

Flight Procedures Cover Page	Task Action: FLIGHT CHECK	Task Type: STAR	Estimated Chart Date: 06/12/2025	APWS Task ID: 0240FC5EBD7E413AAD669FE32B5CEF41	APWS Project ID: 35239729C23A4E65B183831F0CBB17F2
Procedure: STAR BNFSH THREE (RNAV) MIAMI FL KMIA		Enroute: YES	Specialist: Owens, Westley		Agreement Number:
Airport ID: KMIA			Airport City: MIAMI		State: FL
Facility ID:	Facility Type:	Flight Inspection Remark Type: New FC Slot			
<div>Procedure Comments:</div> <div>ADDED HOLDING AT STIXX AND FRATS.</div> <div>CONTACT: ERIC SUSKI, AJV-A431, (405) 954-7331.</div> <div>8260-2 STIXX</div> <div>05/06/2025: THIS IS A CORRECTED COPY OF THE FORM APPROVED ON 01/30/2025</div> <div>ICAO REGION CODE: CHANGED FROM * TO K.</div> <div>12/16/2024</div>					



12/16/2024



FIPC DME/DME FORM							
PROCEDURE: BNFSH (RNAV) THREE ARRIVAL			AIRPORT NAME: MIAMI INTL		AIRPORT ID: KMIA	SPECIAL CONTROL NO: AG-12-190-24	
FAC ID: BNFSH3		CITY: MIAMI			ST: FL	ORIG CHART DATE: 06/12/2025	
DFL TYPE: PROC/D	THIRD PARTY: <input type="checkbox"/> YES	EST. TIME ON SITE: 1.0	REIMB. NUMBER:		PTS TASK ID: 0240FC5EBD7E413AAD669FE32B5CEF41		
PREFLIGHT NOTES							
REVIEWER: eric l geyer					DATE: 01/23/2025		
COMMENTS: Can complete check using the FMS: Added to two stand alone holding patterns (STIXX and FRATS). Both are already publish (CSTAL Arrival)					CHECK ONE:		
					<input checked="" type="checkbox"/> FLT CK REQ <input type="checkbox"/> NFCR <input type="checkbox"/> REJECT		
							YES
					CPV COMPLETE?		X
PROCEDURE RESULTS							
INSPECTION DATE: 01/27/2025		CREW #: VN526	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: james r jones @ 01/28/2025 08:53			PRINTED NAME: GEYER, ERIC LEE			NOTAM INITIATED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
FLIGHT INSPECTOR REMARKS: Miami INTL, Miami, FL, BNFSH THREE (RNAV) MIAMI FL KMIA, SAT. Added two standalone holding patterns that were already established on a separate arrival.							
DME/DME STATUS: <input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT		SPECIALIST SIGNATURE: erik j-ctr john @ 02/04/2025 07:43			PRINTED NAME: Erik J. John		
SPECIALIST REMARKS: No Flight Check Required. 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: BNFSH (RNAV) THREE ARRIVAL			AIRPORT NAME: MIAMI INTL		AIRPORT ID: KMIA	SPECIAL CONTROL NO: AG-12-190-24
FAC ID: BNFSH3		CITY: MIAMI			ST: FL	ORIG CHART DATE: 06/12/2025
DFL TYPE: PROC/D	THIRD PARTY: <input type="checkbox"/> YES	EST. TIME ON SITE: 1.0	REIMB. NUMBER:	PTS TASK ID: 0240FC5EBD7E413AAD669FE32B5CEF41		
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					<input checked="" type="checkbox"/> FLT CK REQ <input type="checkbox"/> NFCR <input type="checkbox"/> REJECT	
					<div style="display: flex; justify-content: space-between;"> YES NO </div>	
					CPV COMPLETE?	
				X		
PROCEDURE RESULTS						
INSPECTION DATE: 01/27/2025	CREW #: VN526	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	
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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:		

BNFSH THREE ARRIVAL (RNAV) Transition Routes

MIAMI, FLORIDA

MIAMI APP CON
124.85 263.025
KHST ATIS★
132.275 269.9
MIA D-ATIS
119.15
TMB ATIS
124.0

RNAV 1 - DME/DME/IRU or GPS.
FIROL, MORME, SNAGY, SUMRS
Transitions: GPS.

RADAR required.

HOAGG

PROTOTYPE-NOT
FOR NAVIGATION

HOVAX

SNAGY

PAAZZ

SUMRS

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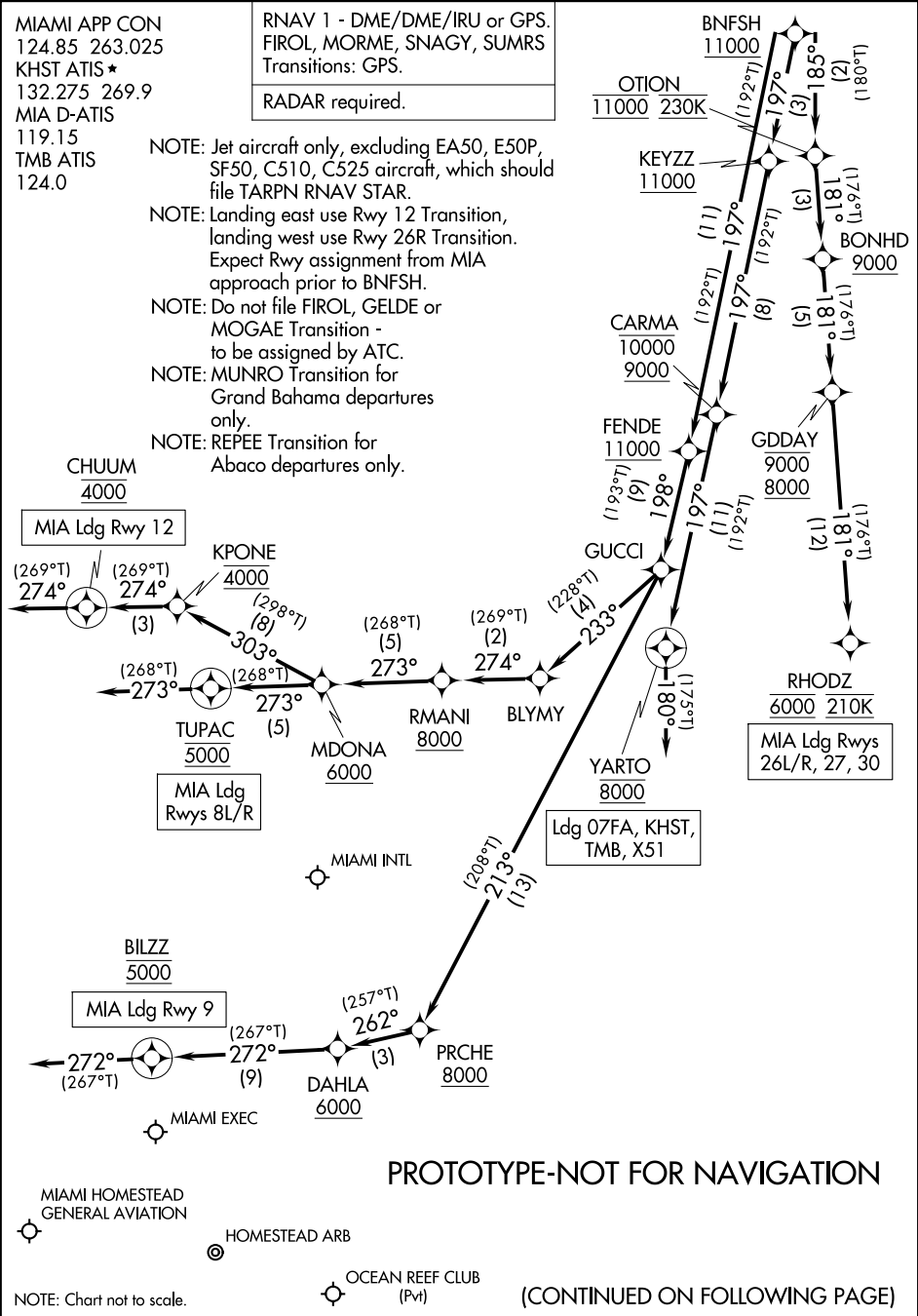
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BNFSH THREE ARRIVAL (RNAV) Arrival Routes

MIAMI, FLORIDA

ARRIVAL ROUTE DESCRIPTION

LANDING MIA RUNWAYS 8L/R: From BNFSH on track 197° to cross FENDE at or above 11000, then on track 198° to GUCCI, then on track 233° to BLYMY, then on track 274° to cross RMANI at or above 8000, then on track 273° to cross MDONA at or above 6000, then on track 273° to cross TUPAC at 5000, then on track 273°. Expect RADAR vectors to final approach course.

LANDING MIA RUNWAY 9: From BNFSH on track 197° to cross FENDE at or above 11000, then on track 198° to GUCCI, then on track 213° to cross PRCHC at or above 8000, then on track 262° to cross DAHLA at or above 6000, then on track 272° to cross BILZZ at 5000, then on track 272°. Expect RADAR vectors to final approach course.

LANDING MIA RUNWAY 12: From BNFSH on track 197° to cross FENDE at or above 11000, then on track 198° to GUCCI, then on track 233° to BLYMY, then on track 274° to cross RMANI at or above 8000, then on track 273° to cross MDONA at or above 6000, then on track 303° to cross KPONE at 4000, then on track 274° to cross CHUUM at 4000, then on track 274°. Expect RADAR vectors to final approach course.

LANDING MIA RUNWAYS 26L/R, 27, 30: From BNFSH on track 185° to cross OTION at 11000 and at 230K, then on track 181° to cross BONHD at or above 9000, then on track 181° to cross GDDAY between 8000 and 9000, then on track 181° to cross RHODZ at 6000 and at 210K. Expect assigned instrument approach to Rwy 26L/R or RADAR vectors to final approach course for Rwy 27, 30.

LANDING 07FA/X51/KHST/TMB: From BNFSH on track 197° to cross KEYZZ at or above 11000, then on track 197° to cross CARMA between 9000 and 10000, then on track 197° to cross YARTO at 8000, then on heading 180°. Expect RADAR vectors to final approach course.

PROTOTYPE-NOT FOR NAVIGATION

1. FLIGHT PROCEDURE IDENTIFICATION:

MIAMI INTL, KMIA

INFORMATION ONLY

BNFSH RNAV STAR

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

Waiver requirement to chart speed less than 250K above 10,000 feet MSL. Order 8260.58B, Paragraph 1-2-5.c.(2), Table 1-2-2. Indicated Airspeeds (KIAS). Minimum Speed Restriction, reference #2: "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):

The BNFSH RNAV STAR is designed as an Optimized Profile Descent, (OPD) RNAV STAR in an airspace that precludes the use of 250K above 10,000FT at the point OTION in order to meet the Descent Gradient and leg length requirement from OTION to BONHD. The restriction at OTION, At 11,000 and 230K reduces the arrivals speed prior to 10,000FT which establishes a shorter leg length requirement between OTION and BONHD, which has a restriction of At or Above 9,000.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

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) $DB_{max} = (Alt1 - 10000) \times 12 / (Alt1 - Alt2) + 318$

The descent from OTION (11,000 230K) to BONHD (+9,000) to GDDAY (+8,000 -9,000) spans a total leg length of 7.53nm. A descent gradient of 324ft/nm (Use of the above formula) requires a minimum of 6.17nm. At 7.53nm the arrival will cross GDDAY at 8,559ft. A previous version of this procedure was tested in simulation by American Airlines in flight simulators and did not have any adverse effect of the descent profile. The current procedure SLFSH also has the same restrictions and has been performing without issues since 8/12/2021.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

Due to the airspace complexity and constraints created by the geographic location of the neighboring airports, KFLI and KPBI, the use of a Non OPD STAR serving KMIA was not an option that met the procedural de-confliction required by the project. The removal of the restriction at BONHD was also considered, however it provides ATC Airspace protection for the adjacent departure sector.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

Eastern Service Area PBN FAA and NATCA leads.
ZMA ARTCC
MIA Approach Control.
American Airlines.

7. SUBMITTED BY:

DATE

OFFICE IDENTIFICATION TITLE

SIGNATURE

VICKI LYNN
TURNER

Digitally signed by VICKI
LYNN TURNER
Date: 2022.01.12 15:35:48
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7. AFS ACTIONS:

☐ ☐ ☐

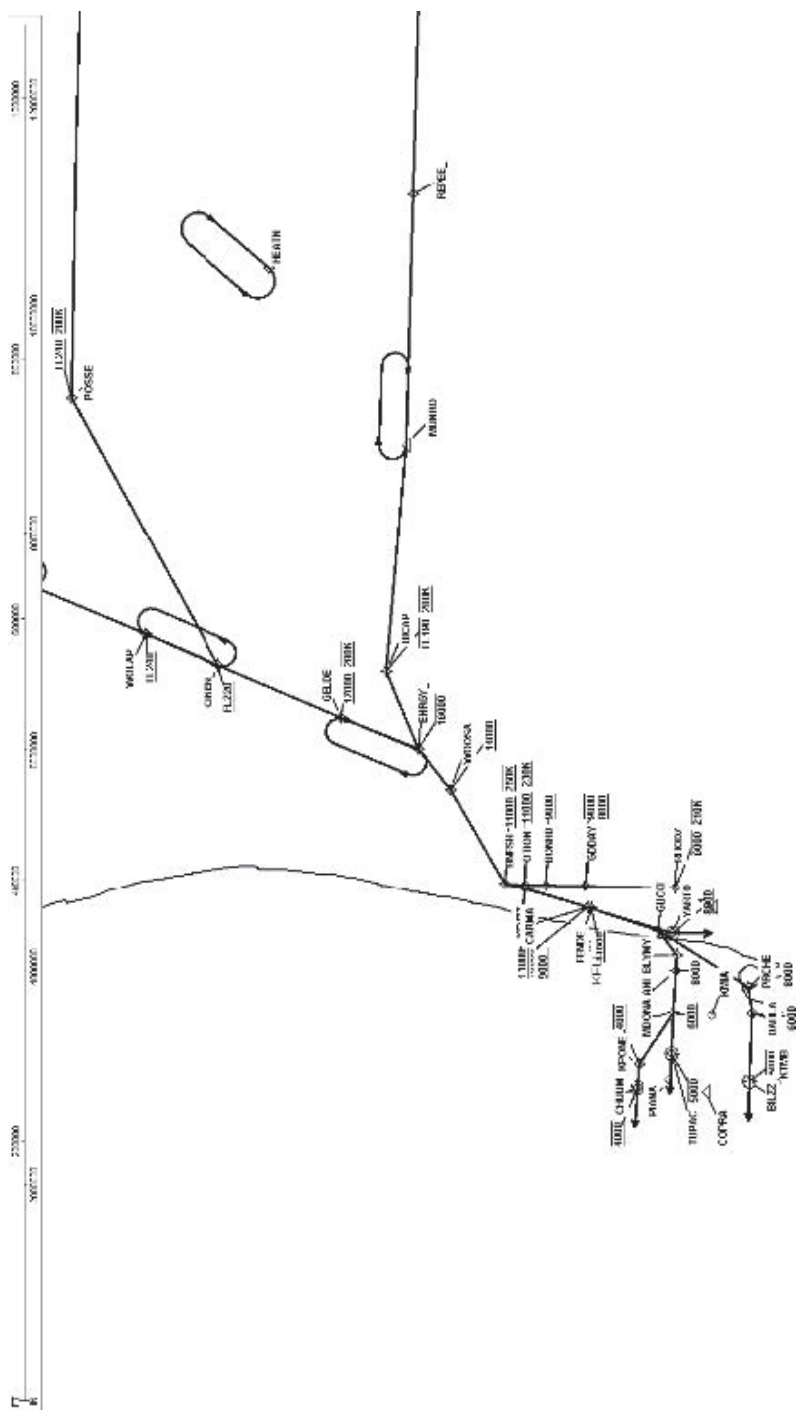
REQUIRED COMMENTS:

DATE

ROUTING SYMBOL

SIGNATURE

Tom Noble
Signed By: Tom Noble Thu Apr 14
2022 11:05:21 GMT-05:00:00
(Central Standard Time)





Federal Aviation Administration

Memorandum

INFORMATION ONLY

Date: December 9, 2021

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

From: Manager Plans and Procedures, Miami ARTCC.

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

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

RMANI to MDONA Segment

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:

“ Alt_1 = Altitude at the fix prior to crossing 10000 feet MSL

“ Alt_2 = 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 (377.60) from RMANI to MDONA is greater than the Maximum Permissible Descent Gradient (318.0).

