

Units Of Measure

Distance = nm , Altitude = feet, Runway Distance = m , Flight Times = minutes, Fuel = L, USG, kg or lb (Need to know)

True v Magnetic & Compass Errors

Refer to charts (maps) or aerodrome in ERSA for magnetic **variation or declination** as it changes by location.

Deviation – is the compass error induced by local magnetic fields e.g. magnets, metal or electronics.

Nippy North, Sluggish South – the compass is ahead of the turn when turning North (roll out early) and behind the turn when turning towards South (roll out late) (Need to know)

When winds are written they are TRUE. When winds are spoken they are Magnetic. (Need to know)

Runways are always in °Magnetic. (Need to know)

1 in 60 Rule – For RAA RPL PPL and CPL - Expect Lots

For every 1nm you are off track at 60nm you are 1° Track Error (TE). If you correct this you fly parallel to track. So to correct you must correct the error and do a 1 in 60 to get back on track.

E.g. After 30nm you are 2nm off track. $60/30 \times 2 = 4^\circ$ off track. To get back on track by destination in 20nm we must correct $4^\circ + (60/20 \times 2) = 4^\circ + 6^\circ = 10^\circ$ (Must Know)

Lines Of Latitude And Longitude Length:

"Meridians of LONGitude are all just as LONG as one another." They run vertical. (Need to know)

"Lines of latitude have attitude, they are different lengths". They run horizontal, so distance around one gets smaller towards the poles. (Need to know)

Degrees Of Latitude And Longitude To Distance:

1° of Long E or W = $\cos(\text{decimal version of the Lat}) \times 69.172$ (Handy to know about)

1° Latitude N or S = 60 nm (Need to know)

Degrees Of Latitude And Longitude To Time:

Earth rotates 360° in 24 hours. $360/24 = 15^\circ$ per hour (Need to know)

1 hour / 15 = 4 minutes per 1° of Lat. (Need to know)

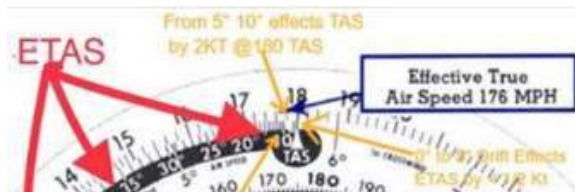
All time is relative to UTC the 0° Meridian in Greenwich England. (Need to know)

We can work out time, knowing the time in another location (Need to know)

BOD and EOD daylight 6° before & after sun, using charts in AIP GEN 2.7 (Need to know)

No Maps Are 100% Accurate: Drawing a spherical earth, on a flat map, produces errors. (Need for CPL ↑)

Effective TAS (ETAS) – For CPL Upwards



Effective TAS is TAS allowing for the lower speed due to high angles above 10°. Below 5° it is insignificant, 5°-10° its approx 1kt, above 10° it needs calculation. E6B have ETAS built in. Circular model flight computers, you need an ETAS model. Rule of thumb: If crosswind >15% of TAS, you need ETAS.

Distance Between Two Points Using Lat and Long For - CPL Upwards: $\text{Distance} = \sqrt{(\text{Lat } 2 - \text{Lat } 1)^2 + (\text{Long } 2 - \text{Long } 1)^2}$

Conversion Tables – ERSA Gen Con – 2 approx pg 916 also contains fuel weights 1kg = 2.2 lbs (Must Know)

Fuel Weights at ISA – 1L AVTUR 0.8kg 1.76lbs AVGAS 0.72kg 1.58lbs 1.2 ImpGal = 1 USG = 3.8 L (Must Know)

Alternate Minima – AIP ENR 1.1-93 Para 11.7.2.13 for (A) ceiling 1500ft and 8km visibility 11.7.2.14 for (H)

BOD and EOD – Conversion refer to AIP Gen 2.7 – 1 UTC > Charts > LMT > Tables > EOD or BOD (Must Know)

Critical Point aka ETP = $(\text{Distance} \times \text{GS Home}) / (\text{GS Out} + \text{GS Home})$ (CPL ↑ only)

Asymmetric Critical Point aka ETP = $(\text{Total dist.} \times \text{GS home}) / (\text{GS on} + \text{GS home})$ (CPL ↑ only)

INTER = < 30 min and **TEMPO** = 30 to 60 min AIP ENR 1.1 – 91 Para's 11.7.2.3 to 11.7.2.14 (Must Know)

Decoding Weather – AIP GEN 3.5 You absolutely will get GAF GPWT, TAF TTF Metars (Must Know)

Airspace – Divided into Classes A, C, D, E, G in order

A is up top for the airliners, big jets and turbo props only.

C is controlled airspace around very major aerodromes.

D is controlled airspace around smaller regional aerodromes like Coffs Harbour and Albury

E is controlled airspace above 8500 feet and is below Class A.

G is uncontrolled airspace. Most country areas and tiny aerodromes are in class G.

