3-8-24 TX_KDFW_STAR_BOOVE SEVEN RNAV

V1 IS BEING RETURNED PRE-PRB FOR THE FOLLOWING:

MISSING WAIVER: SPEED RESTRICTION AT MOWWW: SPEED RESTRICTION ASSIGNED TO FIX MOWWW (240) IS LESS THAN THE MINIMUM AIRSPEED RESTRICTION FOR THE FIX (250) REFERENCE 8260.58C TABLE 1-2-2 NOTE 3. PLEASE ENTER A SIMILAR WAIVER AS REQUESTED IN THE SHMPP THREE (RNAV) STAR.

Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: STAR	Estimated Chart Date: 07/11/2024	APWS Task ID: D4FA19E31D3B4C40A90C4190D8EF77E9	APWS Project ID: 397672FA6C3A47308C55F35A25B7CBB0
Procedure: STAR BOOVE SEVEN (RNAV) FORT WORTH TX KDFW		Enroute: YES	Specialist: Copeland, Guy		Agreement Number:
Airport ID: KDFW			Airport City: DALLAS-FORT WORTH		State: TX
Facility ID:	Facility Type:	Flight Inspection Remark Type: New FC Slot			

Procedure Comments:
CONTACT: ROBERT HAMILTON 405-954-4608

WAIVER: MINUMUM SPEED

LOA: DESCENT GRADIENT

03/11/2024 THIS IS AN UPDATED COPY OF THE FORM APPROVED ON 02/01/2024:

1. ADDED WAIVER TO THIS FILE FOR SPEED RESTRICTION AT MOWWW.

Data as of: 01/04/2024 09:51:14 CST

FIPC BASIC FORM

PROCEDURE:	AIRPORT NAME:	AIRPORT ID:	SPECIAL CONTROL NO:
BOOVE SEVEN ARRIVAL (RNAV)	DALLAS-FORT WORTH INTL	KDFW	OG-03-194-24

FAC ID: BOOVE7	CITY: DALLAS-FORT WORTH	ST: TX	ORIG CHART DATE: 07/11/2024

DFL TYPE:	THIRD PARTY:	EST. TIME ON SITE:	REIMB. NUMBER:	PTS TASK ID:
PROC/D	☐ YES	1.0		D4FA19E31D3B4C40A90C4190D8EF77E9

PREFLIGHT NOTES

REVIEWER: nicholas a varner

DATE: 04/08/2024

COMMENTS:
TABLE-TOP REVIEW COMPLETE, NO FLIGHT CHECK REQUIRED
SPEEDS LOWERED AT MOWWW AND CURLE.
OBSTACLE ANYSYSIS IS SAT DUE TO NO NEW OBSTACLES AND ONLY SPEED CHANGES.

CHECK ONE:
☐ FLT CK REQ ☒ NFCR ☐ REJECT

	YES	NO
CPV COMPLETE?	X	

PROCEDURE RESULTS

INSPECTION DATE:	CREW #:	N #:	INSTRUMENT PROCEDURE STATUS:	ARINC CODING:
04/08/2024	VN536		☒ SAT ☐ SAT W/CHANGES ☐ UNSAT	☒ SAT ☐ SAT/GOLD ☐ UNSAT

FLIGHT INSPECTOR SIGNATURE:	PRINTED NAME:	NOTAM INITIATED?
nicholas a varner @ 04/09/2024 09:20	VARNER, NICHOLAS ALLEN	☐ YES ☒ NO

FLIGHT INSPECTOR REMARKS:

IN-FLIGHT OBSTACLE REPORT

OBSTRUCTION ID #:	COORDINATES OR LOCATION:	GNSS ALTITUDE (MSL):	BAROMETRIC ALTITUDE (MSL):	HEIGHT ABOVE GROUND LEVEL:

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

1. FLIGHT PROCEDURE IDENTIFICATION:

Dallas, Texas
Dallas Fort Worth International Airport (KDFW)
KDFW BOOVE (RNAV) ARRIVAL

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

FAA Order 8260.58C, paragraph 1-2-5, Table 1-2-2, Indicated Airspeeds (KIAS):
Reflects 250 KIAS is the appropriate airspeed for Category B aircraft AT or ABOVE 10,000 feet.
Note 3 states, 250 KIAS AT or ABOVE 10,000 feet MSL except for initial and/or STAR termination fix.
Note 2 states, airspeed restrictions may be established at a charted fix to reduce turn radius, avoid obstacles accommodate ATC request, etc...

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

There is an ATC operational requirement for the crossing restriction of 12000B13000 at 240K at MOWWW. The 240K at MOWWW is to ensure aircraft can be safely sequenced at an acceptable, manageable speed. This change was at the request of industry representatives.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

The BOOVE STAR was designed with Industry input and has their endorsement based on various aircraft flight simulator results. Additional, information from the PARC Group indicates that using less then 250K will be allowed in future orders.

(SEE ATTACHED PARC NAVIGATION WORKING GROUP RECOMMENDATION)

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

Alternatives were considered, however none were feasible due the need for slower airspeeds when entering the terminal environment in order for ATC to safely sequence aircraft for KDFW's multiple arrival runway operations.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

American Airlines
Fort Worth ARTCC (ZFW)
Dallas Fort Worth Approach Control (D10)
CSC OSG

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
			Digitally signed by ***ROBERT G HAMILTON*** Mar 11, 2024

8. AFS ACTIONS:

☐ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

DATE	ROUTING SYMBOL	SIGNATURE

Federal Aviation Administration

Memorandum

Date:	November 14, 2023
To:	Tom Lattimer, Airspace Manager CSA PBN Team
From:	Mike McDonald, TCFW District Support Manager, Airspace and Procedures.
Prepared by:	William Roth, Senior ATC Specialist, NAVTAC Support
Subject:	Letter of Approval Request BOOVE STAR, DFW

KDFW BOOVE Standard Terminal Arrival Route (STAR): BOOVE to SHMPP Descent Gradient.

Currently, FAAO 8260.3F, PARA 2-2-8a (1), The STAR's maximum permissible descent gradient is 330 ft/nm (approximately 3.11 degrees). BOOVE has a restriction of BLOCK ALTITUDE OF FL190 TO FL280, and SHMPP has a restriction of BLOCK ALTITUDE OF 15000MSL TO 17000MSL. The descent gradient (460.83 ft/nm) from BOOVE to SHMPP is greater than the maximum permissible gradient allowed. Flight Standards approval is required.

The BOOVE STAR serves Dallas/Fort Worth International Airport. The altitude restrictions on the BOOVE STAR are designed to separate aircraft on the procedure from either adjacent airspace or other traffic. The deviation from Descent Gradient criteria does not introduce any new risk into the system. Additionally, the procedure does not have any reported issues by either air traffic control or the airline industry since implementation.

Therefore, ZFW is requesting a Letter of Approval to utilize the altitudes at BOOVE (BLOCK ALTITUDE OF FL190 TO FL280) to SHMPP (BLOCK ALTITUDE OF 15000MSL TO 17000MSL) resulting in a descent gradient of 460.83 ft/nm as developed for the BOOVE STAR.

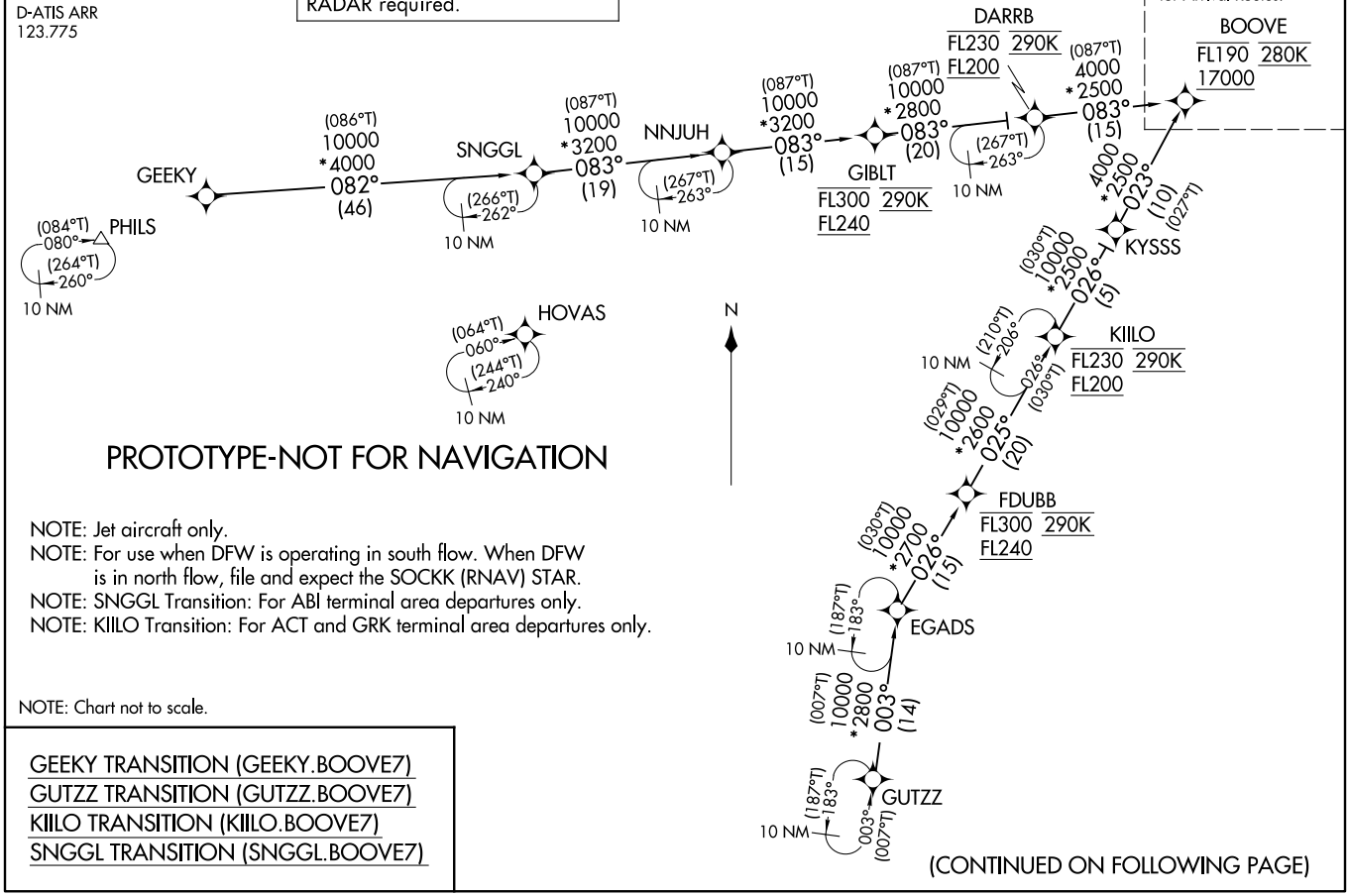
Sincerely,

Mike McDonald
Support Manager, Airspace & Procedures
Fort Worth Center, Texas

REGIONAL APP CON
119.875 133.625 284.65
D-ATIS ARR
123.775

RNAV 1 - DME/DME/IRU or GPS.
RADAR required.