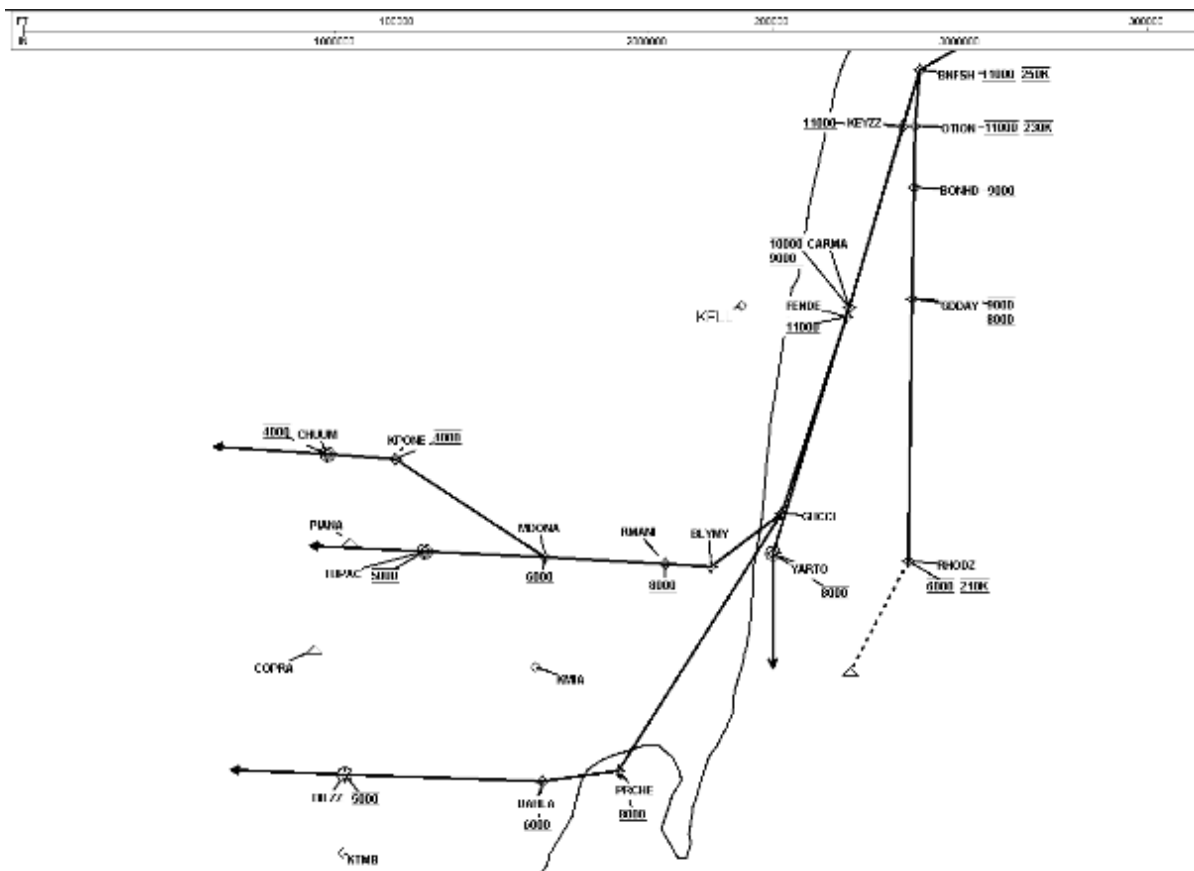
A computed descent gradient value from RMANI to MDONA of 377.60 ft. per NM resulted from the descent gradient being calculated from descending from the restriction of At or Above (AOA) 8000 at RMANI (8000 used) to cross MDONA AOA 6000 (6000 used) over a distance of 5.29 NM. The next restriction after MDONA is TUPAC at 5000 or KPONE at 4000. The distance from RMANI to TUPAC is 10.60 NM and using a descent gradient of 318 ft/NM a total distance of 9.44 NM is required. RMANI to KPONE is 13.14 NM and using a descent gradient of 318 ft. per NM a total distance of 12.58 NM is required. An aircraft is permitted to cross MDONA AOA 6000 and cross KPONE at 4000. Descending at 318 ft. per NM places an aircraft descending from 8000 over RMANI across the restriction at MDONA (AOA 6000) at 6318. The calculated descent gradient from RMANI to TUPAC IS 283 ft. per NM and RMANI to KPONE is 304 ft. per NM.

Consideration was given to removing and or changing the restrictions at RMANI and/or MDONA. However, due to airspace constraints and traffic flows it was decided that the restrictions are necessary to prevent aircraft from entering adjacent airspace, prevent conflict from other traffic and procedures and reduce ATC workload due to required coordination, (point outs).

Digitally signed by
CASIMIR L TABAKA
Mar 01, 2022

Manager Plans and Procedures, Miami ARTCC

KMIA BNFSH STAR





FAA

Aviation Safety

Memorandum

INFORMATION ONLY

Date:

To: Manager, Instrument Flight Procedures Coordination Team

From: Manager, Flight Technologies and Procedures Division

Prepared by: Flight Procedures & Airspace Group

Subject: Approval Request; Memorandum Dated 04/11/2022

Tom Noble
Signed By: Tom Noble Thu Apr 14
2022 11:05:22 GMT-05:00:00
(Central Standard Time)

Your request to utilize a descent gradient greater than 330 feet per FT/NM from RMANI to MDONA on the "BNFSH (RNAV) STAR" at Miami Intl, Miami, FL was discussed at the Flight Standards Procedure Review Board on 04/08/2022 and is approved.

Please direct all inquiries to Victor B. Naso, PRB Lead, Flight Procedures and Airspace Group, at (405) 954-5181.

Attachments



Federal Aviation Administration

Memorandum

INFORMATION ONLY

Date: December 9, 2021

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

From: Manager Plans and Procedures, Miami ARTCC.

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

Subject: Descent Gradient Approval Request: BNFSHRNAV STAR, KMIA

PRCHE to DAHLA Segment

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 (596.22) from PRCHE to DAHLA is greater than the Maximum Permissible Descent Gradient (318.0).

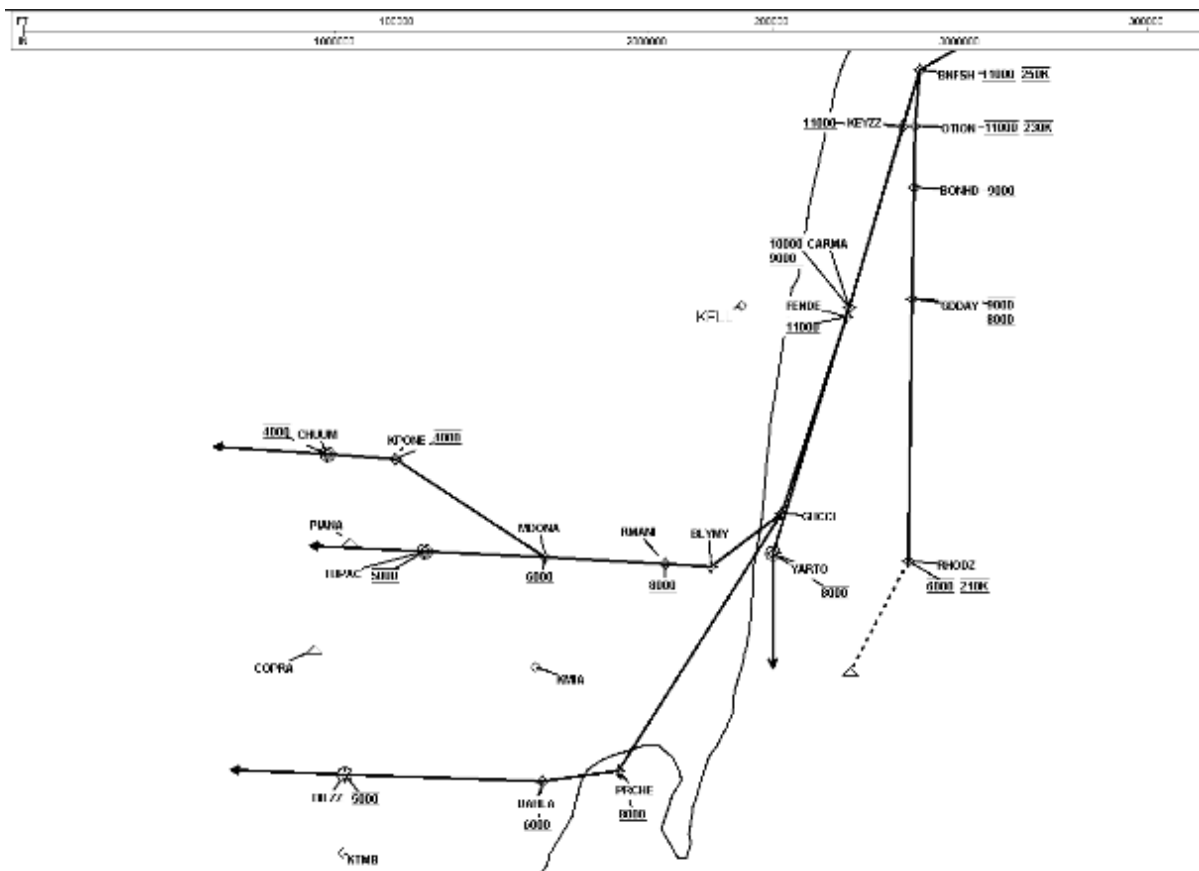
A computed descent gradient value from PRCHE to DAHLA of 596.22 ft/NM resulted from the descent gradient being calculated from descending from the restriction of AOA 8000 at PRCHE (8000 used) to cross DAHLA AOA 6000 (6000 used) over a distance of 3.35 NM. The next restriction after DAHLA is BILZZ at 5000. The distance from PRCHE to BILZZ is 12.05 NM and using a descent gradient of 318 ft. per NM a total distance of 9.44 NM is required. An aircraft is permitted to cross DAHLA AOA 6000 and cross BILZZ at 5,000'. The calculated descent gradient from PRCHE to BILZZ IS 249ft. per NM. Descending at 249ft. per nm places the aircraft at 7165 over DAHLA.

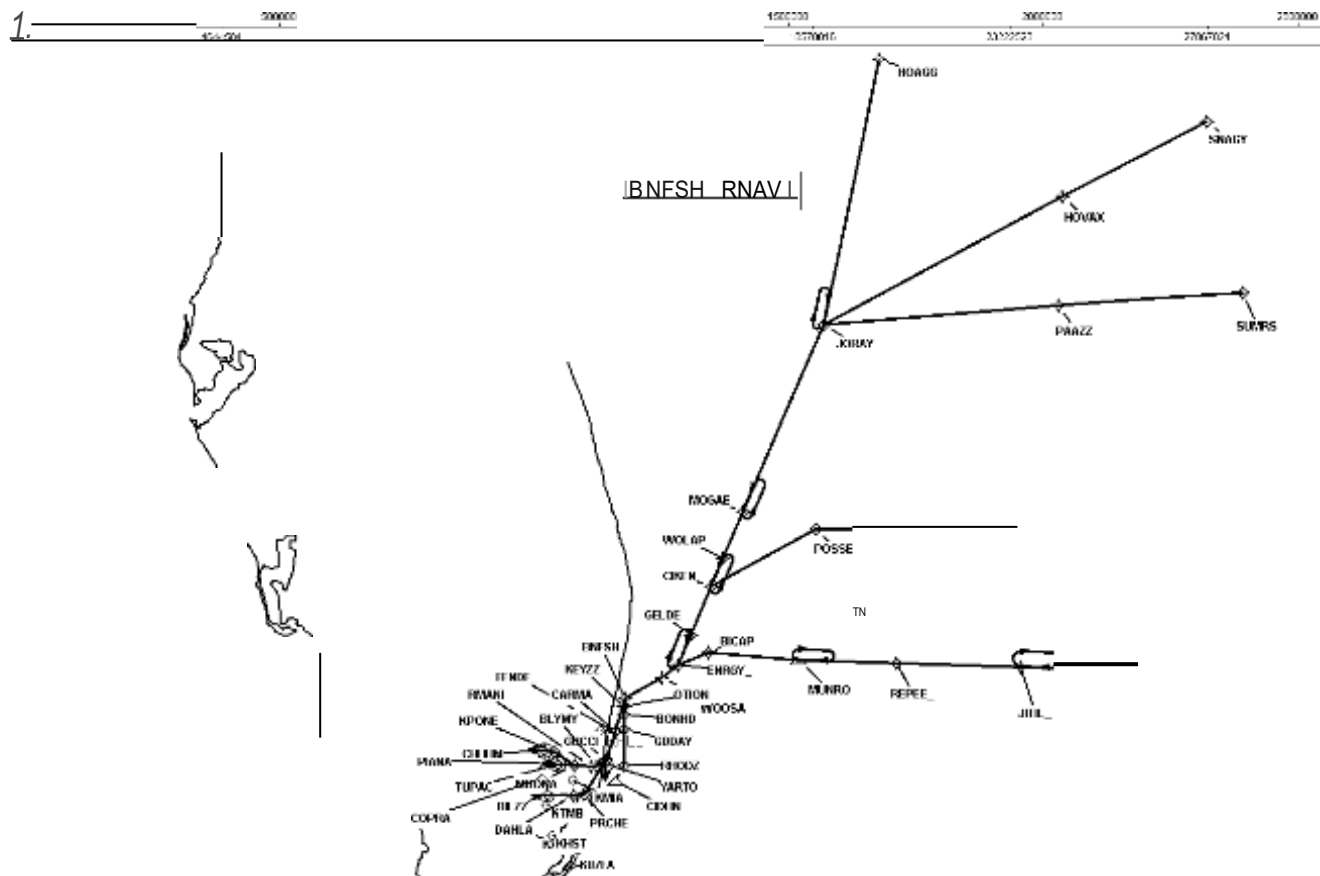
Consideration was given to removing and or changing the restrictions at PRCHE and/or DAHLA. However, due to airspace constraints and traffic flows it was decided that the restrictions are necessary to prevent aircraft from entering adjacent airspace, prevent confliction from other traffic and procedures and reduce ATC workload due to required coordination, (point outs).

Manager Plans and Procedures, Miami ARTCC

Digitally signed by
CASIMIR L TABAKA
Mar 01, 2022

KMIA BNFESH STAR







FAA

Aviation Safety

Memorandum

INFORMATION ONLY

Date:

To: Manager, Instrument Flight Procedures Coordination Team

From: Manager, Flight Technologies and Procedures Division

Prepared by: Flight Procedures & Airspace Group

Subject: Approval Request; Memorandum Dated 04/11/2022

Tom Noble
Signed By: Tom Noble Thu Apr 14
2022 11:05:22 GMT-05:00:00
(Central Standard Time)

Your request to utilize a descent gradient greater than 330 feet per FT/NM from PRCHE to DAHLA on the "BNFSH (RNAV) STAR" at Miami Intl, Miami, FL was discussed at the Flight Standards Procedure Review Board on 04/08/2022 and is approved.

Please direct all inquiries to Victor B. Naso, PRB Lead, Flight Procedures and Airspace Group, at (405) 954-5181.

Attachments



Federal Aviation Administration

Memorandum

INFORMATION ONLY

Date: December 8, 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: Deceleration Approval Request: BNFSH RNAV STAR, KMIA

BNFSH to OTION Segment

The requirements stated in Order 8260.3E, (United States Standard for Terminal Instrument Procedures (TERPS)), paragraph 2-2-10.a. are:

“2-2-10. Deceleration. Sufficient distance and a reduced descent gradient are required prior to any fix with a speed restriction. STARs not meeting the requirements of this paragraph may be authorized with Flight Standards approval (see paragraph 1-4-2).

a. Where deceleration is required but descent is not permitted (for example, between two fixes with the same mandatory altitudes) or is not required (for example, between two fixes with the same minimum altitudes), provide a minimum distance of at least 4 NM prior to a fix with a speed reduction of 40 KIAS or less. For deceleration greater than 40 KIAS, allow 1 NM between fixes for every 10 knots of deceleration required. For example, a deceleration of 10, 20, 30, or 40 KIAS requires a minimum length of 4 NM; a deceleration of 50 KIAS requires a minimum length of 5 NM; a deceleration of 60 KIAS requires 6 NM.

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...”

“RSO179: [Approval Required] The length of the leg from BNFSH to OTION is 2.477851816357096 NM. This leg must be at least 4.0 NM long due to deceleration from 250.0 KIAS to 230 KIAS between 11000.0 ft. MSL to 11000.0 ft. MSL.”

The segment with the restrictions of At or Above (AOA) 11,000’, 250KTS at BNFSH and At 11,000’, 230KTS at OTION requires a four NM length, per the 8260.3E paragraph 2-2-10 a, for a reduction of 10- 40Kts. This procedure is similar to the KMIA CSTAL STAR which was tested in simulation by American Airlines and in the Mike Monroney flight simulators for the deceleration of 20Kts over 3.56 NM and did not have any adverse effect of the descent profile. The aircraft Decelerates distance is 1nm for every 10KIAS. There is 2.47nm between BNFSH and OTION which is sufficient to allow for deceleration and should not have any adverse effect on the descent profile.

