Unit 9 Navigation: Charts and Publications
Note: charts in the AKTS and book are printed to the wrong scale. Remember to transfer the scale to a piece of scrap paper instead of directly using the plotter.

9.1 Longitude and Latitude

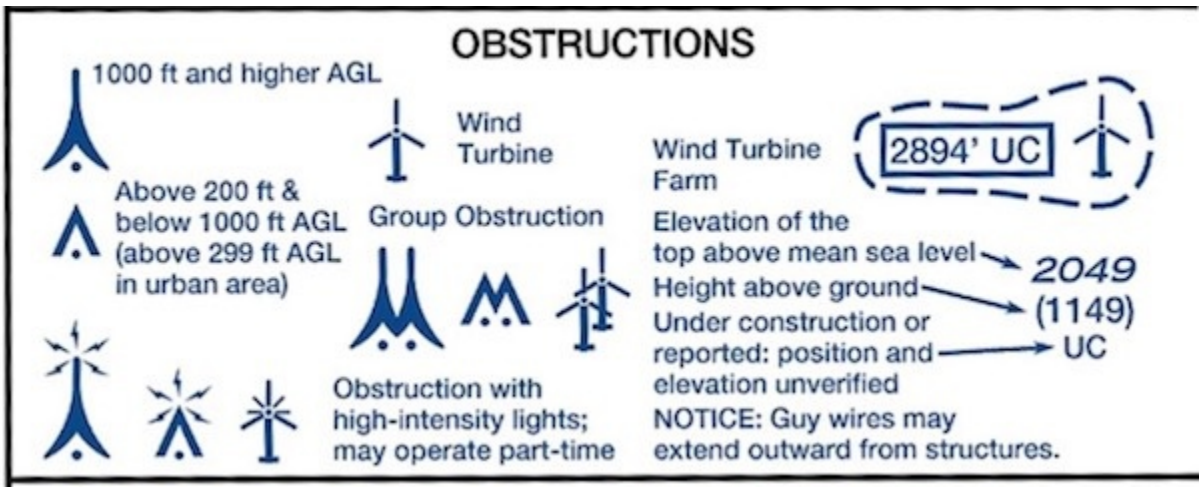
- The location of an airport can be determined by the intersection of the lines of latitude and longitude. Think latitude = ladder. North of the equator is 0-90 degrees north. The prime meridian (longitude) passes through Greenwich, England, which is 0 degrees E/W. Goes up to 180 degrees on either side.
- Latitude and longitude is printed on aeronautical charts; each degree is divided into 60 minutes (DMS scale)

9.2 Airspace and Altitudes

- How airspace is depicted on sectionals:
    - A: class A airspace is not depicted on sectionals. FL180-600; no VFR
    - B: lateral limits are depicted by heavy blue lines on a sectional or terminal area chart. "Upside down wedding cake"; 3SM, clear of clouds. 30NM mode c veil
    - C: lateral limits depicted by solid magenta lines. Outer circle - 1200 to 4000 MSL. 3SM, 1000 abv, 500 below, 2000 horiz
    - D: lateral limits depicted by dashed blue lines. Ceiling (usually 2500 AGL) is shown in MSL on the chart.
    - E: any controlled airspace that isn't A-D. lower limits of class E airspace are depicted on charts. They extend up to but not including FL180, as well as FL600 and abv.
        - Starting at the surface: dashed magenta
        - Starting at 700 AGL: shaded magenta
        - Starting at 1200 AGL: shaded blue
        - Zipper line: beginning is defined in the chart
        - Federal airways: blue lines b/w VOR facilities with "V" and an alphanumeric code. ("Victor airways")
        - Below 10000 MSL: 3SM; clear of clouds. Abv 10,000 MSL: 5SM, 1000 abv, below; 1 mi horizontal
    - G: not depicted on sectionals; it exists wherever controlled airspace does not exist. Daytime: 1SM, clear of clouds; nighttime: 3SM clear of clouds. Abv 10000 MSL: 5SM; 1000 abv, below; 1 mi horizontal unless below 1200 AGL.
- Special Use airspace
    - Prohibited - areas where flight of aircraft are prohibited; marked by blue hashed lines with "P" and a number ("P-40")
    - Restricted - where unusual, often invisible hazards exist. Flight is subject to restrictions. Marked by blue hashed lines with "R" and a number. Must obtain permission from the controlling agency to fly in that airspace.

