Houston (ZHU) Sector 12 - Austin Specialty Low

Surface to FL230

An Add-On Sector for Xavius Software's ATCC
by Garen Evans

VORTACS

IAH Humble
ELA Eagle Lake
SAT San Antonio
TPL Temple
LOA Leona
IDU Industry
CLL College Station
TNV Navasota
ACT Waco
TPL Temple
CQY Cedar Creek
LLO Llano
LFK Lufkin
CWK Centex
GNL Groesbeck
FZT Frankston
JCT Junction

AIRPORTS

IAH Houston Intercontinental
HOU Houston Hobby
EWF$^{\alpha}$ Easterwood Field
AUS Austin International
SAT San Antonio International
DFW Dallas/Fort Worth
CNW$^{\alpha}$ Waco (TSTC *et al.*)

SECTOR INFORMATION

SECT	FREQ	Controlling Entity	Notes	Fixes
12	135.32	ZHU Austin Specialty – Low	Surface to FL230	many
15	132.15	ZHU High Altitude Center	Houston SE	HUB
21	134.40	ZHU High Altitude Center	Austin	CWK
22	125.75	ZHU Low Altitude Center	Austin/Llano	LLO
24	133.10	ZHU High Altitude Center	San Antonio	SAT
26	135.75	ZFW Fort Worth ARTCC	Fort Worth Center	CQY
32	127.10	San Antonio Approach/Departure	Approach Services	MARCS
34	132.77	ZHU High Altitude Center	Lufkin	LFK
35	134.80	ZHU Low Altitude Center	Lufkin	LOVAZ
44	118.80	Austin Approach/Departure	Approach Services	SEWZY,CWK
46	134.50	Houston Approach/Departure	HOU & IAH	MARIT & HOAGI
65	118.50	College Station Class C Airspace	Easterwood Field *vcnty*	CLL, EWF
82	135.20	Waco Approach/Departure	Approach Services	CNW

INTRODUCTION

This sector, which attempts to depict significant operations in the Austin Specialty, is for advanced users who can handle multiple departures and arrivals at a number of large and small airports. Most of the departures are based on published Departure Procedures (DPs) and Standard Terminal Arrivals (STARS). Most of the arrivals include crossing restrictions at fixes, and joins to inbound radials. Commercial arrivals and departures, regional flights, and general aviation instrument practice flights coupled with a good bit of VFR traffic can make this sector very challenging. Although not absolutely necessary, studying the IAP's, STARS and DP's for the area will make you more comfortable and proficient.

Austin Specialty is a large area and the traffic flows are well organized, so you'll have time to identify and circumvent any disasters. However, there can be a lot of different activity. Especially challenging is the hotspot that will inevitably develop northwest of the Houston Terminal area. You will receive, at times, a lot of traffic in this area departing to the west from Hobby and Intercontinental, as well as a good bit of regional traffic headed to San Antonio, or Easterwood Field in College Station. All of this must be kept clear of traffic arriving into Houston. You must also sequence all arriving traffic to Houston Intercontinental 10 miles in-trail, and keep it separated from the Houston Hobby arrival stream, which should also be 10-15 miles in-trail, from the north.

TECHNICAL NOTES

Based on actual descriptions of the Austin Specialty from the ZHU website, NOAA and FAA charts and publications, and from first-hand reception of two-way radio communications (132.325, 120.4, and 118.5 MHz) from Bryan, Texas. The Austin Specialty in real life is bounded Leona, Humble, Eagle Lake, San Antonio, and Temple. It provides a wide range of air traffic control services, and when busy, is divided into four low altitude and two high altitude sectors. Descriptions of the low altitude sectors (surface to FL230) are presented below to give you an idea of what you will encounter.

- Industry Sector - responsible for all Houston Terminal Area departures to the west and Austin Terminal Area arrivals from the southeast

- Cugar Sector - sequences all turbojet and turboprop aircraft from the north and northwest into the Houston Terminal Area.

- College Station Sector - sequences piston traffic for the Houston Terminal Area and arrivals landing within the Austin Terminal Area from the northeast. It also handles approach control services at Easterwood Field (EWF) and sequences arrivals to Waco from the southeast.