Runway Transition									
BNFSH	261515.83N / 0800118.14W	Y		IF				AT/ABOVE 11000	AT 250K
OTION	261246.72N / 0800118.23W	Y	FB	TF	180.03	02.48		AT 11000	AT 230K
BONHD	261006.29N / 0800105.41W	Y	FB	TF	175.88	02.67		AT/ABOVE 9000	
GDDAY	260514.47N / 0800042.12W	Y	FB	TF	175.88	04.86		8000B9000	
RHODZ	255344.46N / 0795947.18W	Y	FB	TF	175.88	11.50		AT 6000	AT 210K
KMIA:RWY 26L,RWY 26R,RWY 27,RWY 30									

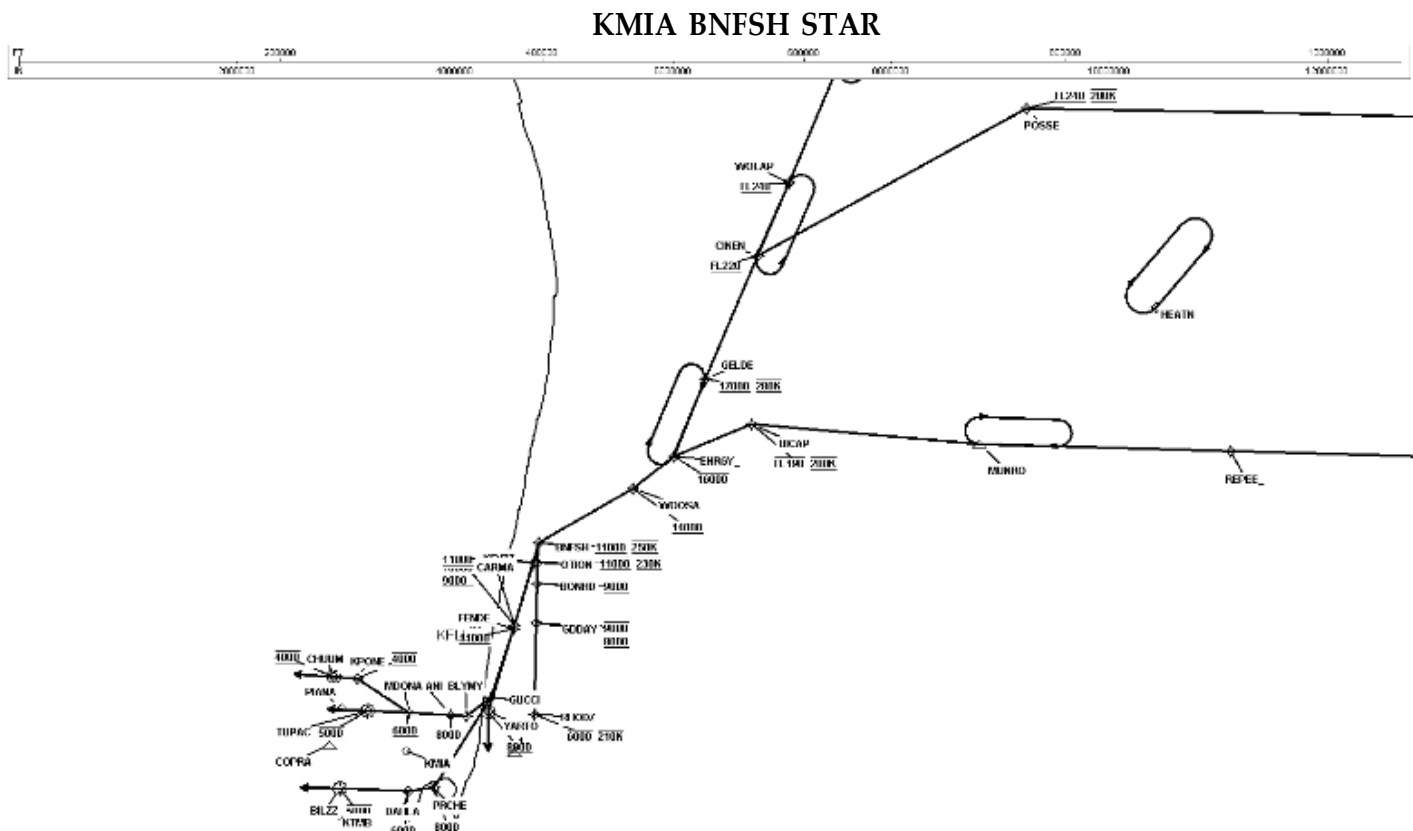
Consideration was given to removing and or changing the restrictions at BNFSH and or OTION. However, to allow aircraft to be configured for the segments following OTION the restrictions remained unchanged after simulation proved losing 20 Kts over 2.48 NM was not an impediment to the safety or profile of the procedure.

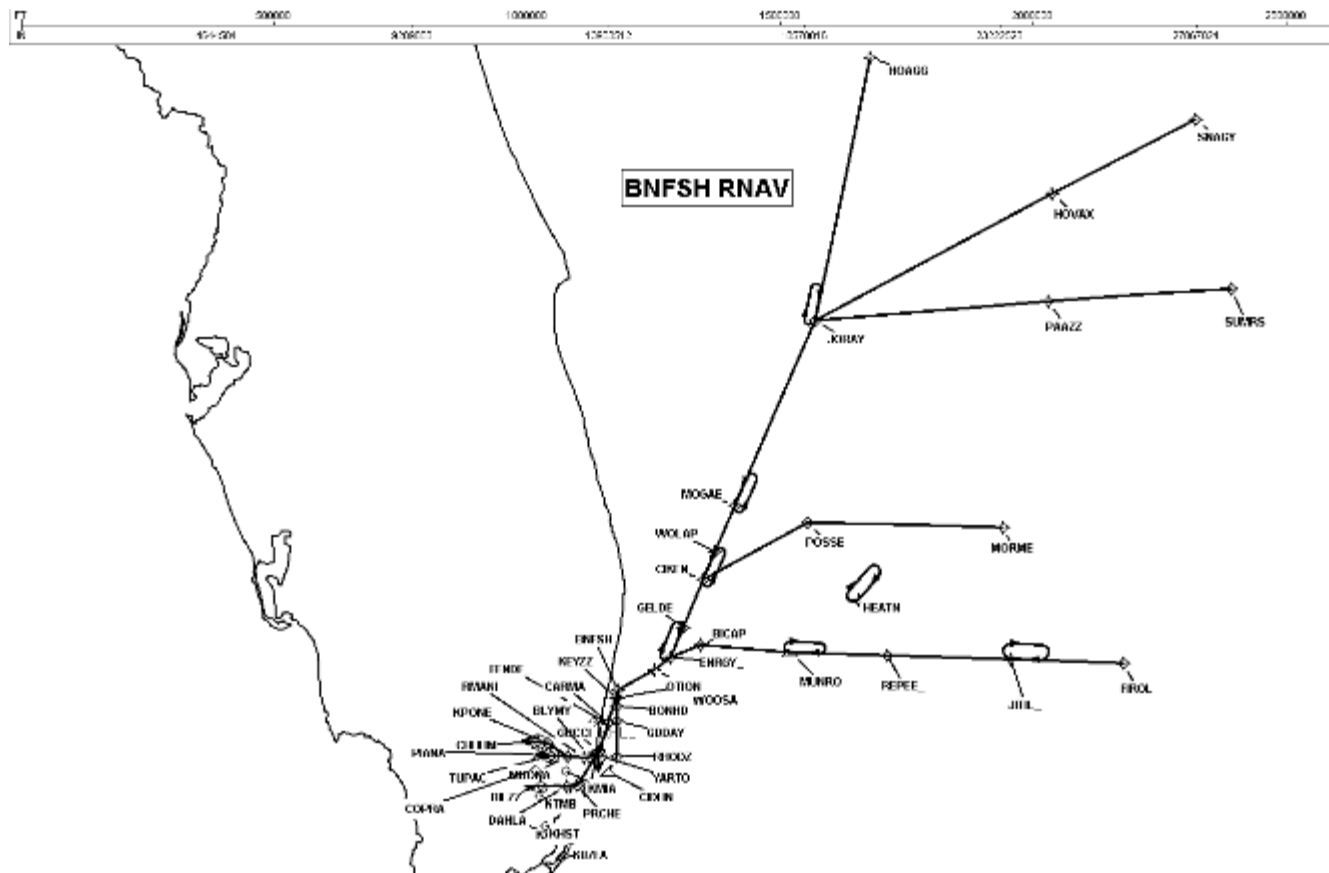
Manager Plans and Procedures, Miami ARTCC

Digitally signed by

CASIMIR L TABAKA

Mar 01, 2022







FAA

Aviation Safety

Memorandum

INFORMATION ONLY

Date:

To: Manager, Instrument Flight Procedures Coordination Team

From: Manager, Flight Technologies and Procedures Division

Prepared by: Flight Procedures & Airspace Group

Subject: Approval Request; Memorandum Dated 04/11/2022

Tom Noble
Signed By: Tom Noble Thu Apr 14
2022 11:05:22 GMT-05:00:00
(Central Standard Time)

Your request to utilize a descent gradient greater than 330 feet per FT/NM from BNFSH to OTION on the "BNFSH (RNAV) STAR" at Miami Intl, Miami, FL was discussed at the Flight Standards Procedure Review Board on 04/08/2022 and is approved.

Please direct all inquiries to Victor B. Naso, PRB Lead, Flight Procedures and Airspace Group, at (405) 954-5181.

Attachments



Federal Aviation Administration

Memorandum

INFORMATION ONLY

Date: December 9, 2021

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

From: Manager Plans and Procedures, Miami ARTCC.

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

Subject: Descent Gradient Approval Request: BNFSHRNAV STAR, KMIA

OTION to BONHD Segment

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:

“ Alt_1 = Altitude at the fix prior to crossing 10000 feet MSL

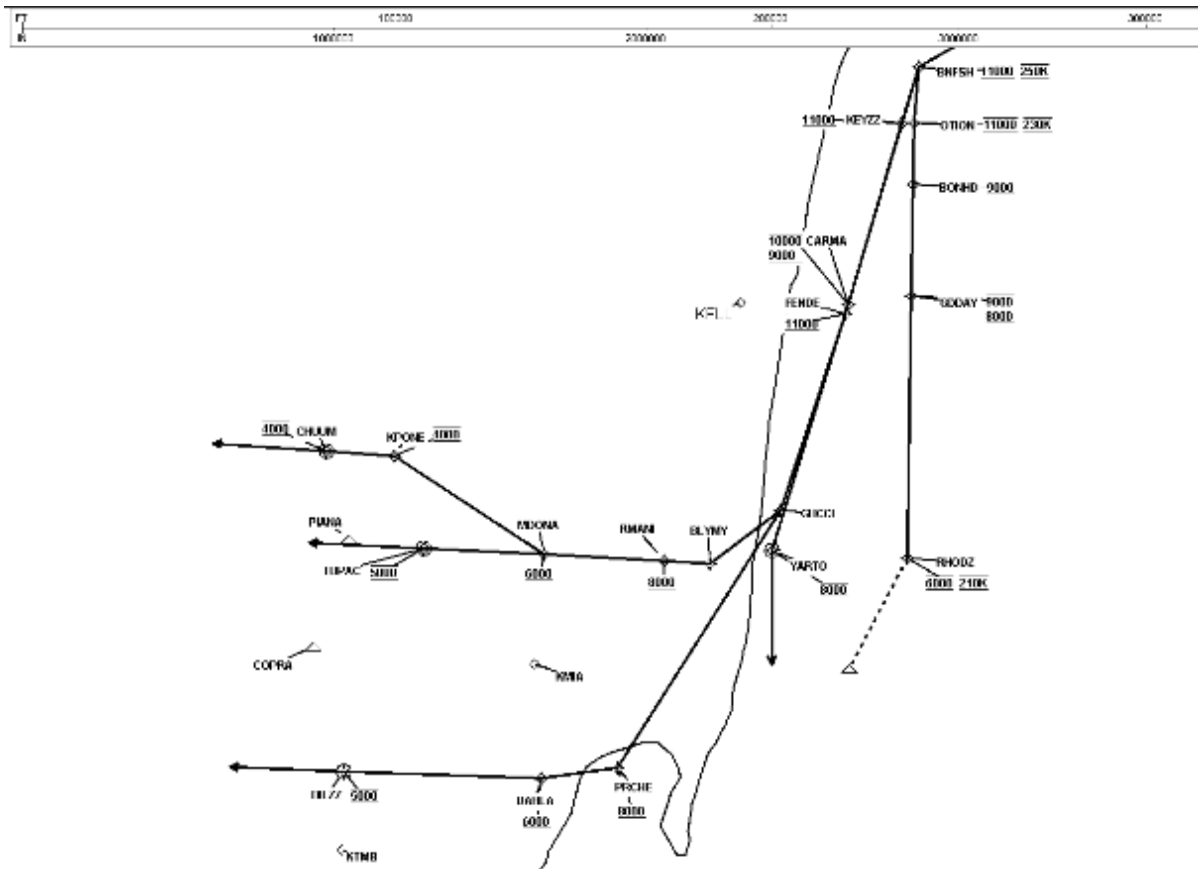
“ Alt_2 = Altitude at the fix after crossing 10000 feet MSL”

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...”





FAA

Aviation Safety

Memorandum

INFORMATION ONLY

Date:

To: Manager, Instrument Flight Procedures Coordination Team

From: Manager, Flight Technologies and Procedures Division

Prepared by: Flight Procedures & Airspace Group

Subject: Approval Request; Memorandum Dated 04/11/2022

Tom Noble
Signed By: Tom Noble Thu Apr 14
2022 11:05:23 GMT-05:00:00
(Central Standard Time)

Your request to utilize a descent gradient greater than 330 feet per FT/NM from OTION to BONHD on the "BNFSH (RNAV) STAR" at Miami Intl, Miami, FL was discussed at the Flight Standards Procedure Review Board on 04/08/2022 and is approved.

Please direct all inquiries to Victor B. Naso, PRB Lead, Flight Procedures and Airspace Group, at (405) 954-5181.

Attachments



Federal Aviation Administration

Memorandum

INFORMATION ONLY

Date: December 14, 2021

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

From: Manager Plans and Procedures, Miami ARTCC.

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

Subject: Deceleration Approval Request: BNFSH RNAV STAR, KMIA

CIKEN to GELDE Segment

The requirements stated in Order 8260.3E, (United States Standard for Terminal Instrument Procedures (TERPS)), paragraph 2-2-10.b. are:

“2-2-10. Deceleration. Sufficient distance and a reduced descent gradient are required prior to any fix with a speed restriction. STARs not meeting the requirements of this paragraph may be authorized with Flight Standards approval (see paragraph 1-4-2).

b. When descent is permitted, the descent gradient leading to the fix with the speed restriction must be reduced. Apply Formula 2-2-2 to determine the minimum deceleration distance (*Decel_d*) required before the fix; the greater distance leads to a reduced descent gradient.

(1) In determining the applicable formula gradient value, “G,” use 330 ft/NM (approximately 3.11 degrees) when the ending speed restriction is greater than or equal to 250 KIAS; use 318 ft/NM (approximately 3.0 degrees) when the ending speed restriction is less than 250 KIAS but greater than 220 KIAS; use 250 ft/NM (approximately 2.36 degrees) when the ending speed restriction is 220 KIAS or less.

(2) In determining “K,” use 310 KIAS, or the previous speed restriction if less than 310 KIAS, as the reference speed at or above 10000 feet MSL. For the reference speed Below 10000 feet MSL, use 250 KIAS or the previous speed restriction if less. For a block altitude, use the minimum altitude when selecting 310 or 250 to use to determine the “K” value.

(3) The first altitude restriction that is below 10000 feet MSL requires a deceleration evaluation unless an airspeed restriction of 250 KIAS or less exists prior to the point where descent below 10000 feet MSL occurs. If no speed is published at the first altitude restriction that is below 10000 feet MSL, then use the lower of 250 KIAS or the previous speed restriction (if applicable). When the first fix that allows descent below 10000 feet MSL has no charted speed restriction and the altitude constraint allows continued flight above 10000 feet MSL, the calculation is extended to the subsequent fix using the total descent and total distance for the applicable fixes.

(4) Some examples are as follows: If deceleration from a fix with no speed restriction to 280 KIAS is required above 10000 feet MSL, then “K” is equal to 3 NM ($K=310-280/10$). If an aircraft is decelerating from a fix with a speed restriction of 280 KIAS to a fix with no speed restriction that is below 10000 feet MSL, use 250 KIAS as the reference airspeed; then “K” is equal to 3 NM ($K=280-250/10$). If an aircraft is decelerating from a fix with no speed restriction that is below 10000 feet MSL, use 250 KIAS as the reference airspeed for the deceleration to the next fix; if the deceleration is to a fix with a speed restriction of 230 KIAS, then “K” is equal to 2 NM ($K=250-230/10$).

Formula 2-2-2. Minimum Deceleration Distance (NM)

$$Decel_D = \frac{Alt_1 - Alt_2}{G} + K$$

Where:

Alt_2 = Minimum altitude at the fix with the speed restriction

G = Applicable gradient value (330/318/250)

K = 1 NM for every 10 KIAS of deceleration required”

$$Decel_D = 18.151515151515152 \text{ NM}$$

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...”

RSO179: [Approval Required] the length of the leg from CIKEN to GELDE is 16.73 NM. This leg must be at least 18.15 NM long due to deceleration from 310.0 KIAS to 280 KIAS between 22000ft and MSL to 17000ft.

The segment with the restrictions of At or Above 22000 at CIKEN and AOA 17000 280KIAS at GELDE requires a 18.15 NM length, per the 8260.3E paragraph 2-2-10 b (4), for a reduction of 10-40Kts. The deceleration required by the CIKEN-GELDE segment is 30Kts. Aircraft crossing GELDE can be at any altitude at or above 17000 ft. A previous version of this procedure was tested in simulation by American Airlines in flight simulators and did not have any adverse effect of the descent profile. A procedure data note also advises the aircraft to maintain 280kts as they transition from Mach which will occur above FL220 so in reality no further slowing will be required by the STAR. The current procedure SLFSH also has the same restrictions and has been performing without issues since 8/12/2021.