    - Warning - activity that may be hazardous to nonparticipating aircraft (such as aerial gunnery, guided missiles). Depicted by blue hashed lines with "W" and a number. Extend from 3NM outward from the coast. May be over domestic or international air and waters.
    - Military operating areas (MOAs) - airspace established to separate certain military training activities from IFR traffic. Depicted by magenta hashed lines. VFR pilots must exercise extreme caution within an MOA when military activity is conducted. Contact FSS within 100 mi of the area to obtain accurate info about the MOA hours of op. Contact the controlling agency for traffic advisories.
    - Alert area - airspace within which there is a high volume of flight training or unusual aerial activity; depicted with magenta hashed lines with "A" and a number.
    - National Security areas (NSAs) - airspace of defined vertical and lateral dimensions established where increase security and safety of ground facility is needed
    - Controlled firing areas (CFAs) - contain activities that could be hazardous to nonparticipating a/c if not conducted in a controlled environment.
- Other Use Airspace
    - Military training routes (MTRs) est below 10,000 MSL for operations at speeds >250kt; depicted on sectionals by a thin grey line.
        - IR - routes in accordance with instrument flight rules
        - VR - routes in accordance with VFR
        - MTRs with one or more segments abv 1500 AGL - ident by 3 digit number
        - No segment abv 1500 AGL - 4 digit number
    - Terminal radar service areas (TRSAs)
    - Published VFR routes
    - Parachute jump a/c ops
    - TFRs (temporary flight restrictions)
    - Airport advisory areas
    - Special air traffic rules (SATR) areas and special flight rules areas (SFRAs)
- Towered airports - drawn in blue; nontowered - drawn in magenta
- Chart supplement contains info about parachute jumping areas and gliders. Parachutes are marked on sectionals.
- Over national wildlife refuges, pilots are requested to maintain at least 2000 AGL.
- Airport data on sectionals include:
    - Name of airport; elevation, followed by the length of the longest hard-surface runway. An "L" b/w altitude and length indicates lighting.

        - Ex1008 L 70 - elevation 1008 MSL; lighting sunset to sunrise; longest runway is 7000ft. "*L" means lighting limitations exist; see the chart supplement
    - "Pvt" - private; nonpublic-use airport with emergency or landmark value
    - UNICOM freq (if assn'd) is shown after or underneath the runway length
    - At controlled airports, the twr freq is usually under the a/p name abv the runway information; preceded by CT
    - A small star-shaped symbol immediately abv the a/p symbol indicates a rotating beacon during night
    - Notation "NO SVFR" means fixed-wing SVFR is prohibited
- Obstructions



    - Terrain elevation = MSL-AGL altitude
    - Must maintain 1000 abv obstructions in congested areas and 500 abv in noncongested.
    - Max elevation figure - MEF - the bold blue numbers, with one as the superscript. Rounded up to nearest 100s of feet; last two digits omitted. Max elevation in a quadrant, which is 30 minutes by 30 minutes.
- Navigational facilities - symbols on Legend 1
    - VORTAC - hexagon with black squares; VOR - hexagon with a black dot; VOR/DME - hexagon within a square

9.3 Identifying Landmarks

- Magenta flags - prominent landmarks that may be used as visual reporting checkpoints for VFR traffic when contacting ATC
- Word "CAUTION" usually has an explanation
- a/ps with rotating beacons - star sign
- Fuel service - small solid squares at the top and bottom, left and right of the airport symbol.

