ANALISIS REORGANIZACIONAL
DEL ESPACIO AEREO
CENTROAMERICANO

BELIZE PBN
ROADMAP 2016+

ICAO
Taller regional de análisis reorganizacional del Espacio Aéreo Centroamericano

Mexico City, Mexico, 15 to 19 February 2016

By: Gilberto Torres, Belize, DCA Deputy Director

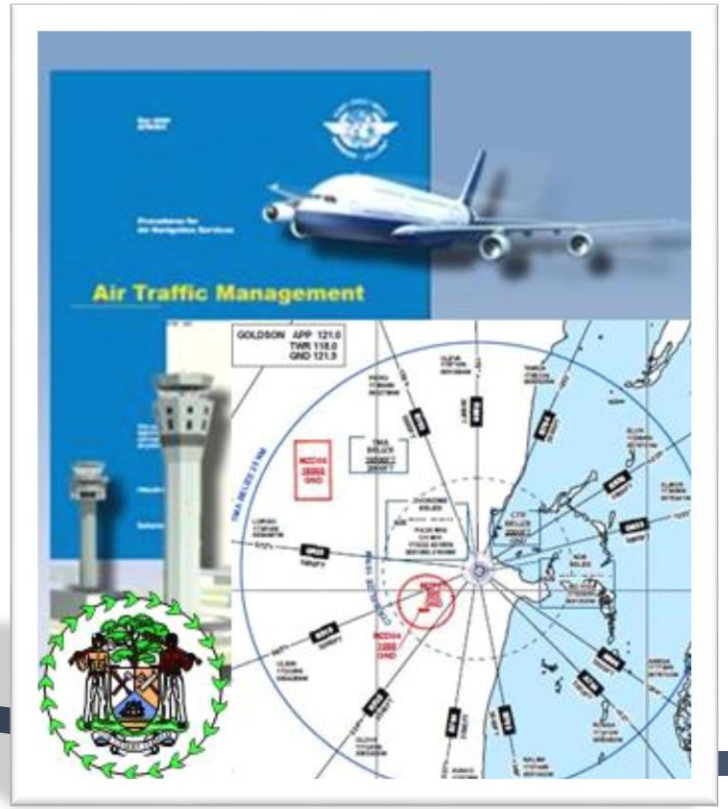
FEBRERO 2016

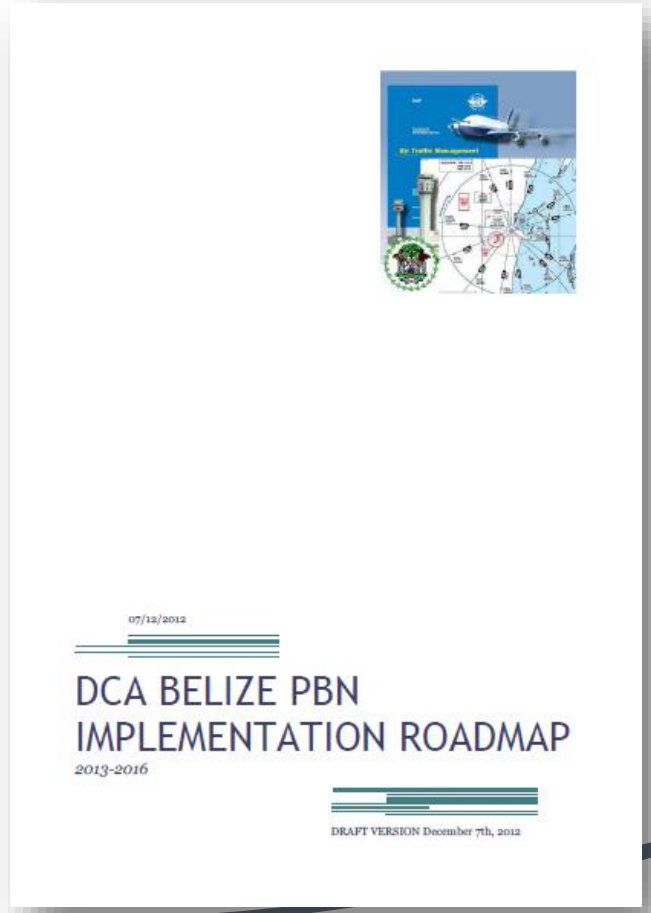
ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

ARESAC
UN ESPACIO SIN FRONTERAS

INTRODUCTION

DCA BELIZE PBN IMPLEMENTATION ROADMAP





ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

- Based on the actual situations in Belize, this Roadmap specifies the policies and overall work plan of the DCA on PBN implementation up to 2016, provides guidance to the stakeholders and facilitates worldwide harmonization of aviation standards and international cooperation. The DCA encourages comments from all participants in the nation's air transportation system to update and improve the Roadmap during implementation in order to keep pace with the actual requirements of developing civil aviation in Belize.

PURPOSE OF THE BELIZE PBN ROADMAP

- ICAO has reached a consensus with the contracting States and other international organizations that PBN represents the main trend of future global navigation technology. Belize provides this PBN Roadmap to ensure consistency between RNAV and RNP operations in Belize and the concept of PBN; provide guidance on PBN implementation for the regulatory authorities, air operators, air navigation service providers, and airports; provide planning for future air navigation development for the entire industry; and assist the stakeholders in formulating their transition plans and investment strategies.

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

- Belize has delegated its PANS OPS and Airspace Redesign project to COCESNA which has become the Service Provider and in charge of providing the required review and design of airspace and procedures based on BDCA requests.
- Recently an audit was made to guarantee that the service provider complies with all regulations according to BCARs.

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

- Belize acts as regulator of the PANS-OPS service provider and making sure through audits that all quality assurance procedures and Belize requirements are met.
- COCESNA as PANS OPS provider started working on Belize airspace redesign according to Belize airspace requirements and operational needs. This has been done through analysis of radar tracks, flows, FPL and historical data.

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

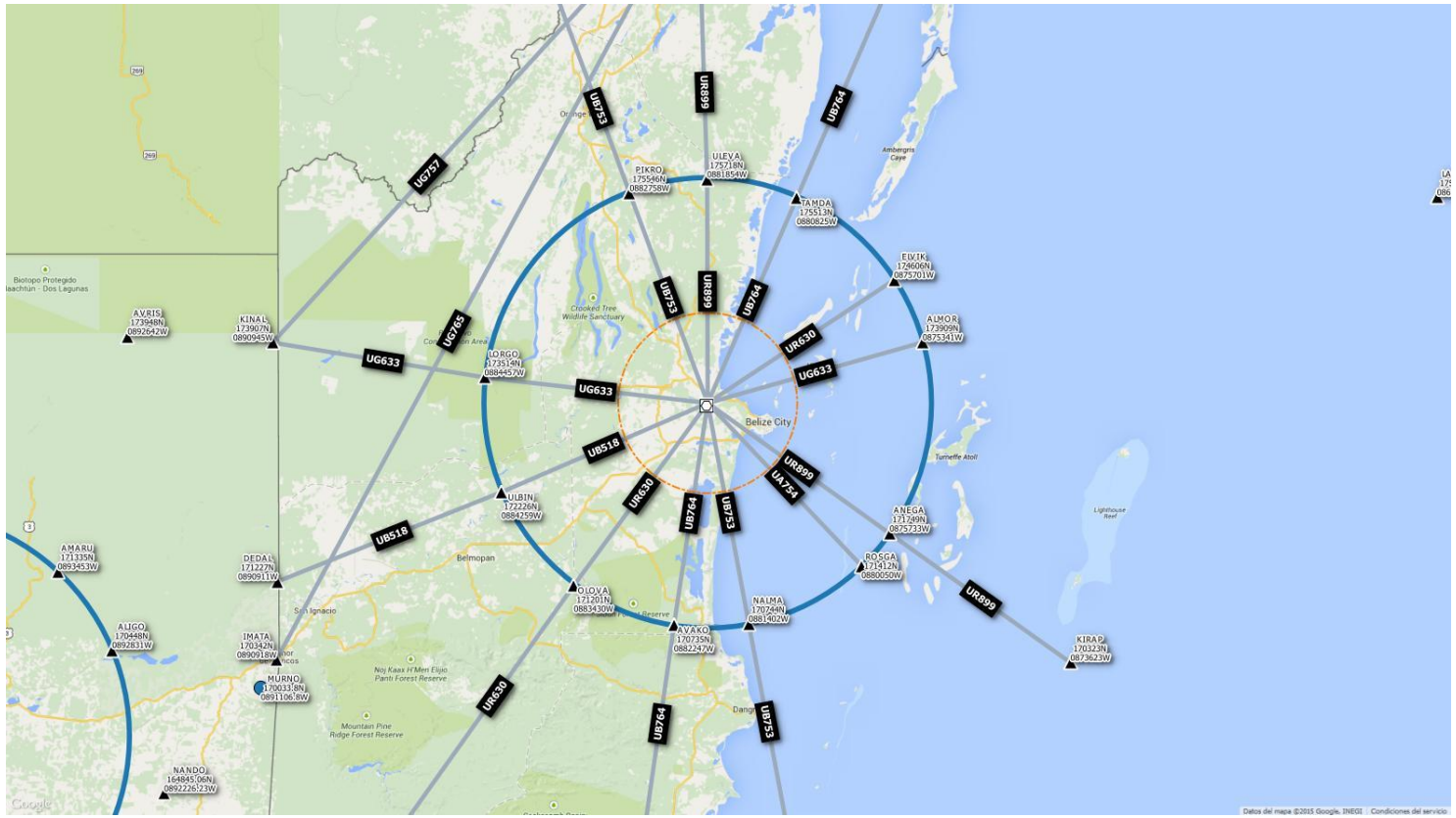
- From the analysis gathering phase it was determined that 90%+ of traffic into Belize enters from the North specifically through PIKRO and TAMDA.
- Aircraft from international carriers are PBN capable and able to fly the procedures once published.