See following page for Arrival Routes.



PROTOTYPE-NOT FOR NAVIGATION

NOTE: Jet aircraft only.
NOTE: For use when DFW is operating in south flow. When DFW is in north flow, file and expect the SOCKK (RNAV) STAR.
NOTE: SNGGL Transition: For ABI terminal area departures only.
NOTE: KIILO Transition: For ACT and GRK terminal area departures only.

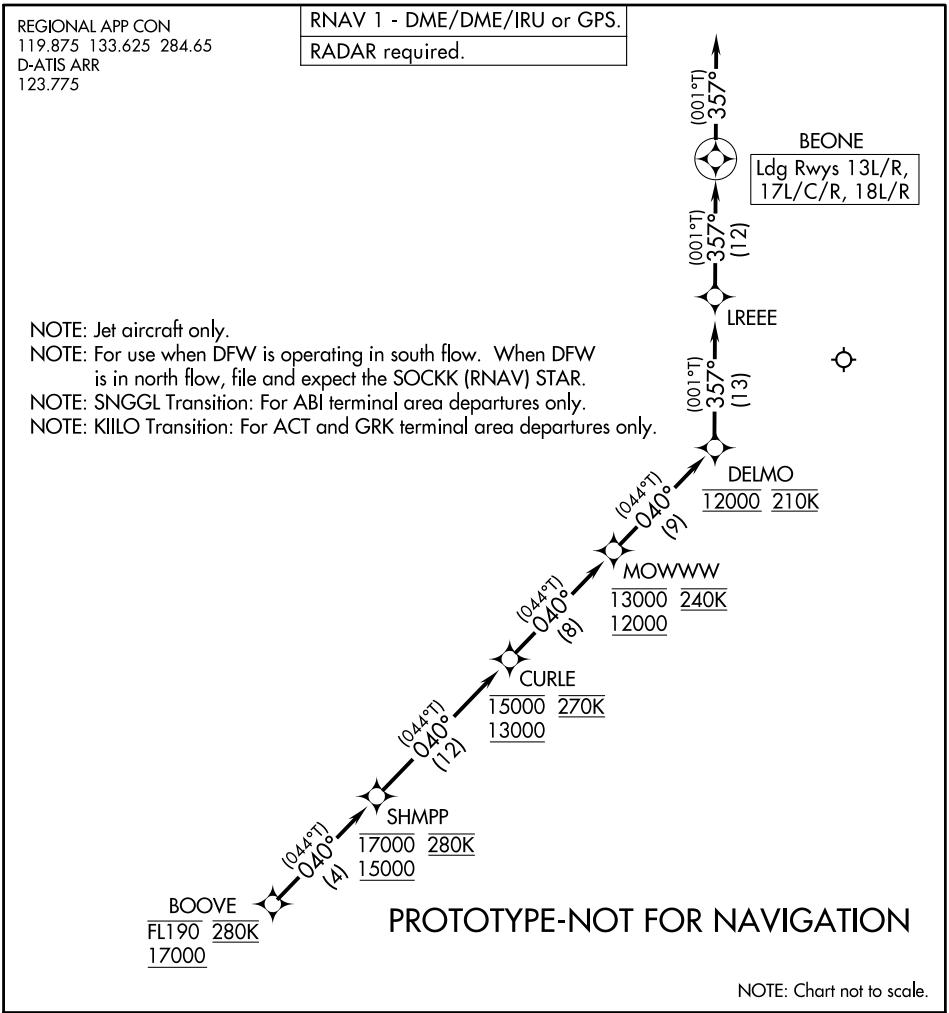
NOTE: Chart not to scale.

GEEKY TRANSITION (GEEKY.BOOVE7)
GUTZZ TRANSITION (GUTZZ.BOOVE7)
KIILO TRANSITION (KIILO.BOOVE7)
SNGGL TRANSITION (SNGGL.BOOVE7)

(CONTINUED ON FOLLOWING PAGE)

(BOOVE.BOOVE7) FIG
BOOVE SEVEN ARRIVAL (RNAV) Transition Routes
DALLAS-FORT WORTH INTL (DFW)
DALLAS-FORT WORTH, TEXAS

BOOVE SEVEN ARRIVAL (RNAV) Arrival Routes



ARRIVAL ROUTE DESCRIPTION

From BOOVE on track 040° to cross SHMPP between 15000 and 17000 and at 280K, then on track 040° to cross CURLE between 13000 and 15000 and at 270K, then on track 040° to cross MOWWW between 12000 and 13000 and at 240K, then on track 040° to cross DELMO at 12000 and at 210K, then on track 357° to LREEE, then on track 357° to BEONE, then on track 357°.
Expect RADAR vectors to final approach course.

BOOVE SIX ARRIVAL (RNAV) Transition Routes

(BOOVE.BOOVE6) 23FEB23

DALLAS-FORT WORTH, TEXAS

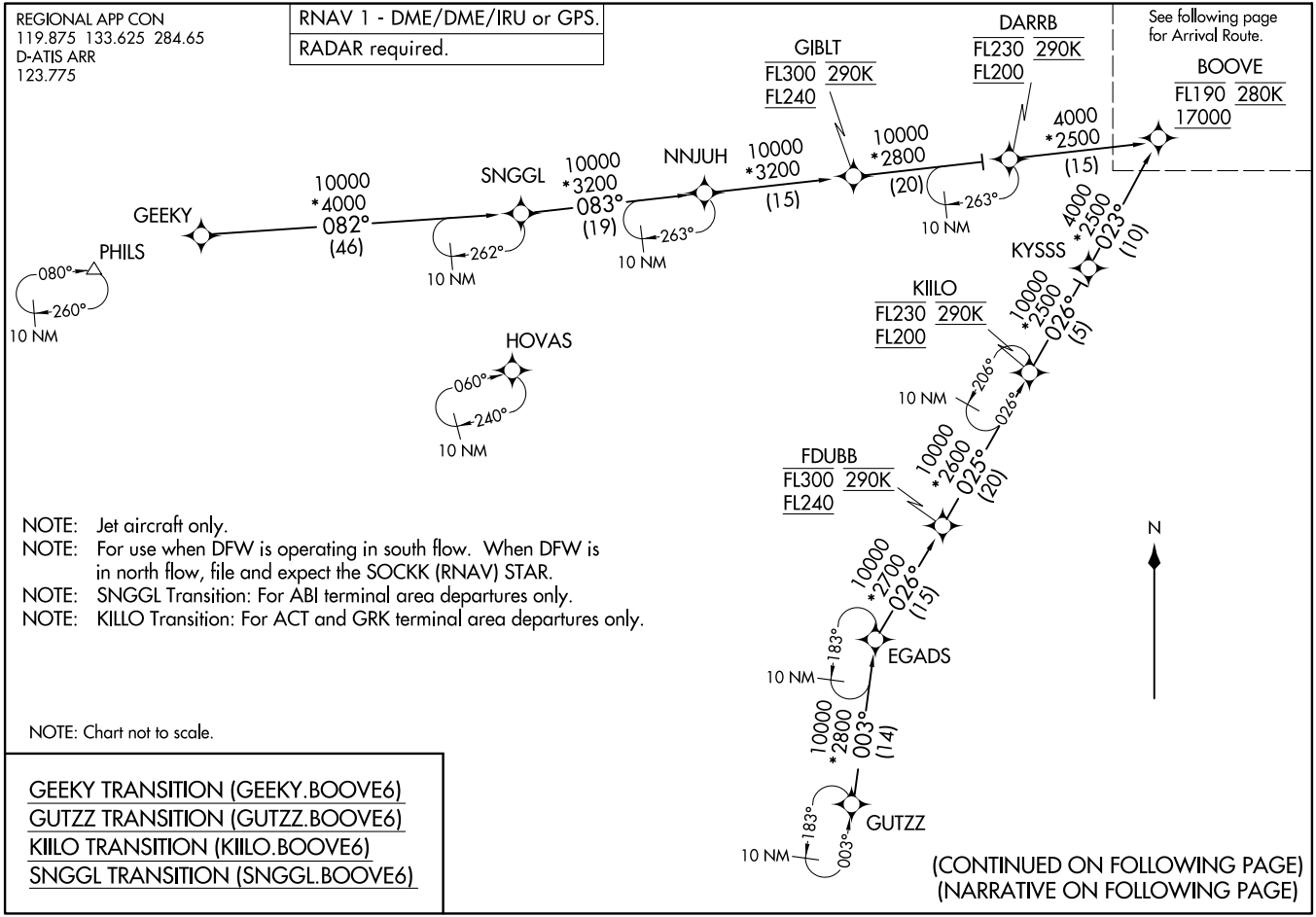
DALLAS-FORT WORTH INTL (DFW)

(BOOVE.BOOVE6) 23054 OLD AL-6039 (FAA)