- Bergstrom Sector - sequences all arrivals from the north and east landing within the San Antonio Terminal Area, and is responsible for sequencing Austin Terminal Area arrivals from the north and departures to the northeast.

SYNOPSIS OF PROCEDURES

ARRIVALS

IAH arrivals will enter the sector from the northeast, north, and west on the Cugar arrival and should be sequenced 10 miles in-trail to cross HOAGI at 10,000. Handoff to Sector 46.

HOU jet arrivals from the north should be sequenced 15 in-trail and cross MARIT at 10,000. Regional traffic from Austin should cross LISSE at 10,000, while turboprops from EWF should cross WESAT at 5,000. Handoff to Sector 46.

SAT – all arrivals into San Antonio should cross MARCS at 13,000. Handoff to Sector 32.

EWF arrivals should be at 4,000 or lower within 10 miles of the field. Commercial traffic from the north can cross CLL vortac at 3,000; turboprops from the south should cross ROWDY at 2,000. Handoff to Sector 65.

AUS – commercial traffic from the north will be descending to cross SEWZY at 13,000 (this is by Letter of Agreement). Arrivals from Houston should be handed off within 20 miles of the field at 6,000. General aviation traffic will be at 6,000 or below already. Handoff to Sector 44.

GNW – general aviation traffic to the Waco area should be handed off to sector 82.

DEPARTURES

IAH jet traffic departing to the west will enter at or climbing to 15,000 direct JCT. Clear them to FL220 and handoff to sector 21.

HOU jet departures will be climbing to 14,000 and should be sequenced in with IAH departures to the west. Clear them to FL220 and handoff to sector 21. Regional departures should be cleared to their filed altitude as soon as possible, then issue arrival instructions after they reach filed altitude. Commercial departures to College Station will be climbing to filed altitude (12,000 or below).

SAT – Outbound flights to the northeast toward Lufkin or southeast toward IAH will be climbing to an initial altitude of 9,000. Clear them to FL230 when able and handoff to sector 34 and 15, respectively.

AUS departures to Houston will be climbing to filed altitude (23,000 or less) to join the LISSE arrival. They should cross LISSE at 10,000. Hand off to sector 46. General aviation traffic to College Station will climb to 5,000 - handoff to Sector 65.

EWF departures will be climbing to 8,000 or below to CNW (sector 82); 6,000 direct Austin (sector 44); climbing to 9,000 to join the Wesat arrival to Houston (sector 46), or headed to DFW (sector 26) at or below 14,000. Some general aviation traffic will return to EWF after flying circuits.

ARRIVAL PROCEDURE DETAILS

IAH - Houston Intercontinental

Traffic will arriving to IAH in three streams on the CUGAR arrival. All arriving traffic will be at FL240, or descending to FL240. They should be sequenced at least 10 miles in-trail, and directed to cross HOAGI at 10,000. Descending through 15,000 they can be handed off to Houston Approach (sector 46).

1. Arrivals from over LOA will be handed off to you at (or descending to) FL240. After crossing LOA, aircraft can be vectored direct to cross HOAGI at 10,000 ("..HOAGI, XHOAGI@100"). Most of the arrivals will be coming from this direction.

2. Arrivals from the north will usually be descending to FL240 and will need to be sequenced with the stream coming over Leona. Watch their altitude and speed. You can issue temporary heading adjustments for sequence purposes. These aircraft are a potential conflict with Hobby arrivals.

3. Arrivals from the west will enter at FL240. Descend them to FL210 to reduce conflicts with Hobby arrivals, and keep them on the CUGAR arrival as often as you can. Use speed restrictions and vectors to sequence this traffic in with the others.

HOU - Houston William P. Hobby

Traffic into Hobby is usually not as busy as into Intercontinental, however Hobby does handle a lot of regional traffic.

Most arrivals into Hobby will be from the northwest, coming over Waco and descending to FL240. You may need to vector entering aircraft to the south (“TRH160”) to avoid conflicts with traffic arriving into IAH, and then southeast along the College Station 299 radial (via direct routing: "..MARIT,XMARIT@100") to join the STRUK arrival. Alternatively, you can use the advanced command, “FH160,=CLL299RI”, to instruct the aircraft to fly heading 160 and join the College Station 299 radial inbound. STRUK arrivals should cross MARIT at 10,000 and be handed off to Houston Approach (Sector 46).

