ONE

INSTRUCTIONAL GUIDE

SECTION 5

EO C130.01 – PARTICIPATE IN A WALK-AROUND AIRCRAFT INSPECTION

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-801/PG-001, *Proficiency Level One Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

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

Ensure access to single engine, non-high performance airplane.

Arrange for 1 qualified pilot per 10 cadets (maximum group size) to conduct the inspection.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An in-class activity was chosen for TP 1 as it is an interactive way to present a walk-around aircraft inspection.

A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share their knowledge about and experience with walk-around aircraft inspection.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have participated in a walk-around aircraft inspection.

IMPORTANCE

Carefully inspecting an airplane before flight is one way the pilot ensures that the airplane is operational and safe. The walk-around inspection is an opportunity to apply knowledge of major airplane components. It is an introduction to the culture of safety that surrounds aviation.

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Teaching point 1 **Supervise a walk-around aircraft inspection.**

Time: 20 min Method: In-Class Activity

BACKGROUND KNOWLEDGE



This information is representative only. Always refer to and follow the recommendations of the manufacturer in carrying out any inspections and procedures. Individual models of airplane may have special procedures and inspection guidelines that may vary from the information given in this guide.

GENERAL

Flight safety includes the possession of knowledge, using common sense, and self-discipline. Thorough inspections and following established procedures allows a pilot to ensure that important safety considerations are not overlooked. One of these practices is conducting a walk-around inspection of the aircraft before a flight. The purpose of the walk-around is to notice any damage or condition that may pose a safety hazard to the flight. A walk-around can identify problems early in the flight preparation process, so that changes can be made if necessary (eg, minor repairs, changing aircraft, etc.). If any damage is noticed, it should be brought to the attention of an aircraft maintenance engineer, and noted in the aircraft's technical logbook. It is ultimately the pilot's decision whether an aircraft is in condition to fly. It is always better to make a decision on the side of safety, than to be caught in a potentially dangerous situation while flying.

CABIN

Before beginning the external inspection of the airplane, there are some preparatory things to be done inside the cabin.

Control locks should be removed. The control lock is a device that makes the control column / yolk immobile, so that the control surfaces (ailerons and elevators) do not move in the wind.

The pilot should ensure that the ignition is off, to avoid an unintended engine start.

The master switch controls power to the electrical systems in the airplane. The master switch should be turned on to supply power to the fuel gauges and the flaps. The fuel level indicated on the fuel gauges should be noted. This indicated level is cross-checked with a visual check of the actual fuel levels. The flaps should be fully lowered. The master switch should then be turned off to avoid draining the battery.

WINGS

Aircraft that are parked outside overnight are usually tied down to anchors beneath the wings and tail. The wing tie-downs should be removed from the airplane. There may be external control locks placed over the ailerons to prevent movement. These should be removed.

The flap sliders should be inspected to ensure secure attachment and minimal "play" or unwanted freedom of movement.

The aileron attachment points should be inspected to ensure security. The ailerons should be moved through their full range of motion to confirm correct and free movement.

All wing surfaces, the leading edge, and the trailing edge should be checked for dents, tears, cracks, wrinkles, bulges or missing rivets.

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A small amount of fuel should be drained from the fuel tank drain valve and visually checked to see if there is any water or sediment in the fuel. Water appears as bubbles at the bottom of the cup as water is heavier than fuel. The fuel should also be checked to see that it is the correct fuel grade. Different grades of fuel are different colours. One hundred low lead is the fuel grade most commonly used in light aircraft, and is coloured blue.

The fuel levels should be visually confirmed by removing the fuel cap and using a dipstick. The fuel cap must be properly secured after checking the fuel.

The pitot tube is connected to the instruments in the cockpit. In order for it to work properly, it must be clear of obstructions.

FUSELAGE

The baggage compartment should be checked to see if there is anything stored there that may be required for the flight, such as a survival kit. Knowing what is on board the airplane is important for calculating the weight and balance.

All fuselage surfaces should be checked for dents, tears, cracks, wrinkles, bulges or missing rivets.

The static port is connected to the instruments in the cockpit. In order for it to work properly, it must be clear of obstructions.

EMPENNAGE

If the aircraft is tied down, the tie-downs from the tail must be removed. External control locks should be removed.

All empennage surfaces should be checked for dents, tears, cracks, wrinkles, bulges or missing rivets.