BOOVE SIX ARRIVAL (RNAV) Transition Routes

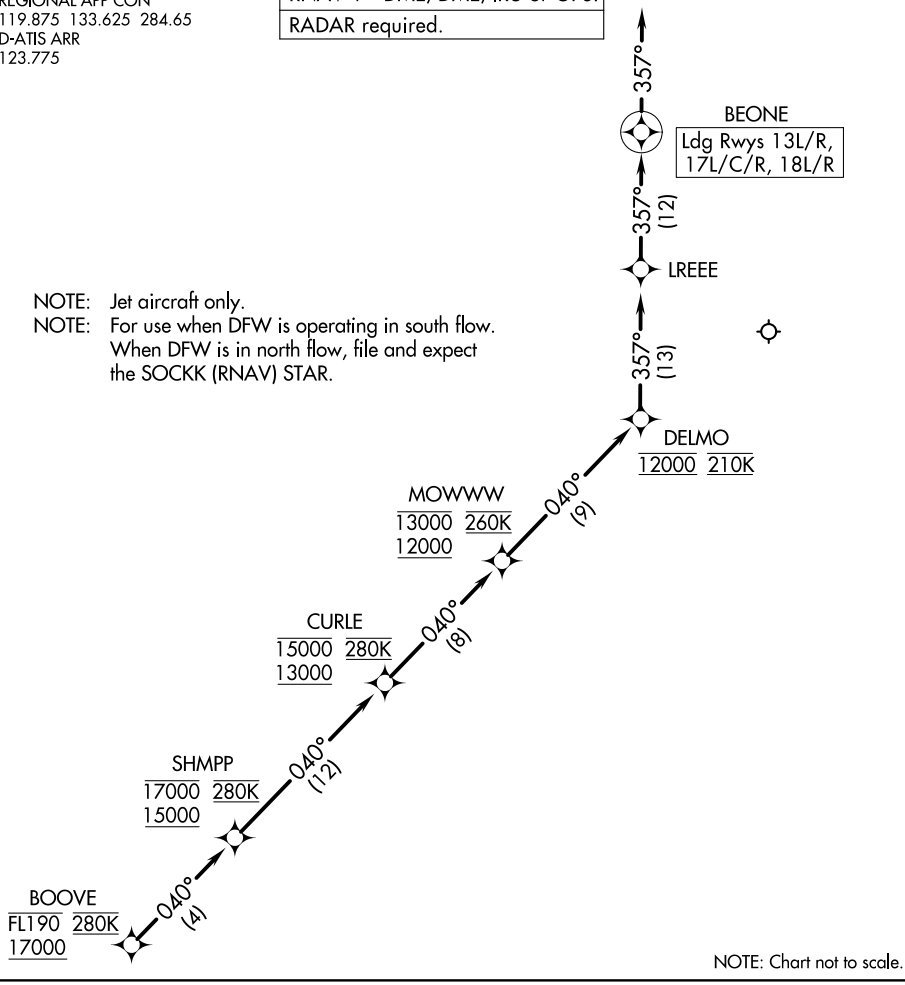
DALLAS-FORT WORTH INTL (DFW)

DALLAS-FORT WORTH, TEXAS



REGIONAL APP CON
119.875 133.625 284.65
D-ATIS ARR
123.775

RNAV 1 - DME/DME/IRU or GPS.
RADAR required.



NOTE: Jet aircraft only.
NOTE: For use when DFW is operating in south flow. When DFW is in north flow, file and expect the SOCKK (RNAV) STAR.

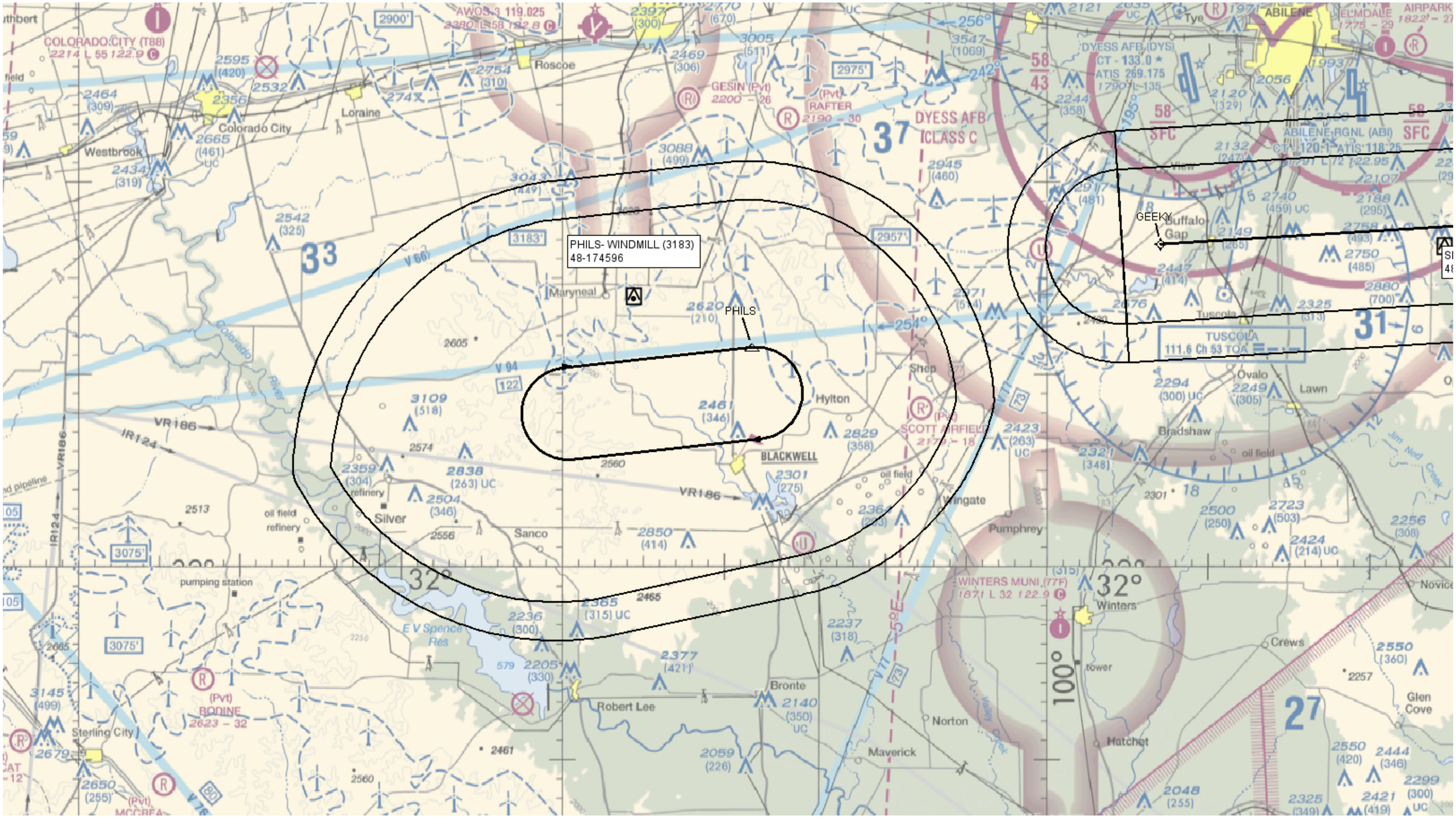
NOTE: Chart not to scale.