9.4 Radio Frequencies

- Airports without control towers: use CTAF (common traffic advisory frequency - marked with letter C on charts.
    - Control tower frequency is usually used for CTAF when the ct is closed.
    - At airports with FSS but no CT, FSS is usually the CTAF frequency
    - At airports without twr or FSS, UNICOM is CTAF
    - Without twr, FSS, or UNICOM, the CTAF is MULTICOM - 122.9
    - Inbound and outbound traffic should communicate position and monitor CTAF within a 10-NM radius of the airport, and give position reports while in the pattern
    - At a/ps with operating CTs UNICOM can be used to request services such as fuel, phone calls, or catering.
- FSS - 122.2

9.5 FAA Advisory Circulars

- FAA issues ACs to provide a systematic means for the issuance of nonregulatory material of interest to the aviation public
- Issued in a numbered system of general subject matter areas to correspond with the subject areas in FARs (60 airmen; 70 airspace; 90 ops)
- Available on the FAA's website

9.6 Chart Supplements

- CSs are published and distributed by FAA approved print providers every 56 days for each of 7 geographical districts of the US. Provide info on services available, runways, special conditions at airport, comms, navaids, etc. info abt a/p sfc hotspots in NOTAMs
- A/p name comes first, then alternate name, if any, and then location identifier.
- a/p location is expressed as a distance and direction of the a/p from the city. Ex. 4 NW means 4 NM northwest of the city.
- Right-traffic indicated by "rgt tfc" following rwy number
- CTAF used when CT not in operation
- Initial comm should be with approach if available where landing. Freq is listed following "APP/DEP CON". may be diff for approaches from diff headings; may be operational only for certain hours
- Class C airspace: VFR provided with radar services: sequencing to primary Class C a/p; approved separation b/w IFR and VFR aircraft; basic radar services incl safety alerts, limited vectoring, traffic advisories
- More info on the CS legend explanations - refer to legends 2-9 and 13-16.

9.7 NOTAMs

- NOTAM system disseminates time-critical aeronautical information that is either temporary or not sufficiently known in advance to publish on charts or other publications.
    - Contain aeronautical info that could affect your decision to make a flight.
- Groups:

- NOTAM (D) - info such as a/p or primary runway closures, changes in status of navaids, ILS, and radar service availability; other info essential to planned enroute, terminal, or landing ops. Also included: info on taxiways, aprons, ramps, lighting
- FDC NOTAMs - issued by flight data center; contain regulatory info such as amendments to instrument procedures, service routes, airspace usage, other restrictions
- Pointer NOTAMs - reduce total NOTAM volume by pointing to other NOTAM (D) and FDC NOTAMs rather than duplicating info.
- SAA NOTAMs - issued when special activity airspace will be active outside the published schedule times and when required by the published schedule; although pilots must still check published schedule times for SAA as well as any other NOTAMs for that airspace.
- Military NOTAMs - ref military airports and navaids
- TFR NOTAMs - flight restrictions due to special events or hazardous conditions.

Unit 9 Quiz 87/99
Missed questions 12
1. A major longitude/latitude line is shown every 30 minutes.
13. Towered airports in B, C, D, and E airspace are shown in blue symbols.
16. For elevation questions, use the contour interval colors.
18. No clearance is necessary to operate in MOAs; VFR traffic can fly anywhere within the MOA.
23. Information about parachute jumping (and gliders) is found in the chart supplement, not NOTAMs.
37. If no airspace is depicted over an airport, it is G until 1200 AGL where it is then E from 1200 up to but not incl FL180.
41. Magenta shading indicates E airspace beginning at 700 AGL. Below it is G airspace.
45. Two-way radio comms are not necessarily required in alert areas.
50. Height limit with "T" means the base of overlying class B airspace.
87. Contact CTAF, not UNICOM when the control tower is not in operation.
89. Even though square boxes might not appear on the airport symbol indicating fuel availability, emergency fuel may be available as noted in the chart supplement.
95. Info about airport hotspots can be found in the chart supplements.