Regional turboprops from College Station will be on the WESAT arrival. They should be sequenced 15 miles in-trail and cross WESAT at 5,000. From Austin, arrivals will be on the LISSE arrival, where they should cross at 10,000. Handoff to Houston Approach (Sector 46).

EWF -Easterwood Field, College Station.

Most arrivals into Easterwood will be general aviation traffic from Waco and Austin. Commercial traffic is American Airlines (Eagle Flight - EGF) from Dallas/Fort Worth, and Continental Airlines (“JetLink” - JTL) from Houston Hobby. Both carriers have been using turboprops for several years, but Continental is starting to use the new Embraer 135 regional jet.

There is also quite a bit of general aviation in the area that may depart EWF only to arrive later after flying circuits. All arrivals should be at or below 4,000 within 10 miles of the field, and handed off to the Class C controller (ie., Tower) at College Station (sector 65). Arrivals from Austin will be level at 5,000 and direct EWF. They should cross 10 miles west of EWF at or below 4,000 (Command: "X10WEWF@-40"). Arrivals from Dallas will be entering your sector over BONDD descending to 8,000 from their filed altitude. They should cross CLL at 3,000. Arrivals from Houston can be vectored direct to the outer marker for the ILS RWY 34 approach using the command, “XROWDY@20”.

AUS - Austin International Arrivals

Handoffs are made to Austin Approach (Sector 44). Arrivals into Austin will be primarily commercial traffic from the north on the BLEWE arrival, and already descending to cross SEWZY at 13,000. Arrivals from Hobby via Industry vortac should be at 6,000 within 20 miles of Austin (Command: X20SEAUS@60). General aviation traffic from College Station (EWF) will be level at 6,000 and can be handed off directly to Austin Approach upon or slightly before crossing Centex (CWK).

SAT - San Antonio Arrivals

Most arrivals will be from the north over BLEWE, or from the east over IDU, descending to FL240 on the MARCS arrival. You may want to keep the east arrivals at FL240 until crossing IDU to reduce conflicts in the Houston area. Both streams should cross MARCS at 13,000. Regional traffic from Houston Hobby be handed off to you at or climbing to 14,000. Climb them to their filed altitude or FL230, whichever is lower. They should cross MARCS at 13,000; they should be allowed to reach their filed altitude before being given crossing restrictions. All aircraft enroute to San Antonio can be vectored direct to MARCS, if desired.

GNW – Waco Area Arrivals

Arrivals into the Waco area out of your sector are handed off to Waco Approach (Sector 82).

DEPARTURE PROCEDURE DETAILS

IAH - Houston Intercontinental

Departing traffic will be at or climbing to 15,000 enroute to JCT via direct. They should be cleared to FL220 within five minutes after you accept the handoff. If you forget to clear them higher, they will probably pester you until satisfied. Start the handoff to sector 21 as they pass through FL200. The lateral limits of Sector 21 extends to a line running between IDU and TNV.

HOU - Houston William P. Hobby

Departures from Hobby include flights out over SEALY and thence to JCT via direct. They will enter your sector climbing to 14,000 and should be cleared to FL220 within five minutes after you accept the handoff. Sequence with departures from IAH, and handoff to sector 21.

Regional departures to Austin will be assigned an initial altitude of 14,000 via SEALY thence IDU. These departures should be cleared and allowed to reach their filed altitude before starting them on their initial descent. Hand off to Austin Approach (Sector 44; see AUS arrival procedures).

Departures to San Antonio will also be assigned an initial altitude of 14,000 and should be cleared to their filed altitude as soon as possible. They will be routed across Industry to join the MARCS arrival (see procedures for arrivals at San Antonio) and handed off to San Antonio Approach (Sector 32).

Aircraft departing to College Station will be climbing to their filed altitude (12,000 or below) by the departure controller in Houston and vectored to SEALY to join V194 to CLL. If arrivals to Houston are not a factor, you can clear them direct to ROWDY with appropriate instructions (see procedures for arrivals at Easterwood). In any event they should be handed off to Easterwood Tower (Sector 65).

EWF -Easterwood Field, College Station.