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

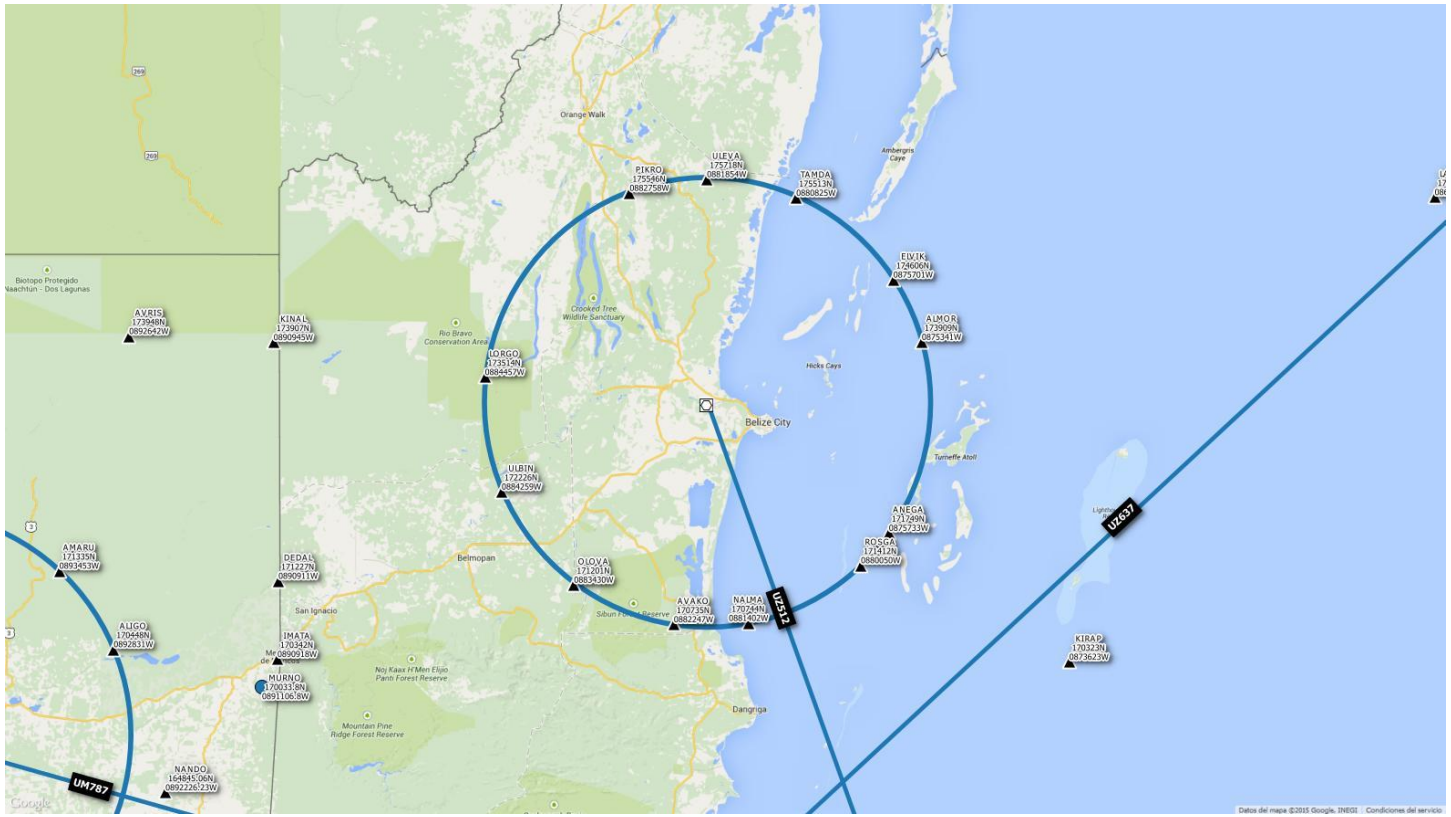
ARESAC
UN ESPACIO SIN FRONTERAS

COCESNA

ATS Routes



RNAV Routes


PIKRO
175546N
0882758W
ULEVA
175718N
0881854W
TAMDA
175513N
0880825W
EIVIK
172606N
0875701W
ALMOR
173909N
0875341W
AVRIS
173948N
0892642W
KINAL
173907N
0890945W
LORGO
173514N
0884457W
ULBIN
172226N
0884259W
Belize City
ANEGA
171249N
0875733W
ROSGA
171412N
0880050W
OLOVA
171201N
0883430W
AVAKO
170735N
0882247W
NALMA
170744N
0881402W
UZ513
UZ637
AMARU
171335N
0893453W
DEDAL
171227N
0890911W
Belmopan
ALIGO
170448N
0892831W
IMATA
170342N
0890918W
MURNO
170033?N
0891106?W
KIRAP
170323N
0873623W
NANDO
164845.06N
0892226?23W
UM787
Orange Walk
San Ignacio
Dangriga

Philip S.W. Goldson Satellite Image

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

ARESAC
UN ESPACIO SIN FRONTERAS

Before implementation an AIC detailing what the plans for PBN in Belize where and the intended changes

Proposed AIC to be published by Belize

Introduction of Performance Based Navigation (PBN) in Belize Terminal Control Area (TMA)

1. Purpose

1.1 The purpose of this Circular is to provide information concerning the introduction of Performance Based Navigation (PBN) operations in Belize Terminal Control Area (TMA).

1.2 The aim is to provide aircraft operators information on Belize plans for implementation and a means to provide feedback on the proposal.

2. Background

2.1 PBN aims to ensure global standardization of RNAV and RNP specifications, traffic is increasing every day and airspace needs to be optimized as well as be used more efficiently.

2.2 Belize Civil Aviation Authority is pushing forward on its implementation to reap the benefits of PBN and comply with GANP implementation dates for the region.

3. Need for PBN in BELIZE TMA

3.1 PBN will be introduced in Belize TMA to obtain the following benefits
- 3.1.1 Increase operational safety
- 3.1.2 Fuel Savings
- 3.1.3 Direct Routes
- 3.1.4 Reduce ATS controller workload
- 3.1.5 Reduce CO2 emissions

4. PBN Implementation plans and expected changes

4.1 PBN implementation in Belize TMA (Philip S. W. Goldson Intl Airport) is planned to be done gradually in phases starting in the second trimester of 2015

4.2 PBN specifications planned to be initially used are:
- 4.2.1 Standard Instrument Departures (SID) - RNAV 1
- 4.2.2 Standard Terminal Arrival Route (STAR) - RNAV 1
- 4.2.3 Instrument Approach Procedures:
  - 4.2.3.1 RNAV (GNSS) procedures – RNP APCH (LNAV/VNAV and LNAV)
  - 4.2.3.2 ILS procedure – ILS procedure in which initial and intermediate segments will be based on RNP APCH. Use of this procedures will required approval for RNP APCH

4.3 PBN operations within Belize Airspace will be only by GNSS as no DME infraestructure is in place nor envisioned to be commissioned in the future to support DME/DME

4.4 Instrument approach procedures in place may suffer minor changes to align as close as possible to new PBN procedures and/or be removed if they are deemed no longer neccesary.

4.5 Procedures will be promulgated by AIRAC AIP Amendments with two (2) AIRAC cycles of anticipation of its effective date.

5. Information for operators not able to meet PBN specification

5.1 Aircraft and operators unable to meet PBN specifications will be able to continue to fly within the Belize TMA provided the use of procedures based on navaids and/or radar vectoring. However this aircraft may need to fly longer distances or altitude restrictions.

5.2 In the future depending on the traffic density and increase of operations flying into Philip S. W. Goldson International Airport priority may be needed to be given to aircraft that comply with PBN specification over those that aren't

6. Flight Planning

[redacted]

6.1 Aircraft operators shall strictly follow ICAO Flight Plan requirements in force, specially those regarding Performance Based Navigation (PBN)

6.2 Aircraft approval to perform RNAV and/or RNP navigation specifications shall be indicated in item 10 of the Flight Plan by inserting the letter **'R'**

6.3 Flight plan item 18 shall be detailed accordingly to the RNAV/RNP specifications capacity on board.

7. Additional Information or feedback

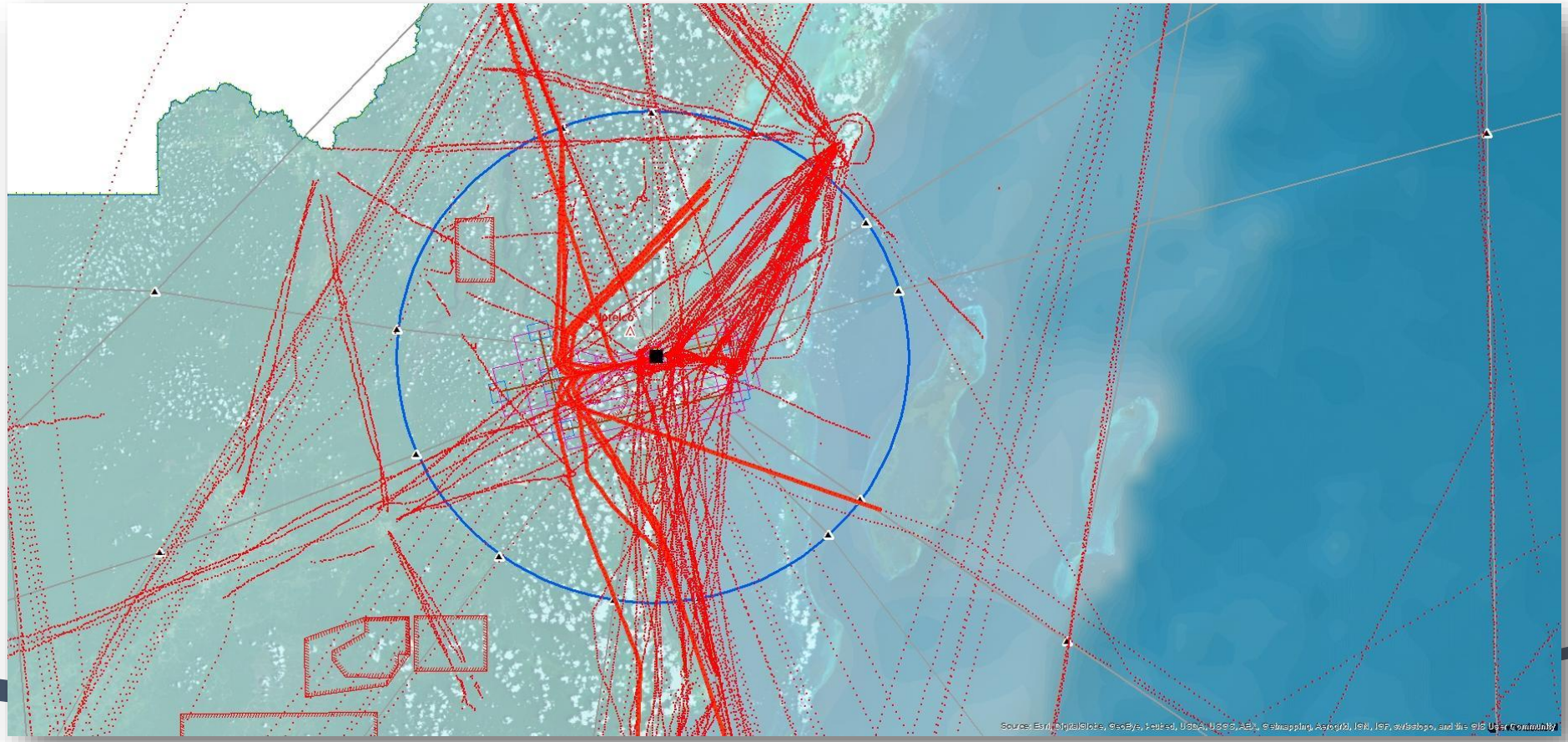
7.1 Belize Civil Aviation Authoriy provides the following email as communication channel to

DESIGN PHASE

- The follow slides show us different steps to evaluate, to design and suggest some new approaches to the Philip S W Goldson International Airport of Belize, including the conventional SID procedures and, mainly, the new RNAV GNSS RWY 07.
- These procedures became operational on Dec 10th,2015 as planned.

