AIRCRAFT RECOGNITION
BASIC

Australian
Air Force Cadets

Cadet / Instructor Notes

ARB 1  AIRCRAFT RECOGNITION FEATURES  A 2

a. Describe the systematic approach to aircraft identification: WETFUS

(1) Wings
(2) Engines
(3) Tailplane
(4) Fuselage
(5) Undercarriages
(6) Special Features

b. Identify the varying types or recognition features of each of the WETFUS elements and the reasons thereof.

ARB 2  ROLES OF ADF AIRCRAFT  B 2

a. Identify, using WETFUS, the current aircraft of the RAAF and their primary roles in the following categories:

(1) Surveillance and Response Group
(2) Air Combat Group
(3) Air Lift Group
(4) Trainer Command

b. State the ADF bases and units/squadrons from which the aircraft primarily operates.

ARB 3  NATIONAL MARKINGS  B 1

Describe the national military marking of the following countries:

(1) Australia  (6) Malaysia
(2) New Zealand  (7) Indonesia
(3) UK  (8) Philippines
(4) USA
(5) Singapore

ARB 5  MAJOR CIVILIAN & MILITARY AIRCRAFT  C 2

Identify, using WETFUS, a minimum of ten (10) aircraft, Excluding those learnt ARB2, and their roles, found in the Basic (Secondary) List contained in Annex A to the ARB syllabus.

Note: Instructors are required to maintain a reasonable balance in selection between military and civilian aircraft listed in Annex A.

a) The training aircraft utilized by Air Training Wing Flight in local Operational WG,

b) Two of the Major civilian types,
c) Four ADF Aircraft,
   d) Three foreign military aircraft.

ARB 6  REVISION 1
ARB 7  EXAMINATION 1
ARB 8  EXAMINATION REVIEW 1
Objective

a. Describe the systematic approach to aircraft identification: WETFUS.
   (1) Wings
   (2) Engines
   (3) Tailplane
   (4) Fuselage
   (5) Undercarriage
   (6) Special features

b. Identify the varying types of recognition features of each of the WETFUS elements and the reasons thereof.

IDENTIFYING AN AIRCRAFT USING "WETFUS"

1001. When examining an aircraft for the purposes of determining its make, model and role it is necessary to look at the various aspects of the aircraft’s size, shape and features.

1002. It is important to make a quick decision on the aircraft by using the WETFUS system. This will enable you to look at the aircraft systematically and allowing you to make the recognition. You may not be able to see all the aircraft, only its silhouette, so you must remember the important features.

1003. The WINGS are the most prevalent, then the ENGINES, followed by the TAILPLANE. The FUSELAGE can be particularly distinguishable eg. the Boeing nose and shape while the UNDERCARRIAGE is helpful if the aircraft is in a “dirty” configuration. The SPECIAL FEATURES assist to complete the recognition of the aircraft.

1004. The list below describes the features that should be examined so as to determine the type of aircraft:
   a. Shape and size of the WINGS
   b. Position and number of ENGINES
   c. Shape and size of the TAILPLANE and RUDDER
   d. Shape and size of the FUSELAGE
   e. Type and style of UNDERCARRIAGE eg fixed, retractable, tricycle or taildragger
   f. Shape and size of the FIN and TAILPLANE
   g. Position of WINGS and TAILPLANE in relation to the FUSELAGE
   h. Type of ENGINE/s eg jet, turbo prop, or incline or radial piston engine.
i. Position, size and shape of such additional parts as DORSAL and VENTRAL FINS, WING FENCES etc
j. Position, size and shape of such additional parts as BULGERS, PODS, BOOMS, ANTENNAE and PROBES.

1005. If all the factors in the above list are taken into account then a positive identification of the aircraft is capable of being made.

1006. Concentrate on the Airframe, Wings and Engine areas of the aircraft as external features should not be as a means of identifying any aircraft. Items such as tip tanks, radomes, or aerial may not always be fitted to a particular aircraft due to changes in roles or missions.

1007. Some aircraft which have the same profile layout from underneath have different styles of cockpit layouts and different roles and uses, eg either single or dual cockpit canopies, glasshouse or solid noses.

IDENTIFYING THE VARIOUS TYPES OF RECOGNITION FEATURES

1008. Aircraft come in many types and sizes, from small single engine propeller driven light aircraft to large multi-engine transports and bombers.

1009. The diagrams following, (a) Propeller Types and (b) Gas turbine types show the common names given to the various parts of these types and, in general, are common to all aircraft. It is necessary to know these names as it will help you understand aircraft recognition terms.

