

Chapter 14

Aircraft Recognition



Chapter Goal

Aircraft recognition for new members is not intended to make them experts in identifying aircraft. Rather it's intended to point out those identification tools that can be used to learn how to identify aircraft. At a minimum, students should be able to identify powered CAP aircraft.

INSTRUCTION

Aircraft Recognition

Suggested Teaching Method: Lecture Method and Demonstration Method

Instruction: Instructors should use this chapter as a means to assist students with identifying aircraft. Students who aspire to be part of search and rescue activities should be encouraged to know this information.

Tip: If you have access to an airport (i.e. your unit meets on an airport), then take the students out for a walk (this will break up the routine classroom atmosphere). Using the newly learned aircraft identification skills (WEFT), have your students describe parts of an airplane. Have students identify different airplanes. Have students review CAP aircraft up close. Point out various markings on CAP aircraft to your students. If you do not have access to an airport, use photographs of airplanes to have your students identify them.

Handouts:

Fact Sheet – CAP Cessna 172 Skyhawk

Fact Sheet – CAP Cessna 182 Skylane

Fact Sheet – CAP GA-8 Airvan

PUBLICATIONS & RESOURCES

US Army FM 3-01.80 (FM 44-80), Visual Aircraft Recognition

<http://www.fas.org/irp/doddir/army/fm3-01-80.pdf>

Aircraft Recognition.com, <http://www.aircraftrecognition.com>

Summary Exercise Answer Key



FACT SHEET

Civil Air Patrol Fact Sheet

Cessna 172 Skyhawk

Mission

The popular and longstanding Cessna 172 is the most successful mass produced light aircraft in history. The Civil Air Patrol adopted this robust aircraft for its outstanding search and rescue capabilities. In support of Civil Air Patrol and Air Force ROTC cadets, aircrews conduct orientation flights.



Features

The C-172 is a high wing aircraft ideal for allowing aircrews to search below the aircraft with no obstructions. The single engine propeller aircraft flies at less than 125 knots maximum speed and can slow to a comfortable 80 knots while conducting search operations.

The C-172 is equipped with direction finding equipment is used for searching for downed aircraft and boats in distress. During search operations, a typical aircrew consists of three members. The pilot is charged with maintaining safe flight condition and is in command. An observer, who sits to the right of the pilot, is charged with assisting the pilot with radio communications, navigation, and operation of the direction finder. The last crew member, the scanner, sits in the rear and is focused on looking for down aircraft or boats in distress.

The aircraft is also equipped with Satellite-Transmitted Digital System (SDIS) technology. This allows an observer or scanner to take digital photographs and transmit them to a mission base in real time. This feature is an invaluable tool for homeland security, counterdrug, and disaster reconnaissance.

General Characteristics

Primary Function: Search & Rescue and Reconnaissance

Contractor: Cessna

Wingspan: 36 ft 1 in (11.0 m)

Length: 27 ft 2 in (8.28 m)

Height: 8 ft 11 in (2.72 m)

Crew: 3 (pilot, observer, scanner)

Never exceed speed: 163 knots (187 mph, 302 km/h)

Maximum speed: 123 knots (141 mph, 228 km/h) at sea level

Range: 687 nm (790 mi, 1,272 km) at 60% power at 10,000 ft (3,040 m)

Service Ceiling: 13,500 ft (4,116m)

Rate of Climb: 720 ft/min (3.7 m/s)



FACT SHEET

Civil Air Patrol Fact Sheet

Cessna 182 Skylane

Mission

The Cessna 182 is has become one of the most popular aircraft with search and rescue aircrews. In addition to its role as a search and rescue platform, the Skylane is used for orientation flights, VIP transport, and reconnaissance in support of counterdrug and homeland security.