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

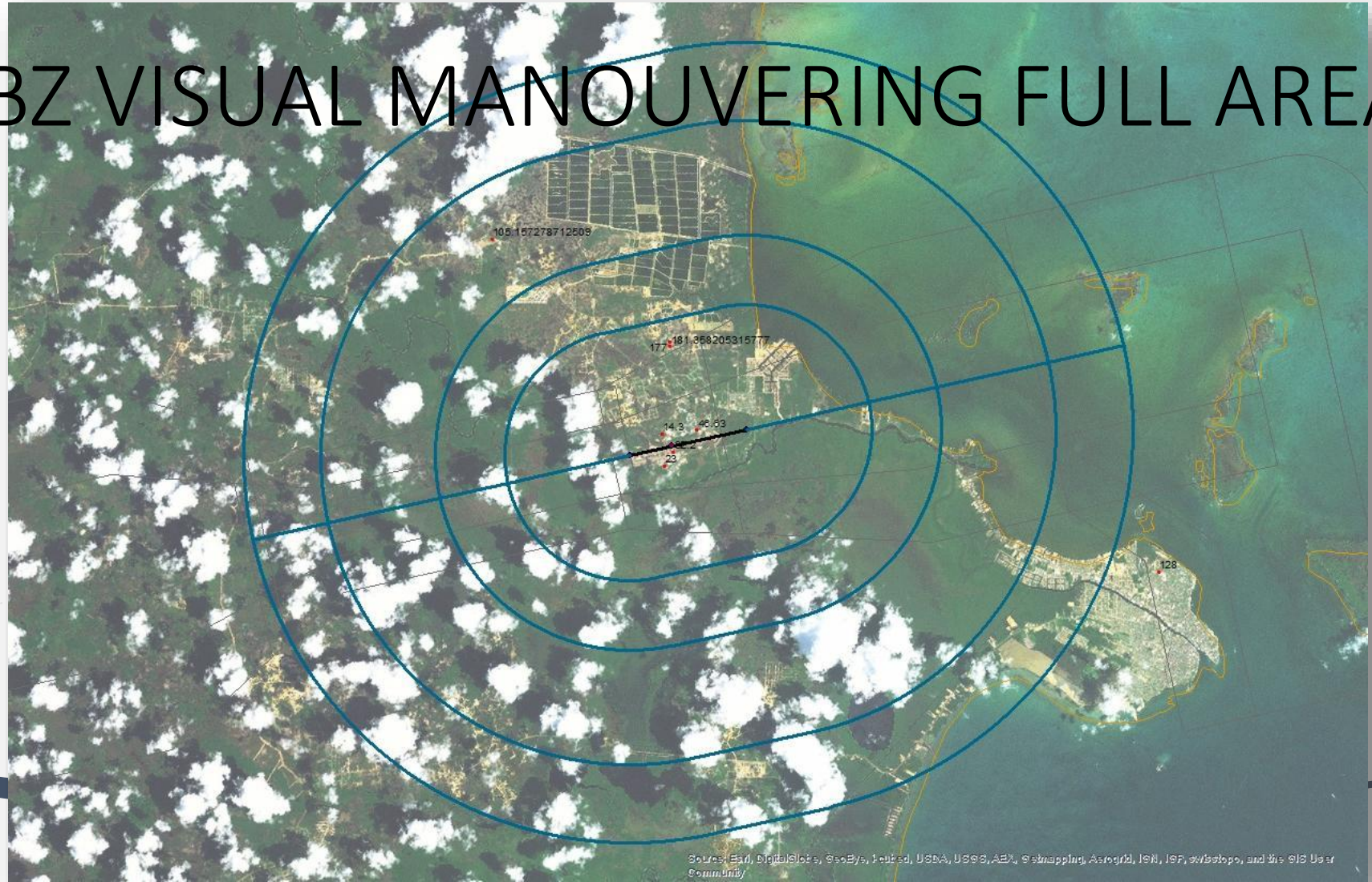
BELIZE RADAR TRACK EXAMPLE



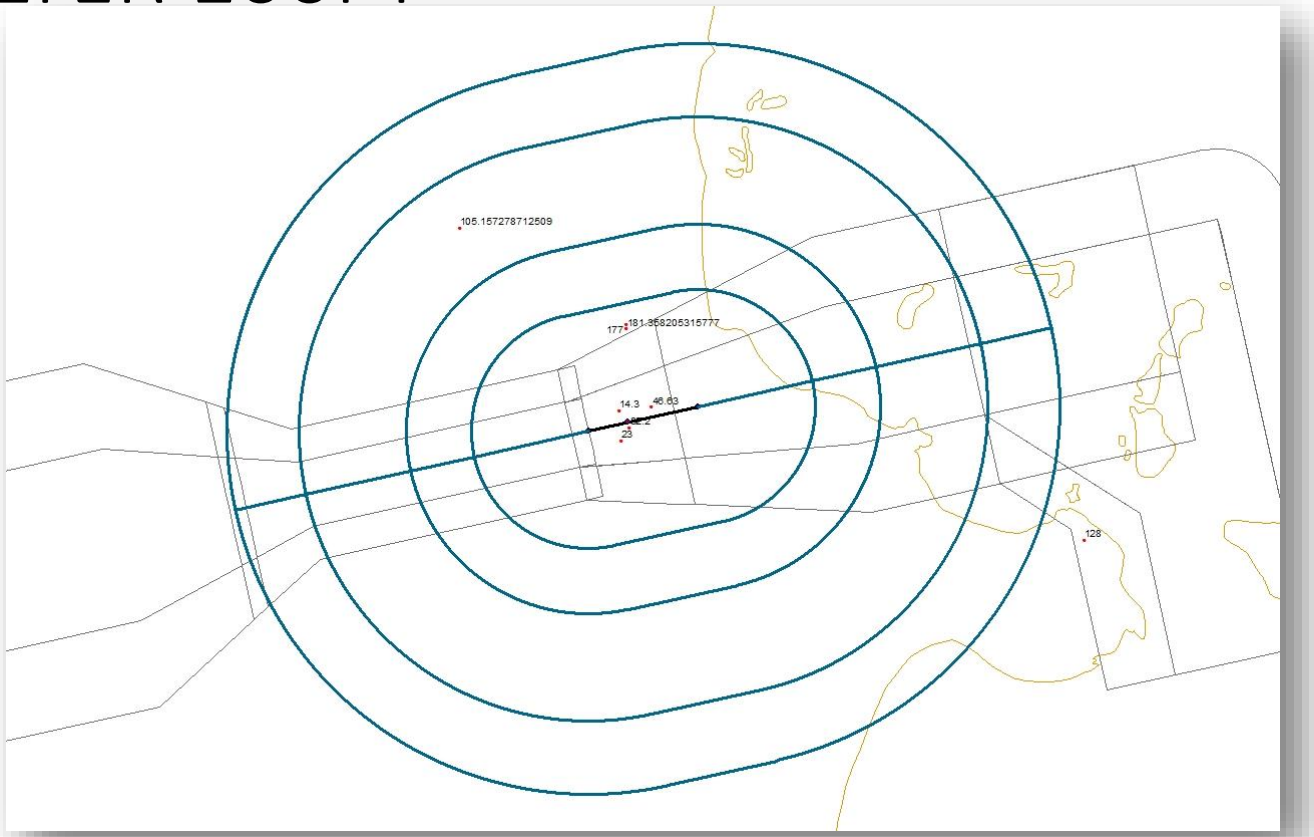
ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

ARESAC
UN ESPACIO SIN FRONTERAS

MZBZ VISUAL MANOUVERING FULL AREA



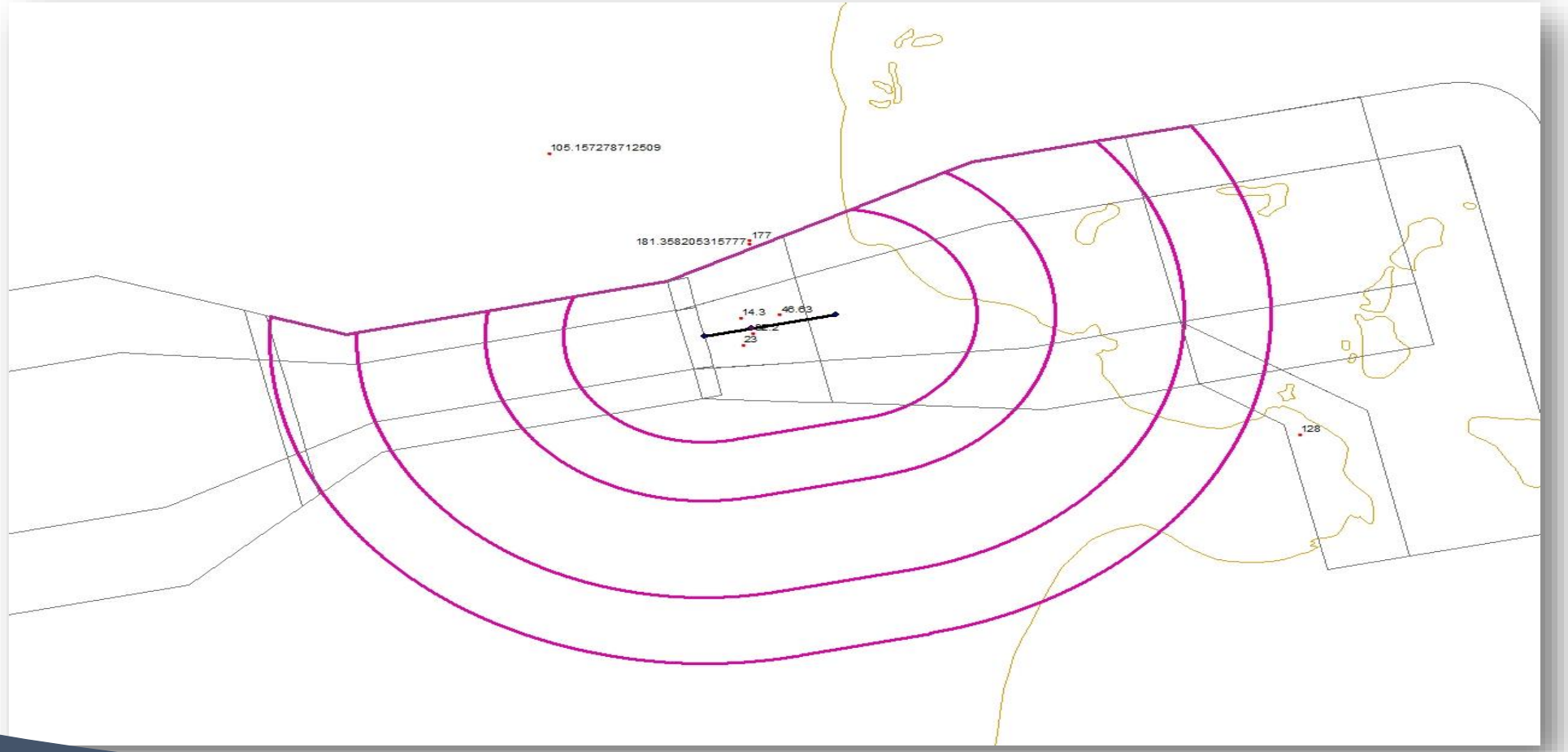
MZBZ VISUAL MANOUVERING FULL AREA TERRAIN FILTER 100FT