1010. Learn the names of the various components, and their purpose and this will greatly improve your ability to recognise the different types of aircraft in the following lessons.
a. Propeller Driven Types

[Diagram of an airplane showing parts like propeller, undercarriage, nose wheel, main wheels, port wing, starboard wing, aileron, tailplane, elevator, cockpit, engine, fin, rudder, flap, and fuselage.]
b. **Gas Turbine Driven Types**
RECOGNITION FEATURES

1011. This part examines in detail the various configurations of the major components of an aircraft such as wings engines and tailplanes. These variations in most cases make each type of aircraft unique making recognition of them easier.

1012. The various configurations are discussed below

Wing Shapes

1013. Wings come in many different forms, and combination of forms, therefore this part has been divided into the following areas:

(1) Wing Platforms - shape.
(2) Wing position relative to fuselage.
(3) Wing Mounting Angle - angular wing settings.

Examples of each of these forms are shown below –
(d) Sweepback

(e) Rectangular

(f) Tapered

(g) Variable Taper

(h) Backward Taper
(2) **Wing positions relative to the fuselage.**

(a) Variable Geometry (Swing-Wing)

(b) Leading Edge Sweepback

(c) Centre

(d) Rear of Centre

(e) Well Forward

(f) Forward of Centre
(3) **Wing Mounting Angle**

(a) Positive Dihedral

(b) Negative Dihedral
(Anhedral)

(c) Gull Wing

(d) Inverted Gull Wing

(4) **Wing Position on Fuselage**

(a) Low Wing

(b) Knee Wing

(c) Mid Wing

(d) Shoulder Wing

(e) High Wing

**Engine Configurations**
Engines on aircraft can vary from one to as many as ten, however the current maximum appears to be eight, as in the B-52 bomber. They can be mounted in the fuselage, buried in the wings, or hanging from them, and some are even mounted on the tailplane. The diagram below, shows more common positions.
Tail Configurations

1015. For many years aircraft tailplanes tended to be what is known as conventional - ie. Fin and Rudder, and Tailplane and Elevators. Today with the advent of high speed and supersonic aircraft, tail configurations have become very sophisticated in design. The terminology is moving to configuring the tail area into vertical and horizontal stabilisers, with the horizontal stabilizers being called ’Stabilators’, if they operate in conjunction with the ailerons.
Fuselage Shapes

1016. As with wings fuselages come in a variety of shapes and combination of shapes. Basically, however, sections of fuselages can be resolved into three shapes - round, oval and square. Some aircraft have round sections for the full length of the aircraft, and some have round nose and cockpit sections, with square or rectangular sections at the rear to house the engines. Shown below are examples of different types of fuselages:
Undercarriage

1017. Although most modern military and regular public transport aircraft have retractable undercarriages, the undercarriage can still be a point of recognition. The clues are: Fixed undercarriage: position of wheels: wheel leg structure: type of wheel housing: degree of retraction in the type where the wheels do not fully retract eg Helicopter. In the case of some Helicopters, they only have skids.
Special Features

1018. The list of Special Features, which make an aircraft distinctive, contains bulges, pods, booms, antennae and probes, which are found on many aircraft.
AIRCRAFT RECOGNITION
ARB 2 - ROLES OF RAAF AIRCRAFT
2 PERIODS

Surveillance and Response Group

NAME: **GENERAL DYNAMICS R/F.111C PIG**

ORIGIN: United States of America

ROLE: Strike and Recon, can fly at supersonic speeds day or night, hugging the ground or sea in all kind of weather.

CREW: 1 Pilot, 1 Navigator side by side

SQUADRONS: RAAF Amberley QLD. No. 1 & 6 SQNs

FEATURES:
- a. Variable geometry wing in high set boxes pivoting from fuselage
- b. Slab elevators and single fin and rudder assembly
- c. Intakes mounted under leading edge of wing.
- d. Low profile cockpit, sharp pointed radar nose cone.
NAME: **LOCKHEED AP.3C ORION**

ORIGIN United States of America

ROLE: Long range maritime patrol aircraft, anti-submarine, anti-shipping reconnaissance escort and rescue duties.

CREW 2 Pilots, 2 Navigators, 2 Flight Engineers, 5 Air Electronics Analysts.

SQUADRONS: RAAF Edinburgh SA. No. 10 &11 SQNs

FEATURES:

a. Low wing monoplane, dihedral wings, with tapered trailing edges
b. Tubular fuselage, large radome nose, MAD boom extending from tail.
c. Large tailfin dihedral tailplane assembly
d. Engines mounted on leading edges of wings.
e. Searchlight pod fitted under starboard wing.
f. Armament fitted under both wings
NAME: **BOEING B737 WEDGETAIL**

ORIGIN United States of America

ROLE: Long range patrol aircraft, anti-submarine, anti-shipping reconnaissance, VIP escort and rescue duties. AWEAC

CREW 2 Pilots, 2 Navigators, 2 Flight Engineers, 5 Air Electronics Analysts.

