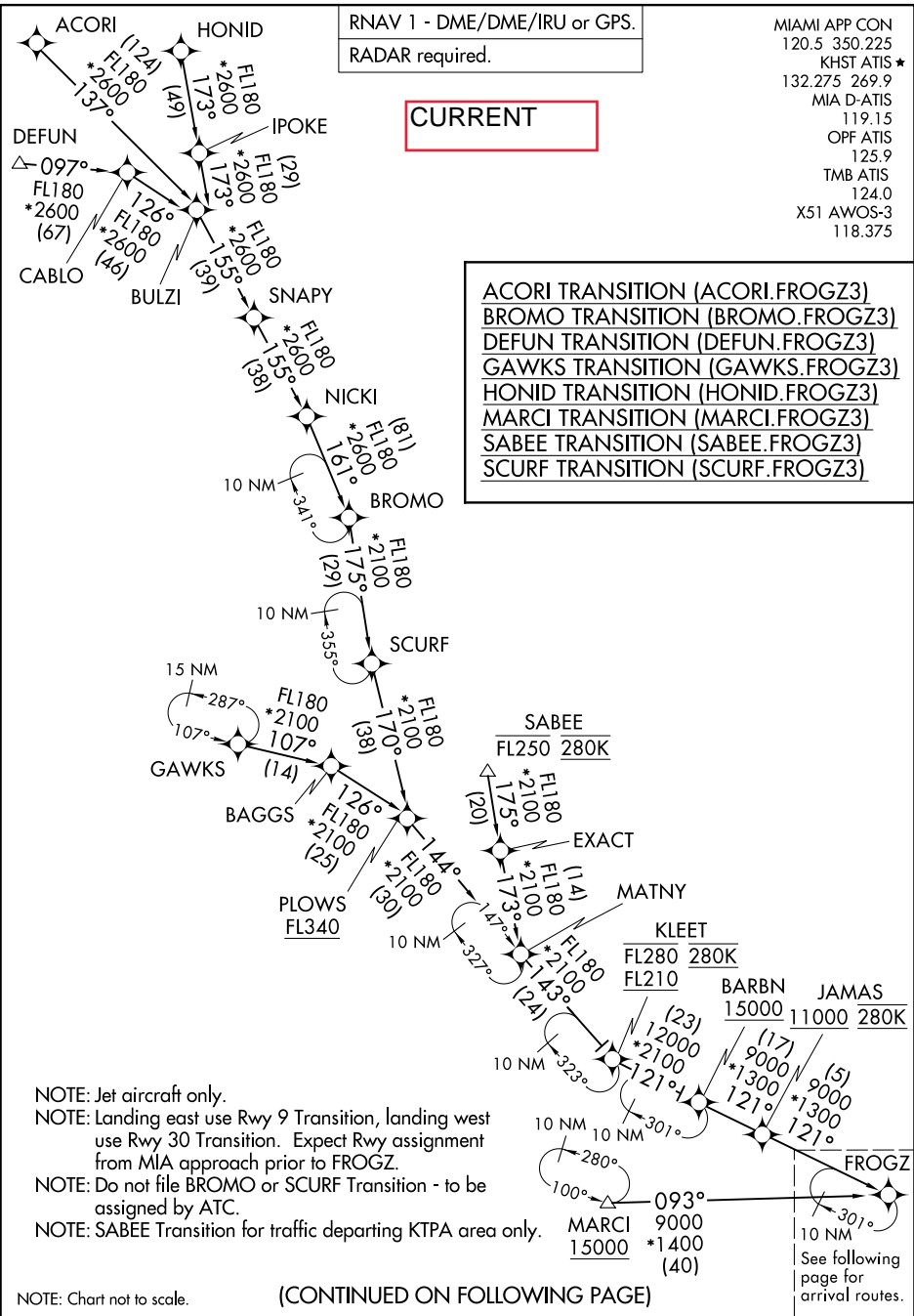


Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: STAR	Estimated Chart Date: 06/15/2023	APWS Task ID: 55815C331BD24196ABD0251D62CB6645	APWS Project ID: 336C6EAB9C0A43FCB0AF088401C85697
Procedure: MIA FROGZ 4 RNAV STAR		Enroute: YES	Specialist: Brandenburg, Phillip		Agreement Number:
Airport ID: KMIA			Airport City: MIAMI		State: FL
Facility ID:	Facility Type:	Flight Inspection Remark Type: New FC Slot			
<div>Procedure Comments: FLMP POST IMPLEMENTATION CONTACT ALLAN WILL 4059546103 3/9/23. THIS IS A CORRECTED COPY OF THE FORM APPROVED ON 3/3/23. 8260-2 BROMO 1. ADDED PATTERN 1 USE FOR CUURT (RNAV) STAR.</div> <div>03/10/2023 QUALITY 14 CHECKED</div>					

Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: STAR	Estimated Chart Date: 04/20/2023	APWS Task ID: 55815C331BD24196ABD0251D62CB6645	APWS Project ID: 84C1ADB73E614117A24F3050000B0D45
Procedure: MIA FROGZ 4 RNAV STAR		Enroute: YES	Specialist: Brandenburg, Phillip		Agreement Number:
Airport ID: KMIA			Airport City: MIAMI		State: FL
Facility ID:	Facility Type:	Flight Inspection Remark Type: New FC Slot			
<div>Procedure Comments: FLMP POST IMPLEMENTATION CONTACT ALLAN WILL 4059546103</div> <div>01/10/2023 QUALITY 14 CHECKED</div>					