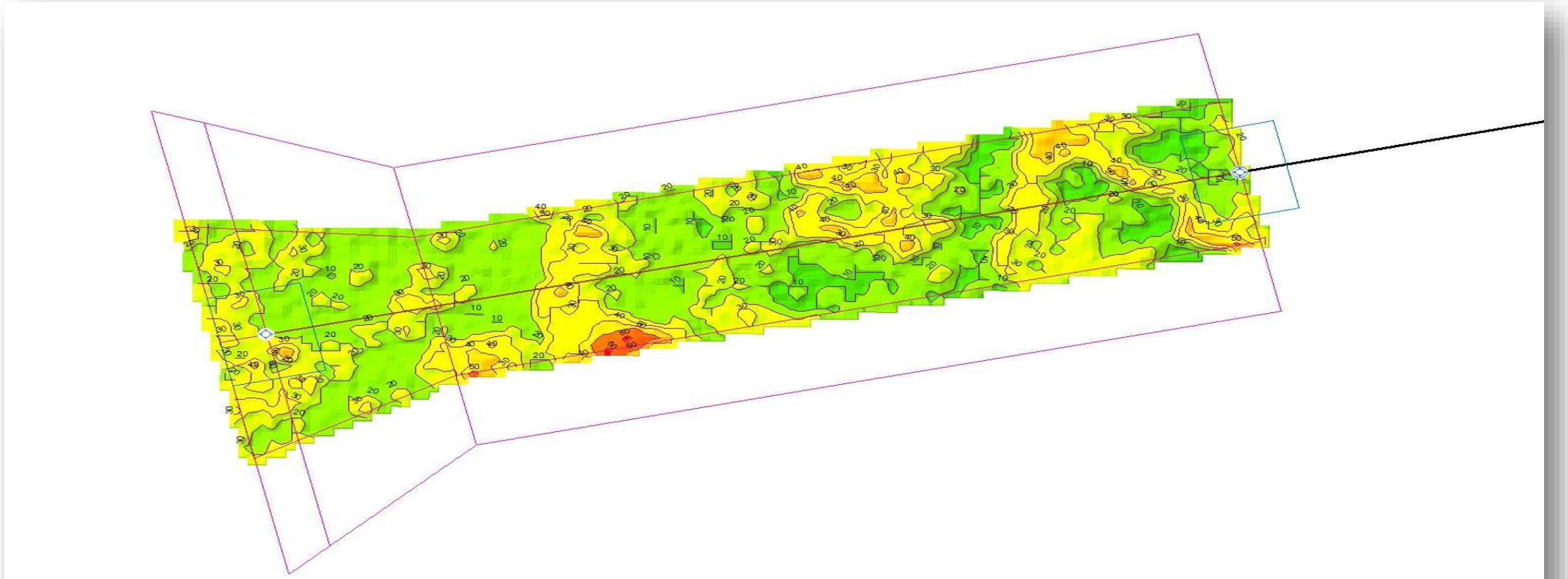
ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

ARESAC
UN ESPACIO SIN FRONTERAS

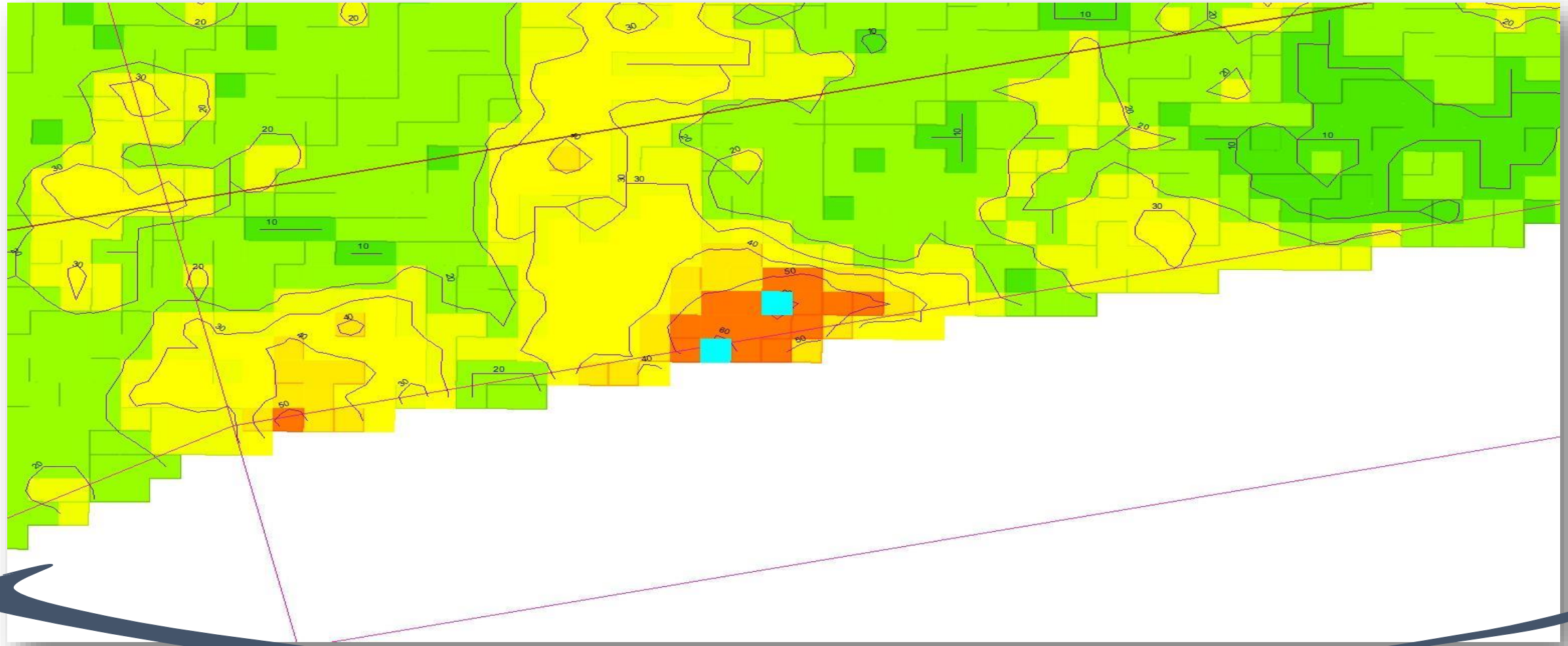
MZBZ VISUAL MANOUVERING RNAV GNSS RESTRICTED NORTH