FIX/NAVAID	LAT/LONG	C	FO/FB	LEG TYPE	TC	DIST (NM)	ALTITUDE	SPEED	REMARKS
En Route Transition									
SNAGY	293626.39N / 0765151.38W	Y		IF					SNAGY.BNFSH1
HOVAX	290814.90N / 0774102.95W	Y	FB	TF	237.01	51.36			
JORAY	282034.13N / 0790205.88W	Y	FB	TF	236.60	85.66			
MOGAE	271824.19N / 0792506.53W	Y	FB	TF	198.31	65.27			
WOLAP	270302.95N / 0793043.31W	Y	FB	TF	198.13	16.11	AT/ABOVE FL240		
CIKEN	265330.91N / 0793411.62W	Y	FB	TF	198.08	10.00	AT/ABOVE FL220		
GELDE	263732.77N / 0793956.82W	Y	FB	TF	197.94	16.74	AT/ABOVE 17000	AT 280K	
ENRGY	262728.63N / 0794328.31W	Y	FB	TF	197.49	10.53	AT/BELOW 16000		
WOOSA	262304.58N / 0794849.42W	Y	FB	TF	227.62	06.51	AT/ABOVE 14000		
BNFSH	261515.83N / 0800118.14W	Y	FB	TF	235.26	13.65	AT/ABOVE 11000	AT 250K	

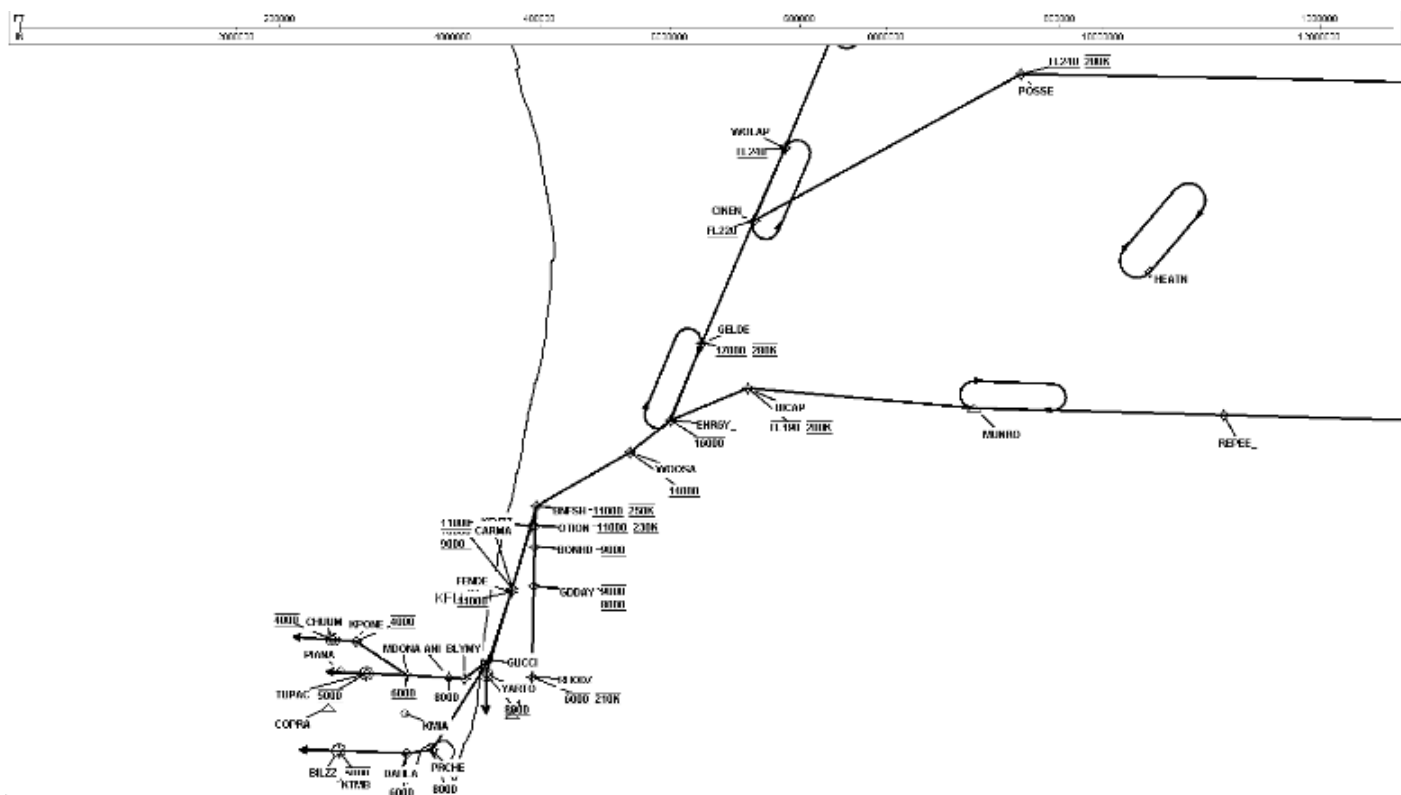
GELDE. However, to allow aircraft to be configured for the segments following GELDE the restrictions remained unchanged after simulation proved slowing to 280Kts was not an impediment to the safety or profile of the procedure.

Digitally signed by
CASIMIR L TABAKA

Mar 01, 2022

Manager Plans and Procedures, Miami ARTCC

KMIA BNFSH STAR



BNFSH TWO ARRIVAL(RNAV) Transition Routes

OLD

MIAMI, FLORIDA

MIAMI APP CON
124.85 263.025
KHST ATIS★
132.275 269.9
MIA D-ATIS
119.15
TMB ATIS
124.0

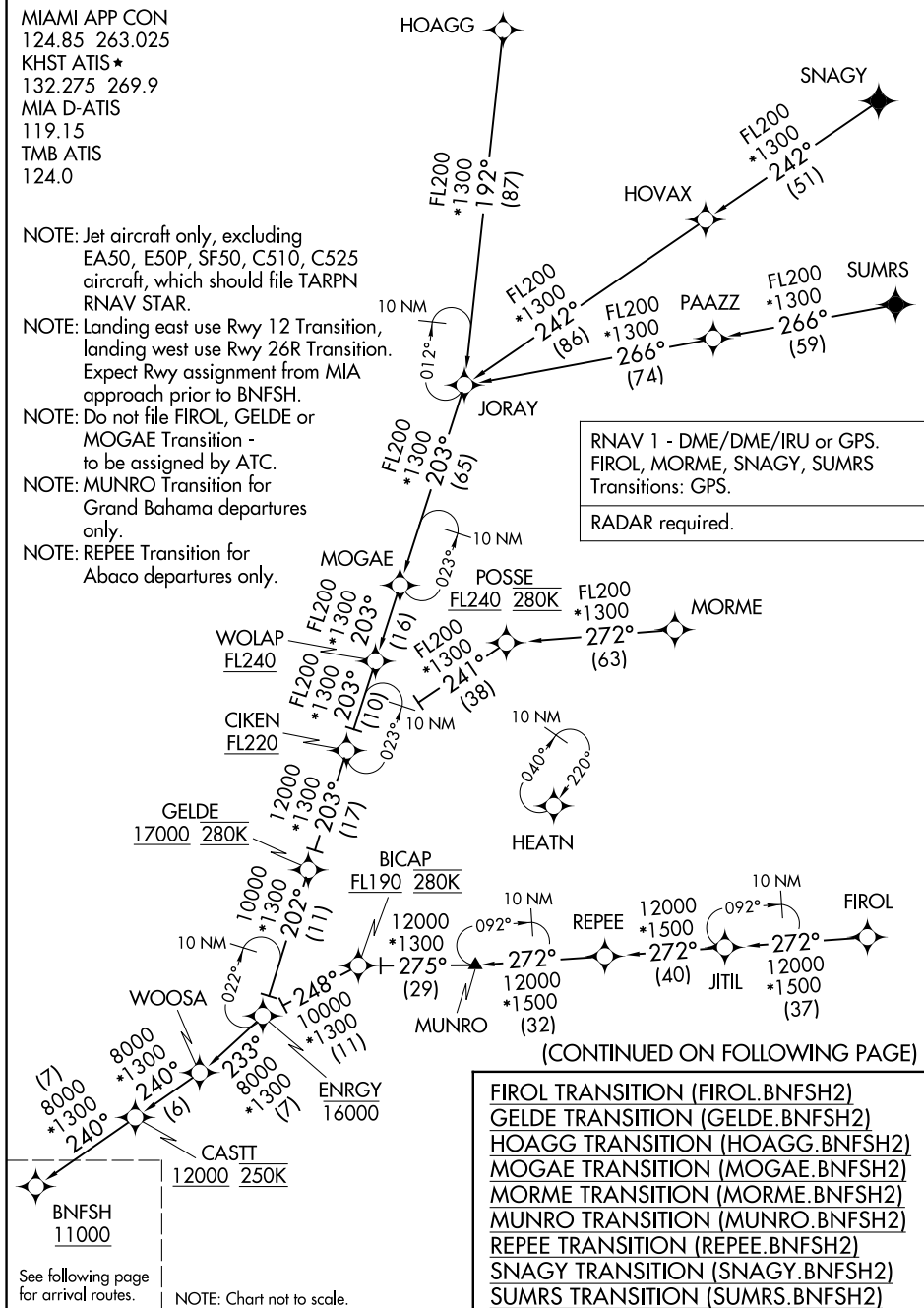
NOTE: Jet aircraft only, excluding EA50, E50P, SF50, C510, C525 aircraft, which should file TARPIN RNAV STAR.

NOTE: Landing east use Rwy 12 Transition,
landing west use Rwy 26R Transition.
Expect Rwy assignment from MIA
approach prior to BNFSH.

NOTE: Do not file FIROL, GELDE or MOGAE Transition - to be assigned by ATC.

NOTE: MUNRO Transition for Grand Bahama departures only.

NOTE: REPEE Transition for
Abaco departures only.



(CONTINUED ON FOLLOWING PAGE)

FIROL TRANSITION (FIROL.BNFSH2)
 GELDE TRANSITION (GELDE.BNFSH2)
 HOAGG TRANSITION (HOAGG.BNFSH2)
 MOGAE TRANSITION (MOGAE.BNFSH2)
 MORME TRANSITION (MORME.BNFSH2)
 MUNRO TRANSITION (MUNRO.BNFSH2)
 REPEE TRANSITION (REPEE.BNFSH2)
 SNAGY TRANSITION (SNAGY.BNFSH2)
 SUMRS TRANSITION (SUMRS.BNFSH2)

BNFSH TWO ARRIVAL (RNAV) Transition Routes

MIAMI, FLORIDA

(BNFSH.BNFSH2) 03NOV22

SE-3, 03 OCT 2024 to 31 OCT 2024

SE-3, 03 OCT 2024 to 31 OCT 2024

ARRIVAL ROUTE DESCRIPTION

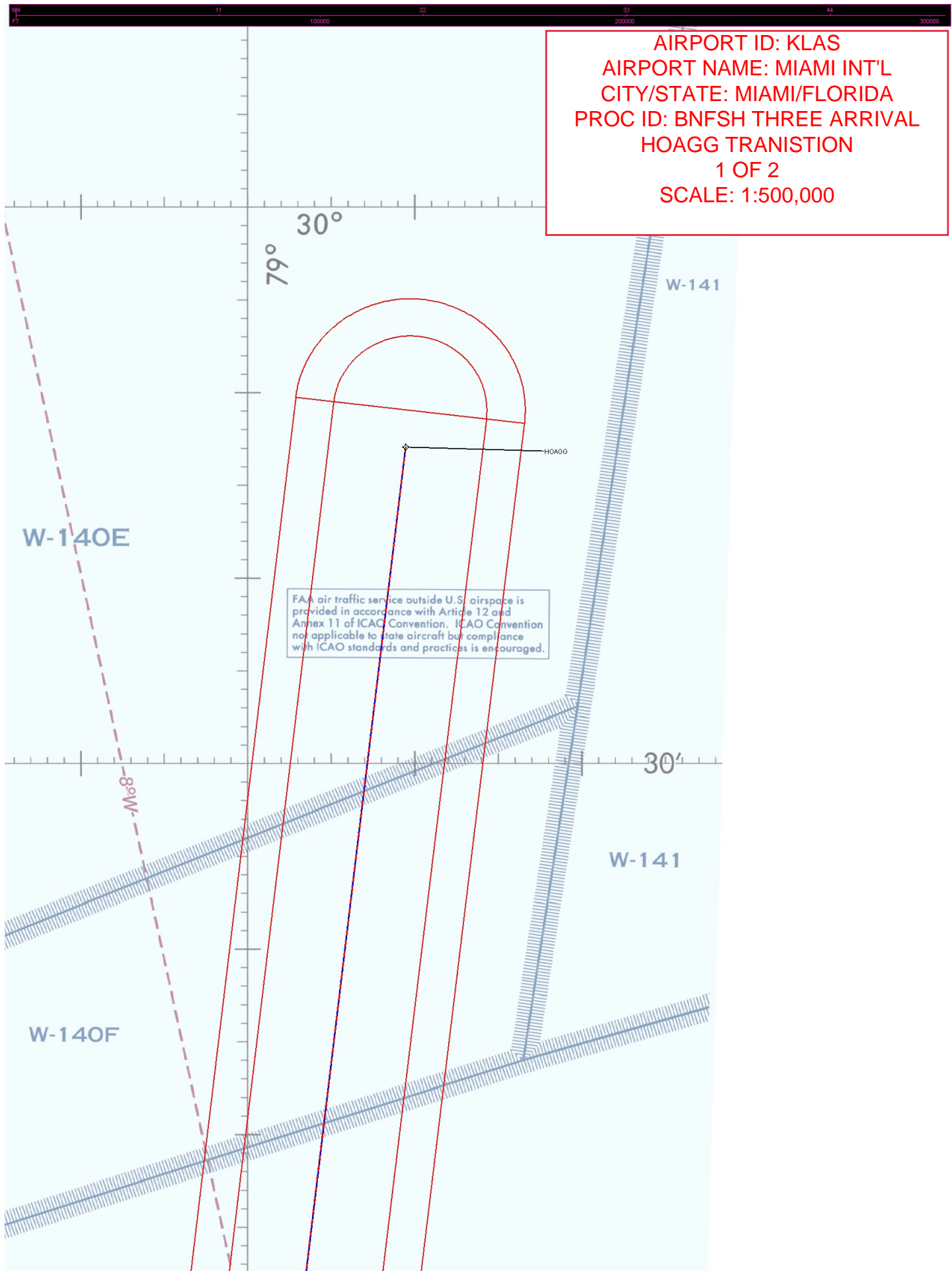
LANDING KMIA RUNWAYS 8L/R: From BNFSH on track 197° to cross FENDE at or above 11000, then on track 198° to GUCCI, then on track 233° to BLYMY, then on track 274° to cross RMANI at or above 8000, then on track 273° to cross MDONA at or above 6000, then on track 273° to cross TUPAC at 5000, then on track 273°. Expect RADAR vectors to final approach course.

LANDING KMIA RUNWAY 9: From BNFSH on track 197° to cross FENDE at or above 11000, then on track 198° to GUCCI, then on track 213° to cross PRCHE at or above 8000, then on track 262° to cross DAHLA at or above 6000, then on track 272° to cross BILZZ at 5000, then on track 272°. Expect RADAR vectors to final approach course.

LANDING KMIA RUNWAY 12: From BNFSH on track 197° to cross FENDE at or above 11000, then on track 198° to GUCCI, then on track 233° to BLYMY, then on track 274° to cross RMANI at or above 8000, then on track 273° to cross MDONA at or above 6000, then on track 303° to cross KPONE at 4000, then on track 274° to cross CHUUM at 4000, then on track 274°. Expect RADAR vectors to final approach course.

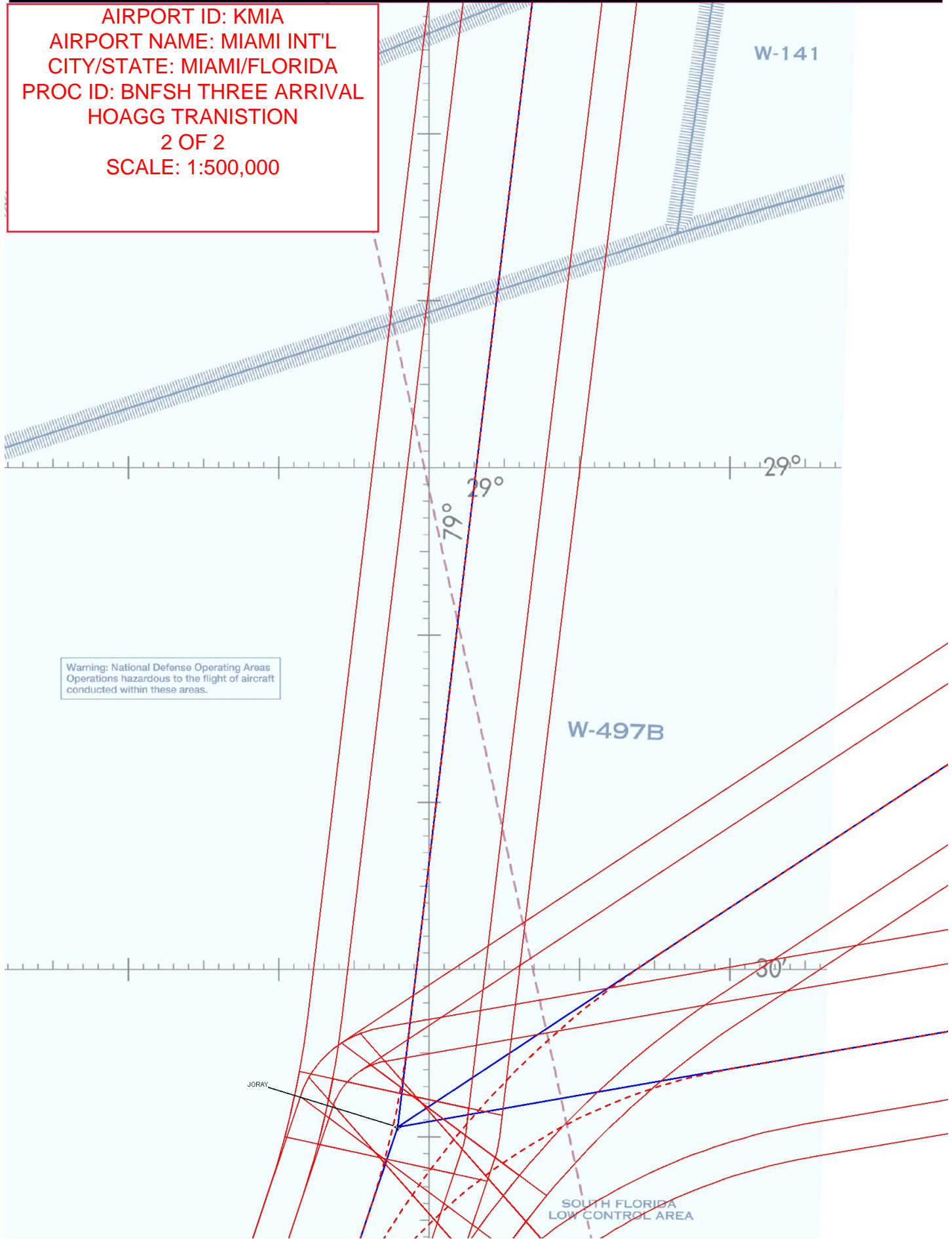
LANDING KMIA RUNWAYS 26L/R, 27, 30: From BNFSH on track 185° to cross OTION at 11000 and at 230K, then on track 181° to cross BONHD at or above 9000, then on track 181° to cross GDDAY between 8000 and 9000, then on track 181° to cross RHODZ at 6000 and at 210K. Expect ILS or LOC Rwy 26L, Rwy 26R, or RADAR vectors Rwy 27, Rwy 30 approach.