FIPC DME/DME FORM									
PROCEDURE: MIA FROGZ 4 RNAV STAR				AIRPORT NAME: MIAMI INTL		AIRPORT ID: KMIA		SPECIAL CONTROL NO: AG-01-131-23	
FAC ID: FROGZ4			CITY: MIAMI			ST: FL		ORIG CHART DATE: 06/15/2023	
DFL TYPE: PROC/D	THIRD PARTY: <input type="checkbox"/> YES	EST. TIME ON SITE: 1.0	REIMB. NUMBER:		PTS TASK ID: 55815C331BD24196ABD0251D62CB6645				
PREFLIGHT NOTES									
REVIEWER: edward w mesa						DATE: 03/02/2023			
COMMENTS:						CHECK ONE:			
						<input type="checkbox"/> FLT CK REQ <input checked="" type="checkbox"/> NFCR <input type="checkbox"/> REJECT			
								YES	NO
						CPV COMPLETE?		X	
PROCEDURE RESULTS									
INSPECTION DATE: 03/02/2023		CREW #: VN283	N #:	INSTRUMENT PROCEDURE STATUS: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> SAT W/CHANGES <input type="checkbox"/> UNSAT			ARINC CODING: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> SAT/GOLD <input type="checkbox"/> UNSAT		
FLIGHT INSPECTOR SIGNATURE: edward w mesa @ 03/02/2023 10:46				PRINTED NAME: MESA, EDWARD WILLIAM					NOTAM INITIATED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
FLIGHT INSPECTOR REMARKS:									
DME/DME STATUS: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT		SPECIALIST SIGNATURE: steven s-ctr rager @ 03/03/2023 15:10				PRINTED NAME: Steven Rager			
SPECIALIST REMARKS: No Flight Check Required. Procedure table topped. No DME Post Flight Check Analysis necessary.									
IN-FLIGHT OBSTACLE REPORT									
OBSTRUCTION ID #:	COORDINATES OR LOCATION:		GNSS ALTITUDE (MSL):		BAROMETRIC ALTITUDE (MSL):		HEIGHT ABOVE GROUND LEVEL:		

FIPC DME/DME FORM							
PROCEDURE: MIA FROGZ 4 RNAV STAR			AIRPORT NAME: MIAMI INTL		AIRPORT ID: KMIA	SPECIAL CONTROL NO: AG-01-131-23	
FAC ID: FROGZ4		CITY: MIAMI			ST: FL	ORIG CHART DATE: 06/15/2023	
DFL TYPE: PROC/D	THIRD PARTY: <input type="checkbox"/> YES	EST. TIME ON SITE: 1.0	REIMB. NUMBER:		PTS TASK ID: 55815C331BD24196ABD0251D62CB6645		
PREFLIGHT NOTES							
REVIEWER: edward w mesa					DATE: 03/02/2023		
COMMENTS:					CHECK ONE:		
					<input type="checkbox"/> FLT CK REQ <input checked="" type="checkbox"/> NFCR <input type="checkbox"/> REJECT		
							YES
					CPV COMPLETE?		X
PROCEDURE RESULTS							
INSPECTION DATE: 03/02/2023		CREW #: VN283	N #:	INSTRUMENT PROCEDURE STATUS: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> SAT W/CHANGES <input type="checkbox"/> UNSAT		ARINC CODING: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> SAT/GOLD <input type="checkbox"/> UNSAT	
FLIGHT INSPECTOR SIGNATURE: edward w mesa @ 03/02/2023 10:46			PRINTED NAME: MESA, EDWARD WILLIAM				NOTAM INITIATED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
FLIGHT INSPECTOR REMARKS:							
DME/DME STATUS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		SPECIALIST SIGNATURE:			PRINTED NAME:		
SPECIALIST REMARKS:							
IN-FLIGHT OBSTACLE REPORT							
OBSTRUCTION ID #:	COORDINATES OR LOCATION:		GNSS ALTITUDE (MSL):		BAROMETRIC ALTITUDE (MSL):		HEIGHT ABOVE GROUND LEVEL:

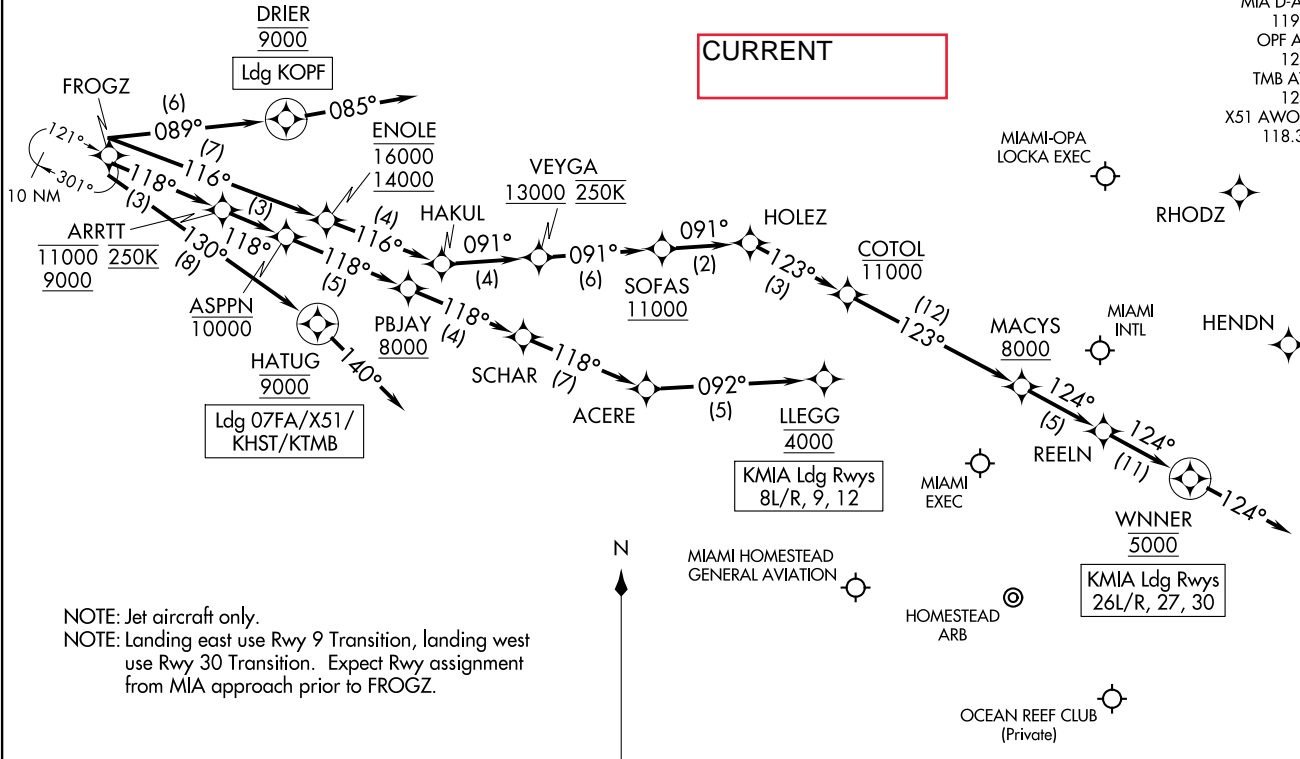


RNAV 1 - DME/DME/IRU or GPS.

