

**PO 470**

1. **Performance:** Discuss Aspects of Aircraft Manufacturing and Maintenance
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet will discuss aspects of aircraft manufacturing and maintenance.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. This PO is complementary material designed to provide an opportunity for the cadets to continue to develop knowledge and skills related to aircraft manufacturing and maintenance, specifically:
    - (1) EO C470.01 (Discuss Aircraft Manufacturers),
    - (2) EO C470.02 (Discuss Aircraft Assembly),
    - (3) EO C470.03 (Identify Aviation Hardware), and
    - (4) EO C470.04 (Disassemble and Reassemble a Small Engine).
  - b. Complementary material from PO 370 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

THIS PAGE INTENTIONALLY LEFT BLANK

**EO C470.01**

1. **Performance:** Discuss Aircraft Manufacturers
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. discuss international partnerships between aircraft manufacturers; and
  - b. identify unmanned aerial vehicle (UAV) manufacturers.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets will: <ol style="list-style-type: none"> <li>a. review a summary of an international partnership between aircraft manufacturers; and</li> <li>b. make a short oral presentation on the international partnership.</li> </ol>	In-Class Activity	20 min	C3-321 C3-322 C3-323
TP2	Identify UAV manufacturers.	Interactive Lecture	5 min	C3-324

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. In-Class Activity: 20 min
  - c. Interactive Lecture: 5 min
  - d. Total: 30 min

6. **Substantiation:**
  - a. An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest among cadets.
  - b. An interactive lecture was chosen for TP 2 to identify UAV manufacturers.

7. **References:**

- a. C3-321 ISBN 978-2-921393-91-1 Bombardier Inc. (2009). *Canada's Bombardier*. Canada: Bombardier Inc.
- b. C3-322 Government of Canada. (2008). *Canada's aerospace advantages*. Retrieved February 10, 2009 from <http://investincanada.gc.ca/eng/industry-sectors/advanced-manufacturing/aerospace/aerospace-advantages.aspx>
- c. C3-323 Industry Canada. (2009). *Aerospace in Canada*. Retrieved February 10, 2009 from <http://www.ic.gc.ca/eic/site/ad-ad.nsf/eng/ad03909.html>
- d. C3-324 Thirty Thousand Feet Aviation Directory. (2009). *Unmanned aerial vehicles*. Retrieved February 10, 2009, from <http://www.thirtythousandfeet.com/uav.htm>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. List of international partnerships.

9. **Learning Aids:**

- a. Pen / pencil, and
- b. List of international partnerships,
- c. International Partnerships Summary Sheets, and
- d. UAV Manufacturers Worksheet.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.

**EO C470.02**

1. **Performance:** Discuss Aircraft Assembly
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall discuss aircraft assembly, to include:
  - a. methods of assembly, and
  - b. assembly areas.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe different methods of assembly of components used by: <ol style="list-style-type: none"> <li>a. small manufacturers, and</li> <li>b. large manufacturers.</li> </ol>	Interactive Lecture	15 min	C3-105 C3-136 (pp. 1-39 to 1-51)
TP2	Discuss manufacturers' assembly areas, to include: <ol style="list-style-type: none"> <li>a. a small manufacturer's shop, and</li> <li>b. a large manufacturer's assembly line.</li> </ol>	Interactive Lecture	10 min	C3-105 C3-136 (pp. 1-39 to 1-50)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to introduce aspects of aircraft assembly methods and give an overview of them.
7. **References:**
  - a. C3-105 Brisley, T., & Pascaud, S. (Executive Producer), & Bowie, B. (Writer / Director) (2003). *World's biggest airliner: The Airbus A380* [Motion Picture]. United States: The Learning Channel.
  - b. C3-136 ISBN 0-88487-207-6 Sanderson Training Systems. (2001). *A&P technician airframe textbook*. Englewood, CO: Jeppesen Sanderson Inc.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
- b. DVD *World's biggest airliner: The Airbus A380* [Motion Picture]. Brisley, T., Pascaud, S. (Executive Producer), & Bowie, B. (Writer / Director) (2003). United States: The Learning Channel.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:**

- a. The cadets may have previously viewed *The World's Biggest Airliner: The Airbus A380* if EO C270.04 was selected in Proficiency Level Two. This lesson focuses and expands on the assembly of aircraft.
- b. Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.

**EO C470.03**

1. **Performance:** Identify Aviation Hardware
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall identify aviation hardware, to include:
  - a. bolts,
  - b. rivets,
  - c. screws, and
  - d. turnlock fasteners.
4. **Teaching Points:** Conduct an activity where the cadets will identify aviation hardware, to include:
  - a. bolts,
  - b. rivets,
  - c. screws, and
  - d. turnlock fasteners.
5. **Time:**

a. Introduction / Conclusion:	5 min
b. In-Class Activity:	25 min
c. Total:	30 min
6. **Substantiation:** An in-class activity was chosen for this lesson as it is an interactive way to provoke thought and stimulate interest among cadets.
7. **References:**
  - a. C3-136 ISBN 0-88487-207-6 Sanderson Training Systems. (2001). *A&P technician airframe textbook*. Englewood, CO: Jeppesen Sanderson Inc.
  - b. C3-137 ISBN 0-88487-203-3 Sanderson Training Systems. (2000). *A&P technician general textbook*. Englewood, CO: Jeppesen Sanderson Inc.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Aviation Hardware Information Sheets, and
- c. Aviation Hardware Identification Worksheet Answer Key.

9. **Learning Aids:**

- a. Pen / pencil, and
- b. Aviation Hardware Handout, and
- c. Aviation Hardware Identification Worksheet.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.



**EO C470.04**

1. **Performance:** Disassemble and Reassemble a Small Engine
2. **Conditions:**
  - a. Given:
    - (1) Small engine,
    - (2) Tools,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. identify the major components and parts of a small engine;
  - b. disassemble the engine; and
  - c. reassemble the engine.
4. **Teaching Points:** Conduct an activity where the cadets will:
  - a. identify the major components and parts of the small engine;
  - b. disassemble the engine; and
  - c. reassemble the engine.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. Practical Activity:	80 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way to allow the cadets to practice aircraft maintenance skills in a safe and controlled environment. This activity contributes to the development of aircraft maintenance skills and knowledge in a fun and challenging setting.
7. **References:** Nil.
8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
  - b. Small engine maintenance manual (if available).

9. **Learning Aids:**

- a. Pen / Pencil,
- b. Paper,
- c. Small engine,
- d. Tools, and
- e. Small engine maintenance manual (if available).

10. **Test Details:** Nil.

11. **Remarks:**

- a. Extra instructors will be required for this lesson to assist with supervision.
- b. Consideration may be given to using SME volunteers from within the community to assist.
- c. Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.
- d. There is no instructional guide for this EO.