SC-2, 23 FEB 2023 to 23 MAR 2023

SC-2, 23 FEB 2023 to 23 MAR 2023

ARRIVAL ROUTE DESCRIPTION

From BOOVE on track 040° to cross SHMPP between 15000 and 17000 and at 280K, then on track 040° to cross CURLE between 13000 and 15000 and at 280K, then on track 040° to cross MOWWW between 12000 and 13000 and at 260K, then on track 040° to cross DELMO at 12000 and at 210K, then on track 357° to LREEE, then on track 357° to BEONE, then on track 357°. Expect RADAR vectors to final approach course.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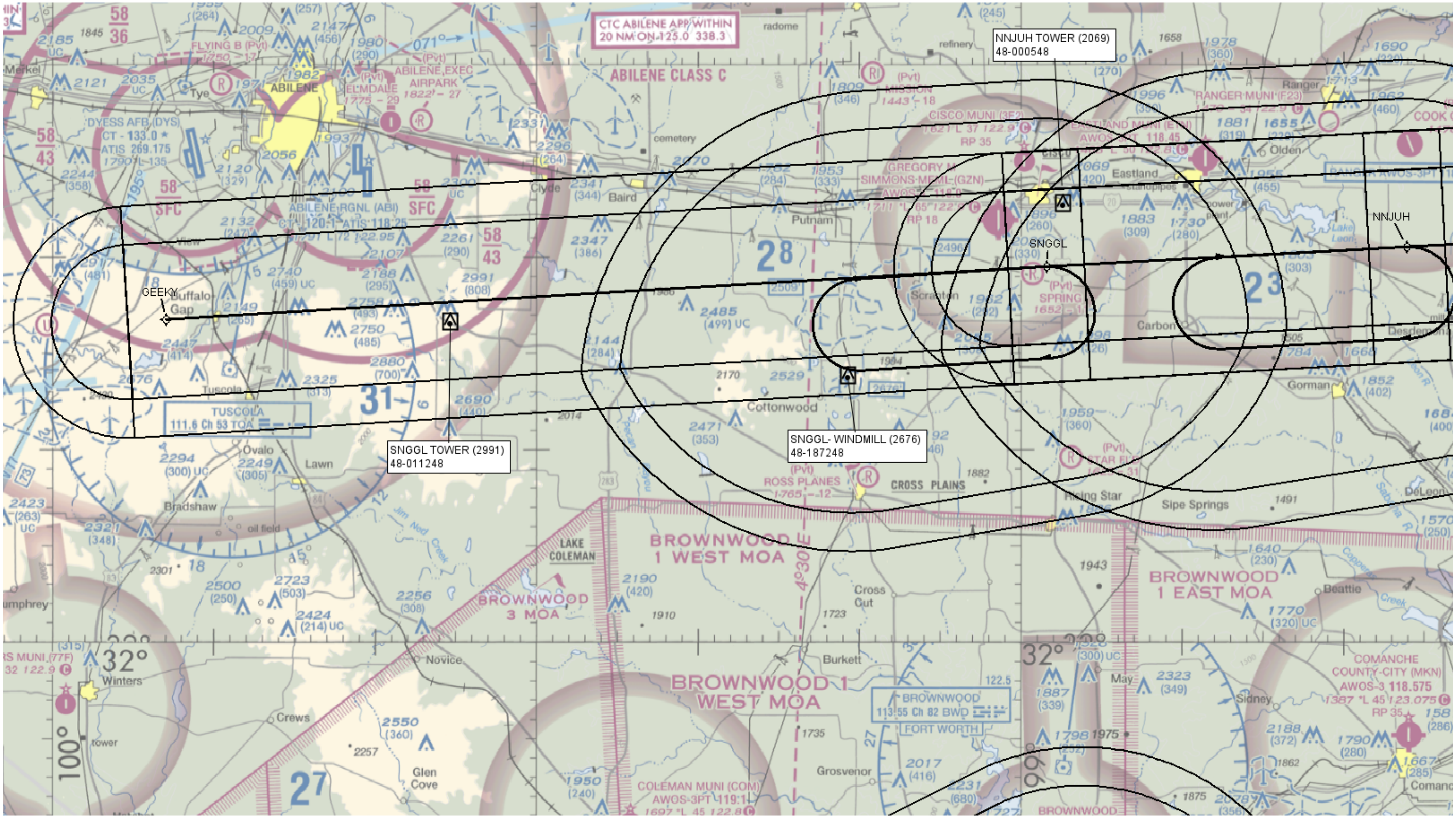
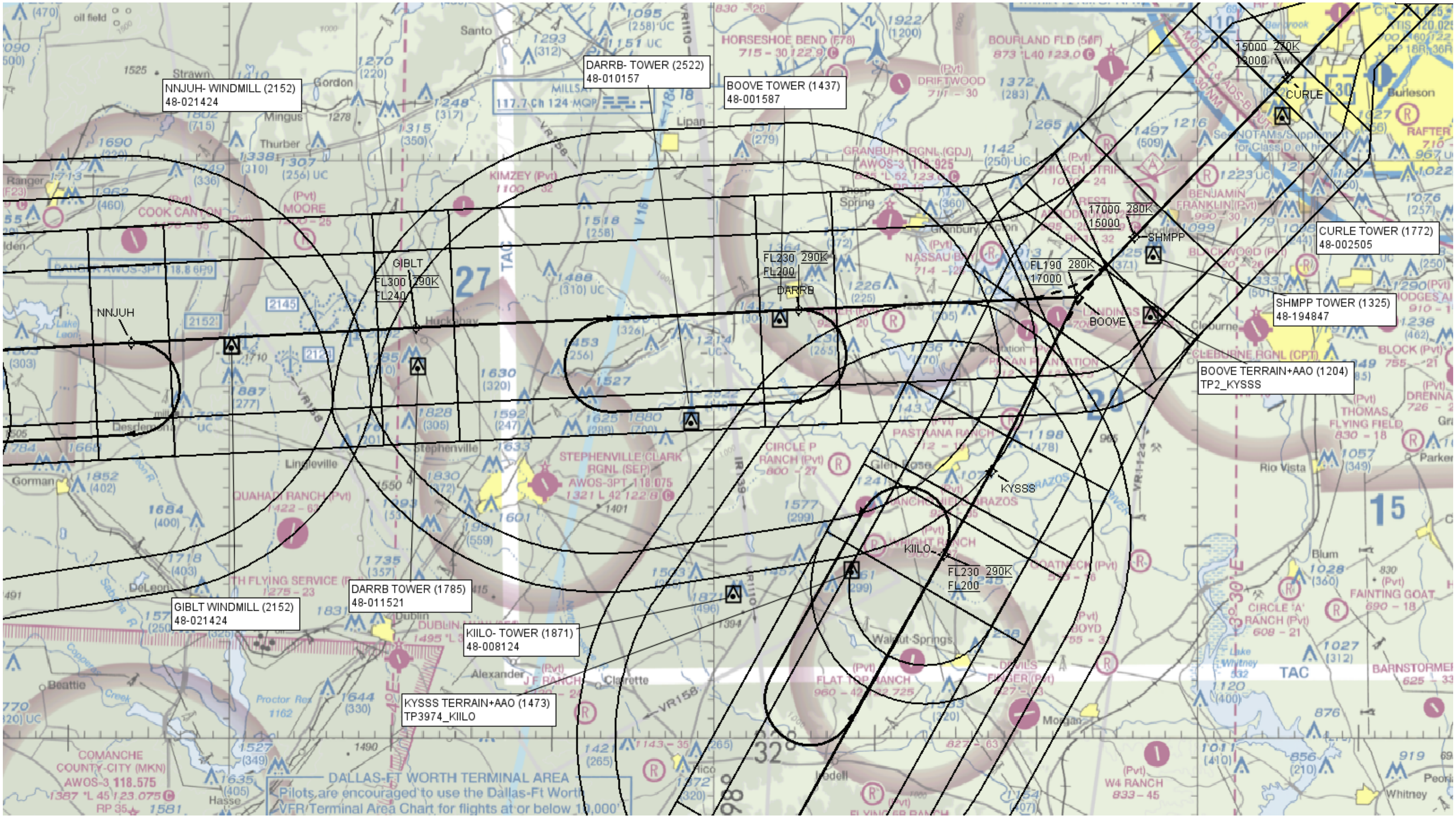
48-174596
PHILS
GEEKY
COLORADO CITY (T88)
Colorado City
Westbrook
Loraine
Roscoe
Maryneal
BLACKWELL
Hylton
Shep
Silver
Sanco
Wingate
Pumphrey
DYESS AFB
CLASS C
DYESS AFB (DYS)
ABILENE RGNL (ABI)
ABILENE
Tye
Buffalo Gap
Tuscola
TUSCOLA
111.6 Ch 53 TOA
Ovalo
Lawn
Bradshaw
WINTERS MUNI (77F)
Winters
Crews
Novice
Glen Cove
Bronte
Robert Lee
Norton
Maverick
Hatchet
Sterling City
E V Spence Res
SCOTT AIRFIELD
GESIN (Pvt)
RAFTER
BODINE
V 66
V 94
VR186
IR124
pumping station
oil field
refinery

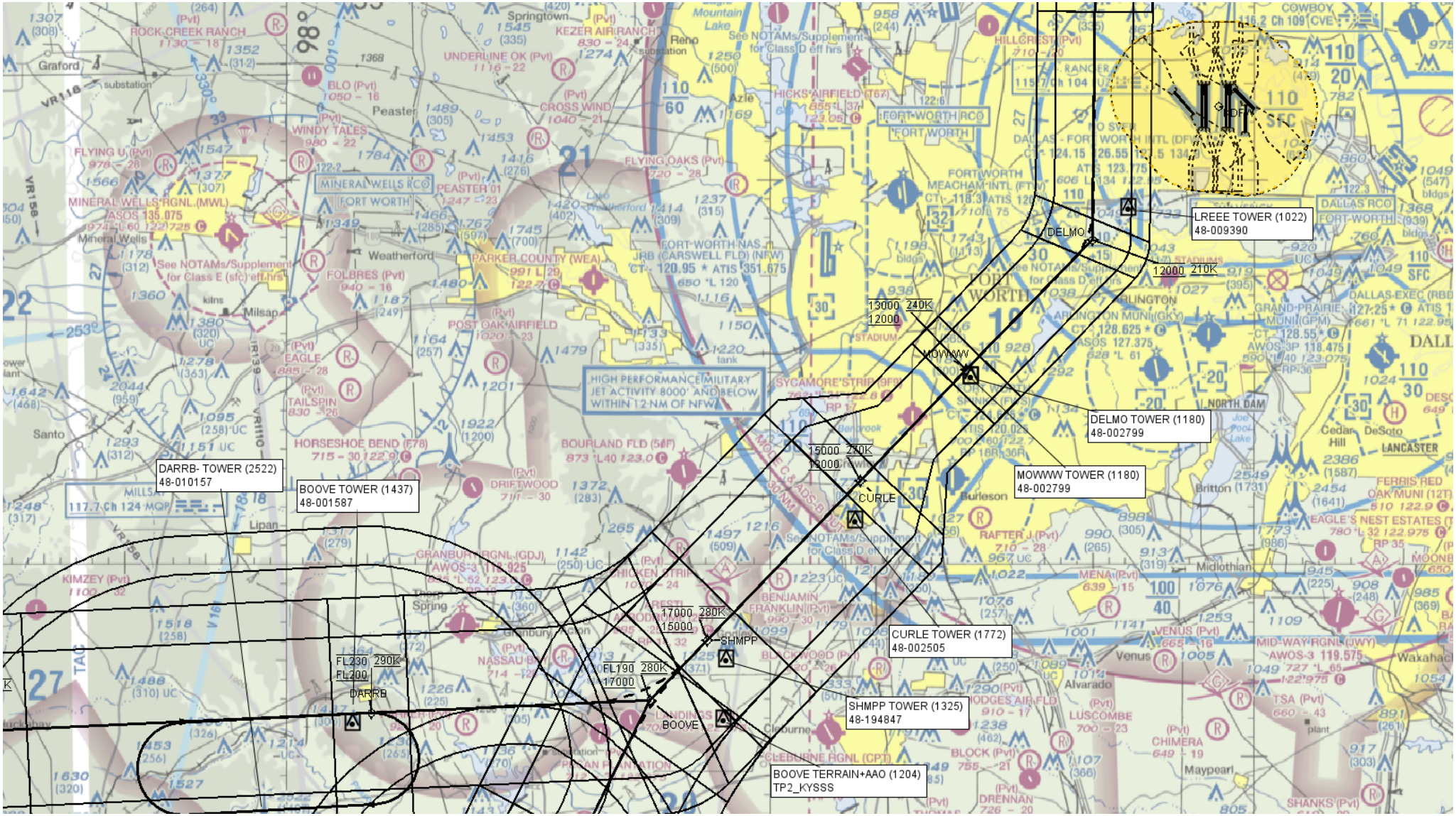
BOOVE (RNAV)