RADAR required.

MIAMI APP CON
120.5 350.225
KHST ATIS ★
132.275 269.9
MIA D-ATIS
119.15
OPF ATIS
125.9
TMB ATIS
124.0
X51 AWOS-3
118.375

CURRENT



NOTE: Jet aircraft only.

NOTE: Landing east use Rwy 9 Transition, landing west use Rwy 30 Transition. Expect Rwy assignment from MIA approach prior to FROGZ.

NOTE: Chart not to scale.

(NARRATIVE ON FOLLOWING PAGE)

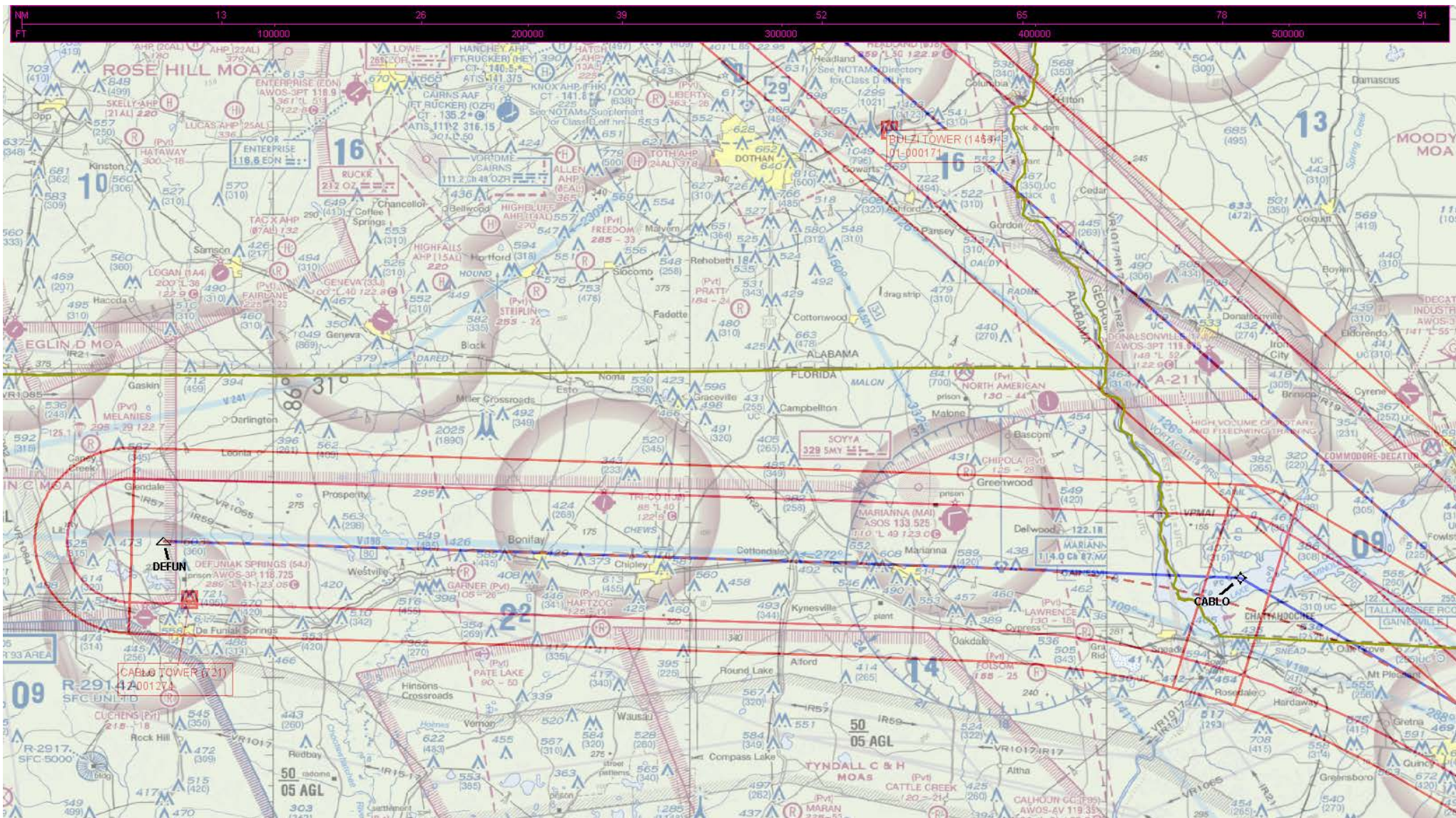
ARRIVAL ROUTE DESCRIPTION

LANDING KMIA RUNWAYS 8L/R, 9, 12: From FROGZ on track 118° to cross ARRTT between 9000 and 11000 and at 250K, then on track 118° to cross ASPPN at or below 10000, then on track 118° to cross PBJAY at or above 8000, then on track 118° to SCHAR, then on track 118° to ACERE, then on track 092° to cross LLEGG at 4000. Expect ILS or RNAV Rwy 9 approach or RADAR vectors to final approach course.