College Station departures will either; (1) check on climbing to 9,000 and head south to the Navasota VORTAC to join the WESAT arrival (handoff to Sector 46) to Houston, (2) climbing to 14,000 (or lower) on a northerly heading over CLL and thence direct to CQY to join the Cedar Creek arrival (handoff to ZFW Sector 26) into Dallas/Fort Worth, (3) enroute to Austin via CWK and climbing to 6,000 (handoff to Austin Approach Sector 44 prior to crossing CWK), or (4) enroute to Waco at or below 8,000 - handoff to Sector 82.

General aviation aircraft may also file out of College Station (ie., EWF) on IFR training flights, and may return some time later after flying circuits in your sector; they will initially be cleared to 4,000 and their flight plan should not be altered with direct routings unless absolutely necessary.

AUS - Austin International Departures

Regional traffic departing Austin International will either be; (1) climbing to 5,000 direct CWK thence direct Easterwood Field (they should cross 10 miles west of the field at or below 4,000 and be handed off to Sector 65), or (2) jet traffic climbing to filed altitude eastbound to MOUZE to join the LISSE arrival for landing at Houston Hobby (see Hobby arrival procedures) – handoff to Sector 46 as they leave your southern boundary.

SAT - San Antonio Departures

Departures to the east toward Lufkin will initially be cleared to 9,000 and should be cleared by you on course to FL230 before handing off to Sector 34. Departures over IAH and thence to destinations in the east and southeast will be assigned a departure altitude of 9,000. They should be cleared to FL230 and handed off to Sector 15. Jets departures to Houston will be joining the LISSE or GLAND, but will not enter your airspace.

OVERFLIGHTS

There are some opposing overflights from west to east at correct altitude for direction of flight. Hand them off to their respective controllers (Sector 22 in the west, and Sector 35 in the east). Military traffic will occassionally enter your sector for instrument training. All overflights should be allowed to follow their flight plan as filed, and with minimal handling.

HINTS

This sector file was designed to portray the activities in the four low-altitude sectors of the Austin Specialty. In real life, late at night one controller might take charge of the entire specialty, but when things get busy there are four controllers who coordinate traffic (plus two high altitude sectors). You will have to assume the duties of all four low-altitude controllers. Therefore, don't get discouraged when things get a bit crazy. For training, set the activity level to 70-80%. Then every 15 minutes increase it to 100% for about five minutes. This should give you plenty of experience to get certified. Actual late night activity levels are probably 10-40%.

AN OVERVIEW OF THE MAP

There is a map at the end of this document which you can use as a reference. The map was created with SectorMap Ver. 0.92, which is an extrememly helpful public domain programto display ATCC sector data. It portrays the approximate locations of the 12 sectors adjacent to the sector that you will be controlling. It includes frequencies, selected airways, airports, ndb's and vortacs. A letter preceding each frequency indicates the type of sector: H = high altitude, L = low altitude, A = approach sector, and T = class C airspace (that is, Tower).

ADDENDUM & CONTACT

This sector was designed as accurately as possible given the resources available. However, some liberties had to be taken in order to portray adjacent and overlying sectors, and a lot of "arbitrary" traffic was not included. I would be interested to know how close I came to the "real thing." Therefore, if you are a Houston controller (or are familiar with ZHU) and would have altitude sectorization maps of Houston ARTCC airspace, I would consider designing ATCC sectors for the remaining specialties. Please contact me if you can help, or if you have any questions, problems, or suggestions about this sector. My e-mail address is garen_evans@hotmail.com

α - As the Xavius program will not recognize 4-letter identifiers for airports, I have used EWF to denote Easterwood Field (KCLL in real life) in order to distinguish it from the College Station VORTAC, CLL. Similarly for Waco where I have used CNW to denote the Waco airport and ACT for the vortac.

ACKNOWLEDGEMENTS

I would like to thank Michael Jackson for his interest in this project, and for providing his assistance and suggestions. Xavius software for their wonderful simulation framework, and Spongey for promoting this add-on.

REFERENCES:

Xavius Software: www.xavius.com

NOAA Low Altitude Enroute Chart L-17/18.

NOAA Instrument Approach Procedures, South Texas

ZHUWeb: www.faa.gov/ats/zhu/notes.html

APPENDIX 1 – MAP OF AUSTIN SPECIALTY