Cruising Levels – Tables in AIP ENR 1.7 – 8 onwards

East 000° to 179° - VFR 1500 3500 5500 7500 9500 **Od-halves** **IFR** 3000 5000 7000 9000 **Ods**

West 180° to 359° - VFR 2500 4500 6500 8500 **Even-halves** **IFR** 2000 4000 6000 8000 10000 **Evens**

esignated Remote Areas – ERSA –FIS-6 Special procedures and equipment apply

Emergency Survival – ERSA EMERG In the back of ERSA

Special Procedures - in ERSA SP towards the back. For Bass Strait, Ayres Rock, PNG, Torres Strait, Bungle bungles, Fraser Island Sandy Bay (Whale Area), Lake Eyre, Cairns, TAS quarantine and Fruit Fly Exclusion zones

AIP – Aeronautical Information Package – most items free on <https://www.airservicesaustralia.com>

PCA Charts – have 4 letter location codes e.g. YSSY and are used for Weather

8 x ERC-L Charts – Low altitude route charts for below FL200. 1 TAS, 2 Melb, 3 Syd-Brisb, 4 QLD-E, 5 QLD-W, 6 Nth QLD & NT, 7 SA & NT, 8

5 x ERC-H Charts - High altitude charts for FL200 & above. 1 Melb-Syd-Brisb, 2 Northern 1/2 of Aust, 3 Southern 1/2 of Aust, 4 WA-W Coast & Indian Ocean, 5 Aust East Coast & TAS Pacific Islands & NZ.

WAC Charts – shows a large area and is used for initial planning or areas not covered by VNC and VTC

VNC Charts - cover wider areas around major aerodromes

VTC Charts - cover smaller areas around major aerodromes, they show details the VTC may not show.

TAC Charts – cover detail in close to major aerodromes, often with 2-4 aerodromes per TAC

360 Feet Obstacles - man made obstacles up to 360 feet may not be on charts.

VTC

- Adelaide VTC
- Albury VTC
- Alice Springs/Uluru VTC
- Brisbane VTC
- Broome VTC
- Cairns VTC
- Canberra VTC
- Coffs Harbour VTC
- Darwin VTC
- Gold Coast VTC
- Hobart VTC
- Karatha VTC
- Launceston VTC
- Mackay VTC
- Melbourne VTC
- Newcastle/Williamtown VTC
- Oakey/Brisbane VTC
- Perth Legend
- Perth VTC
- Rockhampton VTC
- Sydney VTC
- Tamworth VTC
- Townsville VTC
- Whitsunday VTC

VNC

- Adelaide VNC
- Brisbane VNC
- Bundaberg VNC
- Cairns VNC
- Darwin VNC
- Deniliquin VNC
- Hobart VNC
- Launceston VNC
- Melbourne VNC
- Newcastle VNC
- Perth VNC
- Rockhampton VNC
- Sydney VNC
- Tindal VNC
- Townsville VNC

Ross Reef
 VOR } 115.8
 DME } 101X
 40 59 44.8S 144 20 33.5E

Bracket indicates co-location of nav aids.

BN CEN 124.5
BLACK STUMP
BN GEN 128.1
KALAMUNDA

FIS FREQUENCY
 (BN CEN, BN APP indicates the provider of the FIS service, and the location of the outlet)

AERIS-134.2
MT DORE

AERIS FREQUENCY
 with location

Howitt
CTAF 123.4

CTAF

TAC

- **TAC 1** Brisbane, Cairns, Townsville
- **TAC 2** Mackay, Darwin, Rockhampton, Alice Springs
- **TAC 3** Melbourne, Launceston, Hobart
- **TAC 4** Williamtown, Sydney, Canberra
- **TAC 5** Blank
- **TAC 6** Perth, Adelaide
- **TAC 7** Karratha, Port Hedland
- **TAC 8** Pilbara, Broome

FOI

- Class C and D Control Zone
- Military Control Zone
- CLASS A, C & D Airspace
- Class E airspace boundary
- E frequency boundary
- G frequency boundary
- Broadcast Area boundary
- FIR boundary
- NM DME / TAC FM THR RWY
- Dist from ARP
- Dist from that NAVAID
- Dist from threshold of RWY
- CLASS G airspace (Class G exists from SFC to the base of overlying Class A, C, D, or E airspace)

AERODROMES

- Civil Aerodrome
- Military Aerodrome
- Joint Civil - Military Aerodrome
- Airfield Landing Area (ALA) (Verified ; Unverified)
- Airfield Landing Area (ALA)(Water) (Verified ; Unverified)
- Helicopter Landing Site
- Marine Light
- VHF Contact with ATS possible on ground
- 4°E Line of Magnetic Variation
- VOR
- NDB
- TACAN
- Radio or Television Broadcast Station
- Enroute Reporting Point (Compulsory)
- Enroute Reporting Point (As required)
- Check Point
- Tracking Point
- VFR Approach Point
- VFR Route