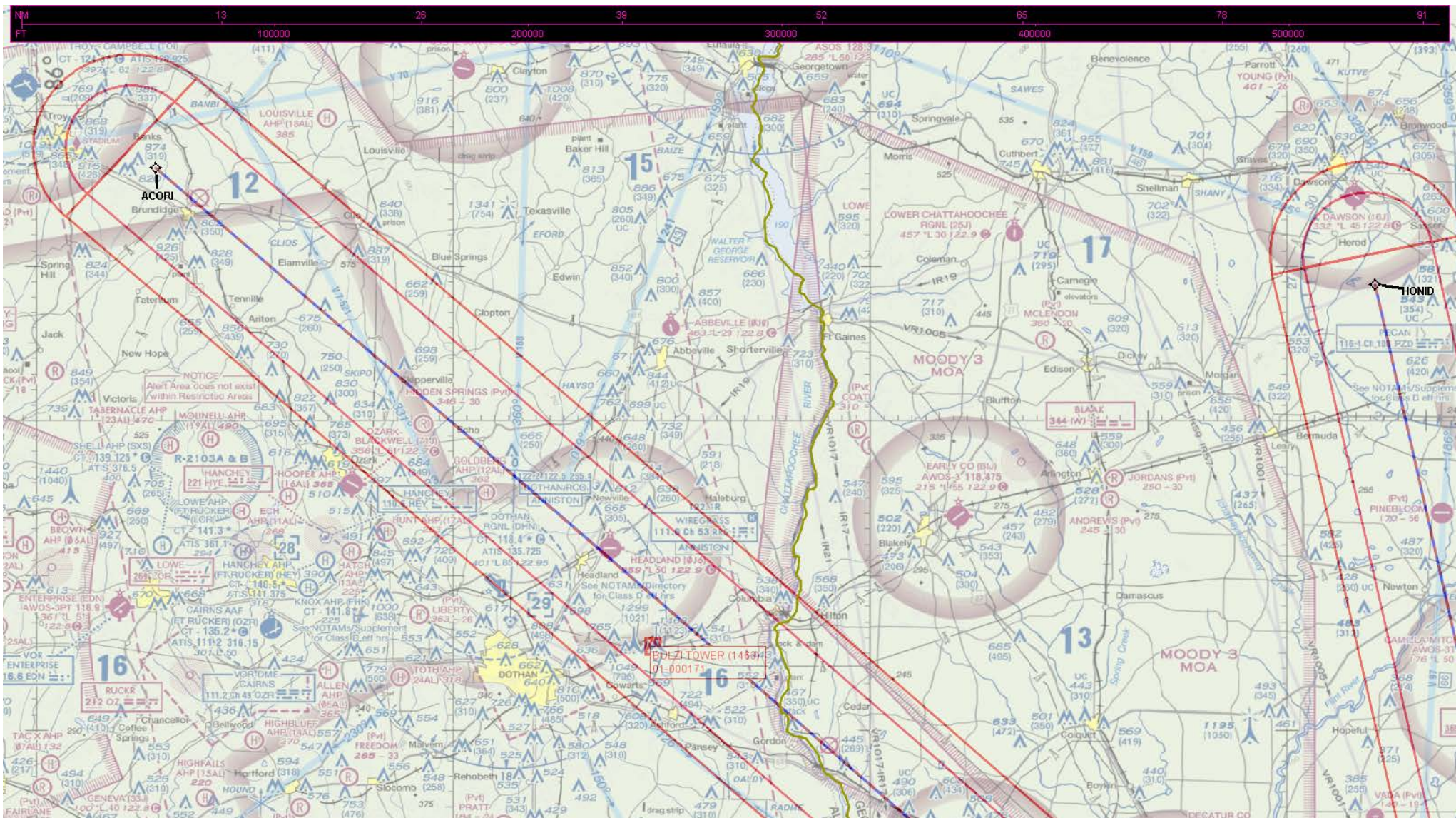
LANDING KMIA RUNWAYS 26L/R, 27, 30: From FROGZ on track 116° to cross ENOLE between 14000 and 16000, then on track 116° to HAKUL, then on track 091° to cross VEYGA at or above 13000 and at 250K, then on track 091° to cross SOFAS at or above 11000, then on track 091° to HOLEZ, then on track 123° to cross COTOL at or below 11000, then on track 123° to cross MACYS at or above 8000, then on track 124° to REELN, then on track 124° to cross WNNER at 5000, then on track 124°. Expect RADAR vectors to final approach course.

LANDING 07FA/X51/KHST/KTMB: From FROGZ on track 130° to cross HATUG at 9000, then on heading 140°. Expect RADAR vectors to final approach course.

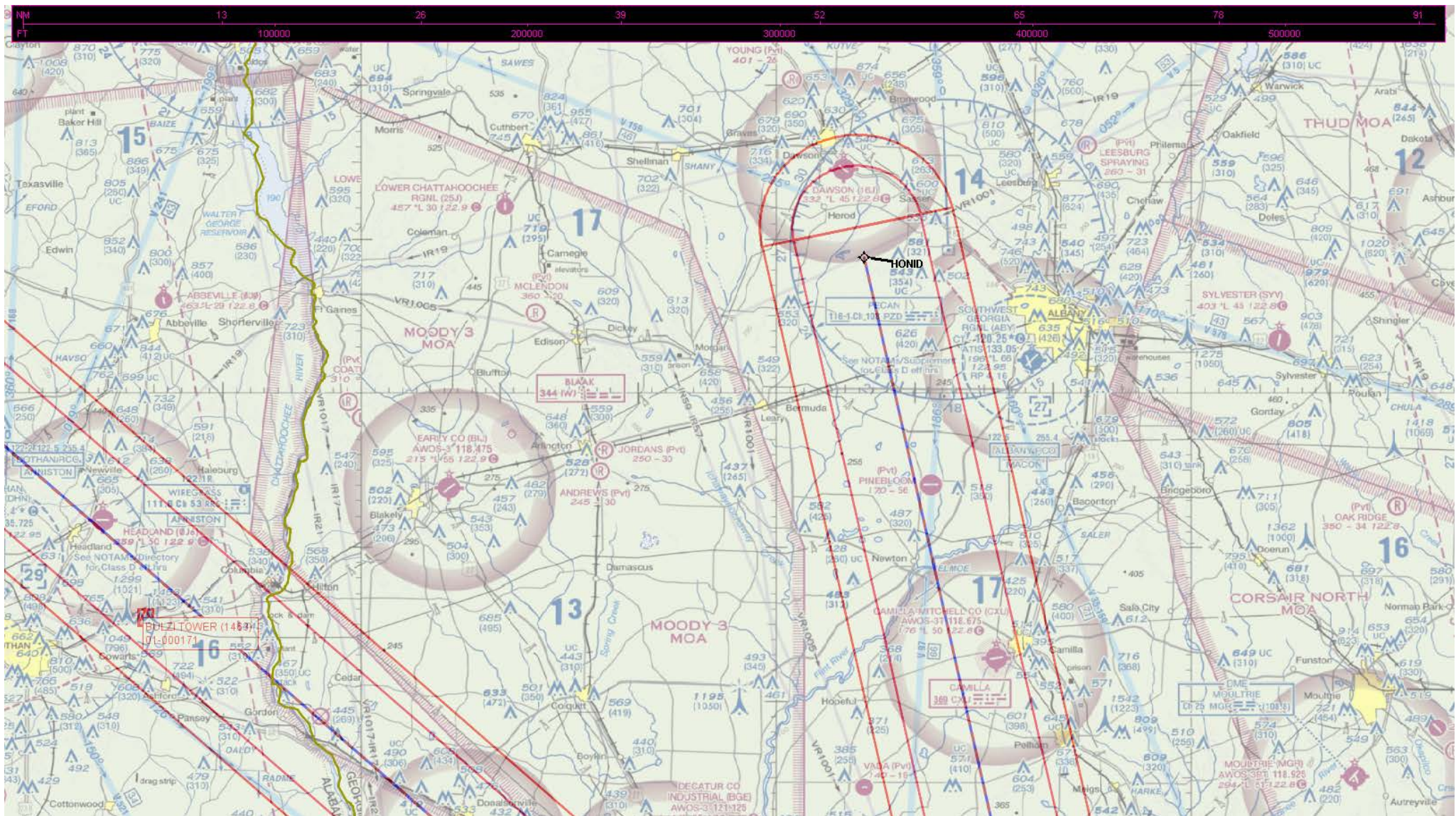
LANDING KOPF: From FROGZ on track 089° to cross DRIER at 9000, then on heading 085°. Expect RADAR vectors to final approach course.