LANDING 07FA/X51/KHST/KTMB: From BNFSH on track 197° to cross KEYZZ at or above 11000, then on track 197° to cross CARMA between 9000 and 10000, then on track 197° to cross YARTO at 8000, then on heading 180° or as assigned by ATC. Expect RADAR vectors to final approach course.

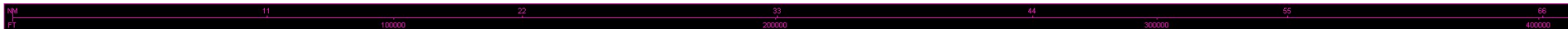




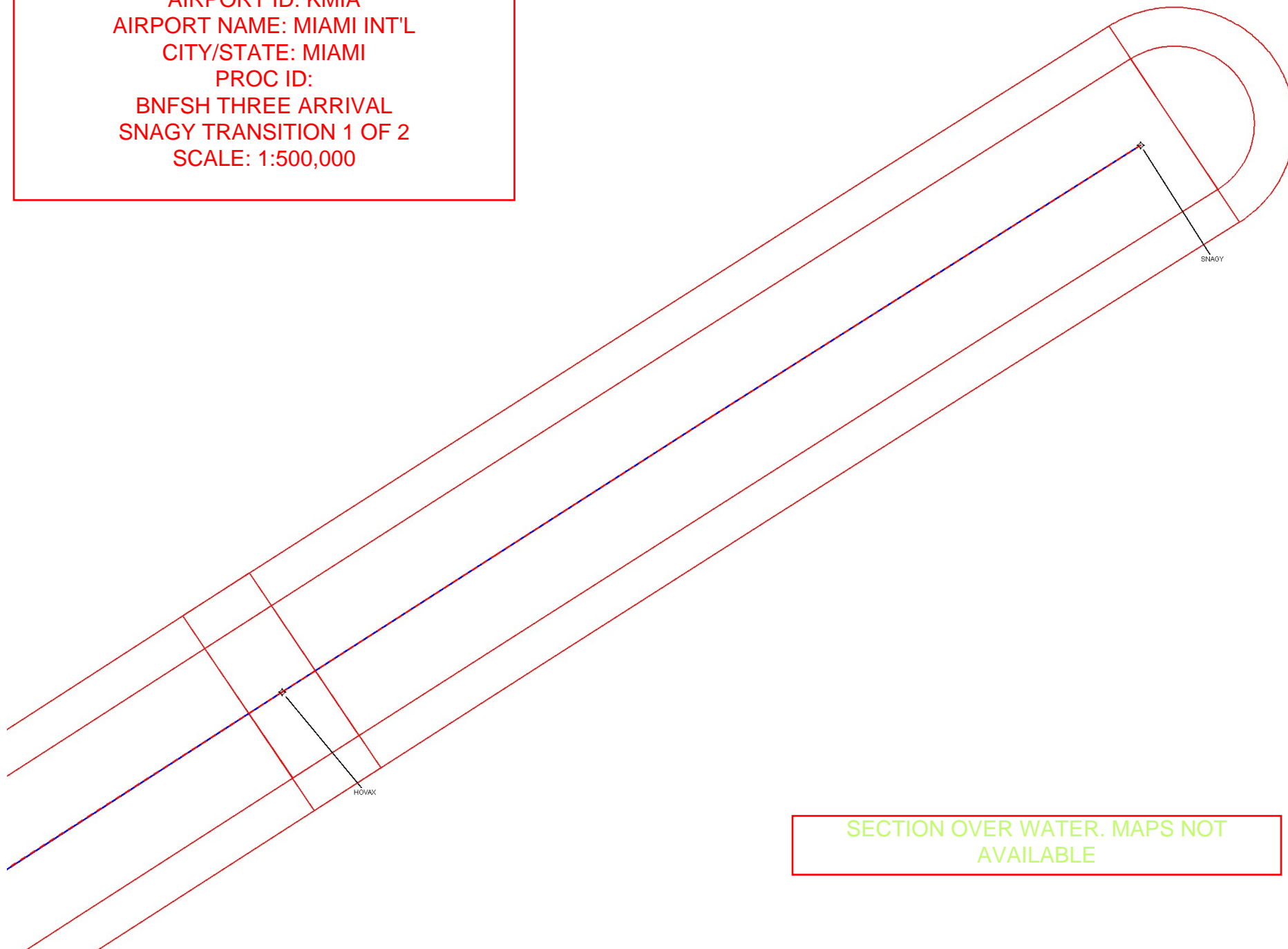
AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI/FLORIDA
PROC ID: BNFSH THREE ARRIVAL
HOAGG TRANISTION
2 OF 2
SCALE: 1:500,000



Warning: National Defense Operating Areas
Operations hazardous to the flight of aircraft
conducted within these areas.



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI
PROC ID:
BNFSH THREE ARRIVAL
SNAGY TRANSITION 1 OF 2
SCALE: 1:500,000



SECTION OVER WATER. MAPS NOT
AVAILABLE

AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI
PROC ID:
BNFSH THREE ARRIVAL
SNAGY TRANSITION 2 OF 2
SCALE: 1:500,000

29°

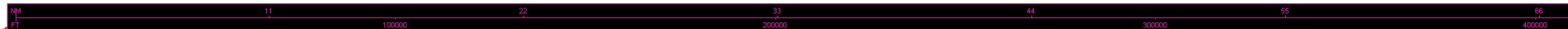
W-497B

30'

