EO M232.01 – IDENTIFY TYPES OF AIRCRAFT ENGINES

1. **Performance**: Identify Types of Aircraft Engines

2. **Conditions**:

   a. Given:

      (1) Supervision; and

      (2) Assistance as required.

   b. Denied: N/A.

   c. Environmental: Suitable classroom facilities or training area large enough to accommodate the entire group.

3. **Standard**: In accordance with specified references, the cadet shall identify types of aircraft engines, to include:

   a. rocket engines;

   b. gas turbine engines; and

   c. piston-powered engines.

4. **Teaching Points**:

TP	Description	Method	Time	Refs
TP1	Explain that a powered aircraft needs a means of propulsion to overcome drag and allow the wings to generate lift. Identify common engine types used for propulsion, to include: a. rocket engines; b. gas turbine jet engines; and c. piston-powered engines.	Interactive Lecture	10 min	C3-116 (p. 51) C3-084 C3-086 C3-087 C3-088
TP2	Explain combustion in rocket, gas turbine and piston-powered engines.	Interactive Lecture	5 min	C3-087
TP3	Explain the oxidization process for the different types of engines.	Interactive Lecture	5 min	C3-084 C3-088
TP4	Identify aircraft and associated engine types.	Interactive Lecture	5 min	C3-116

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 types of aircraft engines and give an overview of them.

7. **References**:

   a. A3-031 Canadian Forces. *Aircraft.* (2006). Retrieved 20 November 2006, from http://www.airforce.gc.ca/equip/equip1_e.asp.

   b. C3-084 NASA Glenn Research Center. *Engines 101.* Retrieved 21 February 2007, from http://www.ueet.nasa.gov/Engines101.html#Aeronautics.

   c. C3-086 NASA Glenn Research Center. *Engines 101.* Retrieved 21 February 2007, from http://www.grc.nasa.gov/WWW/K-12/airplane/icengine.html.

   d. C3-087 NASA Glenn Research Center. *Propulsion Index.* Retrieved 21 February 2007, from http://www.grc.nasa.gov/WWW/K-12/airplane/shortp.html.

   e. C3-088 NASA *Welcome to the Beginner's Guide to Rockets.* Retrieved 21 February 2007, from http://exploration.grc.nasa.gov/education/rocket/bgmr.html.

   f. C3-116 A-CR-CCP-263/PT-001/(ISBN 0-9680390-5-7) MacDonald, A. F. and Peppler, I. L. (2000). *From the Ground Up: Millennium Edition.* Ottawa, ON: Aviation Publishers Co. Limited.

   g. C3-120 Pratt & Whitney Canada. (2006). *Imagine the Power.* Retrieved 18 March 2007, from http://www.pwc.ca/en/3_0/3_0_3/3_0_3_3_1.asp.

   h. C3-121 NASA. (2007). *Missions: Space Shuttle Main Engines.* Retrieved 18 March 2007, from http://www.nasa.gov/returntoflight/system/system_SSME.html.

8. **Training Aids**: Presentation aids (e.g. whiteboard/flipchart/OHP) appropriate for the classroom/training area.

9. **Learning Aids**: N/A.

10. **Test Details**: N/A.

11. **Remarks**: If a computer and projector are available, software to demonstrate engine operation can be found at the Websites listed under reference para 7c.