SQUADRONS: RAAF Richmond, NSW. No. 2 SQN

FEATURES:
- a. Mid wing monoplane, dihedral wings, with tapered trailing edges
- b. Circular fuselage, large radome boom extending along fuselage.
- c. Large tailfin dihedral tailplane assembly
- d. Engines mounted on pylons under leading edges of wings.
- e. Anti armament fitted under fuselage
Air Combat Group

NAME: **McDONNELL DOUGLAS F/A.18A HORNET**

ORIGIN: United States of America

ROLE: Multi role Fighter, air interception, air combat, close air support of ground troops, interdiction of enemy supply lines (including shipping). Technology allows it to strike land or sea targets in any weather.

CREW: 1 pilot

SQUADRONS: RAAF Williamtown NSW No. 3 & 77 SQNs
RAAF Tindal NT. No. 75 SQN

FEATURES:

a. Fixed anhedral mid wing, tapered leading edge, and light taper on trailing edge.
b. Wing leading edge extensions extend from wing roots to front of cockpit.
c. Intakes mounted under wing leading edge on fuselage.
d. Twin outward canting vertical stabilisers.
e. Slab type stabilators.
f. Oval fuselage section, with pointed nose, single or dual bubble cockpit.
NAME: GENERAL DYNAMICS F.111G PIG

ORIGIN: United States of America

ROLE: Strike and Interdiction, can fly at supersonic speeds day or night, hugging the ground or sea in all kind of weather.

CREW: 1 Pilot, 1 Navigator side by side

SQUADRONS: RAAF Amberley QLD. No 1 & 6 SQNs

FEATURES:
   a. Variable geometry wing in high set boxes pivoting from fuselage
   b. Slab elevators and single fin and rudder assembly
   c. Intakes mounted under leading edge of wing.
   d. Low profile cockpit, sharp pointed radar nose cone.
Air Lift Group

NAME: **DE HAVILLAND (CANADA) DHC-4A CARIBOU**

ORIGIN: Canada

ROLE Short range troop and equipment transport for ARMY. Has STOL capabilities.

CREW: 3 Flight crew

SQUADRON: RAAF Townsville QLD. No 35 & 38 SQNs

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FEATURES:

a. Fuselage cross-section is a rounded box shape.
b. High straight wing with tapered outer wing trailing edges.
c. Large radial engines mounted on wings.
d. Wings inverted gull type.
e. High fin. Tailplane set mid-fin.
f. Rear fuselage upswept to help facilitate rear loading door.
g. Bulbous nose with glass house (multi section windows) cockpit.
NAME: **LOCKHEED C.130H HERCULES**

ORIGIN: United States of America

ROLE: Medium/long range combat transport

CREW: 1 pilot, 1 co-pilot, 1 navigator, 1 flight engineer, 1 air electronics officer and 1 loadmaster

SQUADRON: RAAF Richmond NSW. No. 36 Sqn

FEATURES:

a. High tail fin with low horizontal tailplane
b. High upsweep of rear fuselage, two large rear loading doors.
c. Large wheel housing bulges on either side of fuselage.
d. High, straight wing with slight dihedral.
e. Nose radome bulge.
f. Multi section cockpit windows.
g. Engines mounted on leading edge of wings.
NAME: **LOCKHEED C.130J HERCULES**

ORIGIN: United States of America

ROLE: Medium/long range combat transport

CREW: 1 pilot, 1 co-pilot and 2 loadmasters

SQUADRON: RAAF Richmond NSW. No. 36 SQN

FEATURES:

a. High tail fin with low horizontal tailplane  
b. High upsweep of rear fuselage, two large rear loading doors.  
c. Large wheel housing bulges on either side of fuselage.  
d. High, straight wing with slight dihedral.  
e. Nose radome bulge.  
f. Multi section cockpit windows.  
g. Engines mounted on leading edge of wings.  
h. Six bladed propellers.
NAME: **BOEING C-17 GLOBEMASTER**

ORIGIN: United States of America

ROLE: long range combat transport

CREW: 1 pilot, 1 co-pilot, 1 loadmaster

SQUADRON: RAAF Amberley QLD.No.37 SQN

FEATURES:

a. High tail fin with low horizontal tailplane
b. High upsweep of rear fuselage, two large rear loading doors.
c. Large wheel housing bulges on either side of fuselage.
d. High, straight wing with slight dihedral.
e. Nose radome bulge.
f. Multi section cockpit windows.
g. Engines mounted on leading edge of wings.
Trainer Command

NAME: PILATUS PC-9A

ORIGIN: Switzerland

ROLE: 2 seat trainer and also forward air controller.

CREW: 1 instructor, 1 trainee pilot as trainer, or 1 pilot, 1 observer in FAC role.