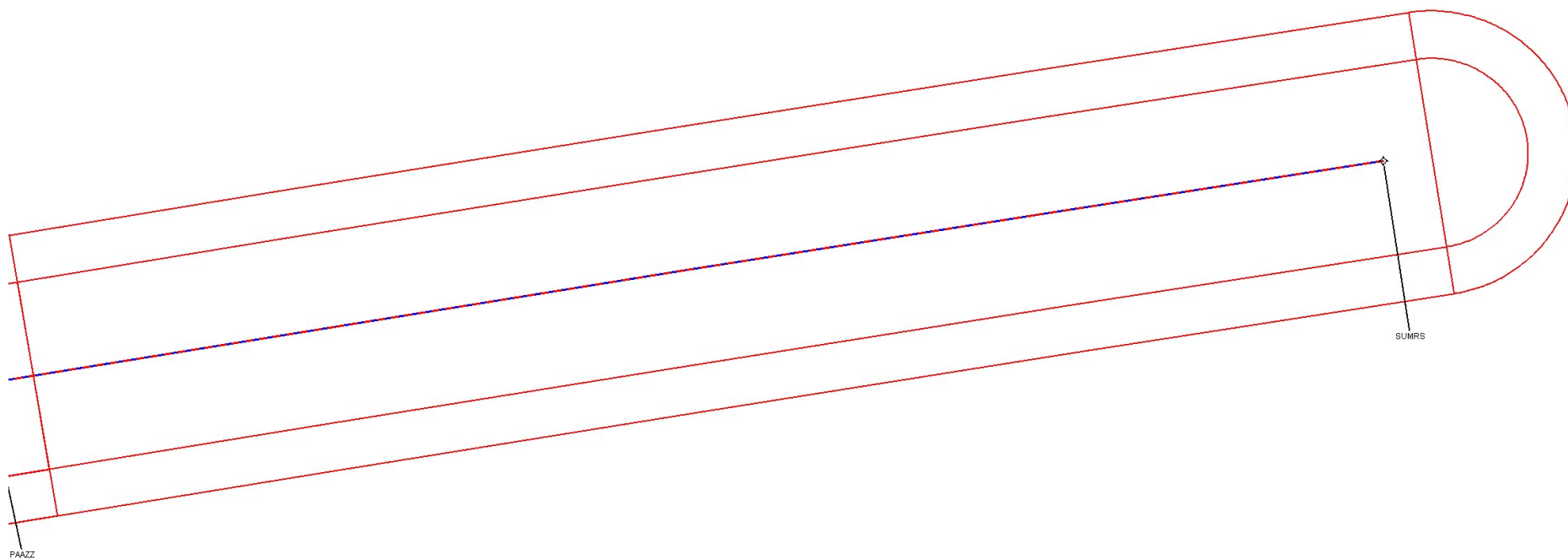
SECTION OVER WATER. MAPS NOT
AVAILABLE

HOVAX

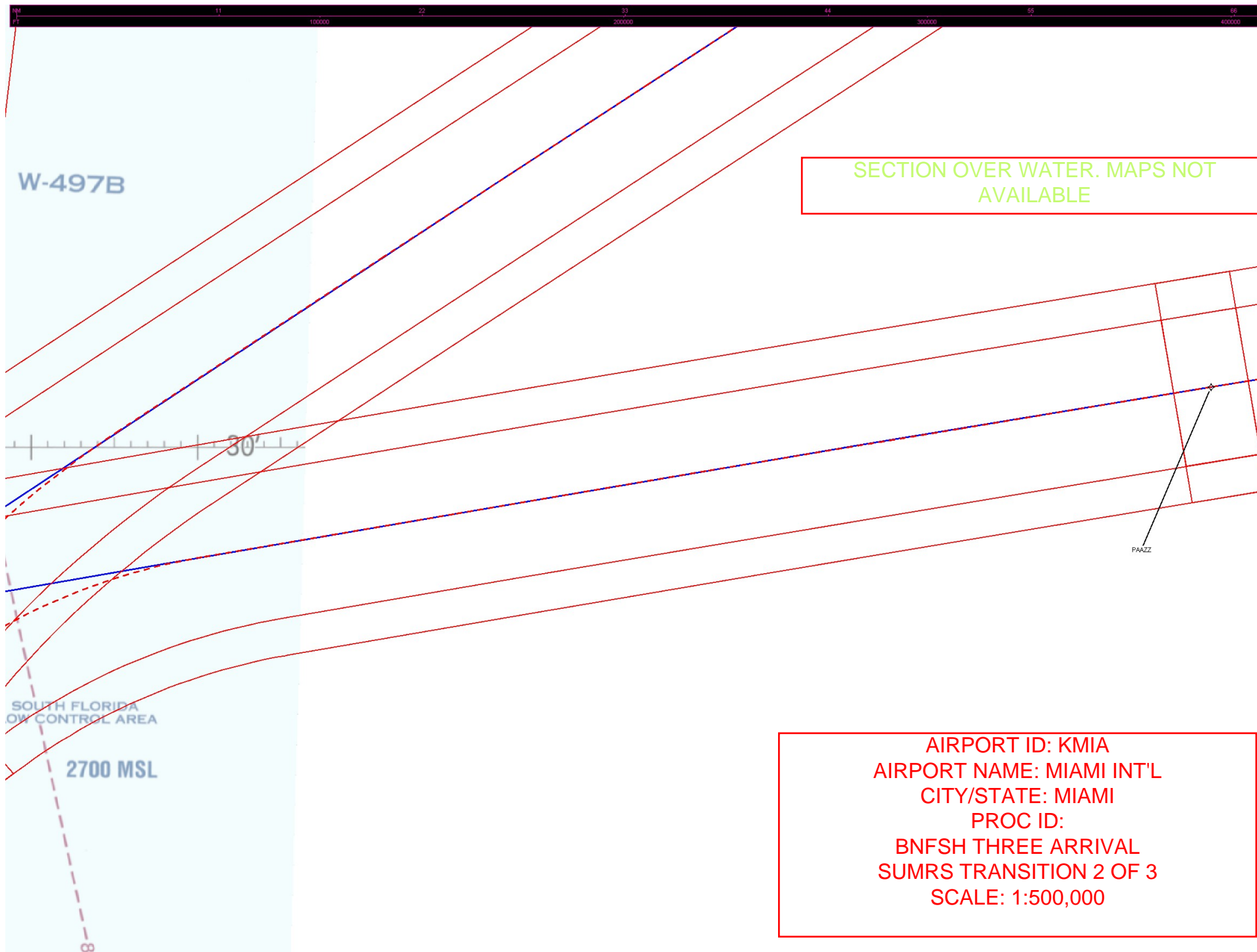
PAVZZ

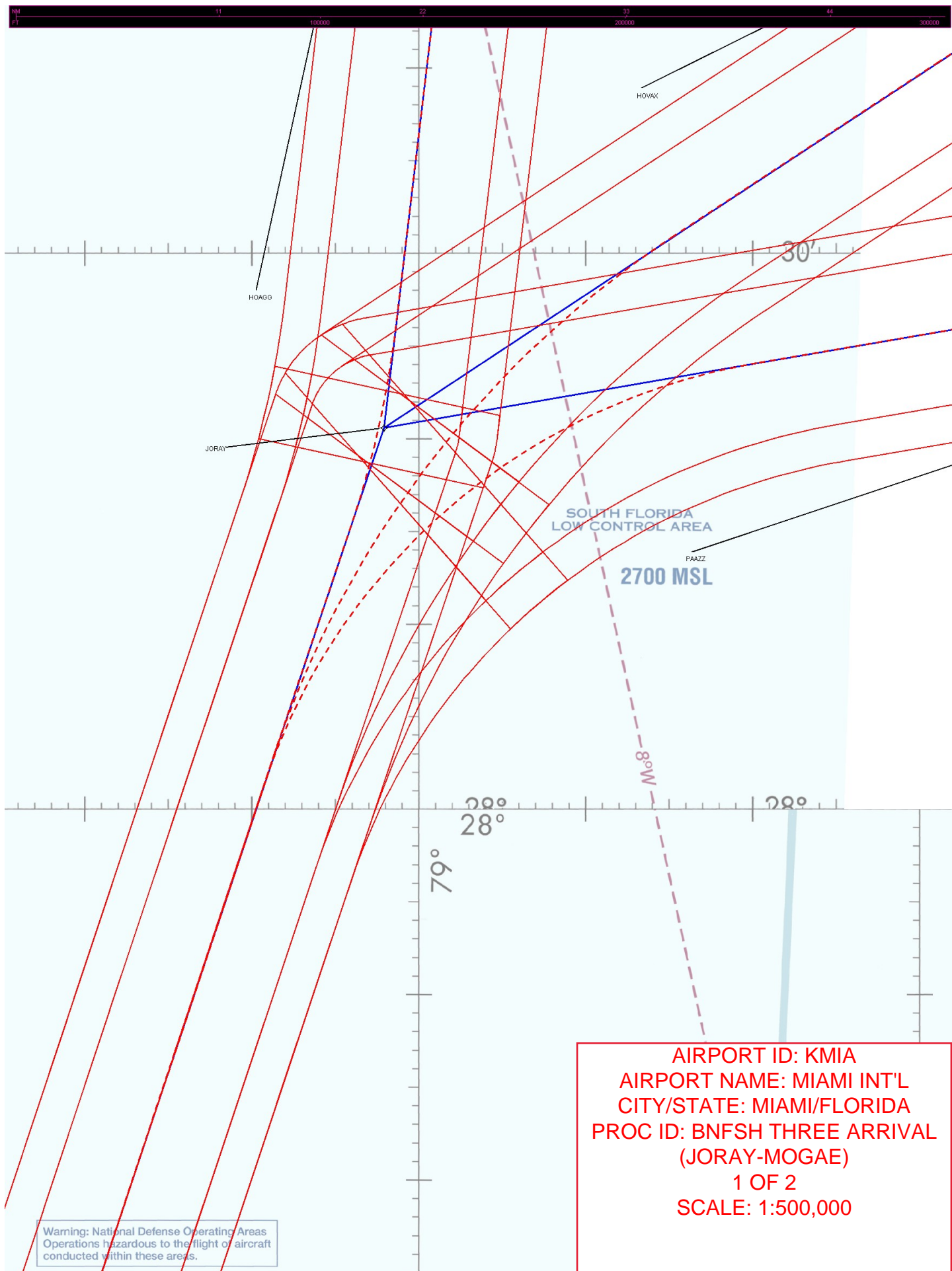


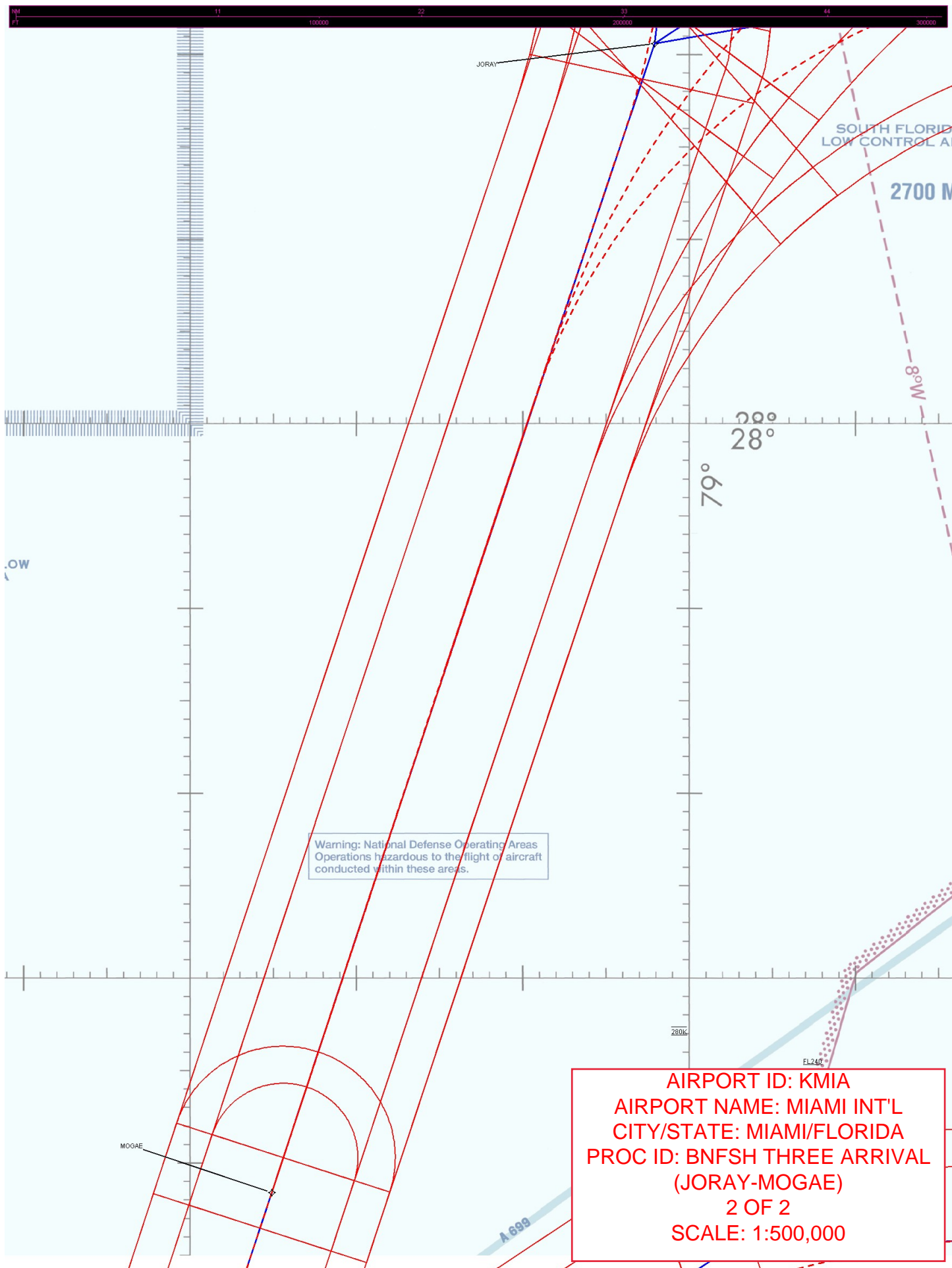
AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI
PROC ID:
BNFSH THREE ARRIVAL
SUMRS TRANSITION 1 OF 3
SCALE: 1:500,000



SECTION OVER WATER. MAPS NOT
AVAILABLE

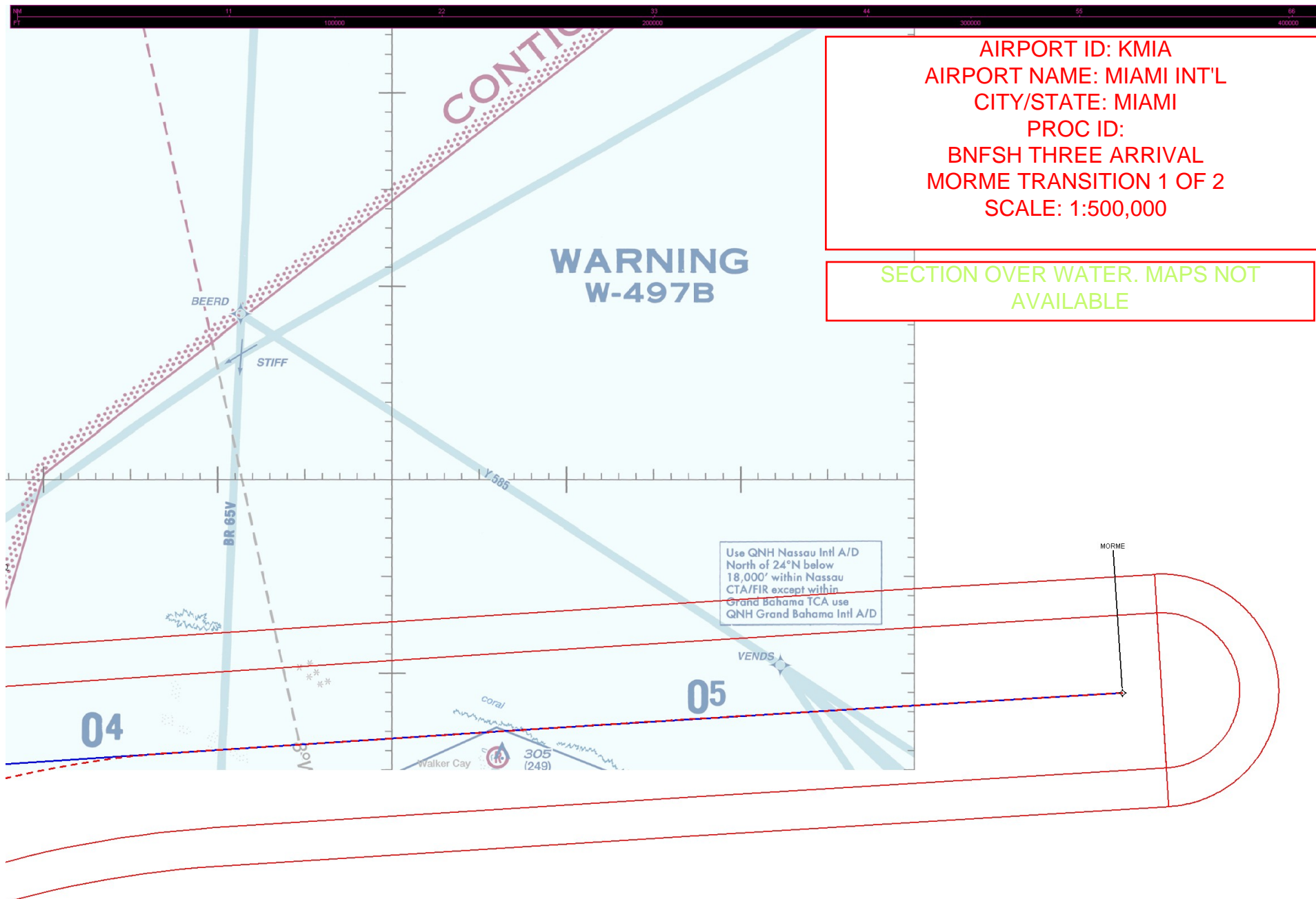


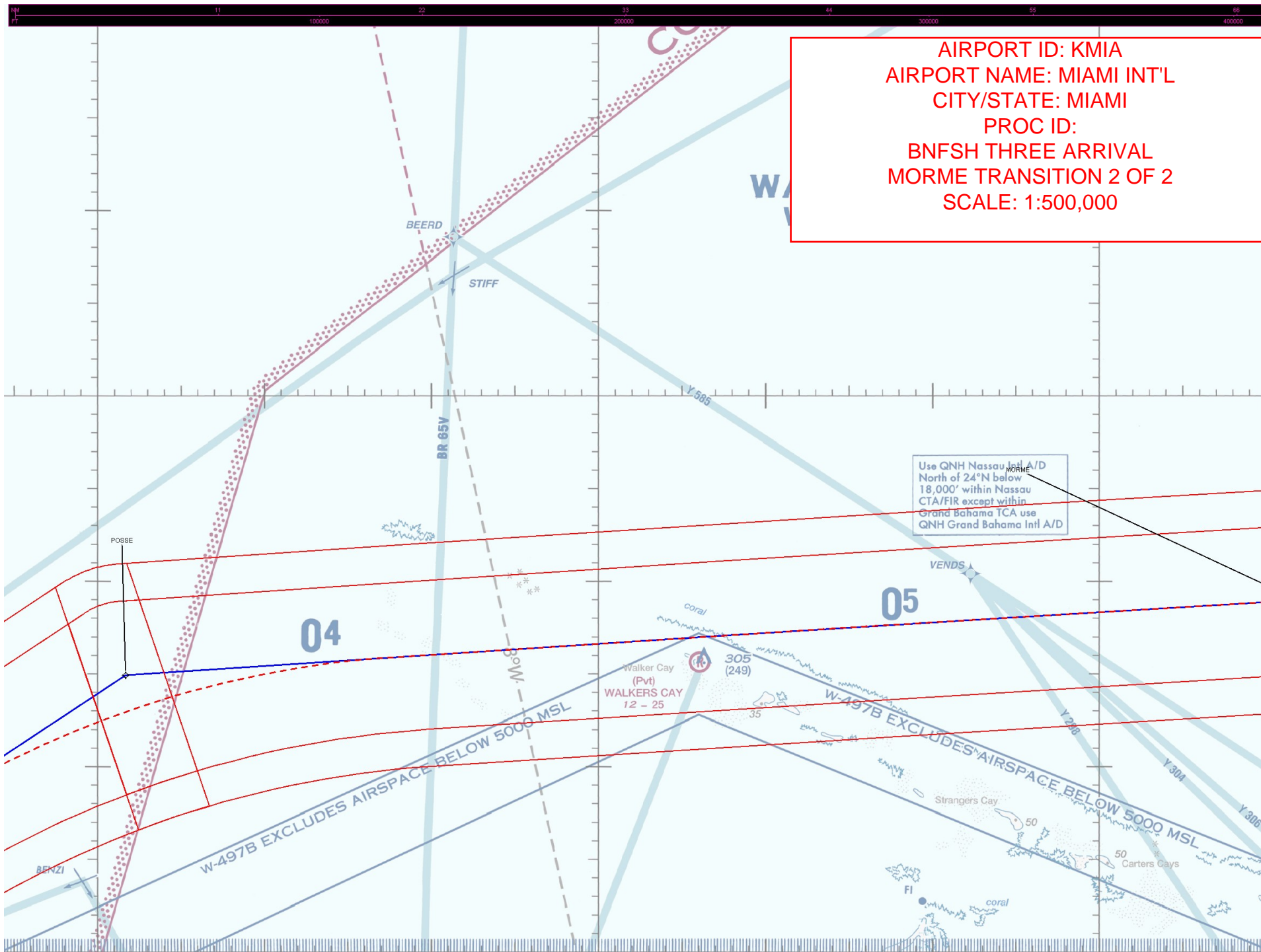




Warning: National Defense Operating Areas
Operations hazardous to the flight of aircraft
conducted within these areas.

AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI/FLORIDA
PROC ID: BNFSH THREE ARRIVAL
(JORAY-MOGAE)
2 OF 2
SCALE: 1:500,000





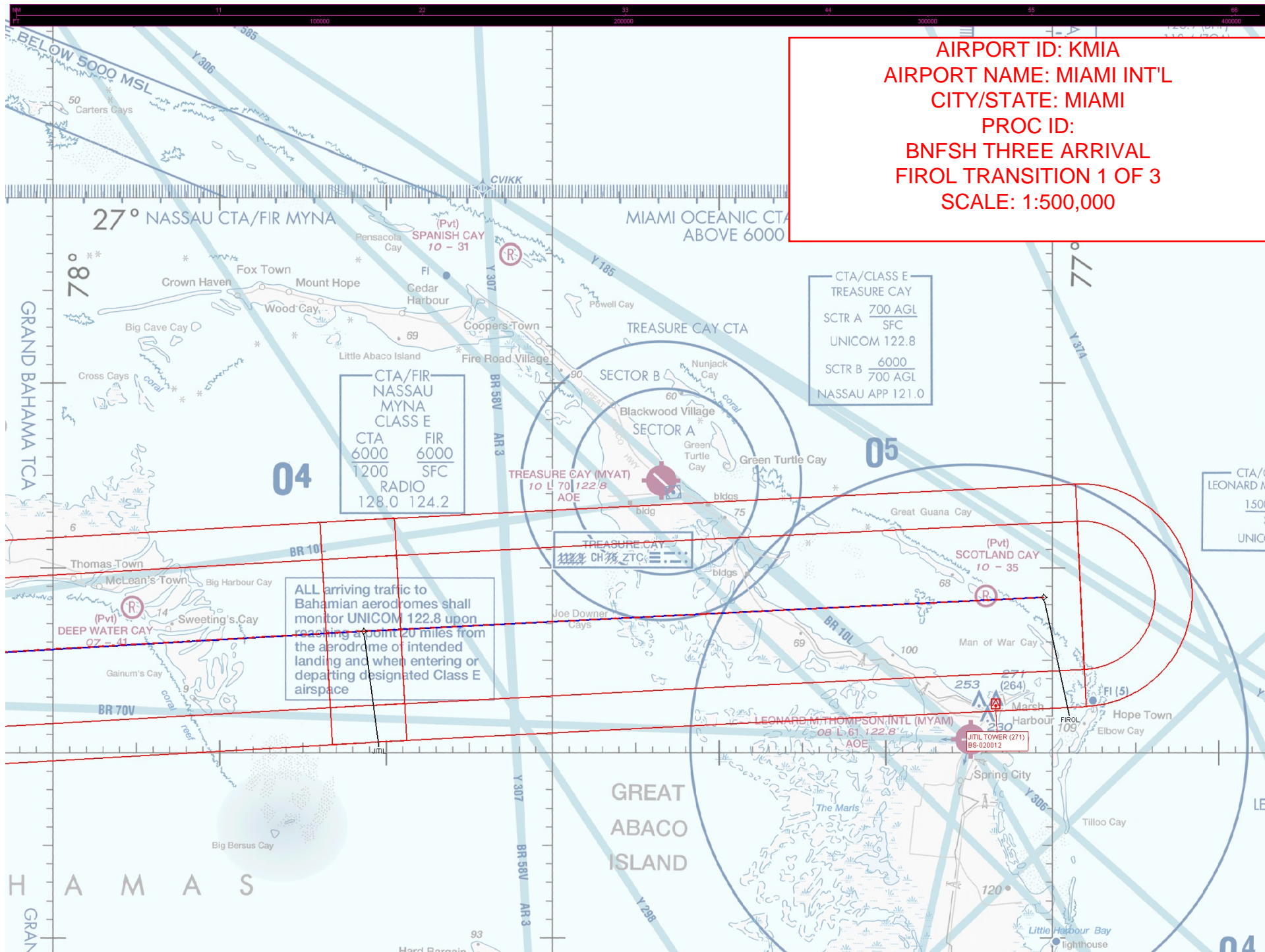
AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI
PROC ID:
BNFSH THREE ARRIVAL
MORME TRANSITION 2 OF 2
SCALE: 1:500,000

Use QNH Nassau Intl A/D
North of 24°N below
18,000' within Nassau
CTA/FIR except within
Grand Bahama TCA use
QNH Grand Bahama Intl A/D

W-497B EXCLUDES AIRSPACE BELOW 5000 MSL

W-497B EXCLUDES AIRSPACE BELOW 5000 MSL

[illegible]



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI
PROC ID:
BNFSH THREE ARRIVAL
FIROL TRANSITION 1 OF 3
SCALE: 1:500,000