FAS PRIMARY AREA SRTM DATA 10FT

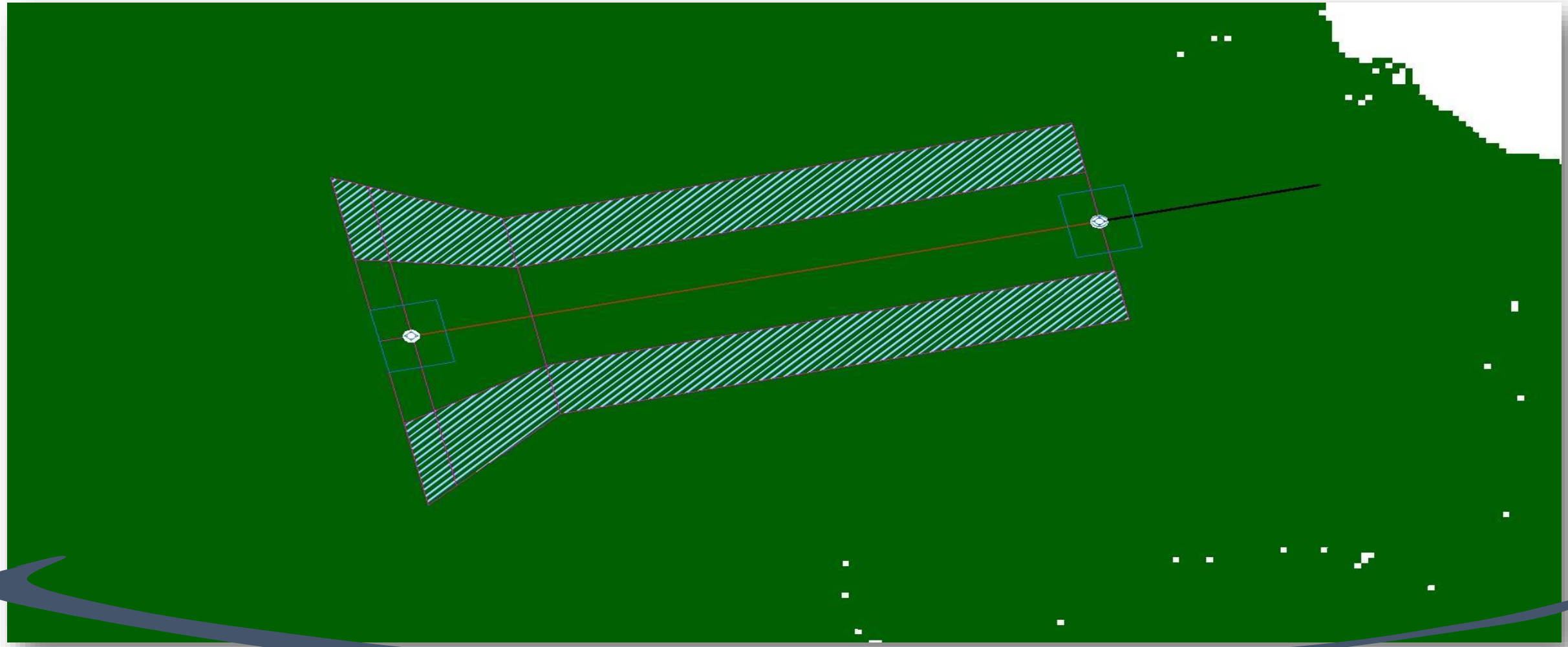


FAS PRIMARY AREA SRTM DATA 10FT CONTROL TERRAIN

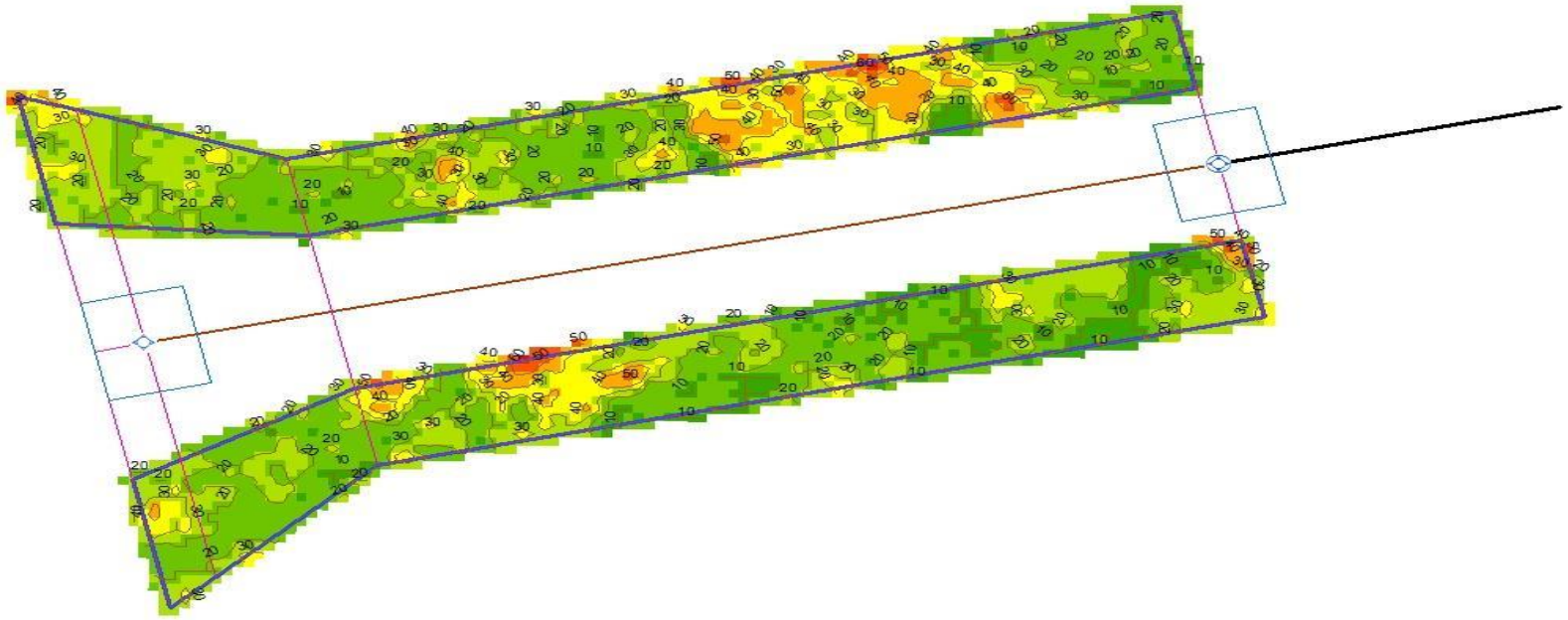


FAS SECONDARY AREAS

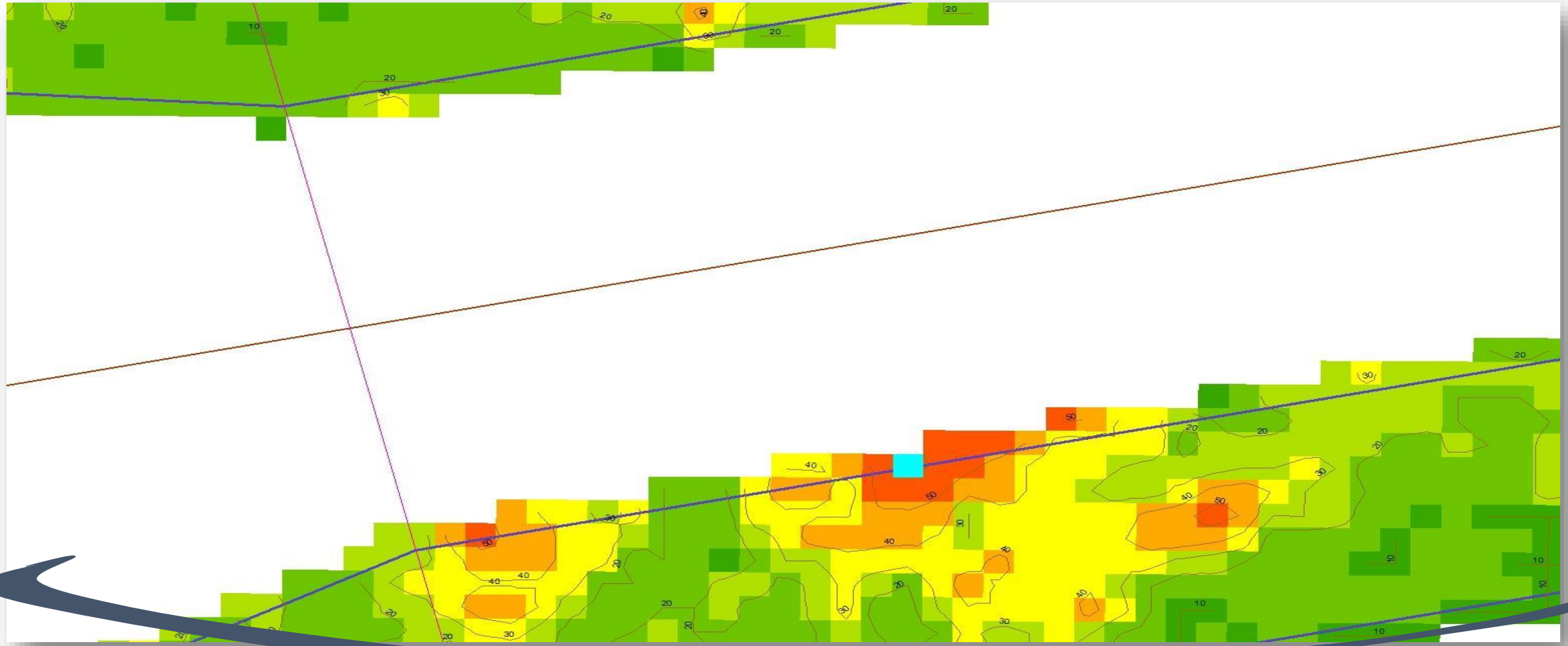
FAS SECONDARY AREAS SRTM DATA



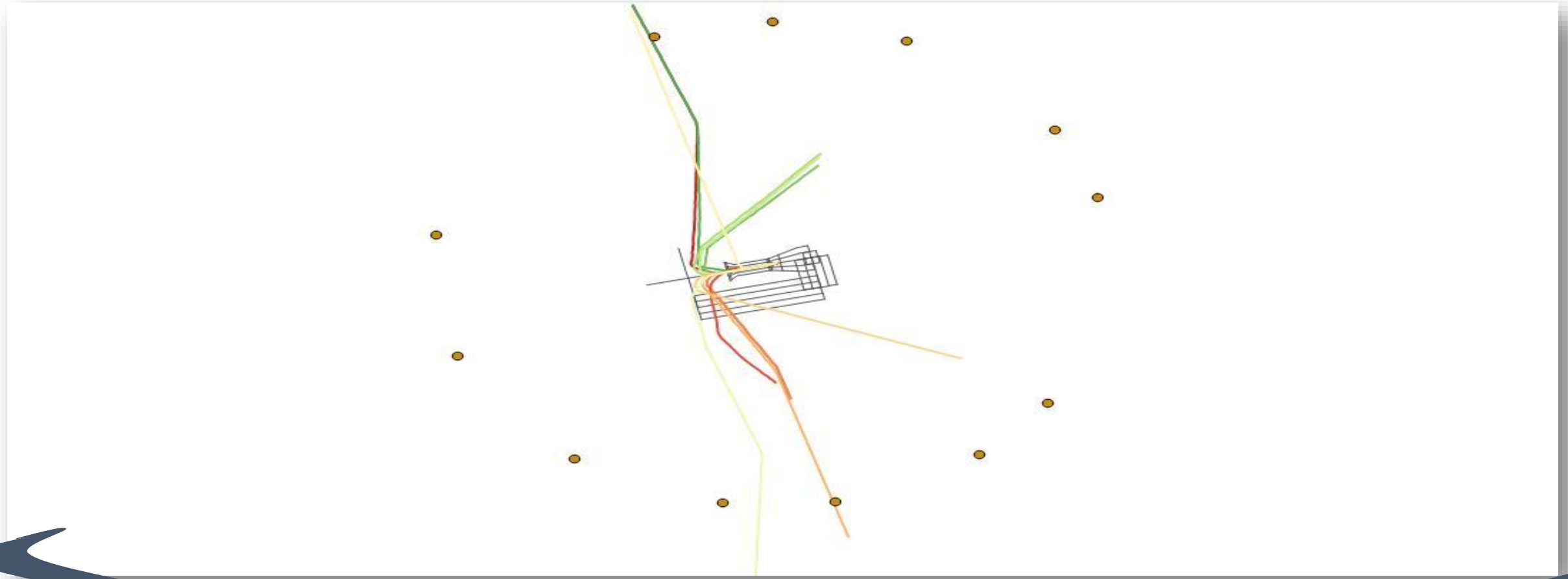
FAS SECONDARY AREAS SRTM DATA 10FT



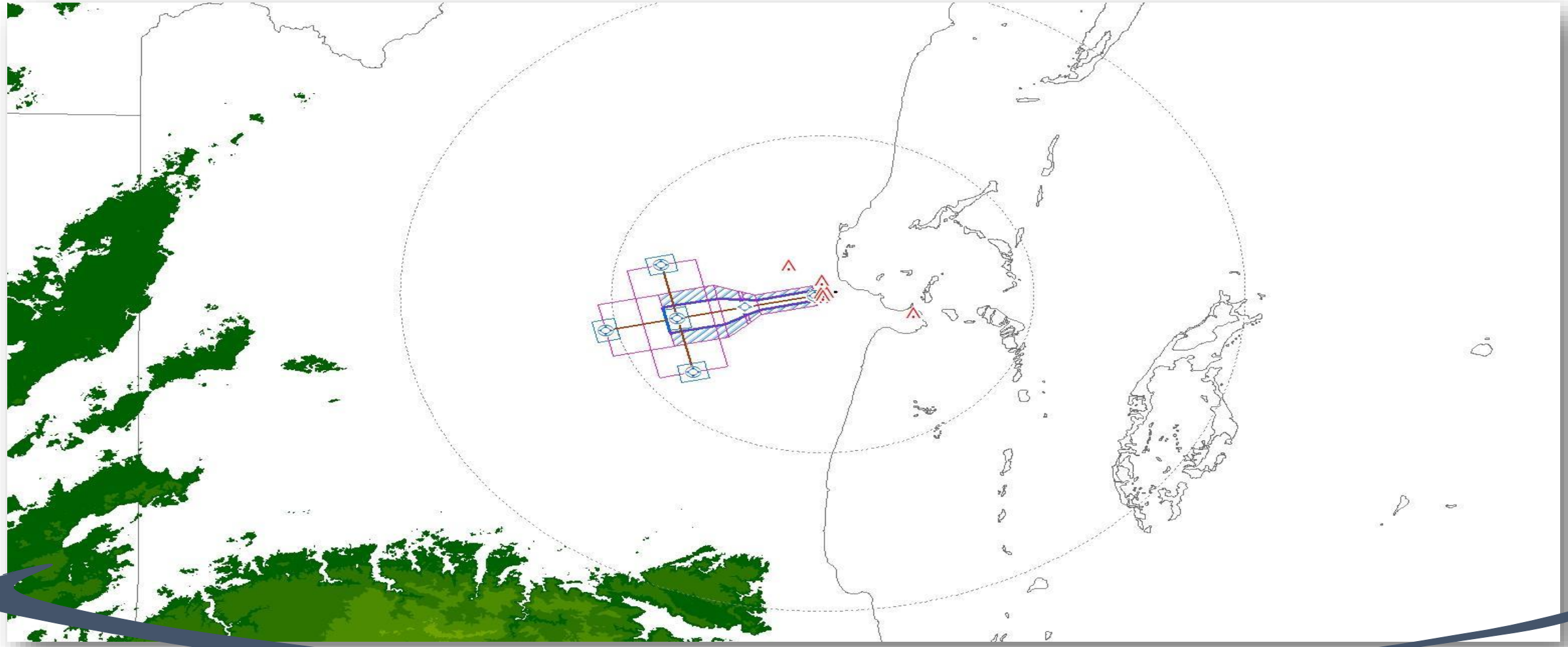
FAS SECONDARY AREAS SRTM DATA 10FT CONTROL TERRAIN



