

activity nine

Become a Squadron Flight Planning Expert THE SECTIONAL CHART FAMILIARIZATION ACTIVITY

OBJECTIVE

This activity will help the senior member become proficient in reading and understanding the most widely-used aeronautical chart, the "Sectional."

Even if you're not a pilot, you can be the squadron's "TOP NAV" once you've mastered the tried and true "aviator's map"



Ryan and his wife, Jennifer, study the sectional chart in preparation for a flight. Both are very active in the AE and cadet programs of the Colorado Wing.

MATERIALS

Preferably a current Dallas-Fort Worth Sectional Chart. Since this is going to be used for no flight training, a used or older one is quite acceptable.

PROCEDURE

1. To really understand a chart, you must first know its "language." In aeronautical terms, the "Legend" is its dictionary.
2. This activity is set up in the form of a challenge to see if the senior member can find the symbols as they are shown in the Dallas-Ft. Worth Sectional. This can be shared with cadets in the squadron or even as a test for other senior members.
3. After becoming familiar with the Legend, take a look at the sample illustration showing the area around Amarillo, Texas, and see how you do with the following: (Identify or define)

NATIONAL SOCIAL STUDIES STANDARDS

3. People, Places, and Environments

NATIONAL SCIENCE STANDARDS

3. Geometry Standard
 - Specify locations and describe spatial relationships using coordinate geometry and other representational systems.
 - Use visualization, spatial reasoning, and geometric modeling to solve problems.
4. Measurement Standard
 - Understand measurable attributes of objects and the units, systems, and processes of measurement.
 - Apply appropriate techniques, tools, and formulas to determine measurements.

Identify or define area around Amarillo, Texas

(Use map on page 55 to answer the following questions)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. In Circle A, what is the large "L" in the center?

11. _____
12. _____
13. _____
14. In Circle B, you will see several symbols for "group obstructions." Answer the following questions concerning those obstructions:
 - a. Do any of the obstructions have high intensity lights?

 - b. Do the numbers beside the obstruction mean that the obstruction is that many feet above sea level or ground level?

- c. Several of the obstructions have the letters "UC" by them. What does this mean?

- d. What do the numbers in parentheses mean?

- e. There is a town inside Circle B. What is it?

- f. There is a dashed magenta-colored line passing through Circle B. What is this line?

15. Take a look now at Circle C. Answer the following questions regarding that Circle:
 - a. There is a small magenta-colored circle with the letter "c" inside of it. Is this an airport?

 - b. There is another symbol inside Circle C. It is larger, magenta-colored and has a symbol in the center vaguely shaped like the number "9". This is the Perry Lefors Airport. Answer the following questions about the airport:
 - Does this airport have aircraft services during normal working hours?

 - This airport has a "NDB". What is an NDB?

 - Does this airport have a rotating beacon in operation from sunset to sunrise?

 - Does this airport have a control tower?

 - What is the field elevation (MSL)?

 - What longitude line passes through this airport?

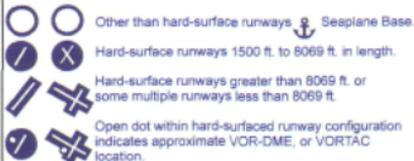
16. And finally, why is the background color of this sectional mostly a tan color?

DALLAS - FT. WORTH LEGEND

HLNOS

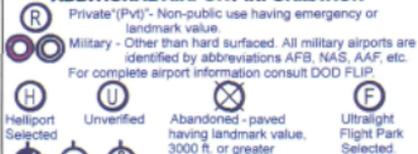
NORTH

Airports having **Control Towers** are shown in **Blue** all others in **Magenta**. Consult Airport/Facility Directory (AFD) for details involving airport lighting, navigation aids, and services. For additional symbol information refer to the Chart user's Guide.



All recognizable hard-surfaced runways, including those closed, are shown for visual identification. Airports may be public or private.

ADDITIONAL AIRPORT INFORMATION



Services-fuel available and field tended during normal working hours depicted by use of ticks around basic airport symbol. (Normal working hours are Mon thru Fri 10:00 A.M. to 4:00 P.M. local time.) Consult AFD for service availability at airports with hard-surfaced runways greater than 8069 ft.

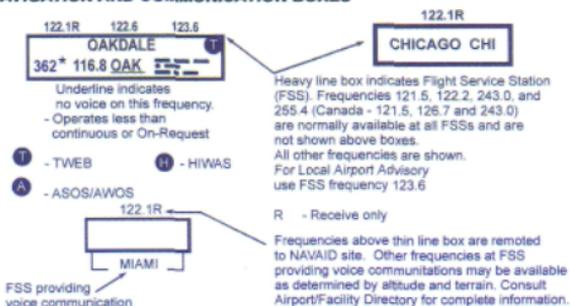
★ Rotating airport beacon in operation *Sunset to Sunrise*.