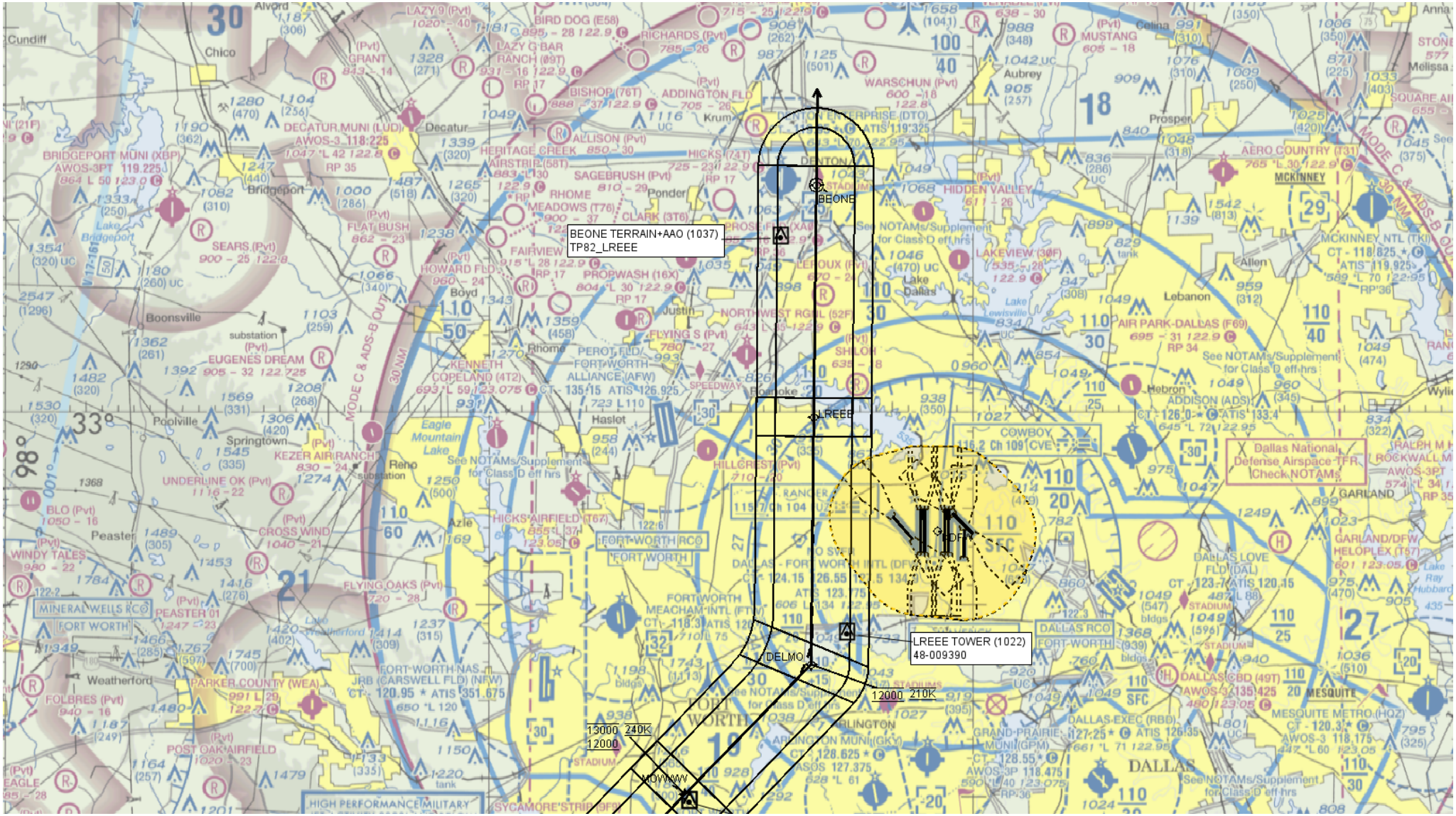

NNJUH TOWER (2069)
48-000548
NNJUH
SNGGL
GEEKY
SNGGL TOWER (2991)
48-011248
SNGGL- WINDMILL (2676)
48-187248
CTC ABILENE APP WITHIN
20 NM ON 125.0 338.3
ABILENE CLASS C
BROWNWOOD
1 WEST MOA
BROWNWOOD
1 EAST MOA
BROWNWOOD
3 MOA
BROWNWOOD 1
WEST MOA

BOOVE (RNAV)

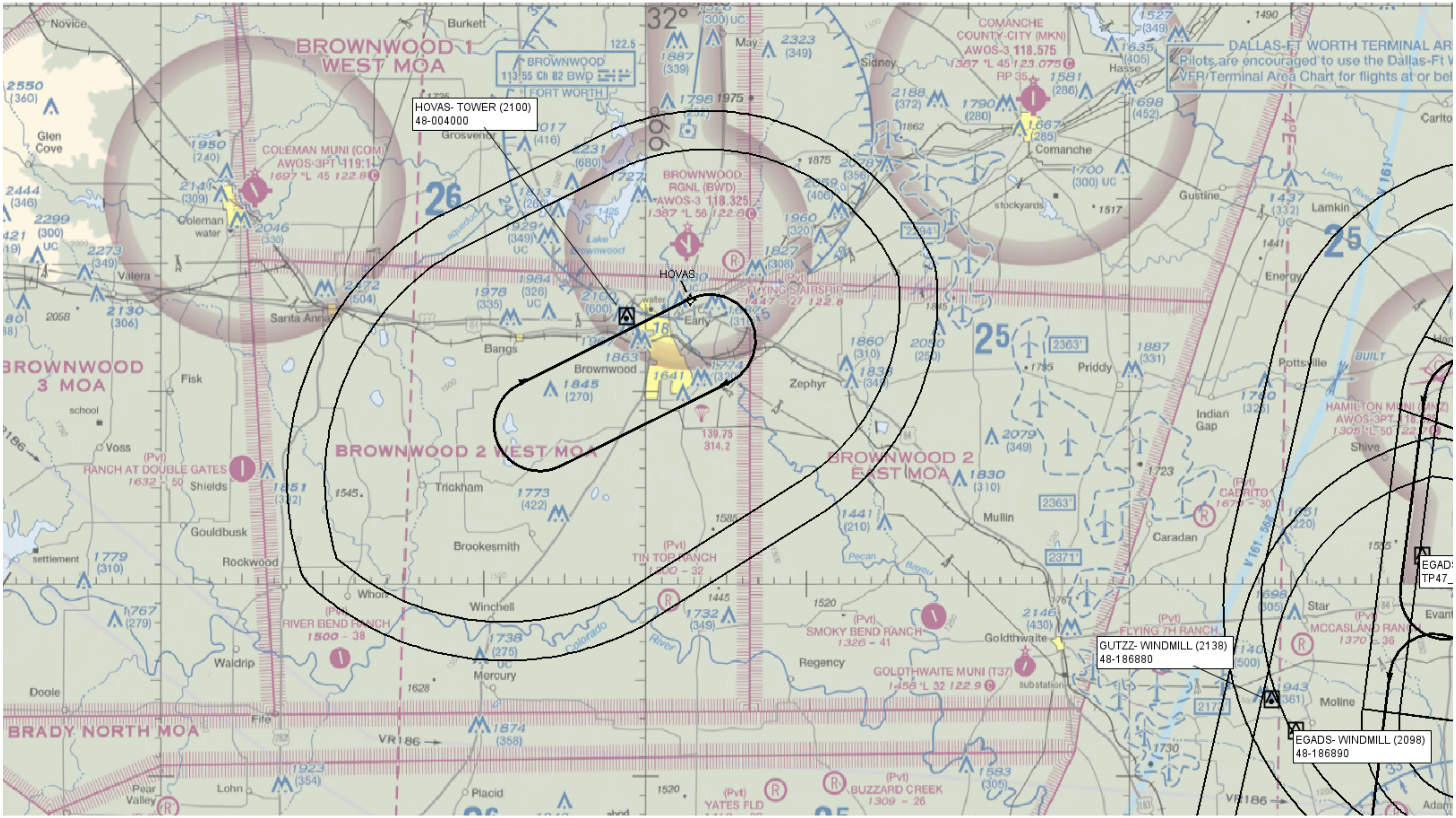

NNJUH- WINDMILL (2152)
48-021424
DARRB- TOWER (2522)
48-010157
BOOVE TOWER (1437)
48-001587
CURLE
15000 270K
13000
CURLE TOWER (1772)
48-002505
17000 280K
15000
SHMPP
FL190 280K
17000
BOOVE
SHMPP TOWER (1325)
48-194847
FL230 290K
FL200
DARRB
GIBLT
FL300 290K
FL240
NNJUH
BOOVE TERRAIN+AAO (1204)
TP2_KYSSS
KYSSS
KIILO
FL230 290K
FL200
DARRB TOWER (1785)
48-011521
GIBLT WINDMILL (2152)
48-021424
KIILO- TOWER (1871)
48-008124
KYSSS TERRAIN+AAO (1473)
TP3974_KIILO

BOOVE (RNAV)


LREEE TOWER (1022)
48-009390
DELMO
12000 210K
13000 240K
12000
MOWWW
DELMO TOWER (1180)
48-002799
MOWWW TOWER (1180)
48-002799
15000 270K
13000
CURLE
CURLE TOWER (1772)
48-002505
17000 280K
15000
SHMPP
SHMPP TOWER (1325)
48-194847
FL230 290K
FL200
DARRB
DARRB- TOWER (2522)
48-010157
FL190 280K
17000
BOOVE
BOOVE TOWER (1437)
48-001587
BOOVE TERRAIN+AAO (1204)
TP2_KYSSS
HIGH PERFORMANCE MILITARY JET ACTIVITY 8000' AND BELOW WITHIN 12 NM OF NFW