SQUADRON: RAAF Pearce WA. No.2 Flying Training School
RAAF East Sale VIC. Central Flying School

FEATURES:
  a. Low wing monoplane.
  b. Dual in line cockpit.
  c. Nose mounted engine.
  d. Box fuselage.
  e. Long nose area forward of wing section.
  f. High tailplane and dorsal fin, tailplane extends past tailfin.
NAME: **BAe HAWK 127**

ORIGIN: United Kingdom

ROLE: Lead in fighter training & fast jet training

CREW: 2 Pilots

SQUADRON: RAAF Pearce WA. No. 76 SQN  
RAAF Williamtown NSW. No. 79 SQN

**FEATURES:**

a. Backward Tapered Wings to rear of centre.
b. Side air intakes (for single jet engine) under rear cockpit.
c. Backward tapered tailplane with anhedral.
d. Large 2 seat bubble canopy set high. Rear seat higher than front.
e. Tricycle trailing arm undercarriage.
NAME: **BEECH/ RAYTHORN SUPER KING AIR B350**

ORIGIN: USA

ROLE: General purpose transport, navigation.

CREW: 2 Pilots, cabin crew as required

SQUADRON RAAF East Sale VIC. No. 32 SQN  
RAAF Edinburgh SA. ARDU

FEATURES:

a. Low wing monoplane with variable taper.
b. High set tailplane –“T Tail”.
c. Stabilizing strakes mounted lower rear of fuselage.
d. Wings are swept back, tapered, with dihedral
e. Turboprop engines mounted above and forward of wings.
f. Straight tapered vertical stabilizer with dorsal fin.
State the ADF bases and units/squadrons from which these aircraft primarily operate.

2001. RAAF Base Fairbairn, ACT. Base contains:
   a. VIP Sqn for visiting dignitaries,
   b. No 24 SQN - Challenger aircraft,
   c. Air Power Study Centre (ADF),
   d. Base Support Wing Fairbairn provide Integrated Logistics & Maintenance for Challenger aircraft,
   e. Aust Army Helicopter Training Unit,
   f. No 28(City of Canberra) Reserve SQN.

2002. RAAF Base Kingswood, NSW. Base contains:
   a. No 1 Central Ammunition Depot (1CAMD) provides short and long term storage and inspection of all Explosive Ordnance used in the RAAF.

2003. RAAF Base Glenbrook, NSW. Base contains:
   a. HQ Air Command and Operational Support Group (OGS) provide planning, coordinating, training and exercising of those elements and providing direct operational support for those deployed RAAF forces in Australia and overseas.

2004. RAAF Base Richmond, NSW. Base contains:
   a. HQ Air Lift Group (ALG) comprising No 86 & No 84 Wings. AGL provides long and medium range Tactical Transport, Air to Air Refuelling, Search & Rescue duties plus other related air operations,
   b. No 33 SQN - B707, No 36 SQN - C130H Hercules, C130J Hercules,
   c. No 503 Wing provides Integrated logistics and Deeper Maintenance for C130 and B707 aircraft with associated Ground Support Equipment,
   d. No 303 Air Base Wing provides the Administration, Operational & Logistic support for the elements of this Base,
   e. Air Transportable Telecommunications Unit (ATTU) Operational Support Wing,
   f. Air Movements Training & Development Unit (AMTDU),
   g. No 22 SQN (City of Sydney) Reserve SQN,
   h. USAF Military Airlift Command Det (MAC).

2005. RAAF Base Wagga, NSW. Base contains:
   a. Training Base for technical and non technical basic trade training,
   b. RAAF School of Technical Training (STT), RAAF STT Non Technical Training Squadron (NTTS), RAAF School of Management & Training Technology (SMTT), RAAF School; of Radio (RADS),
   c. Base Support Wing provides Administration, Logistical and Maintenance support.
2006. RAAF Base Williamtown, NSW. Base contains:
   a. HQ Tactical Fighter Group (TFG). No 81 Wing provides Air Defence & Air Operations for RAAF forces in any theatre of operation.
   c. No 41 Wing Air Defence/Surveillance Units, No 3 Control & Reporting Unit (3CRU) of No 41 Wing
   d. No 304 Air Base Wing provides the Administration, Operational & Logistics services for the Base.
   e. No 502 Wing provides Integrated Logistics & Deeper Maintenance for FA18A and PC9 aircraft plus Ground Support Equipment.
   f. Tactical Fighter Logistics Unit.
   g. No 26 SQN (City of Newcastle) Reserve Squadron.

2007. RAAF Base Curtin, (Bare Base) WA. Base contains:
   a. Forward base facilities used mainly for air/ground combat exercises and training. It maintained by a caretaker staff.

2008. RAAF Base Learmonth, (Bare Base) WA. Base contains:
   a. Forward base facilities used mainly for air/ground combat exercises and training. It maintained by a caretaker staff.