AIRPORT DATA

Box indicator F.A.R. 93
 Special Air Traffic Rules & Airport Traffic Patterns
 Airport Surveillance
 Radar
 Runways with Right Traffic Patterns (public use)
 RP ★ (See Airport/Facility Directory)
 FSS - Flight Service Station
 NO SVFR - Fix wing special VFR light is prohibited.
 CT - 118.3 - Control Tower (CT) - primary frequency
 ★ - Star indicates operation part-time. See lower frequencies tabulation for hours of operation.
 ● - Indicates Common Traffic Advisory Frequencies (CTAF)
 AMIS 123.8 - Automatic Terminal 2 Information Service
 ASOS/ AWOS 135.42 - Automated Surface Weather Observing System
 Some ASOS/AWOS facilities may not be located at airport.
 UNICOM - Aeronautical advisory station
 VFR Advdy - VFR Advisory Service shown where ATIS not available and frequency is other than primary CT frequency.

285 - Elevation in feet
 L - Lighting in operation *Sunset to Sunrise*
 *L - Lighting limitation exist, refer to Airport/Facility Directory.
 72 - Length of longest runway in hundreds of feet; usable length may be less.
 When facility or information is lacking, the respective character is replaced by a dash. All lighting codes refer to runway lights. Lighted runway may not be the longest or lighted full length. All times are local.

RADIO AIDS TO NAVIGATION AND COMMUNICATION BOXES



Pictures of Dallas - Ft. Worth Legend.

← WINDS

DALLAS - FT. WORTH LEGEND

→ NORTH

AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

Only the controlled and reserved airspace effective below 18,000 ft. MSL are shown on this chart. All times are local.

- Class B Airspace
- Class C Airspace (Mode C)
- Class D Airspace
- Ceiling of Class D Airspace in hundreds of feet. (A minus ceiling value indicates surface up to but not including that value)
- Class E (sfc) Airspace
- Class E Airspace with floor 700 ft. above surface
- Class E Airspace with floor 1200 ft. or greater above surface that abuts Class G Airspace.

Ceiling of Class D Airspace in hundreds of feet. (A minus ceiling value indicates surface up to but not including that value)

- Class E Airspace with floor 700 ft. above surface
- Class E Airspace with floor 1200 ft. or greater above surface that abuts Class G Airspace.

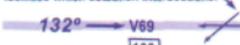
2400 MSL Difference floors of Class E Airspace greater than 700 ft. above surface

4500 MSL

Class E Airspace exists a 1200' AGL unless otherwise designated as shown above.

Class E Airspace low altitude Federal Airways are indicated by center line.

Intersection - Arrows are directed towards facilities which establish intersections.



Total mileage between NAVAIDs on direct Airway.



Prohibited, Restricted, Warning and Alert Areas
Canadian Advisory and Restricted Areas



MOA - Military Operations Area



Special Airport Traffic Area (See F.A.R. Part 93 for details)

- MODE C (See F.A.R. 91.215(A)(1).)
- National Security Area
- Terminal Radar Service Area (TRSA)
- IR211 MTR - Military Training Routes

OBSTRUCTIONS

- 100 ft. and higher AGL
- below 1000 ft. AGL
- Group Obstruction
- Obstruction with high-intensity light. May operate part-time
- Elevation of the top above mean sea level
- Height above ground
- Under construction or reported; position and elevation unverified

NOTICE: Guy wire may extend from structures.

MISCELLANEOUS

- Isogonic Line (2000 VALUE)
- Ultralight Activity
- Flash Light
- Hang Glider Activity
- Marine Light
- Glider Operations
- Parachute Jumping Area (See Airport/Facility Directory)
- VFR Waypoints (See Airport/Facility Directory for latitude/longitude)
- NAME (VPXYZ)

TOPOGRAPHIC INFORMATION

- Roads
- Road Markers
- Railroad
- Bridges and Viaducts
- Power Transmission Lines
- Aerial Cable
- Landmark Feature - stadium, factory, school, golf course, etc.
- Outdoor Theatre
- Lookout Tower P17 (Site Number) 618 (Elevation Base of Tower)
- Coast Guard Station
- Race Track
- Tank - water, oil or gas
- Oil Well
- Mines and Quarries
- Mountain Pass
- 1123 (Elevation of Pass)

(Peak symbol does not indicate a recommended route or direction of flight and pass elevation does not indicate a recommended clearance altitude. Hazardous flight conditions may exist within and near mountain passes.)