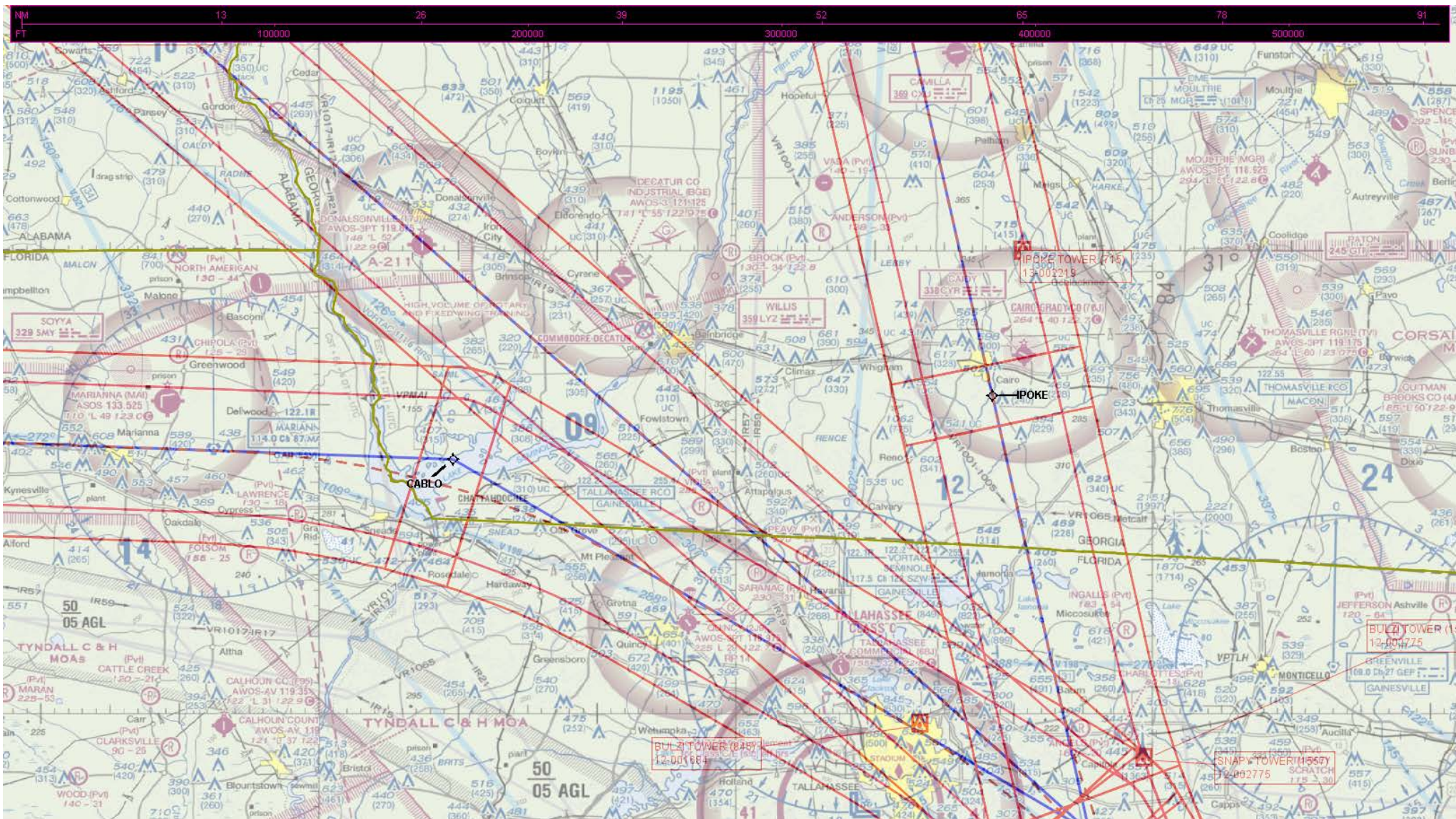
FROGZ (RNAV)



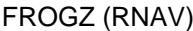
FROGZ (RNAV)