2009. RAAF Base, Pearce, WA. Base contains:
   a. The training base and provides flying training for trainee pilots.
   c. No 3 Telecommunications Unit (3TU).
   d. Base Support Wing provides the Administration, Operational & Logistics support.

2010. RAAF Base Edinburgh, SA. Base contains:
   a. HQ Maritime Patrol Group (MPG), HQ 92 Wing of MPG.
   c. No 304 Air Base Wing provides the Administration, Operational & Logistics support for MPG.
   d. No 1 Recruit Training Unit (1RTU)
   e. Aircraft Research & Development Unit (ARDU)
   f. RAAF Institute of Aviation Medicine
   g. No 24 SQN (City of Adelaide) Reserve Squadron

2011. RAAF Base Darwin, NT. Base contains:
   a. Coastal surveillance, early warning and forward support for No 75 SQN at Tindal,
b. HQ RAAF Northern Area,
c. No 35 SQN Det A - DHC-4, No 2 Control & Reporting Unit (2CRU) of No 41 Wing.
d. No 321 Air Base Wing provides the Administration, Operational & Logistics support and Maintenance for DHC-4 aircraft.
e. Lee Point/11 Mile Telecommunication Transmission & Receiving Station.
f. No 13 SQN (City of Darwin) Reserve Squadron.

**2012.** RAAF Base Tindal, NT. Base contains:

a. No 75 SQN - FA18/A Hornet of No 81 Wing.
b. No 322 Air Base Wing provides the Administration, Operational & Logistics support and Maintenance for FA18/A aircraft.
c. No 1 Air Field Defence Squadron (1AFDS).

**2013.** RAAF Base Townsville, QLD. Base contains:

a. Air Command Operations Unit.
b. HQ Operational Support Group (OSG) provides support to deployed RAAF forces in Australia & overseas.
c. HQ Operational Support Wing (1OSW) of OSG.
d. No 1 Operational Support Unit (1OSU) of OSW.
e. HQ Airfield Defence Wing (ADW) of OSG.
f. HQ No 84 Wing of Air Lift Group.
g. No 35 SQN - DHC-4 aircraft.
h. No 323 Air Base Wing provides the Administration, Operational & Logistics support and Maintenance for DHC-4 aircraft.
i. Combat Survival Training School.
j. No 27 SQN (City of Townsville) Reserve Squadron.

**2014.** RAAF Base Amberley, QLD. Base contains:

a. HQ Strike Reconnaissance Group (SRG).
b. No 82 Wing provides Reconnaissance & Strike Operations against maritime and land based targets.
c. No 1 SQN - F111C aircraft No 6 SQN - F111G & RF111G
d. No 38 SQN - DHC-4 aircraft of No 84 Wing provides tactical training & transport for ADF Operation and search and rescue duties.
e. 114 Mobile Control & Reporting Unit (114MCRU) of NO 41 Wing provides tactical air defence for deployed RAAF forces in any theatre of operation.
f. RAAF Security Fire Training School (RAAFSFS) is a training unit for the ADF Security Forces & Tri Service Fire Fighting Training school.
g. No 301 Air Base Wing provides the Administration & Logistical support for the Base.
h. No 501 Wing provides Logistical, Operational Support and Deeper Maintenance for F111 aircraft.

i. No 23 SQN (City of Brisbane) Reserve Squadron.

2015. RAAF Base Sherger, (Bare Base) QLD. Base is:

a. A new Base situated in the Gulf region of Northern Australia. It is a bare base facility at present and is maintained by a caretaker staff.
(b) Bases from which ADF aircraft operate
Objective:
Describe the national markings of the following countries:
(a) Australia (f) Malaysia
(b) New Zealand (g) Indonesia
(c) United Kingdom (h) Philippines
d) United States of America (e) Singapore
AUSTRALIA

NATIONAL MARKINGS: Consists of roundels, fin flashes and identification numbers.

WING MARKINGS: Consists of a red kangaroo silhouette, imposed on a white inner circle, surrounded by a blue circle. The outside circle shall be two thirds of the outside diameter of the blue circle. The kangaroo must face forward with its feet pointing towards the fuselage.

FUSELAGE MARKINGS: Rear fuselage. Army and Navy aircraft have ARMY or NAVY respectively after the marking. Transport aircraft can have ROYAL AUSTRALIAN AIR FORCE titling on the upper forward fuselage. The kangaroo must face towards the front of the aircraft.

FIN MARKINGS: This consists of a rectangular flash on each side of the fin, divided into three equal vertical sections. Colours are red to the front, white centre, and blue aft.

IDENTIFICATION: This is a registration group consisting of a letter and number followed by a hyphen and a serial number for RAAF and RAN aircraft eg A9-663, N13-154647.