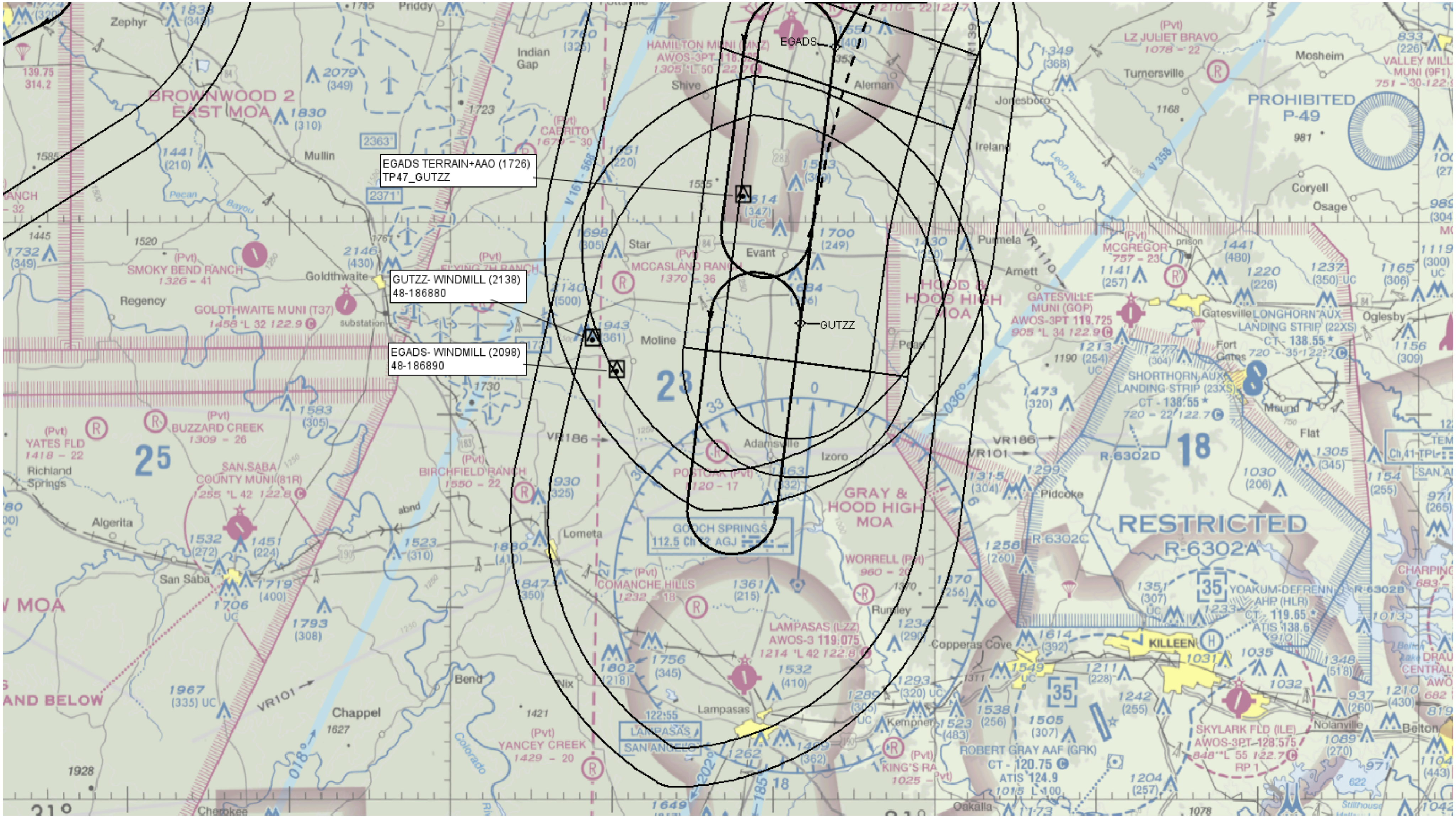

BEONE TERRAIN+AAO (1037)
TP82_LREEE
LREEE TOWER (1022)
48-009390
BEONE
LREEE
DELMO
MDW
DFW
12000 210K
13000 240K
12000
Dallas National
Defense Airspace TFR
Check NOTAMs

BOOVE (RNAV)

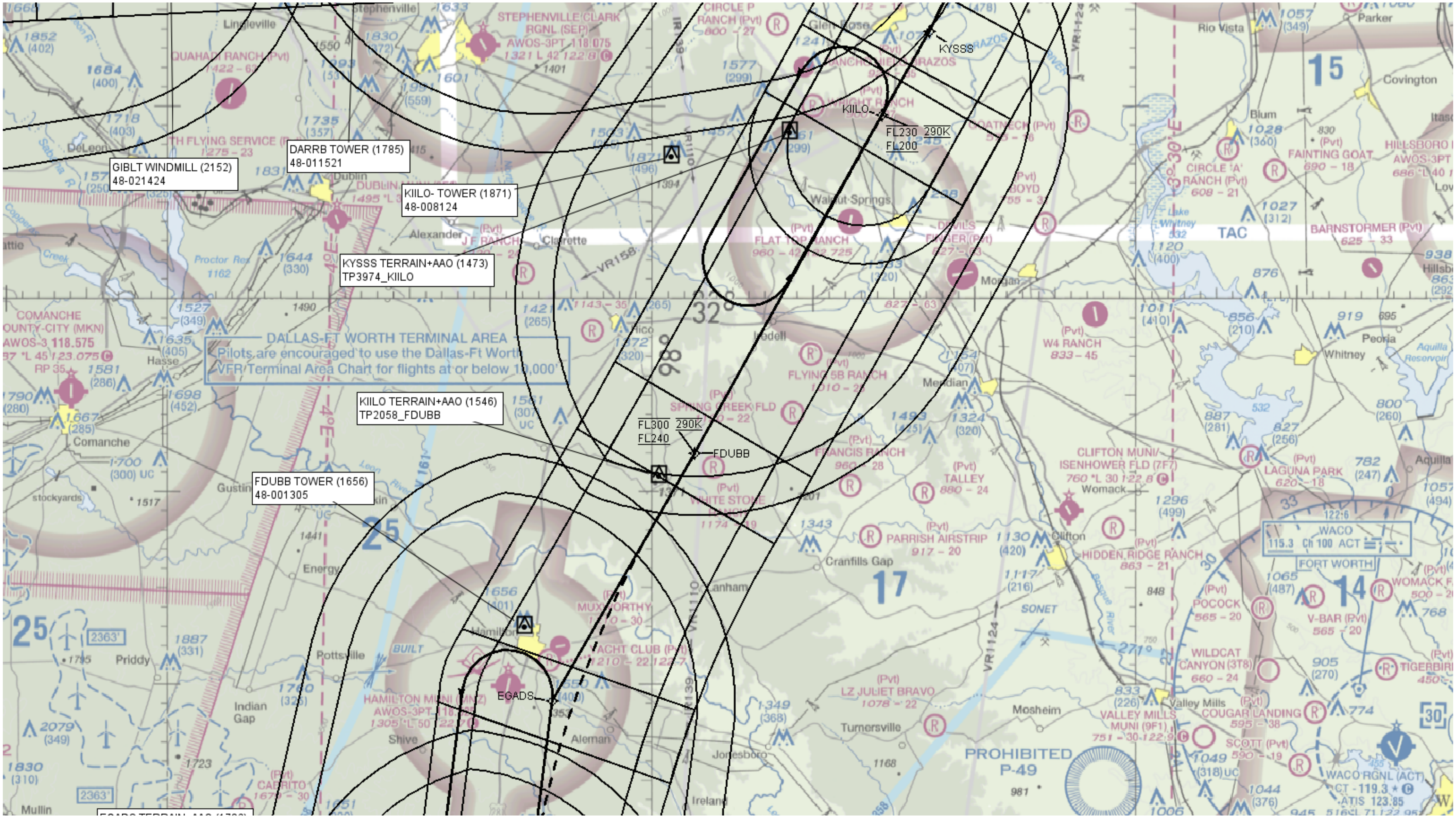


BOOVE (RNAV)

Generated 11/16/2023 01:23 PM by: TARGETS: 7.2.0; WGS84: 3.3.5; Common RS: 2.14.0; RNAV STAR RS: 2.13.0


EGADS TERRAIN+AAO (1726)
TP47_GUTZZ
GUTZZ- WINDMILL (2138)
48-186880
EGADS- WINDMILL (2098)
48-186890
EGADS
GUTZZ

BOOVE (RNAV)