FLIGTH TRACK VALIDATION

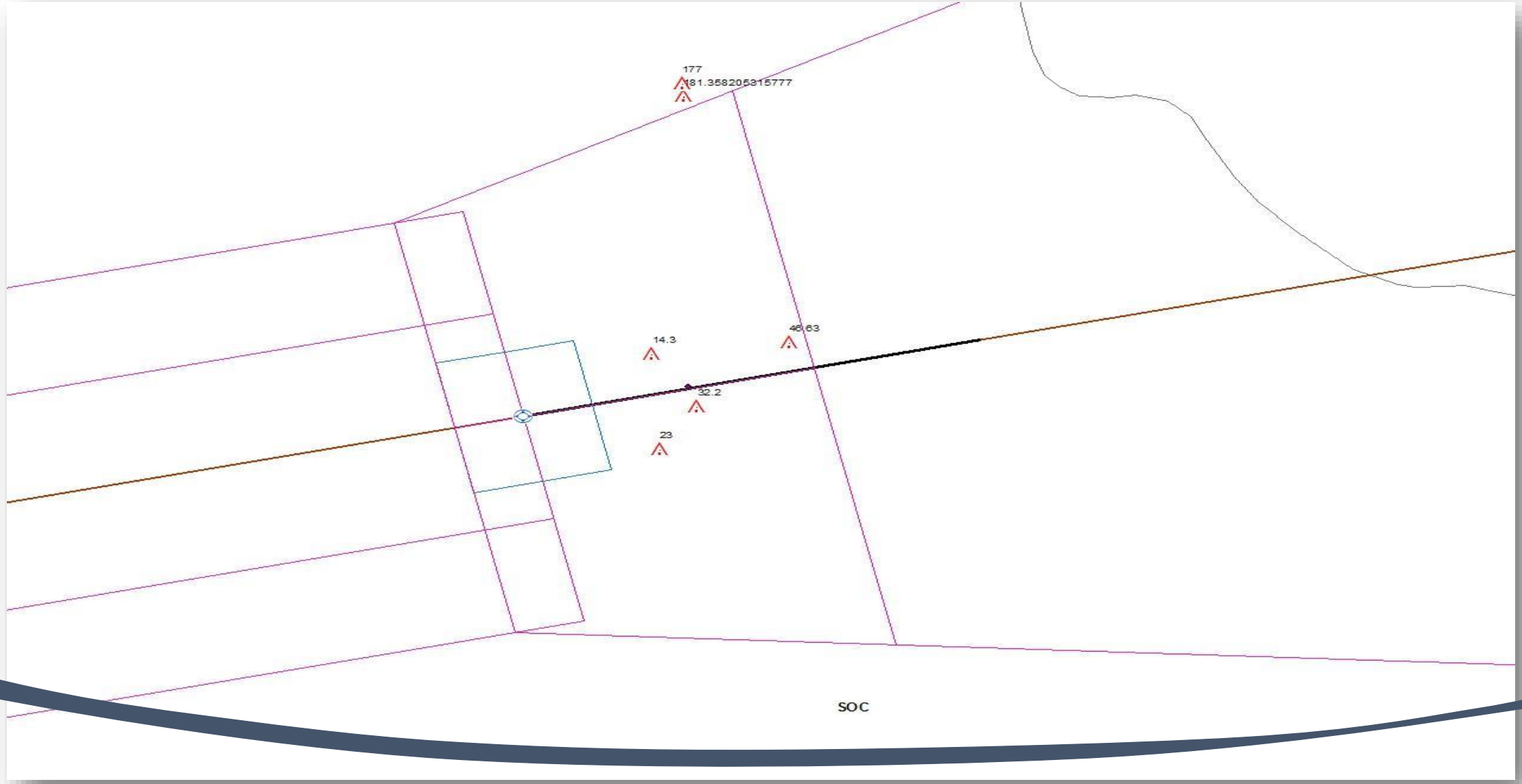


INITIAL APPROACH SEGMENT SRTM 663FT FILTER

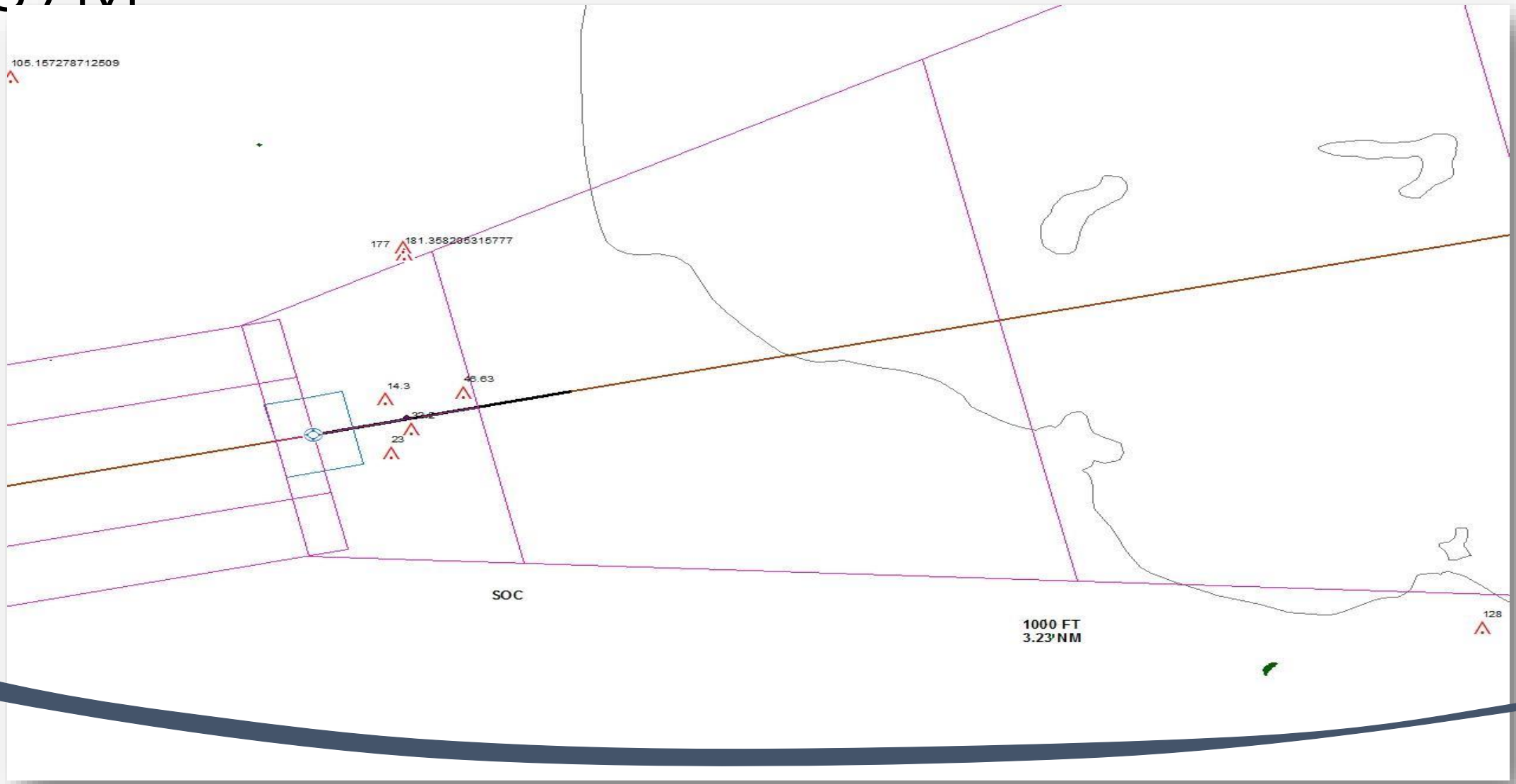


INTERMEDIATE SEGMENT SRTM FILTER

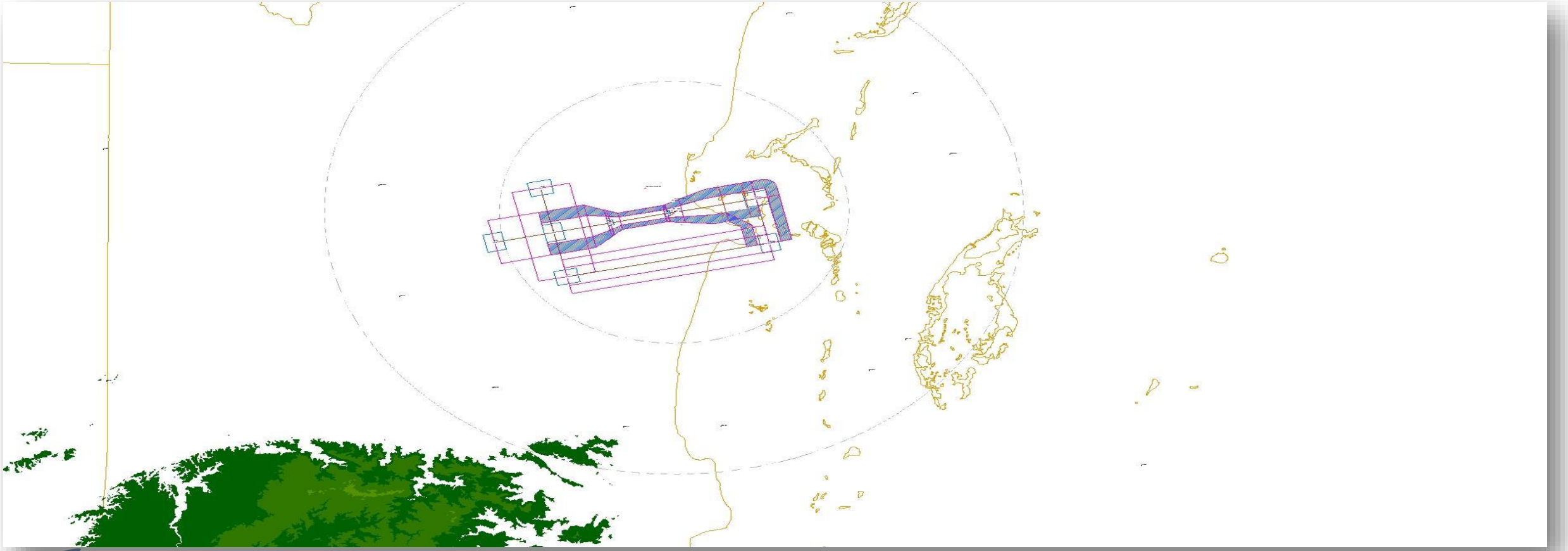
MISSED APPROACH INITIAL AREA



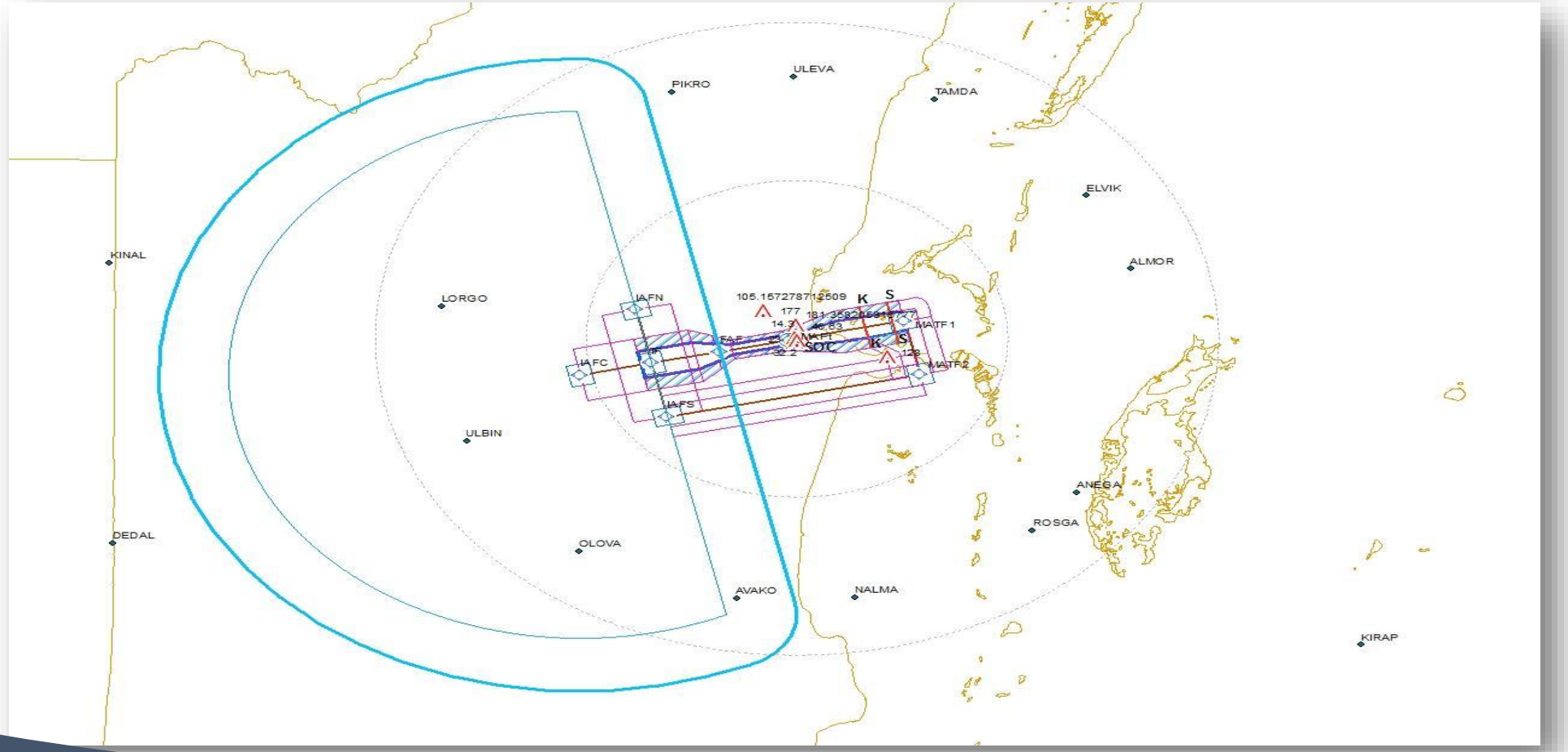