VARIATIONS: With increasing emphasis on visual camouflage, markings are painted in less contrasting colours eg greys on Orion’s or just a black ‘roo on camouflaged Army aircraft.
NEW ZEALAND

NATIONAL MARKINGS: Consists of roundels, fin flashes and identification code.

WING MARKINGS: This consists of a red Kiwi, imposed on a white circle, surrounded by a blue circle. Beak of Kiwi points forward.

FUSELAGE MARKINGS: Rear fuselage Transport aircraft can have ROYAL NEW ZEALAND AIR FORCE on upper forward fuselage. Kiwi must face forward.

FIN MARKINGS: This consists of a rectangular flash on either side of the fin, equally divided. Colours are red to the front, white centre and blue aft.

IDENTIFICATION: This “registration” number is the letters NZ followed by number painted on the side of the fuselage eg NZ110.

VARIATIONS: To be less obvious, the white has been removed from camouflaged aircraft, ie. red kiwi on a blue roundel and the fin flash of equal parts red and blue.
UNITED KINGDOM

NATIONAL MARKINGS: Consists of roundels, fin flashes and identification code, and the words ROYAL AIR FORCE.

WING MARKINGS: This consists of a red circle, imposed on a white circle, surrounded by a blue circle. Above and below wings

FUSELAGE MARKINGS: Same as for wings, rear fuselage, with Navy aircraft having ROYAL NAVY behind.

FIN MARKINGS: This consists of a rectangular flash on either side of the fin, which is divided into three equally spaced vertical sections. Colours are - red to the front, white centre and blue aft.

IDENTIFICATION: This individual number consists of two letters followed by three digits on the side of the fuselage or under the sailplane eg XX948.

VARIATIONS: Aircraft of the Royal Navy does not carry fin flashes, instead they carry a code letter/s relating to the aircraft’s unit eg a single letter for a carrier or squadron and two letters for a land station.
UNITED STATES OF AMERICA

NATIONAL MARKINGS: Consists of roundels, an identification, and wording relating to which branch of the services it belongs.

WING MARKINGS: Consists of a white star imposed on a dark blue circle with white horizontal rectangles projecting on either side of the circle. The rectangles have a heavy dark blue border with a white centre. A horizontal red stripe is centred on the white background. The roundel is painted on the upper port wing and the starboard lower wing only.

FUSELAGE MARKINGS: Same as for wings, and usually on both sides of the rear fuselage, but can appear on the forward fuselage usually below the cockpit.

FIN MARKINGS: The National flag can appear as a fin flash on some larger aircraft. Only the aircraft’s serial number and Squadron marking.

IDENTIFICATION: Aircraft usually show their service (except USAF) after the fuselage marking eg ARMY. NAVY. MARINES plus two letters followed by a three digit number.

VARIATIONS: Most carrier borne aircraft have a “carrier aircraft side number” and according to the range of number, a ‘SQN’ colour. Aircraft painted in anti radar grey have their roundels painted grey and white as well as all writing.
SINGAPORE

NATIONAL MARKINGS: This consists of a red lion’s head facing forward on a white disc, surrounded by a thin red circle.

WING MARKINGS: Above and below, on larger aircraft only.

FUSELAGE MARKINGS: Both side of rear fuselage.

FIN MARKINGS: Nil.

IDENTIFICATION: Three digit numbers on fin or fuselage.

VARIATIONS: Dark grey or black in place of the red and the white removed on most camouflaged aircraft.
MALAYSIA

NATIONAL MARKINGS: Consists of a round emblem, an identification code and the wording: ‘TENDERA UDARA DIRAJA MALAYSIA’.

WING MARKINGS: This consists of a fourteen pointed yellow sun on a light blue circular “sky”, surrounded by a thin dark blue band. Above and below both wings.

FUSELAGE MARKINGS: Rear fuselage, both side. Larger aircraft can have the full service name of TENTERA UDARA DIRAJA MALAYSIA on the upper forward fuselage.

FIN MARKINGS: Rectangular flash of light blue (forward), dark blue and yellow equal vertical stripes

IDENTIFICATION: Serial numbers are placed on the rear fuselage or fin consisting of a four digit number prefixed by M.

VARIATIONS: Reduced size.
INDONESIA

NATIONAL MARKINGS: This consists of a white pentagon outlined by a broad red one, orientated with one side as a base.

WING MARKINGS: Above and below wings with base towards rear.

FUSELAGE MARKINGS: Both sides of rear fuselage. The upper fuselage of large aircraft have the service name

Air Force TENTARA NASIONAL INDONESIA - ANGKATAN UDARA
Army TENTARA NASIONAL INDONESIA - ANGKATAN DARAT
Navy TENTARA NASIONAL INDONESIA - ANGKATAN LAUT

FIN MARKINGS: The national flag is used as a fin flash, consisting of a horizontal red rectangle immediately above an equal sized white one.