GIBLT WINDMILL (2152)
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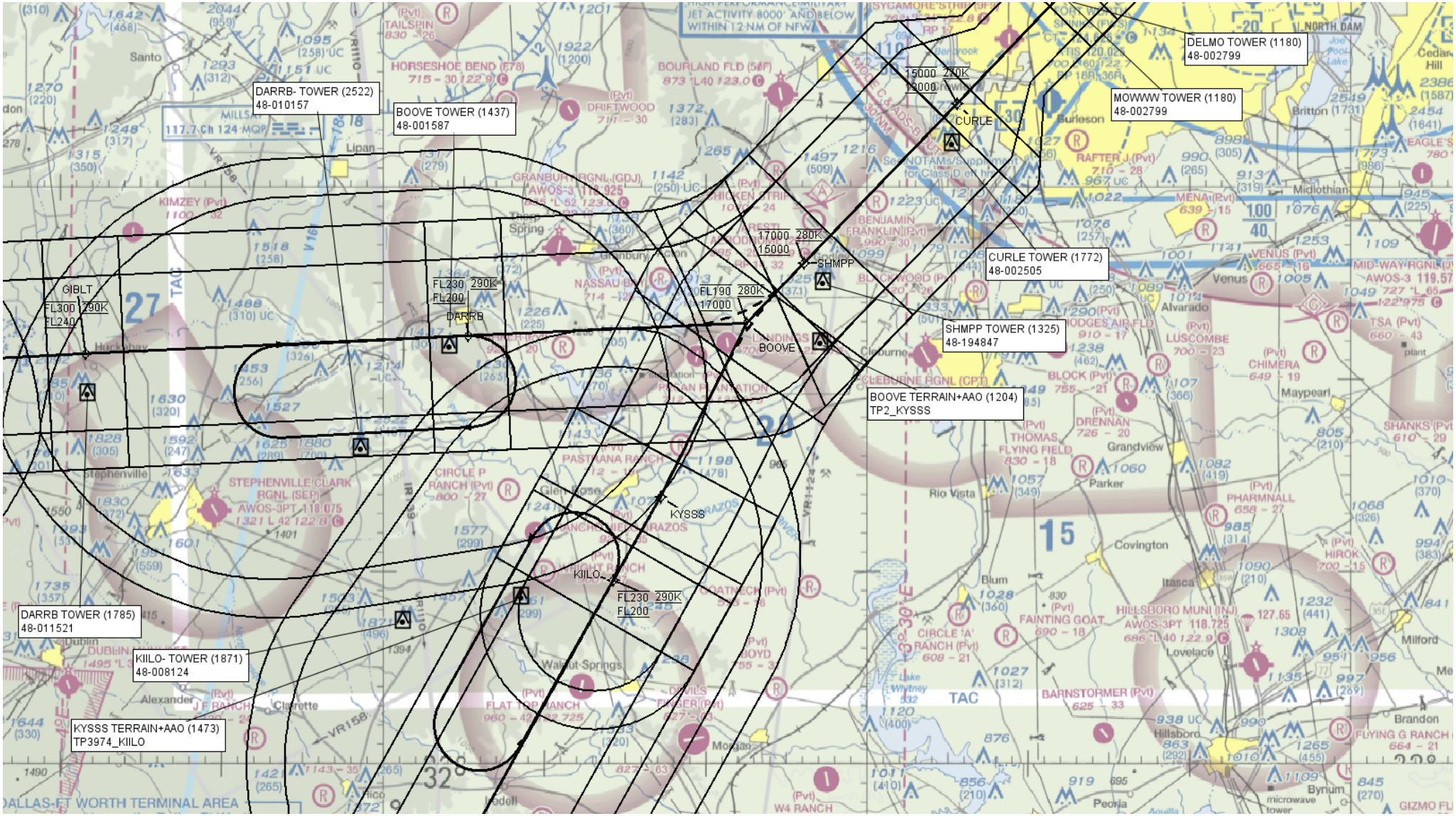
DARRB TOWER (1785)
48-011521
KIILO- TOWER (1871)
48-008124
KYSSS TERRAIN+AAO (1473)
TP3974_KIILO
KIILO TERRAIN+AAO (1546)
TP2058_FDUBB
FDUBB TOWER (1656)
48-001305
KYSSS
KIILO
FL230 290K
FL200
FL300 290K
FL240
FDUBB
EGADS
DALLAS-FT WORTH TERMINAL AREA
Pilots are encouraged to use the Dallas-Ft Worth VFR Terminal Area Chart for flights at or below 10,000'
PROHIBITED
P-49

BOOVE (RNAV)


DARRB- TOWER (2522)
48-010157
BOOVE TOWER (1437)
48-001587
DELMO TOWER (1180)
48-002799
MOWWW TOWER (1180)
48-002799
CURLE TOWER (1772)
48-002505
SHMPP TOWER (1325)
48-194847
BOOVE TERRAIN+AAO (1204)
TP2_KYSSS
DARRB TOWER (1785)
48-011521
KIILO- TOWER (1871)
48-008124
KYSSS TERRAIN+AAO (1473)
TP3974_KIILO
GIBLT
FL300 290K
FL240
FL230 290K
FL200
DARRB
FL190 280K
17000
BOOVE
17000 280K
16000
SHMPP
15000 290K
13000
CURLE
KYSSS
KIILO
FL230 290K
FL200
DALLAS-FT WORTH TERMINAL AREA

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

Previously Approved

1. FLIGHT PROCEDURE IDENTIFICATION:

Dallas, Texas
Dallas Fort Worth International Airport (KDFW)
KDFW BOOVE SIX (RNAV)

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

FAA Order 8260.58B, paragraph 1-2-5, Table 1-2-2, Indicated Airspeeds (KIAS):
Reflects 250 KIAS is the appropriate airspeed for Category B aircraft AT or ABOVE 10,000 feet.
Note 3 states, 250 KTS AT or ABOVE 10,000 feet MSL except for initial and/or STAR termination fix.
Note 2 states, airspeed restrictions may be established at a charted fix to reduce turn radius, avoid obstacles accommodate ATC request, etc...

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

here is an ATC operational requirement for a the crossing restriction of AT 12,000 AT 210 KTS at DELMO. The 210 KTS at DELMO is to ensure aircraft can be safely sequenced at an acceptable, manageable speed. This change was at the request of industry representatives.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

The BOOVE STAR was designed with Industry input and has their endorsement based on various aircraft flight simulator results. Additional, information from the PARC Group indicates that using 210 KTS will be allowed in future orders.

(SEE ATTACHED PARC NAVIGATION WORKING GROUP RECOMMENDATION)

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

Alternatives were considered, however none were feasible due the need for slower airspeeds when entering the terminal environment in order for ATC to safely sequence aircraft for KDFW's multiple arrival runway operations.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

American Airlines
Fort Worth ARTCC (ZFW)
Dallas Fort Worth Approach Control (D10)
CSC OSG

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
09/16/22	AJV-A423	Manager, IFP Team 2, Sub-Team C	*Digitally signed by* ***ALLAN WILL*** Sep 16, 2022

8. AFS ACTIONS:

☐ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

DATE	ROUTING SYMBOL	SIGNATURE

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

Waiver 1 of 1

1. FLIGHT PROCEDURE IDENTIFICATION:

Dallas, Texas
Dallas Fort Worth International Airport (KDFW)
KDFW BOOVE SIX (RNAV)

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

FAA Order 8260.58B, paragraph 1-2-5, Table 1-2-2, Indicated Airspeeds (KIAS):
Reflects 250 KIAS is the appropriate airspeed for Category B aircraft AT or ABOVE 10,000 feet.
Note 3 states, 250 KTS AT or ABOVE 10,000 feet MSL except for initial and/or STAR termination fix.
Note 2 states, airspeed restrictions may be established at a charted fix to reduce turn radius, avoid obstacles accommodate ATC request, etc...

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

here is an ATC operational requirement for a the crossing restriction of AT 12,000 AT 210 KTS at DELMO. The 210 KTS at DELMO is to ensure aircraft can be safely sequenced at an acceptable, manageable speed. This change was at the request of industry representatives.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

The BOOVE STAR was designed with Industry input and has their endorsement based on various aircraft flight simulator results. Additional, information from the PARC Group indicates that using 210 KTS will be allowed in future orders.

(SEE ATTACHED PARC NAVIGATION WORKING GROUP RECOMMENDATION)

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

Alternatives were considered, however none were feasible due the need for slower airspeeds when entering the terminal environment in order for ATC to safely sequence aircraft for KDFW's multiple arrival runway operations.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

American Airlines
Fort Worth ARTCC (ZFW)
Dallas Fort Worth Approach Control (D10)
CSC OSG

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
09/16/22	AJV-A423	Manager, IFP Team 2, Sub-Team C	*Digitally signed by* ***ALLAN WILL*** Sep 16, 2022

8. AFS ACTIONS:

☑ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

Waiver is temporarily approved until November 24, 2026.

DATE	ROUTING SYMBOL	SIGNATURE
		Romana Wolf Signed By: Romana Wolf Fri Nov 18 2022 08:35:41 GMT-06:00:00 (Central Standard Time)

Recommendation: PBN Instrument Procedure Design (STAR Speeds)

FAA Order 8260.58A, *United States Standard for Performance Based Navigation (PBN) Instrument procedure Design*, provides airspeed assumptions for evaluating a procedural turn's obstacle evaluation area (OEA). The order bases these airspeeds on MSL altitudes and aircraft categories to protect the stability and control of the aircraft. They are consolidated by procedure type and segment in Table 1-2-2 (see Figure 1 next page), and include explanatory notes, which ensure compliance with CFR 91.117.

However, FAA Order 8260.3D, *United States Standard for Terminal Instrument Procedures (TERPS)*, contains what appears to be contradictory airspeed standards for holding patterns above 10,000 FT MS. It establishes a holding airspeed of 230 KIAS (210 KIAS when "operationally necessary") between 6,000 and 14,000 FT MSL. This is an apparent contrast with the procedure design standards for a Standard Terminal Arrival (STAR) in Order 8260.58A. In this order, Note 3 of Table 1-2-2 requires a STAR above 10,000 FT MSL to use a minimum airspeed of 250 KIAS to support Category C and D aircraft, with no relief offered, At many locations, this limits flexibility in STAR design, resulting in less than optimum path length and location.

With this in mind, since Order 8260.3D permits use of a minimum airspeed as low as 210 KIAS at and below 14,000 FT MSL, there is no apparent reason why a STAR cannot use a minimum airspeed as low as 210 KIAS at the same altitudes when operationally necessary (see the STAR at Figure 2 below). Updating the STAR procedure design criteria to permit use of a minimum airspeed of 210 KIAS will offer more flexibility in STAR design and better optimize STAR paths, while also eliminating the need to justify a procedure design waiver when the STAR requires an airspeed below 250 KIAS as an operational necessity.

Recommendation: The PARC Navigation Working Group recommends the PARC Steering Group support a change to FAA Order 8260.58A, Table 1-2-2, Note 3, to read; "250 above 14,000 feet MSL".

Rationale: This change will reduce the number of waivers for STARs operationally requiring an airspeed less than 250 KIAS and will standardize the procedure design minimum airspeed standards by both Oder 8260.58A and Order 28260.3D for altitudes 10,000 to 14,000 FT MSL.

Note: This recommendation does not alter or impact the procedure design criteria's support for CFR 91.117 as Table 1-2-2 requires in Note 1 and Note 4.