MISSED APPROACH INITIAL AREA FILTERED 37M



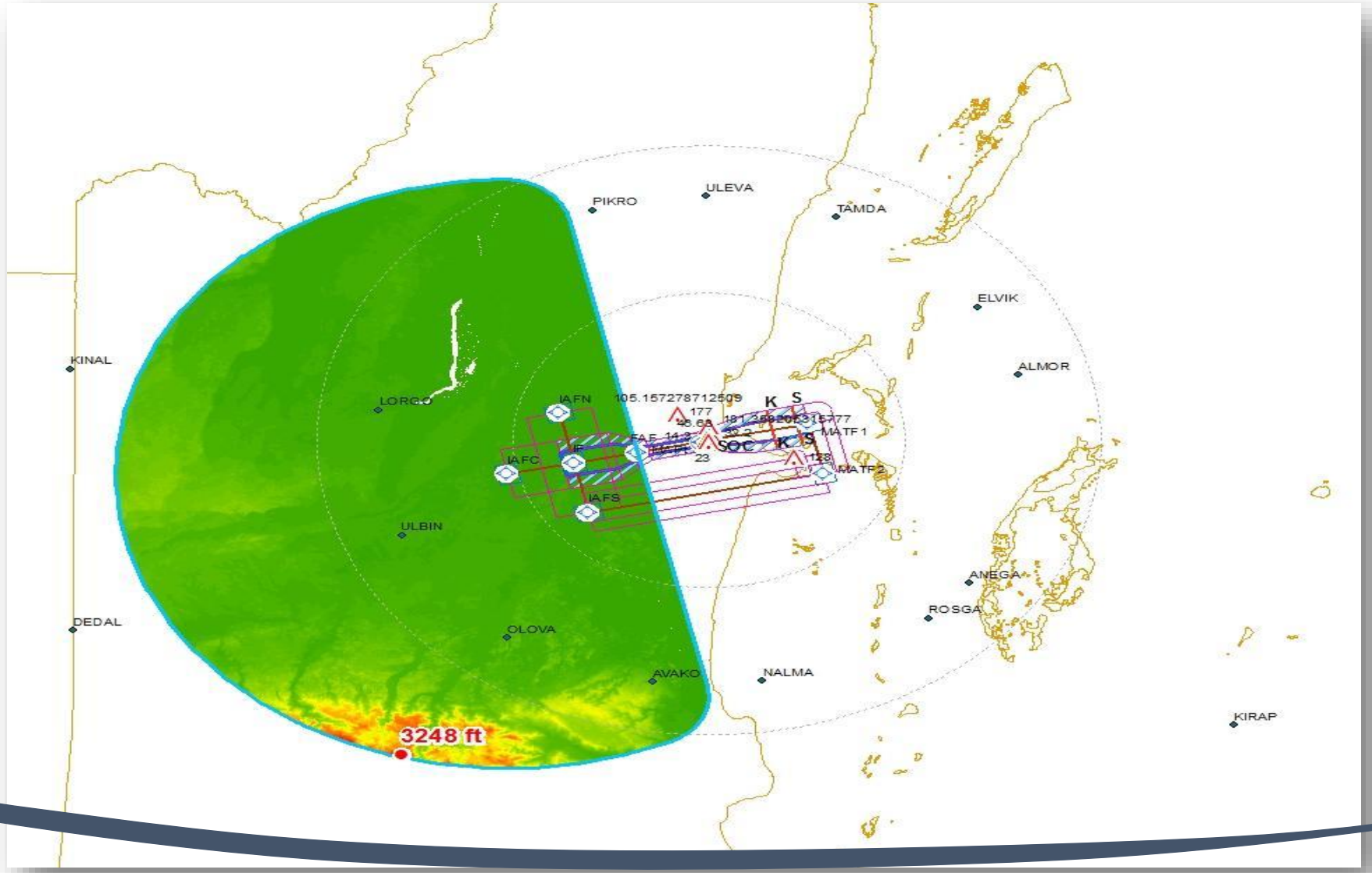
MISSED APPROACH FINAL AREA



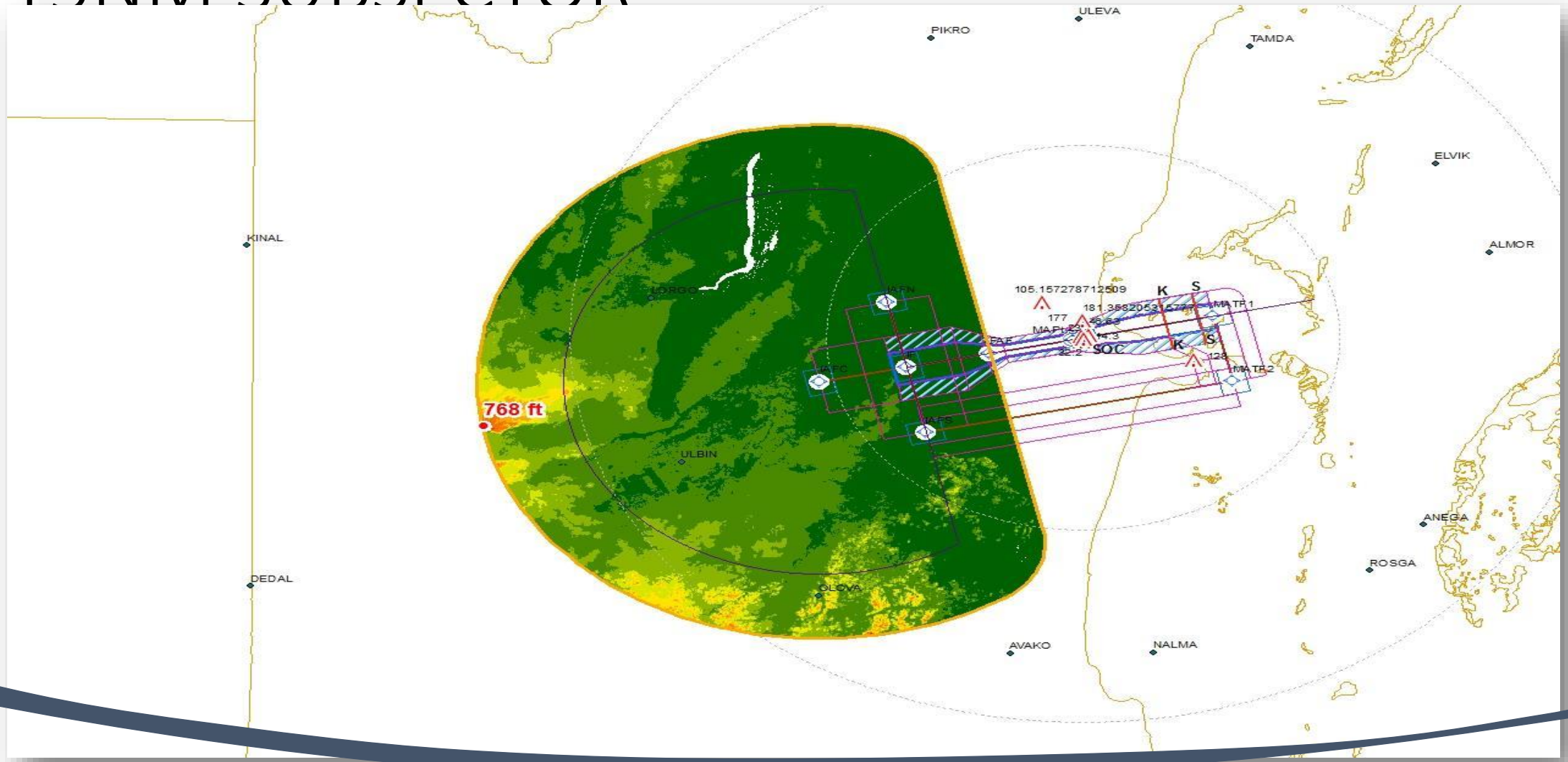
TAA CENTER


PIKRO
ULEVA
TAMDA
ELVIK
ALMOR
KINAL
LORGO
IAFN
IAFC
IAFS
FAF
MAPT
MATF1
MATF2
SOC
105.15727871.2509
ULBIN
DEDAL
OLOVA
AVAKO
NALMA
ANEGA
ROSGA
KIRAP