IDENTIFICATION: Coding of aircraft is by blocks of numbers with a prefix letter(s) which indicates the aircraft’s role eg T Transport, F Fighter etc

VARIATIONS: Army aircraft have a yellow five pointed star centred on the white field, similarly Navy aircraft have a black anchor
PHILIPPINES

NATIONAL MARKINGS: This consists of a symbol and wings.

WING MARKINGS: Follow the USA practise of a marking on the port upper and starboard lower wings

FUSELAGE MARKINGS: Rear fuselage on most aircraft

FIN MARKINGS: Nil.

IDENTIFICATION: Due to the large US influence all markings usually follow their practices
# AIRCRAFT RECOGNITION
## ARB 4- MAJOR CIVILIAN AIRCRAFT
### 2 PERIODS

**Objective:**

To identify using WETFUS, a minimum of 10 aircraft, and their roles, from the secondary list below.

<table>
<thead>
<tr>
<th>ADF LIST</th>
<th>AIRCRAFT</th>
<th>AIRCRAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UH-1H Iroquois</td>
<td>Sea King</td>
</tr>
<tr>
<td></td>
<td>Chinook CH-47D</td>
<td>Squirrel</td>
</tr>
<tr>
<td></td>
<td>Kiowa/206 Jet ranger</td>
<td>Seahawk/Blackhawk</td>
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<td>Super Seasprite</td>
<td>Tiger ARH</td>
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<td>NH90</td>
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<tr>
<th>CIVILIAN LIST</th>
<th>ATW training aircraft in local Operational WG.</th>
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<tr>
<td></td>
<td>Cessna 150/152</td>
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<td>Piper PA28 Cherokee</td>
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<td>Cessna 172</td>
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<td>Piper PA38 Tomahawk</td>
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<td>Boeing 717</td>
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<td>Airbus A380</td>
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<td>Boeing 747-400</td>
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<td>Boeing 777</td>
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<td>Boeing 787</td>
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<tr>
<th>FOREIGN MILITARY</th>
<th>C.5B Galaxy</th>
<th>F18E/F</th>
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<tr>
<td></td>
<td>F.15 Eagle/Strike Eagle</td>
<td>Bae Sea Harrier</td>
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<td>F.16 Fighting Falcon</td>
<td>F.35 Joint Strike Fighter</td>
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<td>F.22 Raptor</td>
<td>A-4 Skyhawk</td>
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<td>MiG-29 Fulcrum</td>
<td>MiG-31 Foxhound</td>
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</tbody>
</table>
NAME: **BOEING 737-300**

ORIGIN: United States of America

ROLE: Short - medium haul commercial airliner

CREW: 2 flight crew and 100 - 149 passengers

AIRLINES: Qantas

**FEATURES:**

a. Low dihedral sweptback wings, two engines underslung on forward protruding pylons.

b. Narrow body, circular section fuselage.

c. Swept dorsal fin and conventional tailplane.
NAME: **BOEING 747-400**

ORIGIN: United States of America

ROLE: Wide body ultra-long haul commercial airliner

CREW: 2 flight crew and 375-500 passengers

AIRLINES: Qantas, Singapore, British Airways.

FEATURES:

a. Low dihedral sweptback wings with four engines underslung on forward protruding pylons and winglets
b. Wide body, circular section fuselage.
c. Sweptback fin and tailplane.
d. Distinctive ‘upper deck’ hump on forward fuselage.
e. 18 wheels on five sets of undercarriage.
NAME: **AIRBUS INDUSTRIES A330**

ORIGIN: European Consortium

ROLE: Wide body medium haul commercial airliner

CREW: 2 flight crew and 267-375 passengers

AIRLINES: Qantas

FEATURES:

a. Low dihedral sweptback wings with two underslung engines forward protruding pylons.

b. Wide body, circular section fuselage.

c. Conventional swept fin and tailplane.

d. A330 variant includes small dual winglets.
NAME: **AIRBUS INDUSTRIES A320-200**

ORIGIN: European Consortium.

ROLE: Short-medium haul commercial airliner.

CREW: 2 flight crew and 150-179 passengers.

AIRLINES: Qantas.

FEATURES:
- a. Low dihedral sweptback wings with two engines underslung on forward protruding pylons.
- b. Narrow body, circular section fuselage.
- c. Sweptback fin and tailplane.
- d. Small dual winglets.
NAME: **BELL UH.1 IROQUOIS**

**ORIGIN:** United State of America

**ROLE:** General purpose, Assault and Rescue Helicopter.

**CREW:** 1 pilot and 14 troops, or 6 stretchers and 2 attendants.

**SQUADRON:** Army Aviation Centre, Oakey Q No.171 (Command Liaison) Sqn
Aerial Fly Support, Townsville Q C Sqn, 5 Aviation Reg - ’C’ Sqn

**FEATURES:**

a. Pod and boom type fuselage construction
b. Large windscreens, with 1 large door on either side of fuselage.
c. Bulge on top of fuselage housing engine and rotor head.
d. Skid type undercarriage.
e. Horizontal stabiliser mounted at rear of fuselage boom.
NAME: **Tiger**

ORIGIN: France

ROLE: General purpose, Assault Helicopter.