Dallas - Ft. Worth Legend continued.

CLASS B, CLASS C, TRSA, AND SELECTED RADAR APPROACH CONTROL FREQUENCIES

FACILITY	FREQUENCIES	SERVICE AVAILABILITY
DALLAS-FT. WORTH CLASS B	118.1 304.55 (NORTHWEST) 135.975 379.7 (SOUTHWEST) 124.3 282.35 (NORTHEAST) 125.2 343.65 (SOUTHEAST)	CONTINUOUS
AMERINE CLASS C	125.0 338.3 (EAST) 127.2 282.3 (WEST)	CONTINUOUS
AMARILLO CLASS C	119.5 307.0 O/T 127.88 351.7 ZAB CHTR	0600-2300 O/T Class E
LURMOCK CLASS C	119.2 351.8 (EAST OF HWY 176/35E) 119.9 333.6 (WEST OF HWY 176/35E)	CONTINUOUS
OKLAHOMA CITY CLASS C	130.45 381.5 (EFT-1797) 124.2 334.4 (EFT-080) 124.6 264.8 (1711-3607)	CONTINUOUS
TULSA CLASS C	119.1 311.8 (EAST-1747) 124.0 338.3 (1717-3547)	CONTINUOUS
ALUS TRSA	125.1 257.725	0830-0230 MCH-FB EIC FED HDL
HENRY POST AAF RADAR	120.55 123.4 (S) 127.3 307.275 (E)	CONTINUOUS
SHEPARD AFB/ WICHITA FALLS RADAR	118.2 308.6 O/T 133.5 350.35 2PW CHTR	0400-2300 MCH-FB 0900-1700 SUN 0300 SAT

ZAB—Abilene, 2PW—Fort Worth
O/T—Indicates Other Times

SPECIAL USE AIRSPACE ON DALLAS-FT. WORTH SECTIONAL CHART

Unless otherwise noted altitudes are
MSL and in feet
Contact nearest FSS for information.
†Other times by NOTAM contact FSS

The word "TO" on altitudes means "to and including"
"MCH-FB" indicates "Monday thru Friday"
†L—Right hand
ND A/O—No air to ground communications

U.S. P-PROHIBITED, R-RESTRICTED, A-ALERT, W-WARNING, MOA-MILITARY OPERATIONS AREA

NUMBER	LOCATION	ALTITUDE	TIME OF USE	CONTROLLING AGENCY**
P-47	AMARILLO, TX	TO 4800	CONTINUOUS	NO A/O
R-5401 A	FORT SILL, OK	TO 40,000	CONTINUOUS	2PW CHTR
R-5401 B	FORT SILL, OK	TO 40,000	CONTINUOUS	2PW CHTR
R-5401 C	FORT SILL, OK	TO 40,000	CONTINUOUS	2PW CHTR
R-5401 D	FORT SILL, OK	500 AGL TO FL 400	38-2200 MCH-FB†	2PW CHTR
R-5401 E	FORT SILL, OK	500 AGL TO 4000	38-2200 MCH-FB†	2PW CHTR
A-541	FREDERICK, OK	TO 4000	38-55 MCH-FB	NO A/O
A-542 A	SHIL, OK	TO 10,000	38 TO 3 HRS AFTER 55 MCH-FB	NO A/O
A-434	WICHITA FALLS, TX	TO 4000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	NO A/O

**2PW—Fort Worth

MOA NAME	ALTITUDE OF USE*	TIME OF USE†	CONTROLLING AGENCY**
BROWNWOOD-1 EAST, 1 WEST	7000	0700-2200	2PW CHTR
BROWNWOOD-3	13,000	0700-2200	2PW CHTR
HOLLS	11,000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	2PW CHTR
LANCER	4200	0900-2400 MCH-FB	2PW CHTR
RIVERS	8000	0700-2100 MCH-FB	2PW CHTR
SHEPARD 1,2	8000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	2PW CHTR
VANCE 1A	10,000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	ZIC CHTR
VANCE 1B	7000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	ZIC CHTR
WASHITA	8000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	2PW CHTR
WESTOVER 1	9000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	2PW CHTR
WESTOVER 2	10,000	1 HR BEFORE SR 1 HR AFTER 55 MCH-FB	2PW CHTR

*Altitudes indicate floor of MOA. All MOAs extend to but do not include FL 180 unless otherwise indicated in tabulation or on chart.

†Other times by NOTAM contact FSS

**2PW—Fort Worth, ZIC—Kansas City

Features normally used as check points for controlling VFR traffic are emphasized on this series of charts so they may be readily identified.