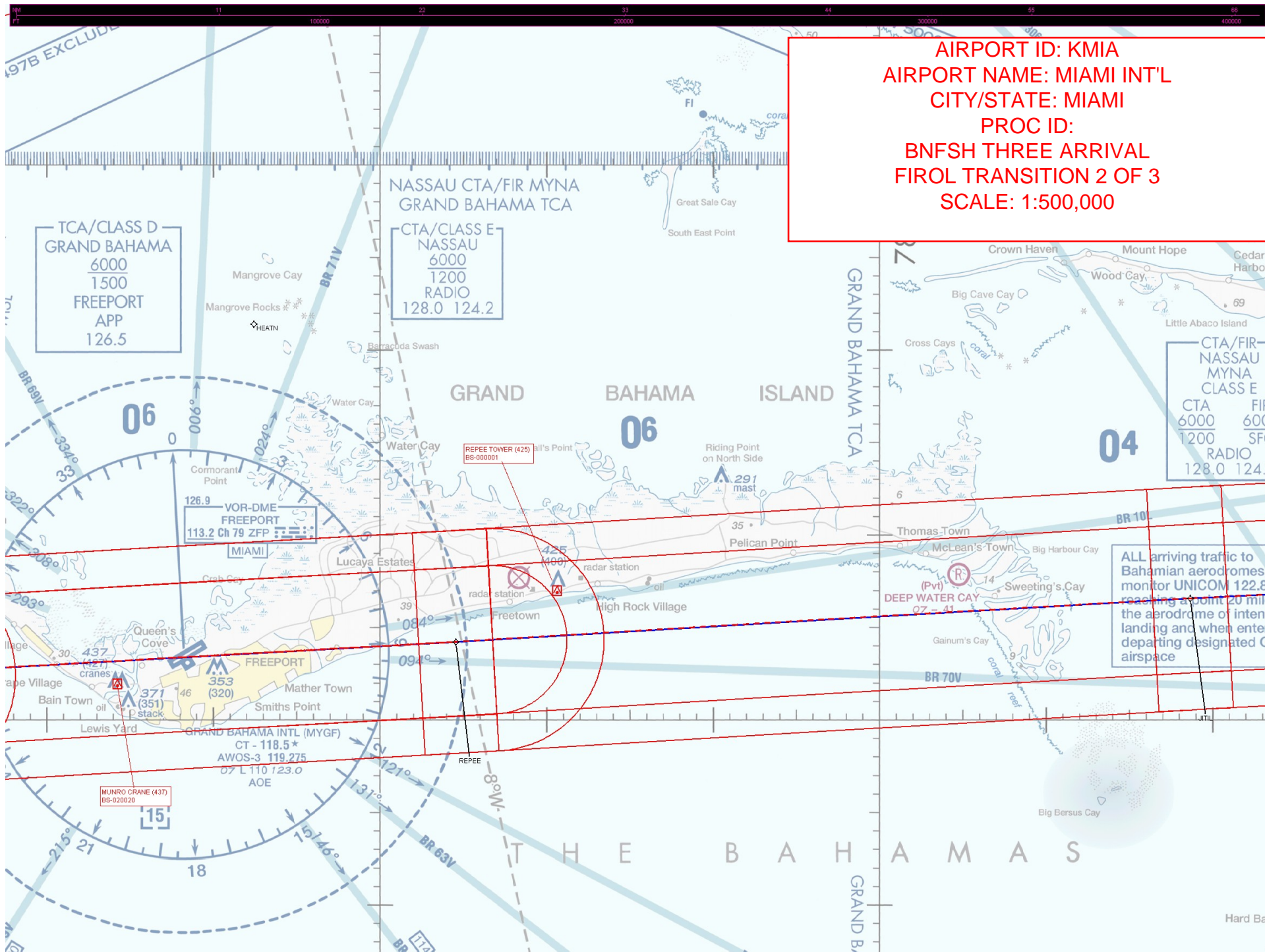
CTA/FIR
NASSAU
MYNA
CLASS E
CTA 6000
FIR 6000
RADIO 128.0 124.2

CTA/CLASS E
TREASURE CAY
SCTR A 700 AGL
SFC
UNICOM 122.8
SCTR B 6000
700 AGL
NASSAU APP 121.0

ALL arriving traffic to
Bahamian aerodromes shall
monitor UNICOM 122.8 upon
reaching a point 20 miles from
the aerodrome of intended
landing and when entering or
departing designated Class E
airspace

CTA/C
LEONARD M.
1500
S
UNICOM

INTL TOWER (271)
BS-020012



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI
PROC ID:
BNFSH THREE ARRIVAL
FIROL TRANSITION 2 OF 3
SCALE: 1:500,000

TCA/CLASS D
GRAND BAHAMA
6000
1500
FREEPORT
APP
126.5

NASSAU CTA/FIR MYNA
GRAND BAHAMA TCA

CTA/CLASS E
NASSAU
6000
1200
RADIO
128.0 124.2

CTA/FIR
NASSAU
MYNA
CLASS E
CTA
6000
1200
RADIO
128.0 124.2

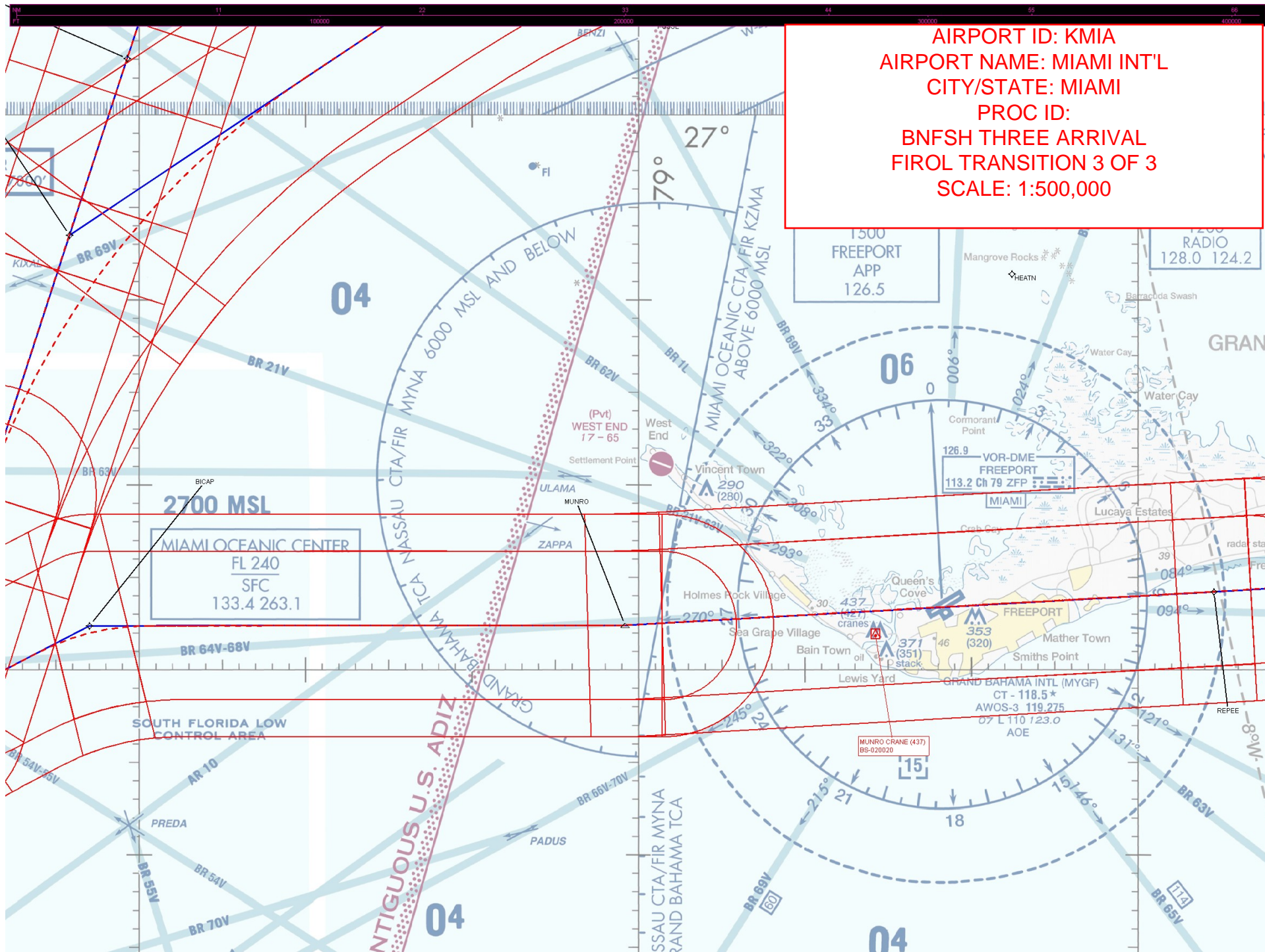
126.9 VOR-DME
FREEPORT
113.2 Ch 79 ZFP
MIAMI

REPEE TOWER (425)
BS-000001

MUNRO CRANE (437)
BS-020020

ALL arriving traffic to
Bahamian aerodromes
monitor UNICOM 122.8
reaching airport 20 miles
the aerodrome of intent
landing and when entering
departing designated C
airspace

GRAND BAHAMA INTL (MYGF)
CT - 118.5*
AWOS-3 119.275
07 L 110 123.0
AOE



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI INT'L
CITY/STATE: MIAMI/FLORIDA
PROC ID: BONEFISH THREE
ARRIVAL
(ENRGY-BNFSH TO THE BEGINNING OF THE RUNWAY TRANSITIONS)
SCALE: 1:500,000

CTC MIAMI APP WITHIN 20 NM ON 119.7 306.3

CTC MIAMI APP WITHIN 20 NM ON 128.6 306.975

CAUTION
HEAVY VOLUME JET TRAFFIC
DESCENDING TO 5000'
CTC MIA APP 128.6 ZMA 135.6

MIAMI OCEANIC CENTER
FL 240
SFC
133.85 319.1

SOUTH FLORIDA LOW CONTROL AREA

CONTIGUOUS U.S. ADIZ

Fort Lauderdale-Hollywood Intl (FLL)
CT-119.3 ATIS 135.0
65 L 90 122.95 AOE

Fort Lauderdale Exec (FXE)
CT-120.9 ATIS 119.85
13 L 60 122.95

Miami Intl (MIA)
CT-118.3 ATIS 123.9
09 L 130 123.0 AOE

MIAMI BEACH
482 UC
122.8 123.025 AOE

VIRODME
122.2
FORT LAUDERDALE
114.4 Ch 91 FLL

CTC MIAMI APP WITHIN 20 NM ON 125.2 343.6

CTC MIAMI APP WITHIN 20 NM ON 119.7 306.3

CTC MIAMI APP WITHIN 20 NM ON 128.6 306.975

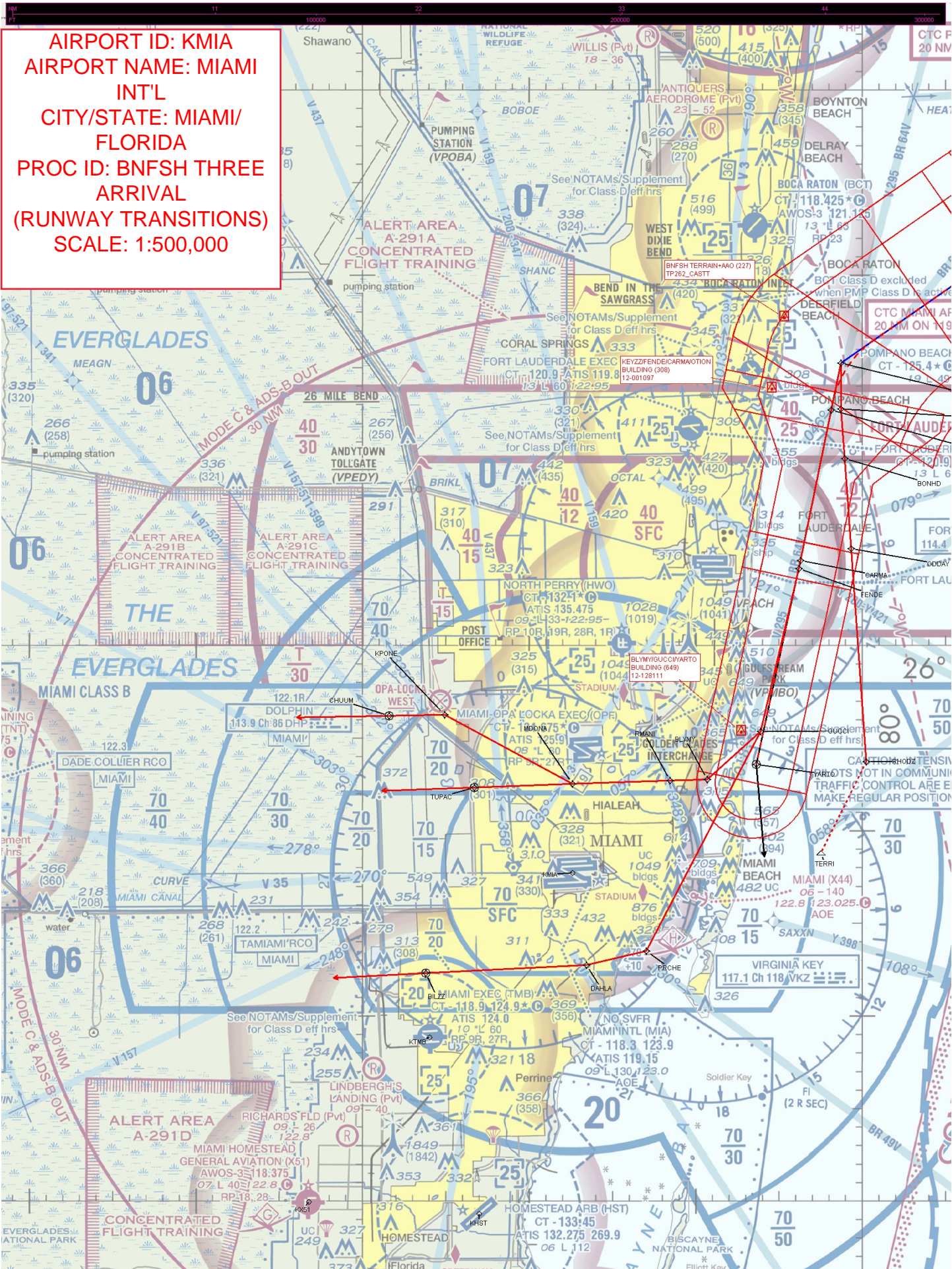
CAUTION
HEAVY VOLUME JET TRAFFIC
DESCENDING TO 5000'
CTC MIA APP 128.6 ZMA 135.6

MIAMI OCEANIC CENTER
FL 240
SFC
133.85 319.1

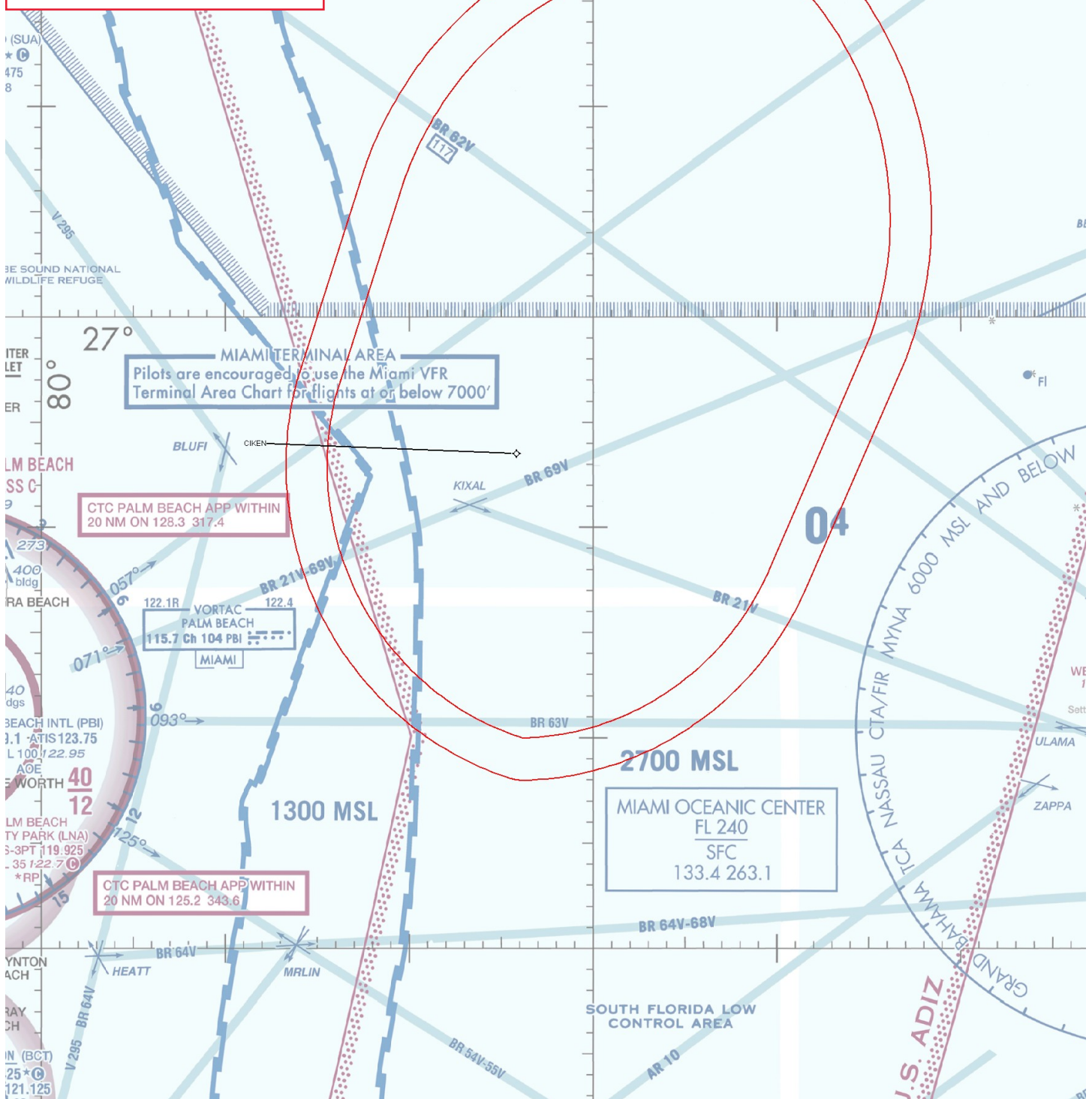
SOUTH FLORIDA LOW CONTROL AREA

CONTIGUOUS U.S. ADIZ

AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(RUNWAY TRANSITIONS)
SCALE: 1:500,000



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(CIKEN HOLDING
FL200-FL450)
SCALE: 1:500,000



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(ENRGY HOLDING
13000-16000)
SCALE: 1:500,000

MIAMI TERMINAL AREA
Pilots are encouraged to use the Miami VFR Terminal Area Chart for flights at or below 7000'

CTC PALM BEACH APP WITHIN 20 NM ON 128.3 317.4

ENRGY HP TRAVERSE_WAY (207) 12-079507

2700 MSL
MIAMI OCEANIC CENTER
FL 240
SFC 133.4 263.1

1300 MSL

CTC PALM BEACH APP WITHIN 20 NM ON 125.2 349.0

CTC MIAMI APP WITHIN 20 NM ON 119.3 306.3

CTC MIAMI APP WITHIN 20 NM ON 128.6 306.975

CAUTION: INTENSIVE VFR TRAFFIC
PILOTS NOT IN COMMUNICATION WITH AIR TRAFFIC CONTROL ARE ENCOURAGED TO MAKE REGULAR POSITION REPORTS ON 123.025