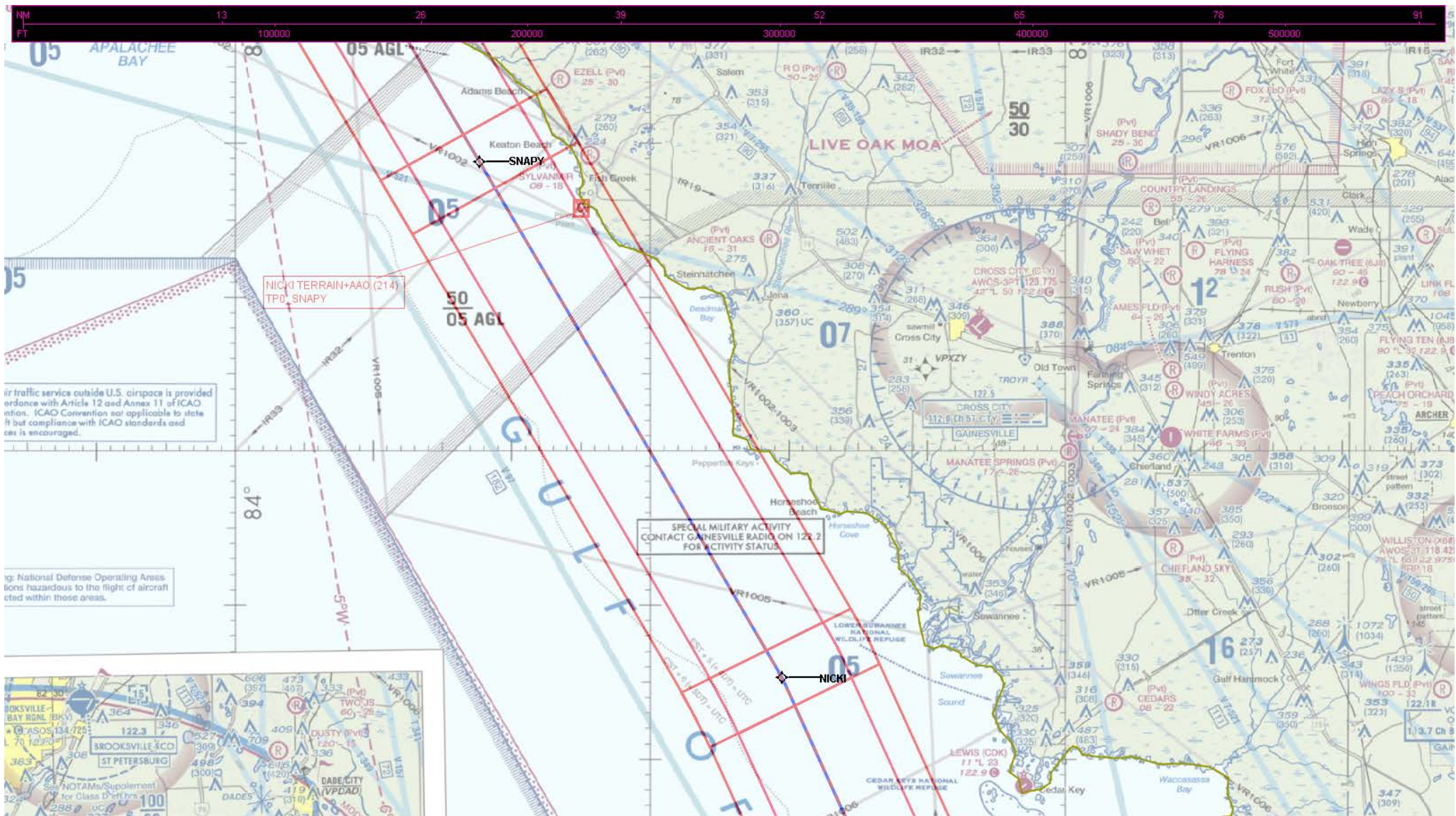


FROGZ (RNAV)

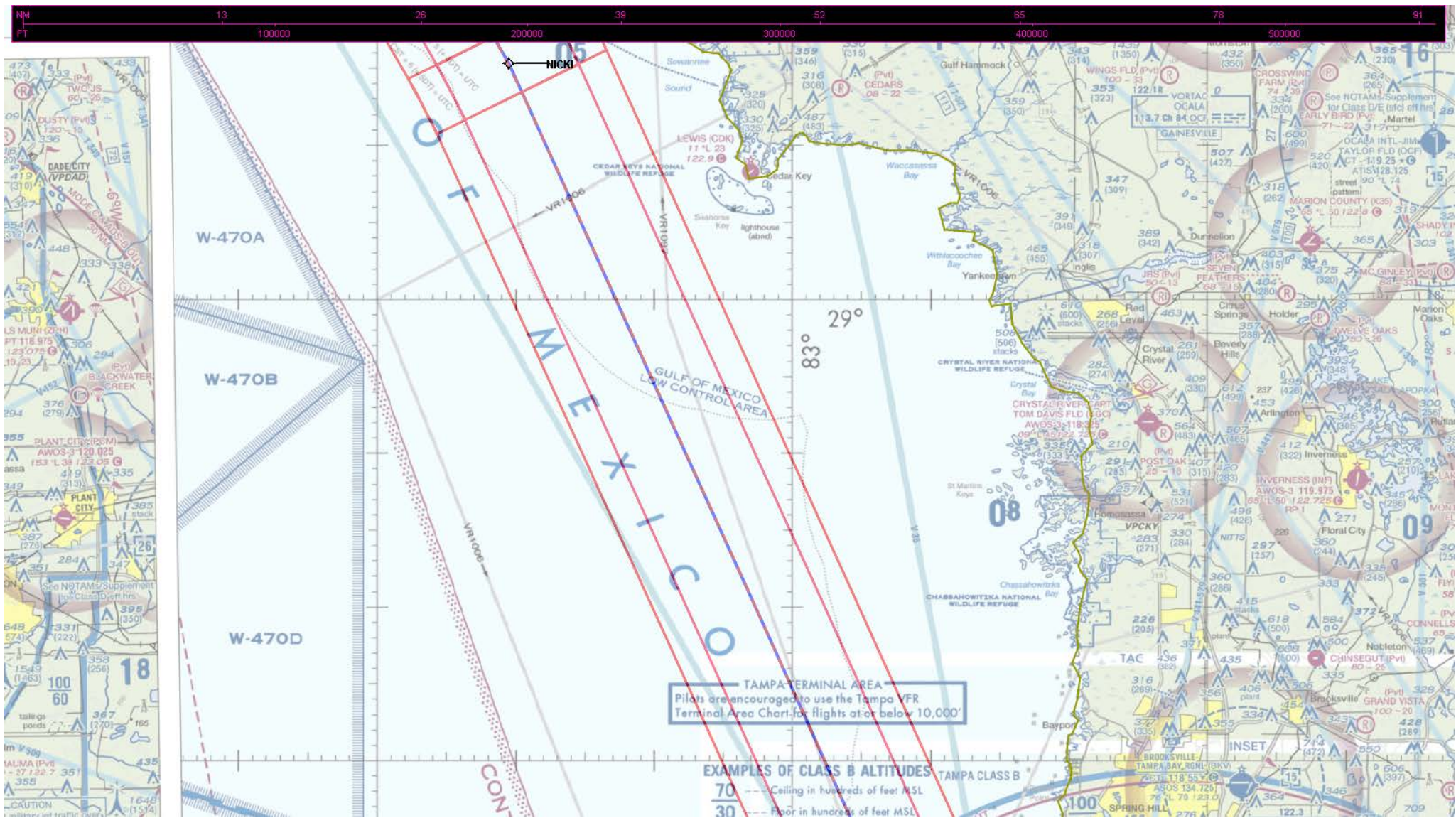


FROGZ (RNAV)