Recommendation: PBN Instrument Procedure Design (STAR Speeds)

Figure 1

Table 1-2-2. Indicated Airspeeds (KIAS)

Flight Phase		Indicated Airspeed by CAT					
		Copter	A	B	C	D	E
At or Above 10000 feet MSL							
En route, STAR/Feeder/TAA, Initial, Intermediate, Missed, Departure		150	180	250	300	300	350
Below 10000 feet MSL							
En route, STAR/Feeder/TAA, Initial, Intermediate		150	150	180	250	250[1]	310
Final		90	90	120	140	165	250
Missed Approach (MA), Departure		150	110	150	240	265	310
Minimum Airspeed Restriction							
Minimum Airspeed Restriction[2]	STAR/Feeder/TAA, Initial, Departure	70	110	140	200[3]	210[3,4]	310
	Intermediate	70	110	140	180	180	310
	Missed Approach	70	100	130	165	185	310
	Final	70	Not Authorized				

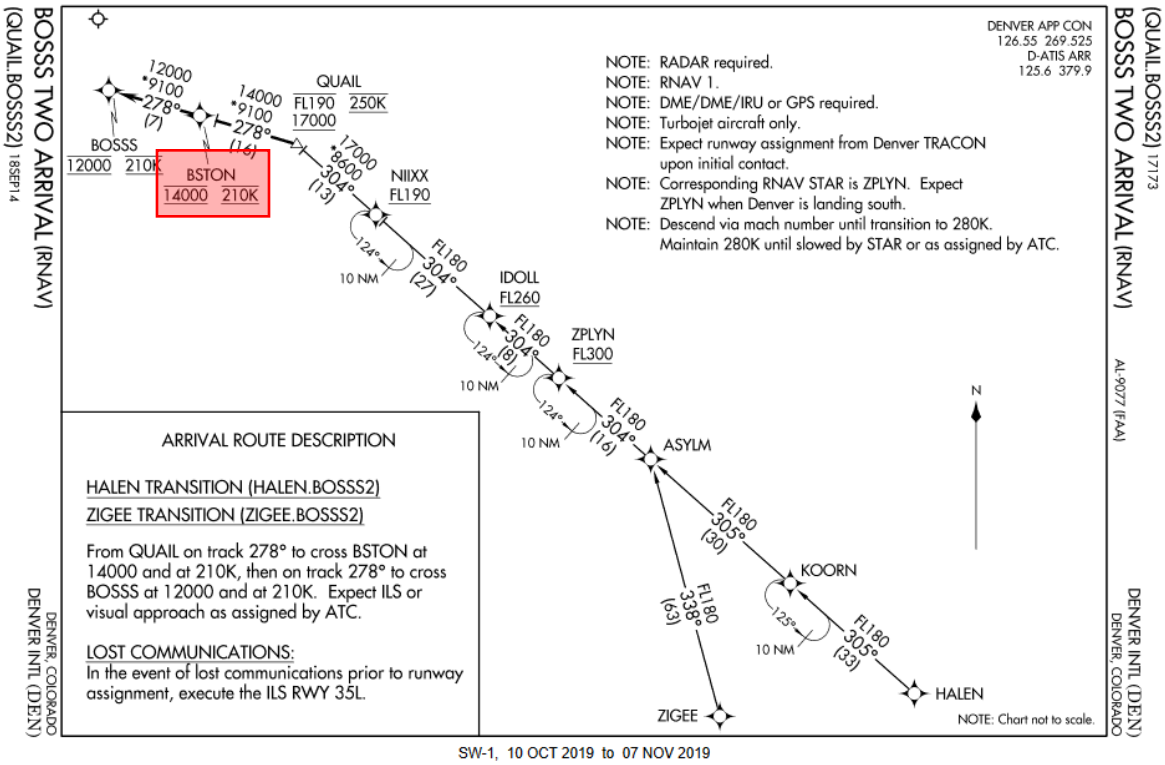
[1] Consider using 265 KIAS where heavy aircraft routinely exceed 250 KIAS under 14 CFR § 91.117.

[2] Airspeed restrictions may be established at a charted fix to reduce turn radius, avoid obstacles, accommodate ATC request, etc. Use the fewest number of restrictions possible on the same IFP. Especially avoid consecutive restrictions requiring speed changes of less than 20 KIAS in the same or adjoining segments. Flight Standards or military authority approval is required for missed approach restrictions for other than obstacle avoidance.

[3] 250 at or above 10000 feet MSL except for initial and/or STAR termination fix.

[4] 200 underlying Class B airspace per 14 CFR § 91.117(c).

Figure 2



Previously Approved

Federal Aviation Administration

Memorandum

Date:	October 25, 2022
To:	Tom Lattimer, FAA CSA OSG PBN Co-Lead
From:	Mike McDonald, TCFW District Support Manager, Airspace and Procedures
Prepared by:	William Roth, Senior ATC Specialist, NAVTAC Support
Subject:	Letter of Approval Request BOOVE STAR, KDFW

The termination fix for the BOOVE Standard Terminal Arrival Route (STAR) is BEONE.

Currently, FAAO 8260.3D, PARA 2-2-7f(2) requires an altitude at the termination fix and that altitude must be at or above the minimum vectoring altitude (MVA) and/or minimum IFR altitude (MIA) (as applicable). The procedure is continuously radar monitored and 12,000' altitude assignments are issued based on conflicting departure traffic causing frequent TCAS RAs. In a six-month time frame, 72 TCAS RA events were recorded on the STARS and/or coincident departures. D10 chose to stop arrivals at 12,000' starting in July of 2020 and resolved all TCAS RA events due to climbing SID vs descending STAR traffic. This has created significant increase to workload and frequency clutter. The STAR serves multiple runways and manual control of the descent is required after DELMO, making a permanent altitude restriction at the Terminus Fix not feasible.

The procedure has an altitude of 12,000' at DELMO and this is above all obstacles and MVA/MIA's. FAAO 7110.65 PARA 4-5-6 and 5-6-1 requires altitude assignments above the minimum IFR altitude/minimum vectoring altitude (MIA/MVA) so the absence of an altitude does not introduce any new risk into the system. ZFW/D10 is requesting a Letter of Approval (LOA) to utilize BEONE (termination fix) for the BOOVE6 STAR without published or mandatory altitudes.

Sincerely,

MICHAEL D MCDONALD

Digitally signed by MICHAEL D MCDONALD
Date: 2022.10.27 11:29:15 -05'00'

DME ESVs

#	Name	Lat/Lon	MAGVAR	Range	Elevation [ft]	Frequency	Replaces	Status
1	ACT FAA 704207-100 ACT [IFPA]	N31° 39' 44.03", W097° 16' 08.45"	9.0 E	130	507.1	115.3	ACT FAA 704207-100	
	ESV:	Bearing [True]: 248.0° to 256.0° Bearing [Mag]: 239.0° to 247.0°				Arc Distance: Out to 51.0 NM Altitude: 9900.0 to 15100.0 ft		
2	ACT FAA 704207-85 ACT [IFPA]	N31° 39' 44.03", W097° 16' 08.45"	9.0 E	130	507.1	115.3	ACT FAA 704207-85	
	ESV:	Bearing [True]: 287.0° to 340.0° Bearing [Mag]: 278.0° to 331.0°				Arc Distance: Out to 87.0 NM Altitude: 5000.0 to 16000.0 ft		
3	AGJ FAA 767088-36 AGJ [IFPA]	N31° 11' 07.82", W098° 08' 30.69"	5.0 E	130	1190.8	112.5	AGJ FAA 767088-36	
	ESV:	Bearing [True]: 315.0° to 17.0° Bearing [Mag]: 310.0° to 12.0°				Arc Distance: Out to 100.0 NM Altitude: 8200.0 to 20000.0 ft		
4	BWD FAA 212001-005 BWD [IFPA]	N31° 53' 33.30", W098° 57' 26.86"	8.0 E	40	1574.3	113.55	BWD FAA 212001-005	
	ESV:	Bearing [True]: 291.0° to 302.0° Bearing [Mag]: 283.0° to 294.0°				Arc Distance: Out to 55.0 NM Altitude: 9900.0 to 19600.0 ft		
5	CQY FAA 941418-12 CQY [IFPA]	N32° 11' 08.60", W096° 13' 05.17"	6.0 E	40	400	114.8	CQY FAA 941418-12	
	ESV:	Bearing [True]: 215.0° to 66.0° Bearing [Mag]: 209.0° to 60.0°				Arc Distance: Out to 78.0 NM Altitude: 2600.0 to 18000.0 ft		
6	MQP FAA 698238-72 MQP [IFPA]	N32° 43' 34.25", W097° 59' 50.79"	9.0 E	130	900	117.7	MQP FAA 698238-72	
	ESV:	Bearing [True]: 113.0° to 266.0° Bearing [Mag]: 104.0° to 257.0°				Arc Distance: Out to 98.0 NM Altitude: 6000.0 to 16000.0 ft		
7	SJT FAA 704198-16 SJT [IFPA]	N31° 22' 29.84", W100° 27' 17.53"	10.0 E	130	1886.1	115.1	SJT FAA 704198-16	
	ESV:	Bearing [True]: 22.0° to 45.0° Bearing [Mag]: 12.0° to 35.0°				Arc Distance: Out to 87.0 NM Altitude: 9900.0 to 18000.0 ft		
8	TPL FAA 882321-027 TPL [IFPA]	N31° 12' 33.61", W097° 25' 29.88"	0.0 E	40	710.2	null	TPL FAA 882321-027	
	ESV:	Bearing [True]: 286.0° to 292.0° Bearing [Mag]: 286.0° to 292.0°				Arc Distance: Out to 43.0 NM Altitude: 9900.0 to 18800.0 ft		
9	TTT FAA 970053-42 TTT [IFPA]	N32° 52' 08.98", W097° 02' 25.81"	6.0 E	130	535.7	113.1	TTT FAA 970053-42	
	Restriction:	Bearing [True]: 186.0° to 196.0° Bearing [Mag]: 180.0° to 190.0°				Distance: All Altitude: Below 99999.0 ft		
	Restriction:	Bearing [True]: 186.0° to 196.0° Bearing [Mag]: 180.0° to 190.0°				Distance: Beyond 10.0 NM Altitude: Below 99999.0 ft		
	ESV:	Bearing [True]: 209.0° to 233.0° Bearing [Mag]: 203.0° to 227.0°				Arc Distance: Out to 105.0 NM Altitude: 9000.0 to 20000.0 ft		
10	UKW FAA 170290-24 UKW [IFPA]	N33° 32' 09.19", W097° 49' 16.60"	6.0 E	130	1101.9	117.15	UKW FAA 170290-24	
	ESV:	Bearing [True]: 139.0° to 262.0° Bearing [Mag]: 133.0° to 256.0°				Arc Distance: Out to 95.0 NM Altitude: 8200.0 to 16000.0 ft		