CAUTION
HEAVY VOLUME JET TRAFFIC DESCENDING TO 5000'
CTC MIA APP 128.6 ZMA 135.6

MIAMI OCEANIC CENTER
FL 240

U.S. ADIZ

CONTIGUOUS U.S. ADIZ

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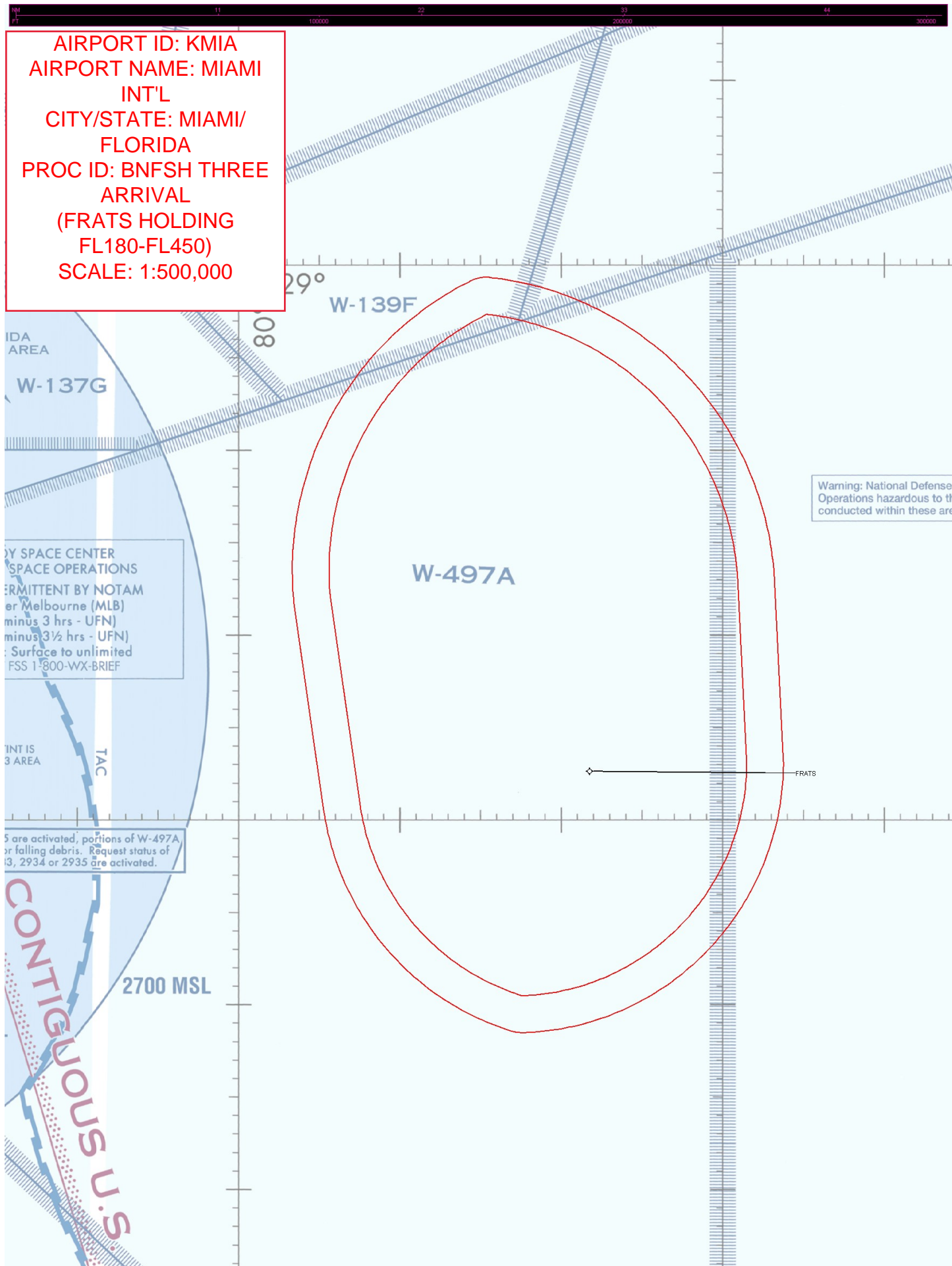
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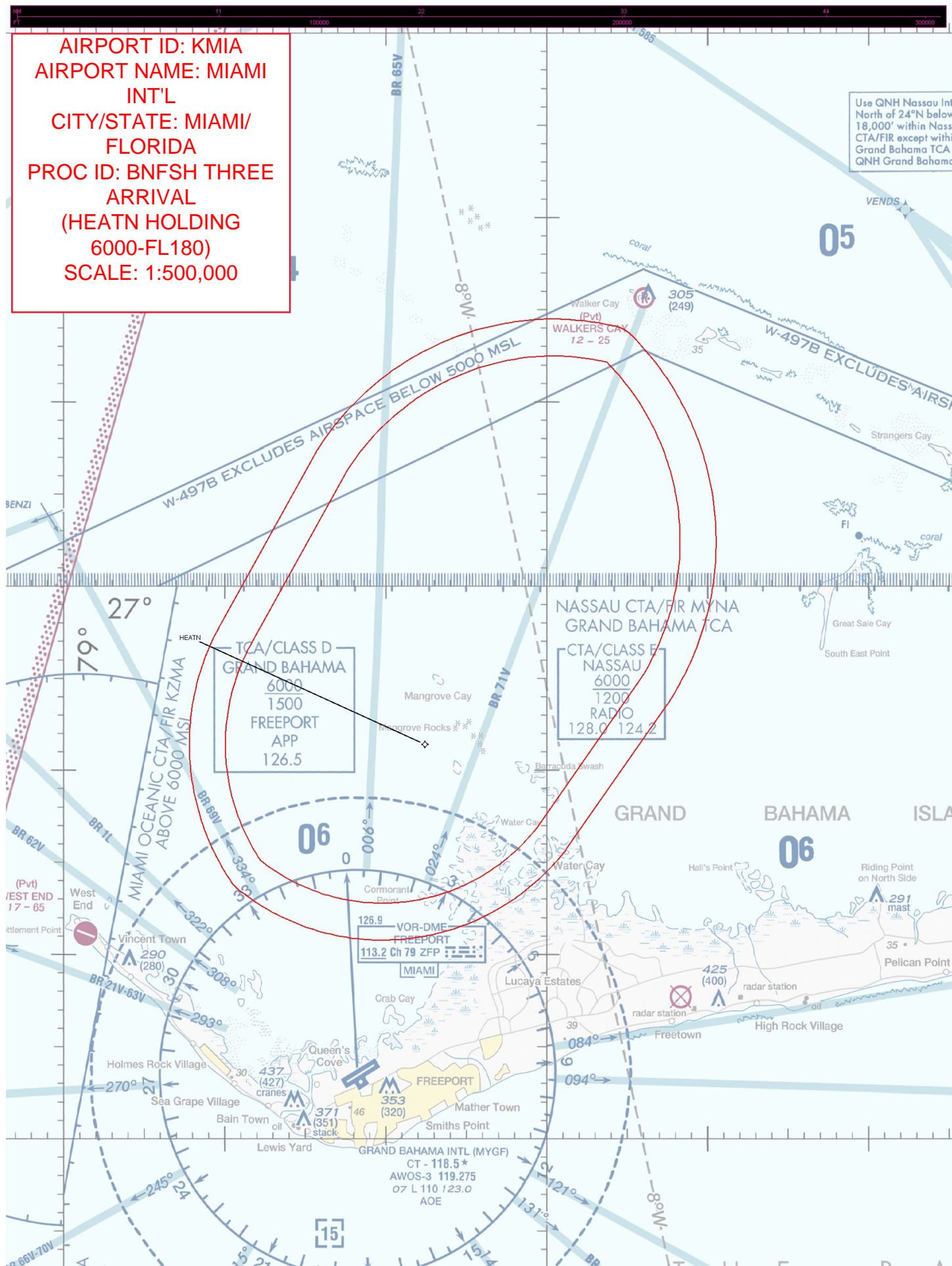
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AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(FRATS HOLDING
FL180-FL450)
SCALE: 1:500,000

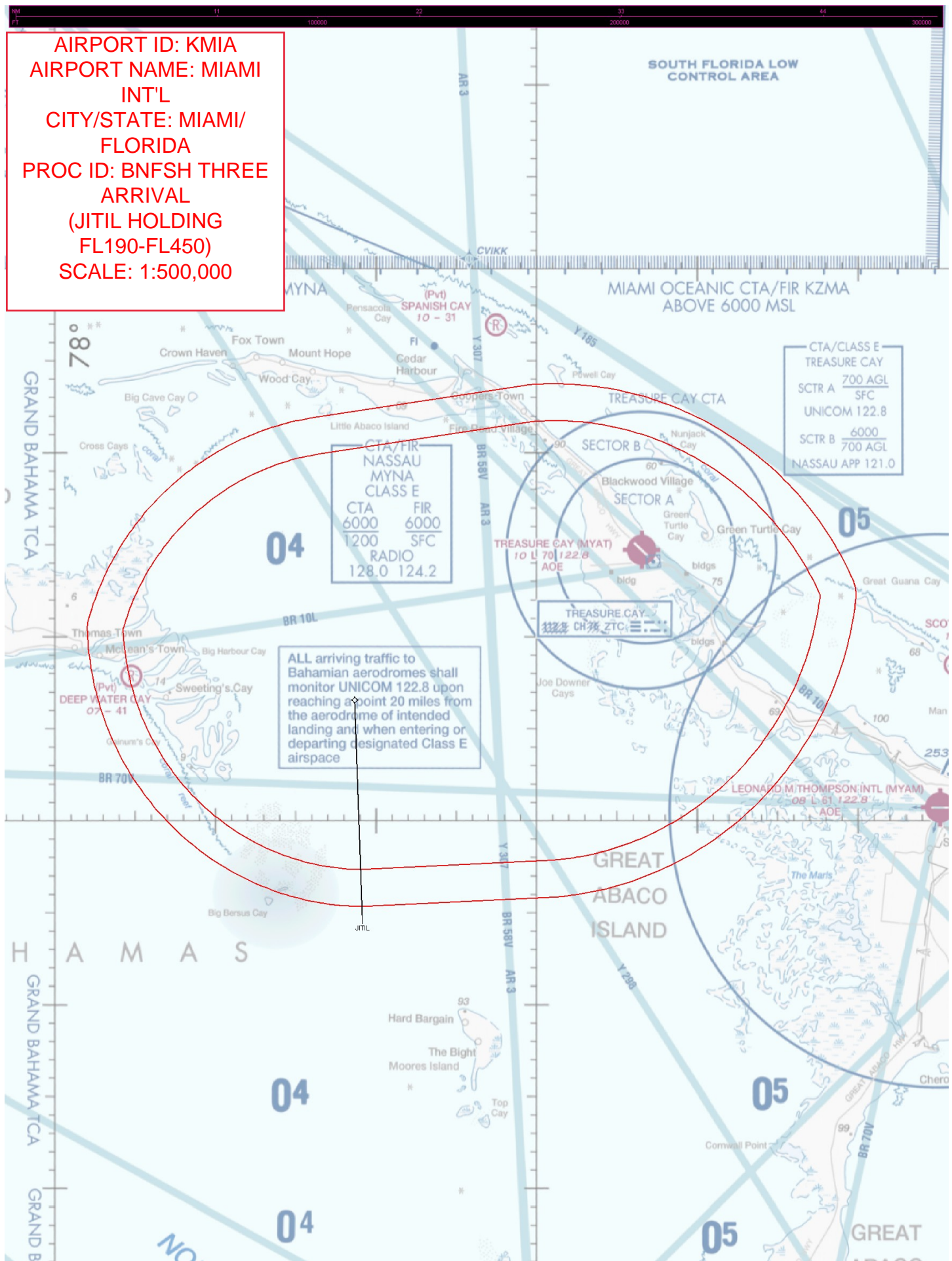


AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(HEATN HOLDING
6000-FL180)
SCALE: 1:500,000

Use QNH Nassau Int
North of 24°N below
18,000' within Nass
CTA/FIR except withi
Grand Bahama TCA
QNH Grand Bahama



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFTH THREE
ARRIVAL
(JITIL HOLDING
FL190-FL450)
SCALE: 1:500,000



AIRPORT ID: KMIA
 AIRPORT NAME: MIAMI
 INT'L
 CITY/STATE: MIAMI/
 FLORIDA
 PROC ID: BNFSH THREE
 ARRIVAL
 (JORAY HOLDING
 FL220-FL450)
 SCALE: 1:500,000

Use Operating Areas
 to the flight of aircraft
 areas.

W-497B

JORAY

SOUTH FLORIDA
 LOW CONTROL AREA

2700 MSL

29° 28° 27°

79° 79° 78°

AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(MOGAE HOLDING
FL180-FL450)
SCALE: 1:500,000

97B

2700 MSL

Warning: National Defense Operating Areas
Operations hazardous to the flight of aircraft
conducted within these areas.

ADIZ

BR 62V
117

A 839

MOGAE

BENZI

MIAMI TERMINAL AREA
e encouraged to use the Miami VFR
Area Chart for flights at or below 7000'

JFI
H APP WITHIN
317.4

KIXAL

BR 69V

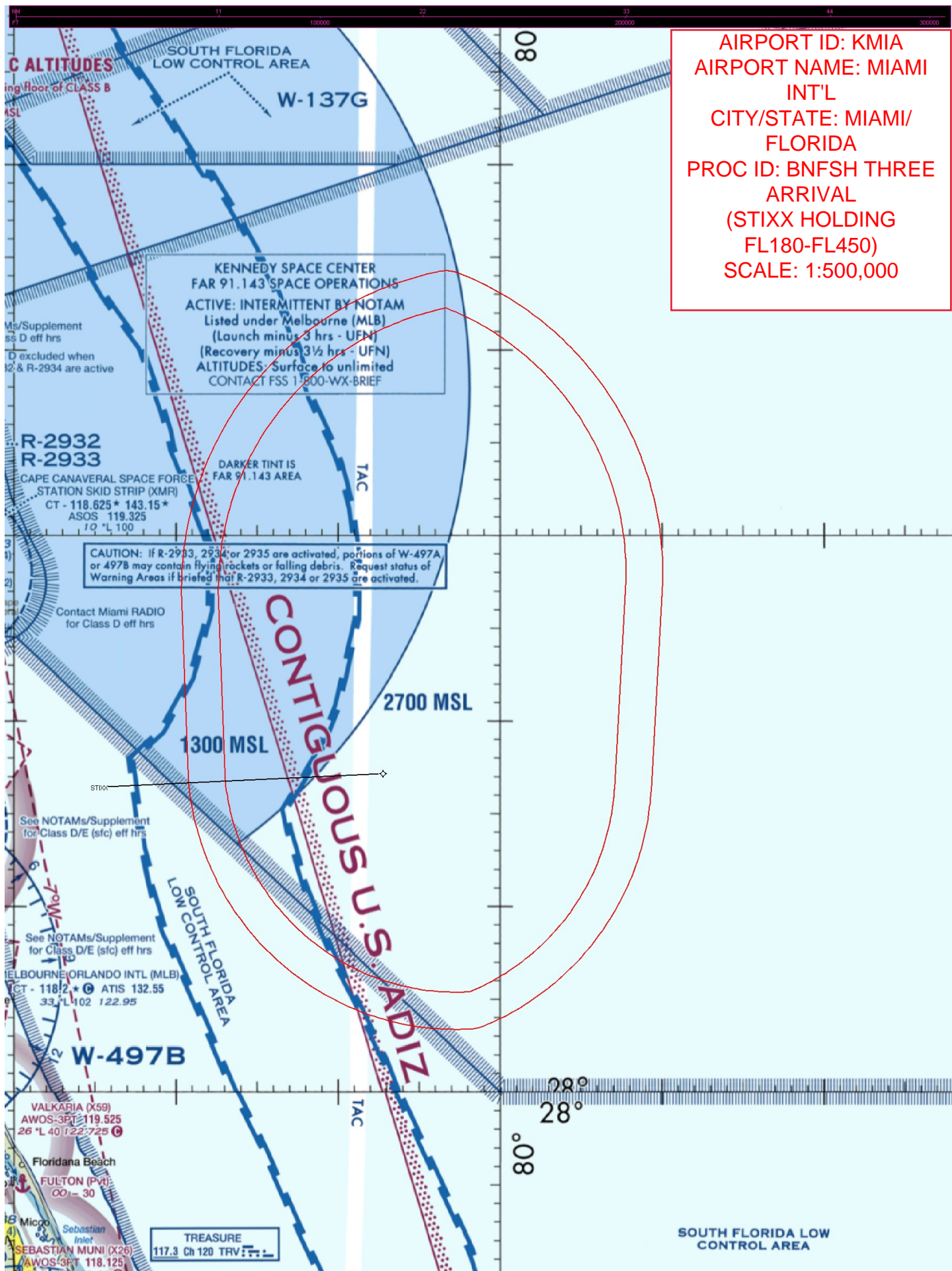
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MSL AND BELOW

27°
79°

NIC CTA/FIR K7A
6000

[illegible]



AIRPORT ID: KMIA
AIRPORT NAME: MIAMI
INT'L
CITY/STATE: MIAMI/
FLORIDA
PROC ID: BNFSH THREE
ARRIVAL
(STIXX HOLDING
FL180-FL450)
SCALE: 1:500,000