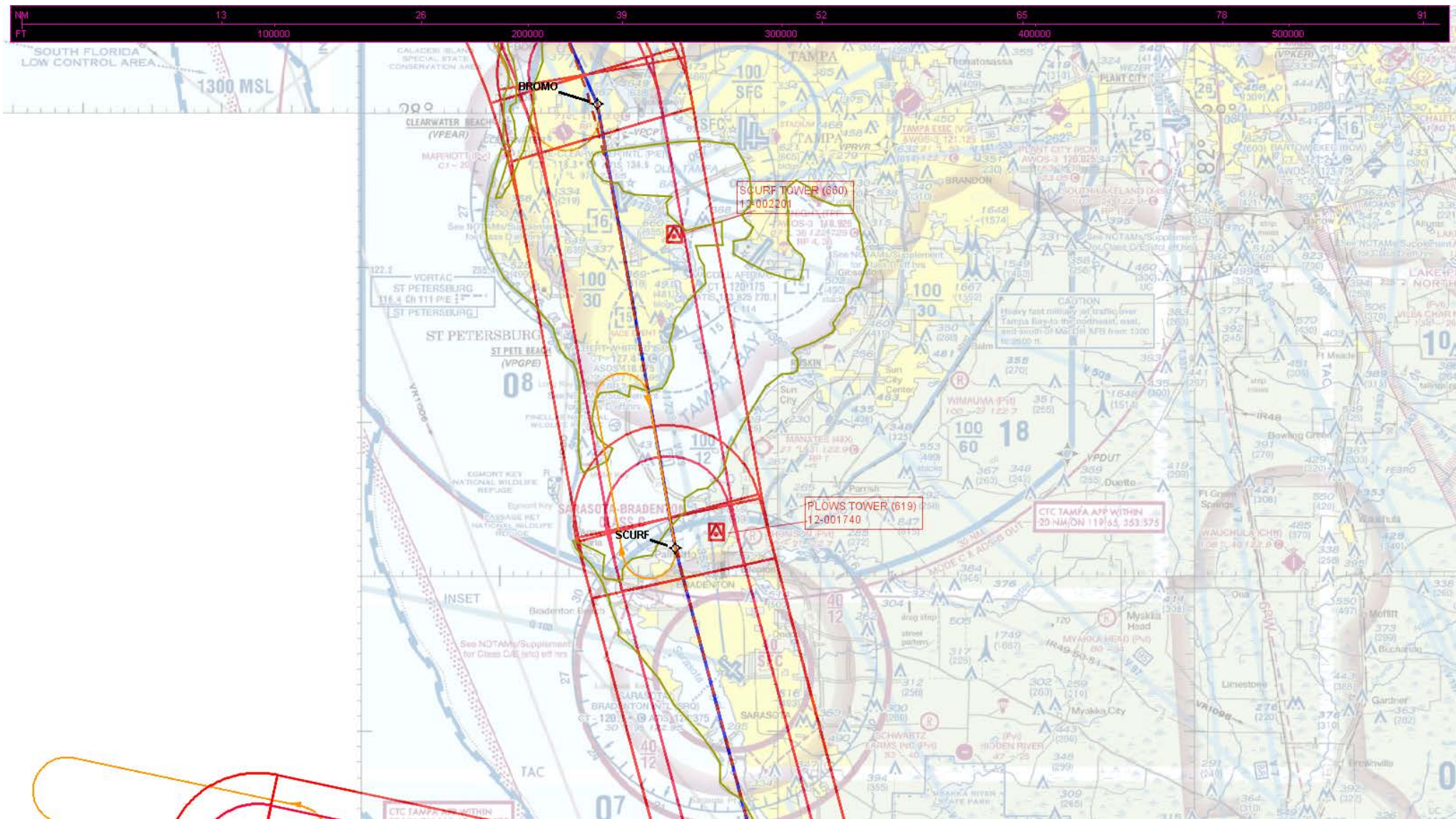




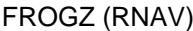
FROGZ (RNAV)