Example: **POWER PLANT**

The name shown is that used by the controlling personnel and is not necessarily the official name of the feature.

CAUTION: Severe turbulence may occur over rugged terrain. See AIRM.

DALLAS-FT WORTH

Dallas - Ft. Worth Legend back side.

WEST

NORTH

DALLAS - FT. WORTH SECTIONAL AERONAUTICAL CHART

SCALE 1:500,000

Lambert Conformal Conic Projection Standard Parallels 33°20' and 38°40'
 Nontropical Datum: North American Datum of 1983 (World Geodetic System 1984)

72 ND EDITION March 18, 2004

Includes airspace amendments effective February 19, 2004

and all other aeronautical data received by January 22, 2004

Information on this chart will change; consolidated updates to chart changes are available every 56 days in the AIRPORT FACILITY DIRECTORY (AFD). Also consult appropriate NOTICES TO AIRMEN (NOTAMS) and other FLIGHT INFORMATION PUBLICATIONS (FIPs) for the latest changes.

This chart will become OBSOLETE FOR USE IN NAVIGATION upon publication of the next edition scheduled for SEPTEMBER 30, 2004

PUBLISHED IN ACCORDANCE WITH INTERAGENCY AIR CARTOGRAPHIC COMMITTEE

SPECIFICATIONS AND AGREEMENTS, APPROVED BY:

DEPARTMENT OF DEFENSE * FEDERAL AVIATION ADMINISTRATION



Terminal Area Chart

Topographic data extracted as January 2004

ATTENTION
 THIS CHART CONTAINS MAXIMUM ELEVATION FIGURES (MEF). The Maximum Elevation Figures show an outcropping surrounded by ticked lines of latitude and longitude are represented in THOUSANDS and HUNDREDS of feet above mean sea level. The MEF is based on information available concerning the highest known feature in each quadrangle, including man-made obstructions (towers, towers, antennas, etc.)

125

Example: 12,500 feet

CONTOUR INTERVAL 500 FEET

HIGHEST TERRAIN elevation is 3618 feet
 located at 34°32'N - 101°56'W

Spot elevation..... +4254
 Approximate elevation..... +3000
 Doubtful location are indicated by omission of the point locator (dot or "x")



MILITARY TRAINING ROUTES (MTRs)

All IR and VR MTRs are shown, and may extend from the surface upwards. Only the route centerline, direction of flight along the route and the route designator are depicted - route width and altitudes are not shown.

Since these routes are subject to change every 90 days, and the charts are released every 8 months, you are cautioned and advised to contact the nearest FSS for route dimensions and current status for those routes affecting your flight. Routes with a change in the alignment of the charted route centerline will be indicated in the Aeronautical Chart Bulletin of the Airport/Facility Directory. Military Pilots refer to Area Planning AP710 Military Training Route North and South America for current routes.



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Dallas - Ft. Worth Sectional and Amarillo Sectional with numbers.

PLOTTING DIRECT ROUTE ON NORTH/SOUTH SIDE

There are approximately 60 minutes of latitude overlap between the north and south sides of each sectional/WAC chart. To plot a course line from one side to the other, the user must first draw two "match lines" that are common to both sides. On the north side connect the tick marks of the most southern minute of latitude and on the south side connect the marks of the most northern minute of latitude. These "match lines" must have the same latitude on both the north and south sides.

Step No. 1

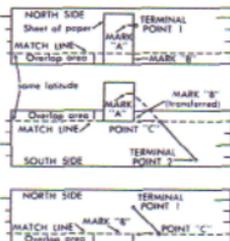
On the side of the chart having a terminal point nearer the match line, place a sheet of paper (or chart) so that one edge (corresponding to the match line) will overlap edge (corresponding to Terminal Point 1) of the other. Make a mark on the edge of the paper at Terminal Point 1 (Mark "A" as illustrated) and also another mark on the chart extending from match line to the edge of the chart (Mark "B" as illustrated).

Step No. 2

Roll the chart over and transfer Mark "B" from the north side to the south side, extending the mark to the match line. Align the sheet of paper to the match line with the corner of the sheet at the transferred Mark "B". With a straight edge draw a line from Terminal Point 2 to Mark "A" to intersect the match line forming Point "C".

Step No. 3

Turn chart over and transfer Point "C" from the south side to the north side. This can be done by measuring the distance from Mark "B" to Point "C" along the match line from the south side. With a straight edge draw a line from Point "C" to Terminal Point 1. This line is the continuation of the direct route drawn on the north side.