CREW: 1 pilot and 1 weapons Officers

SQUADRON: Army Aviation Centre, Townsville Q C Sqn, 5 Aviation Reg - 'A' Sqn

**FEATURES:**

a. Pod and boom type fuselage construction
b. Large windscreens, with 1 large entry door on side of fuselage cockpit.
c. Wheel type undercarriage.
d. Horizontal stabiliser mounted at rear of fuselage boom.
NAME: **CESSNA 150/152**

ORIGIN: United States of America

ROLE: Two seat trainer & general purpose light aircraft.

CREW: 1 pilot and 1 trainee or passenger.

AIRLINES: Flying Schools and Aero Clubs throughout Australia.

**FEATURES:**

a. High mounted dihedral wings.
b. Fixed tricycle undercarriage with wheel spats to reduce drag.
c. Large clear perspex cabin area.
d. Typical Cessna struts.
e. Engine mounted in nose.
NAME: **CESSNA 172**

ORIGIN: United States of America

ROLE: Four seat trainer & general purpose light aircraft.

CREW: 1 pilot and 1 trainee or 3 passenger.

AIRCRAFTS: Flying Schools and Aero Clubs throughout Australia.

**FEATURES:**

a. High mounted dihedral wings.

b. Fixed tricycle undercarriage with wheel spats to reduce drag.

c. Large clear perspex cabin area.

d. Typical Cessna struts.

e. Engine mounted in nose.
NAME: **LOCKHEED C-5B GALAXY**

ORIGIN: United States of America.

ROLE: Strategic heavy freight transport.

CREW: 5 flight crew & up to 345 troops.

AIRLINES: World’s largest military transport used by USAF’s military airlift command (MAC) on strategic & tactical operations.

FEATURES:

a. High mounted, swept back anhedral wings.

b. T-tailplane.

c. Four engines mounted on pylons under wings.

d. Nose opens upwards to accommodate cargo loading.

e. Large undercarriage housing bulges under side of fuselage to accommodate 26 of the 28 wheels.
NAME: **LOCKHEED/MARTIN F-35 JOINT STRIKE FIGHTER**

ORIGIN: United States of America.

ROLE: Multi-role Fighter.

CREW: 1 flight crew.

AIR FORCES: Worlds Latest military fighter will be used by the RAAF, USAF’s military on strategic & tactical operations.

![Image of F-35 Joint Strike Fighter](image)

**FEATURES:**
- a. High mounted, swept back leading edge anhedral wings.
- b. Twin Slab-tailplane.
- c. Single engines mounted in fuselage.
- d. Square shaped fuselage
- e. Stealth technology.
NAME: **McDONNELL DOUGLAS F/A.18E/F HORNET**

ORIGIN: United States of America

ROLE: Multi role Fighter, air interception, air combat, close air support of ground troops, interdiction of enemy supply lines (including shipping). Technology allows it to strike land or sea targets in any weather.

CREW: 1/2 pilot

AIR FORCES: Worlds Latest military fighter will be used by the RAAF, USAF’s military on strategic & tactical operations. This aircraft will used be used

FEATURES:

a. Fixed anhedral mid wing, tapered leading edge, and light taper on trailing edge.
b. Wing leading edge extensions extend from wing roots to front of cockpit.
c. Intakes mounted under wing leading edge on fuselage.
d. Twin outward canting vertical stabilisers.
e. Slab type stabilators.
f. Oval fuselage section, with pointed nose, single or dual bubble cockpit.
g. The E/F models are larger in size than the A models that the RAAF fly.
NAME: Mikoyan-Gurevich MiG-29 Fulcrum

ORIGIN: U.S.S.R

ROLE: Multi role Fighter, air interception, air combat, close air support of ground troops, interdiction of enemy supply lines (including shipping). Technology allows it to strike land or sea targets in any weather.

CREW: 1/2 pilot

AIR FORCES: This military fighter will be used by the NATO Countries for strategic & tactical operations.

FEATURES:

a. Fixed anhedral mid wing, tapered leading edge, and light taper on trailing edge.
b. Wing leading edge extensions extend from wing roots to front of cockpit.
c. Intakes mounted under wing leading edge on fuselage.
d. Twin outward canting vertical stabilisers.
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f. Oval fuselage section, with pointed nose, single or dual bubble cockpit.