Features

Like the C-172 Skyhawk, the Skylane's high wing configuration is ideal for allowing aircrews to search below the aircraft with no obstructions. New Skylanes entering the fleet are equipped with highly advanced avionic displays (sometimes referred to as glass cockpits). The engine package is stronger than the Skyhawks allowing for a larger operational envelope.

The C-182 is equipped with direction finding equipment used for searching downed aircraft and boats in distress. During search operations, a typical aircrew consists of three members. The pilot is charged with maintaining safe flight condition and is in command. An observer, who sits to the right of the pilot and is charged with assisting the pilot with radio communications, navigation, and operation of the direction finder. The last crew member, the scanner, sits in the rear and is focused on looking for down aircraft or boats in distress.

The aircraft is also equipped with Satellite-Transmitted Digital System (SDIS) technology. This allows an observer or scanner to take digital photographs and transmit them to a mission base in real time. This feature is an invaluable tool for homeland security, counterdrug, and disaster reconnaissance.

General Characteristics

Primary Function: Search & Rescue and Reconnaissance

Contractor: Cessna

Wingspan: 36 ft (10.97 m)

Length: 29 ft (8.84m)

Height: 9 ft 4 in (2.84 m)

Crew: 3 (pilot, observer, scanner)

Maximum speed: 150 knots (276 km/h)

Range: 773 nm (1,432 km) at 80% power at 7,000 ft

Service Ceiling: 18,100 ft (5,517m)

Rate of Climb: 924 ft/min (282m/m)



FACT SHEET

Civil Air Patrol Fact Sheet

Gippsland GA8 Airvan

Mission

The Gippsland GA8 Airvan is the newest type aircraft in the Civil Air Patrol fleet. This GA8 was selected as the platform for the Airborne Real-Time Cueing Hyperspectral Enhanced Reconnaissance (ARCHER) system. In addition to this role, the GA8 has become vital in personnel/equipment transportation, reconnaissance, and homeland security operations.



Features

The Gippsland GA8 Airvan is equipped with advanced avionics. The aircraft has a capacity to carry six personnel including the pilot. With slow speed maneuverability capabilities, the aircraft can easily perform multiple search or reconnaissance roles.

The GA8 is equipped with the ARCHER system. When performing mission using this system, highly trained aircrew members can perform hyperspectral searches in real time. This technology allows aircrews to discriminate various objects below much more accurately than the naked eye. Items of interest can then be transmitted via satellite to personnel on the ground for further examination. Currently, the Civil Air Patrol is the only organization in the world to employ this technology.

General Characteristics

Primary Function: Airborne Real-Time Cueing Hyperspectral Enhanced Reconnaissance (ARCHER)

Contractor: Gippsland

Wingspan: 12.4m (40'9")

Length: 8.9m (29'4")

Height: 3.9m (12'9")

Crew: 4 (pilot, observer, ARCHER operator, ARCHER tracker)

Engine: Lycoming IO-540-K1A5

Cruise Speed: 118 KTAS at 4,000 ft

Maximum speed: 185 Knots

Range: 930 nm (9hr)

Rate of Climb: 787 ft/min (ISA Sea Level)

SUMMARY EXERCISE – ANSWER KEY

1. What are the four main features of an aircraft when using visual recognition techniques?

Answer – Wings, Engines, Fuselage, Tail

Reference – 14-1, Aircraft Recognition

2. Identify the following aircrafts:



Answer – GA-8 Airvan

Reference – 14-7, GA-8 Airvan



Answer – Super Blaink L-23

Reference – 14-8, Super Blaink L-23

3. Describe the wings on the following aircraft.



Answer – High-mount; Straight

Reference – 14-2, Wings

4. Describe the tail on this aircraft.



Answer – Twin Vertical Stabilizer; Rectangular

Reference – 14-5, Tail

5. Describe the rear of the fuselage.



Answer – Upswept

Reference – 14-4, Fuselage

6. Describe the front of the fuselage.



Answer – Rounded; Thick (Wide); Stepped

Reference – 14-4, Fuselage