CONTROL TOWER FREQUENCIES ON DALLAS-FT. WORTH SECTIONAL CHART

Airports with control towers are indicated on the face of the chart by the letters (C) followed by the primary VHF local control frequency (MHz). Information for each tower is listed in the table below. Operational hours are local time. The primary VHF and UHF local control frequencies are listed. An asterisk (*) indicates the part-time tower frequency is reserved to a collocated ILS (see FSI) for use on Local Airport Advisory (LAA) during hours the tower is closed. The primary VHF and UHF ground control frequencies are listed whenever frequency information is provided. ATIS frequencies shown on the face of the chart are primary ground VHF/UHF frequencies. All ATIS frequencies are listed in the table below. ATIS operational hours may differ from tower operational hours. ASD and/or FMS indicate Radar Treatment Approach available. "NON-FRT" indicates Non-Frequency Through Friday.

CONTROL TOWER	OPERATES	TWR FREQ	GND CON	ATIS	ASD/FMS
ABILENE REGIONAL	CONTINUOUS	130.1 357.9	121.7 348.6	118.25	ASD
ADDICKS	0600-2400 MON-FRI OCT 20	126.0 239.0	121.6	123.4	
	0600-2300 MON-LAR 20				
AJLUS AFB	0630-0330 MON-FRI	119.45 232.6	121.6 375.8	372.5	ASD/FMS C/D 800 800 800 800
AMARILLO INTL	0600-2400	118.1	121.9 348.6	118.85 330.3	ASD
ANCHORE	0600-2300 MON-FRI	118.5 257.7	121.8	125.6	
	0700-1300 SAT-SUN				
ANTON SHERMAN	0700-2300 MON-FRI	119.4 334.9	121.7 339.0		
	0700-1300 SAT-SUN				
DALLAS DOWNTOWN	0600-2100	130.3 297.8	121.7	126.35	
DALLAS-FT. WORTH RGNL	CONTINUOUS	124.15 124.9 (M)	121.65 121.8 (B)	ASD 120.775	
		126.35 232.8 (P)	121.85 (P)	307 120.775	
DALLAS LOVE	CONTINUOUS	127.7 239.3	121.75 348.6	120.15	
DRESS AFB	0700-2100 MON-FRI	123.8 294.7	119.35 375.8	367.7	ASD
	0700-1300 SAT-SUN				
FT. WORTH HALFBIRD CARRIAGE	0700-2300	120.85 349 335	126.4 334 335	372.575	ASD/FMS
FT. WORTH ALHAFER	CONTINUOUS	125.15 388.15	122.65 366.2	124.425	
FT. WORTH CONTINENTAL	CONTINUOUS	121.1 357.8	121.9	120.7	
MEADOWS INTL	0600-1800	124.425	119.425	121.15	
GRAND PRairie	0700-1700 SAT-SUN	126.35			
	0700-1800 200				
HEWITT POWELL AFB	0700-2300 MON-FRI	124.85 239.4	121.7 379 375	335.425 334 335	ASD/FMS
	0700-1300 SAT-SUN				
HOWARD JONES	0700-2300	126.3	121.7	126.2	
LANTON-FT. SILL REGIONAL	0600-1900	119.9 237.8	121.9	120.75	ASD
LANCASTER INTL	CONTINUOUS	126.2 239.2	121.9 348.6	122.2	ASD
MAJORS	0700-1800 MON-FRI	118.45 363 425	121.7 322.8		
	C/D 11800LAP INTL				
MC CORMICK	0600-2300	118.825	121.825		
SHEPARD AFB/WICHTA FALLS	0230-2100 MON-FRI	119.75 239 323	122.5 289.4	122 05 289.9	ASD/FMS
	0700-1400 SAT-SUN & HCA, C/D, C/DZ				
SNOWWATER REGIONAL	0700-1700	125.35	121.6		
TRINITY AFB	CONTINUOUS	124.45 289.6	121.8 371.8	370.1	ASD
TULSA INTL	CONTINUOUS	118.7 237.8	121.9 348.6	124.9 377.2	ASD
		0700 180 363			
		121.2 310.8			
		0700 180 368			
		8 0700 81761			
TRIP HOLLAND RGNL	0430-2100	122.1 257.8	121.9	124.25	
UNIV OF OKLAHOMA WICKIREE	0600-2200	118.0	121.6		
WILEY POST	0700-2300	124.9 364.9	121.7	126.725	ASD
WILL ROGERS	CONTINUOUS	119.35 349.45	121.9 348.6	122.85	ASD

Dallas - Ft. Worth Sectional and Amarillo Sectional with numbers (back side).