The rudder and elevator attachment points should be inspected to ensure security. The rudder and elevator should be moved through their full ranges of motion to confirm correct and free movement.

LANDING GEAR

Wheel chocks are used to keep the airplane from rolling while parked. They should be removed.

The wheels and brakes should be checked to ensure there is no excessive wear or fluid leaks.

The tires should be checked to ensure they are properly inflated and there are no signs of excessive wear or damage.

ENGINE

Extra caution should always be exercised around the propeller arc. The propeller should be checked for damage or evidence of a propeller strike. This could indicate damage to the engine.

The openings to the cowling should be checked for obstructions, particularly bird or animal nests.

The oil level is checked with a dipstick, and should be within the prescribed limits. The cap and dipstick must be secured after checking the oil.

A small amount of fuel should be drained from the main fuel strainer to clear any water or sediment that may have accumulated.

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ACTIVITY

Time: 20 min



The cadets should be guided through a complete walk-around inspection. The instructor / pilot should cover all of the relevant information provided in the background information section of this guide.

OBJECTIVE

The objective of this activity is designed to familiarize the cadet with the procedures of a walk-around aircraft inspection.

RESOURCES

- Single engine, non-high performance airplane,
- Operator’s manual inspection checklist for the aircraft type,
- Fuel dipstick, and
- Fuel drain cup.

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of ten or less. Brief all cadets on the safety guidelines before beginning the inspection.

2. If there is more than one group inspecting one plane, they should start at opposite points (eg, opposite wings, or nose and tail).

3. Have the groups walk around and conduct an aircraft inspection.

SAFETY

- Caution should always be exercised around the propeller arc.
- Indentify boundaries.
- Only the aircraft involved in the lesson can be touched.

CONFIRMATION OF TEACHING POINT 1

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

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Teaching point 2 **Lead a group discussion about what the cadets learned and found interesting.**

Time: 5 min Method: Group Discussion

BACKGROUND INFORMATION



Background Information

You have had the opportunity to participate in a walk-around aircraft inspection during which you saw the process to inspection various parts of the aircraft. The walk-around aircraft inspection can identify problems that require minor repairs or changing the aircraft that is not serviceable.

DISCUSSION QUESTIONS



TIPS FOR ANSWERING / FACILITATING DISCUSSION:

- Establish ground rules for discussion, eg, everyone should listen respectfully; don't interrupt; only one person speaks at a time; no one's ideas should be made fun of; you can disagree with ideas but not with the person; try to understand others as much as you hope they understand you; etc.
- Sit the group in a circle, making sure all cadets can be seen by everyone else.
- Ask questions that will provoke thought; in other words avoid questions with yes or no answers.
- Manage time by ensuring the cadets stay on topic.
- Listen and respond in a way that indicates you have heard and understood the cadet. This can be done by paraphrasing their ideas.
- Give the cadets time to respond to your questions. Ensure every cadet has an opportunity to participate. One option is to go around the group and have each cadet answer the question with a short answer. Cadets must also have the option to pass if they wish.
- Additional questions should be prepared ahead of time.



Cadets can be divided into more than one group to conduct the group discussion. This enables all cadets the opportunity to participate in the discussion if the initial group is too large. Assistant instructors will be needed to conduct this activity.

SUGGESTED QUESTIONS:

Q1. Why is it important to conduct a walk-around aircraft inspection?

Q2. What would a pilot do if damage to the airplane is noticed?

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Q3. How would a pilot change the walk-around procedure if the pilot was in a hurry to go flying?

(The pilot wouldn't! Procedures, checklists, and inspections are too important!)



Other questions and answers will develop throughout the discussion stage. The group discussion should not be limited to the suggested questions.



Reinforce those answers given and comments made during the group discussion, ensuring the teaching point is covered. Cadets should be given time to share information, experiences and feelings about the aircraft inspection.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

The walk-around inspection is one of the procedures followed to ensure the safety of a flight. Carefully following procedures on every flight is very important to ensure nothing is overlooked. Safety is paramount in aviation.

INSTRUCTOR NOTES / REMARKS

This lesson should be conducted by a qualified pilot / in conjunction with familiarization flying.

REFERENCES

A3-001 A-CR-CCP-263/PT-001 *From the ground up: Millennium edition (28th edition)*. (2000). Ottawa, ON: Aviation Publishers.

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