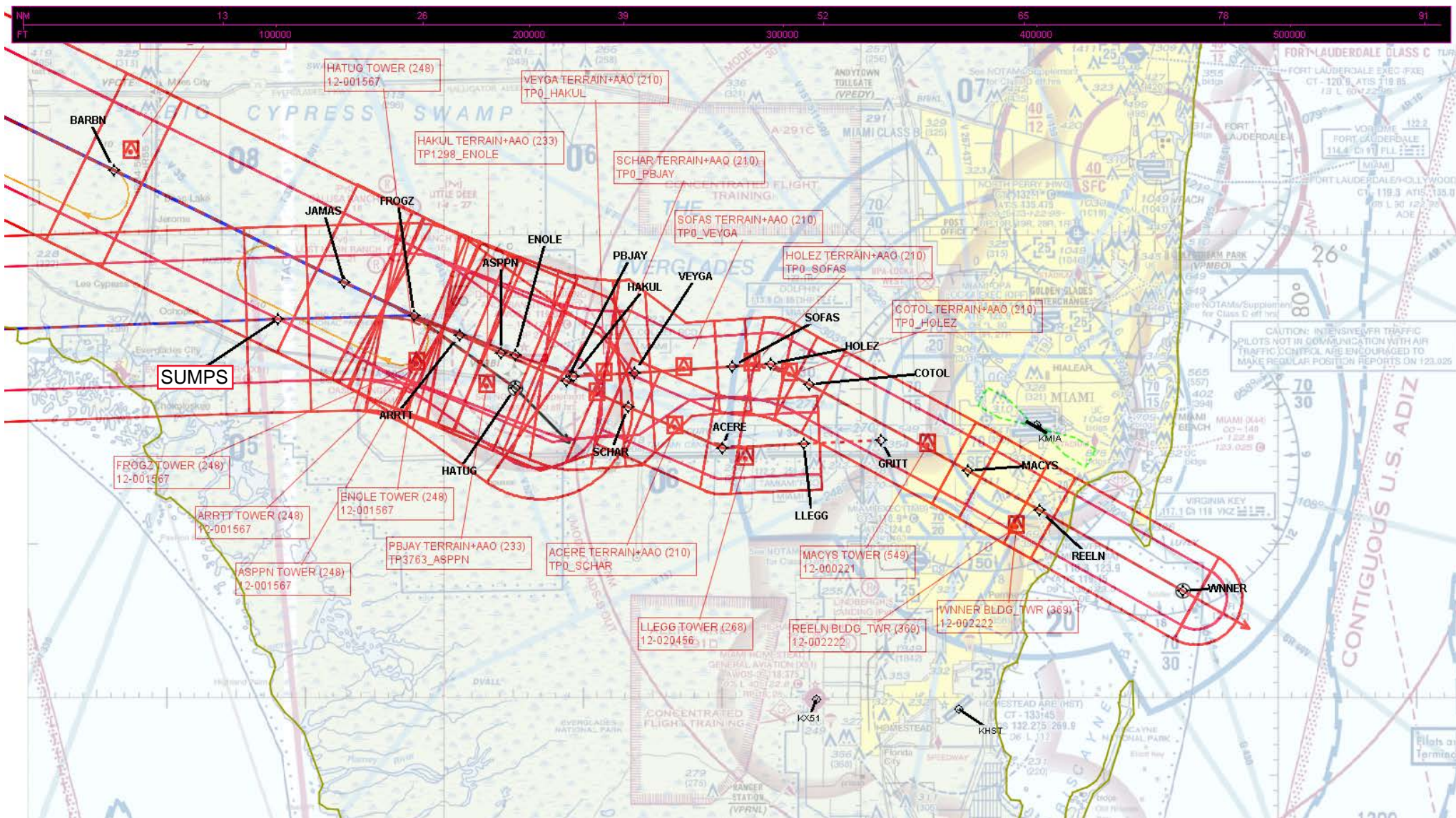


FROGZ (RNAV)



FROGZ (RNAV)





FROGZ (RNAV)



Federal Aviation Administration

Memorandum

Date: December 9, 2021

To: Mark Steinbicker, Manager, Flight Technologies and Procedures
Division
THRU: Wade Terrell, Manager, Flight Procedures and Airspace Group

From: Eddie Perez Manager Plans and Procedures, Miami ARTCC.

Prepared by: Jefferson Rutledge, Sr. ATC Specialist, NAVTAC CTR Support

Subject: Descent Gradient Approval Request: FROGZ RNAV STAR, KMIA

The requirements stated in Order 8260.3E, (United States Standard for Terminal Instrument Procedures (TERPS)), paragraph 2-2-8.a. are:

“(1) the maximum permissible gradient 10000 MSL and above is 330 ft./NM (approximately 3.11 degrees).

“(2) **The maximum permissible DG below 10000 feet MSL is 318 ft. /NM (approximately 3.0 degrees).**

“(3) When a STAR contains a descent between fixes that passes through 10000 feet MSL, the maximum permissible DG is between 318 ft. /NM and 330 ft. /NM and is in proportion to the amount of the altitude change that is below/above 10000 feet MSL. Use formula 2-2-1 to determine the maximum DG (DGmax) between fixes that contain a descent that passes through 10000 feet MSL.”

“Formula 2-2-1. Maximum DG Passing through 10000 Feet MSL (ft/NM)

$$DBmax = (Alt_1 - 10000) \times 12 / (Alt_1 - Alt_2) + 318$$

“Where:

“**Alt₁** = Altitude at the fix prior to crossing 10000 feet MSL

“**Alt₂** = Altitude at the fix after crossing 10000 feet MSL”

Paragraph 2-2-8.b states:

“When a gradient exceeds the maximum DG allowed in paragraph 2-2-8a, the STAR requires approval.”

Paragraph 1-4-2. ...states in part:

“Nonstandard IFP. ...obstacles, navigation information, or traffic congestion may require special consideration where justified by operational requirements. In such cases, nonstandard IFPs that deviate from these criteria may be approved, provided they are documented and an equivalent level of safety exists...”

RSO144: [Approval Required] The Descent Gradient (430.22) from ASPPN to PBJAY is greater than the Maximum Permissible Descent Gradient (318.0).

A computed descent gradient value from ASPPN to PBJAY of 430.23 ft./NM resulted from the descent gradient being calculated from descending from the restriction of At or Below, 10000 at ASPPN to cross PBJAY At or Above 8000 over a distance of 4.65 NM. The next restrictions after PBJAY are at MABYB, AOA 7000 and LLEGG at 4000. The distance from ASPPN to LLEGG is 22.96NM and using a descent gradient of 318ft/NM a total distance of 18.87NM is required. Descending at 318 ft. per NM places an aircraft descending from 10000 at ASPPN to cross the restriction at PBJAY of AOA 8000 at 8520, and to cross over MABYB AOA 7000 at 7000 and to cross over LLEGG at 4000. Calculating a descent from ASSPN at 10000 to LLEGG at 4000 distance 23.88nm resulted in a descent gradient of 209.4 ft per NM.

Runway Transition Data - KMIA:RW08L,RW08R,RW09,RW12														
DB	End Point	Latitude (D° M' S.ss")	Longitude (D° M' S.ss")	FO/ FB	Leg	TC	MC	Dist.	Altitude	Speed	MEA	MOCA	Turn Dir	Arc Center (D° M' S.ss")
IFPA r0 08-12-21 TO UNK	FROGZ WP	N25 54 47.44	W081 02 13.20		IF						9000			
IFPA r0 08-12-21 TO UNK	ARRTT WP	N25 53 32.27	W080 58 56.99	FB	TF	112.94	117.94	3.20	+9000 -11000	250		1300		
IFPA r0 08-12-21 TO UNK	ASPPN WP	N25 52 23.77	W080 55 58.42	FB	TF	112.97	117.97	2.92	-10000			1300		
IFPA r0 08-12-21 TO UNK	PBJAY WP	N25 50 34.47	W080 51 13.93	FB	TF	112.99	117.99	4.65	+8000			1300		
	SCHAR WP	N25 48 52.70	W080 46 49.54	FB	TF	113.03	118.03	4.32				1300		
IFPA r0 08-12-21 TO UNK	ACERE WP	N25 46 14.84	W080 40 00.36	FB	TF	113.06	118.06	6.69				1300		
	LLEGG_ WP	N25 46 31.10	W080 34 08.58	FB	TF	87.06	92.06	5.30	4000			1300		

Consideration was given to removing and or changing the restrictions at ASPPN and PBJAY. However, to prevent aircraft from entering adjacent airspace above the FROGZ STAR, the requirement to provide de-confliction from the KFLB BHHIA STAR below the FROGX STAR, and to reduce ATC workload due to required coordination, (point outs) it was decided that the restrictions are necessary.

EDDIE PEREZ-
COLON

Digitally signed by EDDIE
PEREZ-COLON
Date: 2022.01.14
12:24:54 -05'00'

Manager Plans and Procedures, Miami ARTCC.