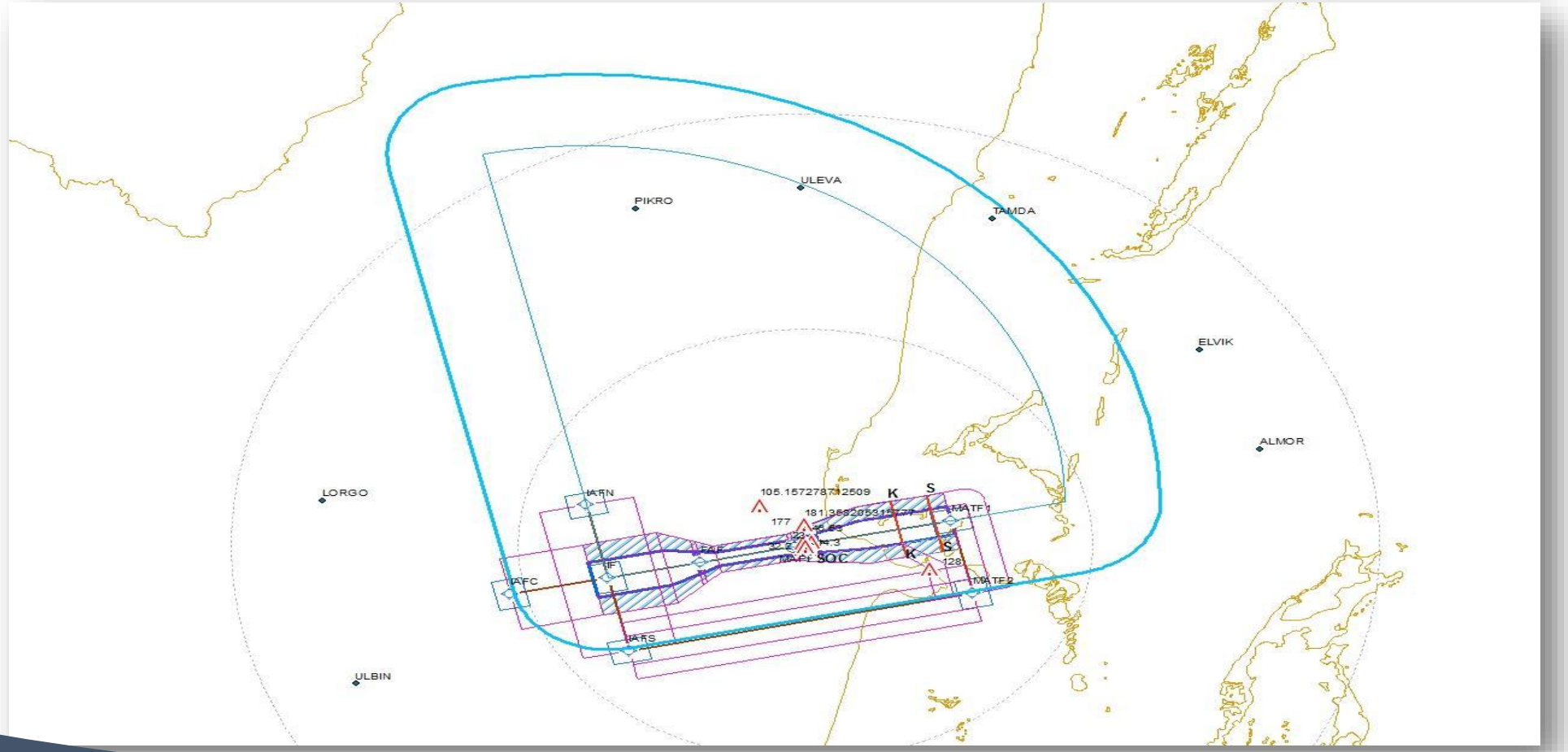
TAA CENTER CONTROL DTM OBSTACLES



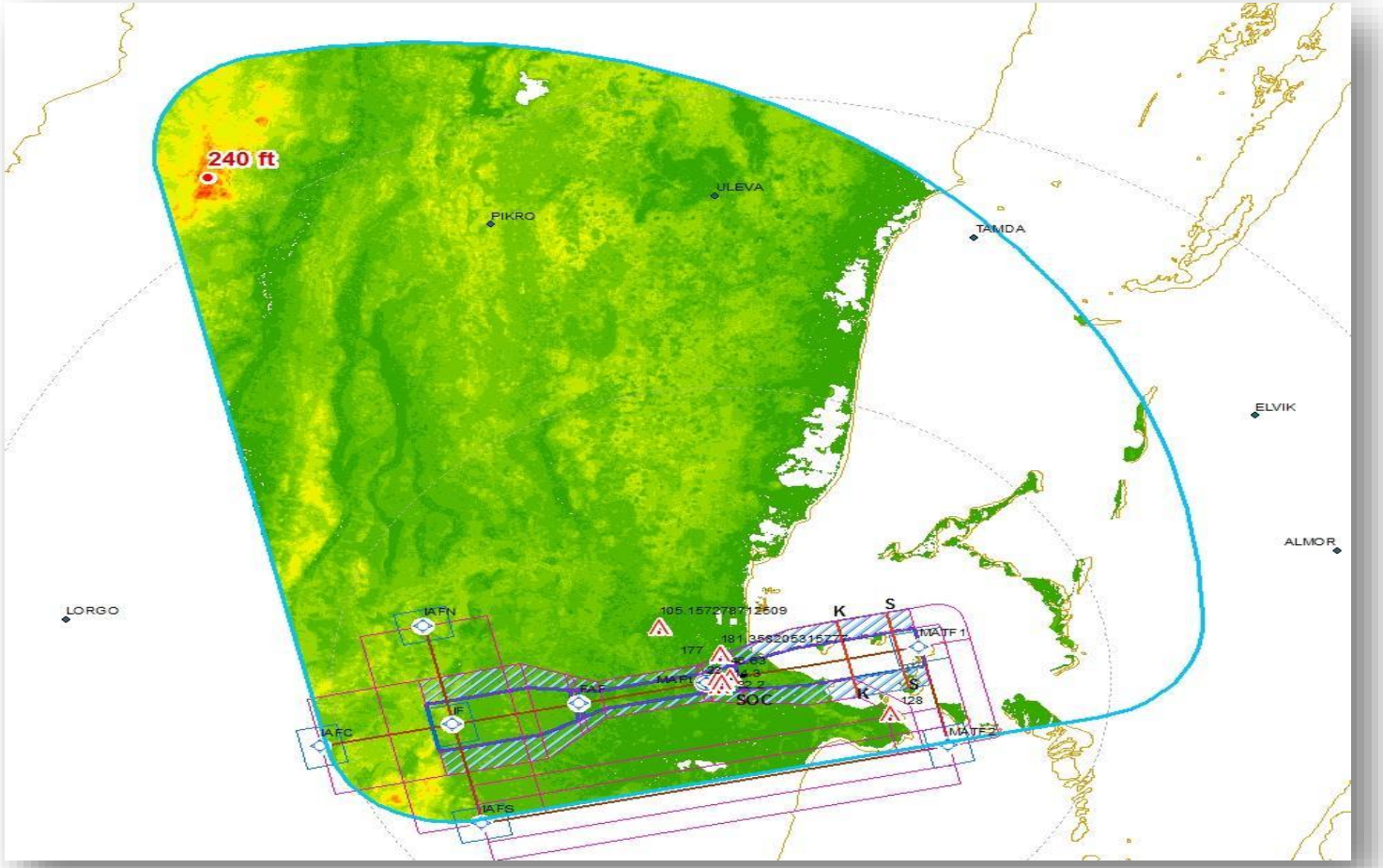
TAA CENTER CONTROL DTM OBSTACLES 15NM SUBSECTOR



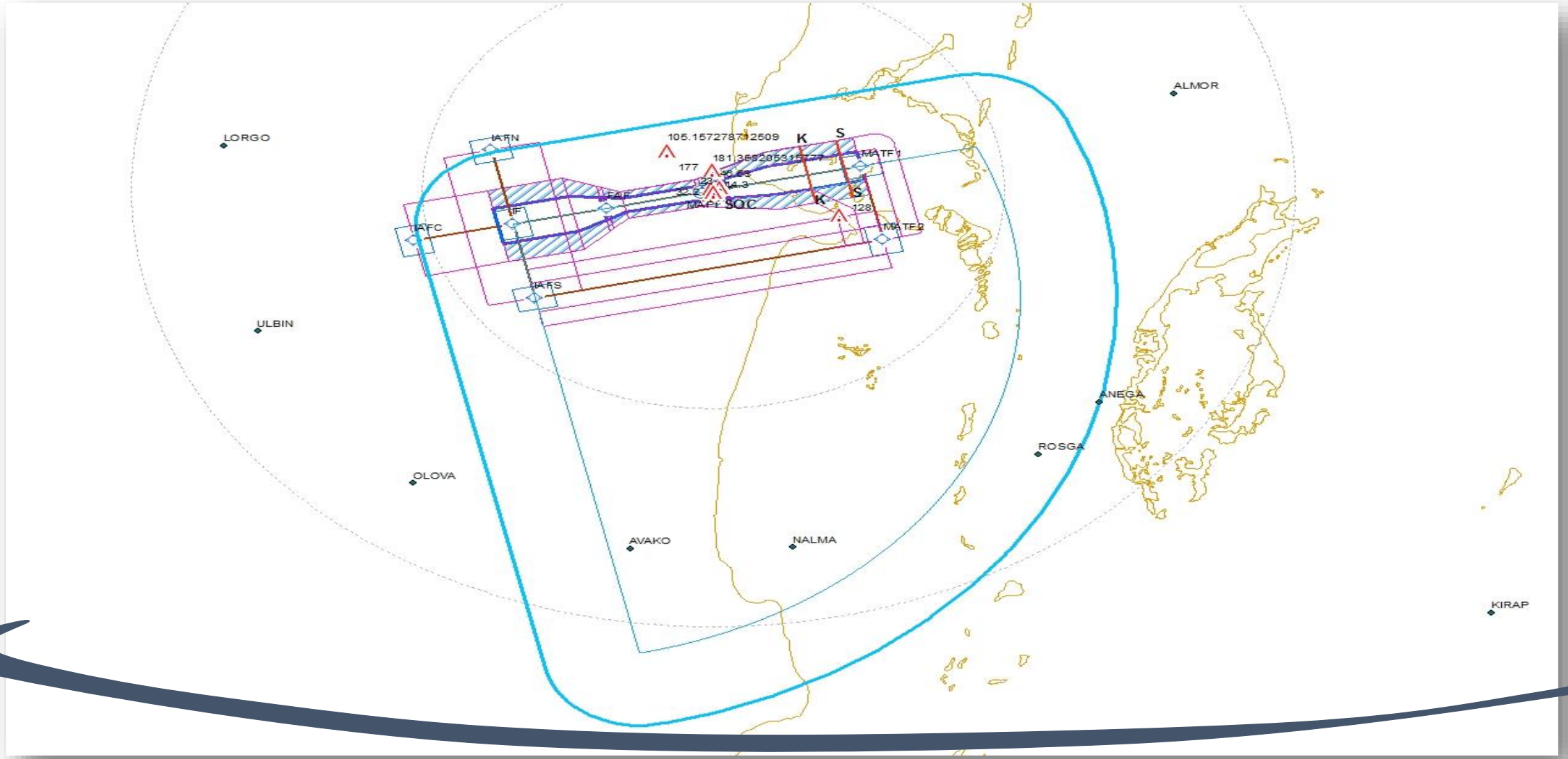
TAA NORTH


ULEVA
PIKRO
TAMDA
ELVIK
ALMOR
LORGO
ULBIN
IARN
IAFC
IARS
IF
FAF
MAPt
SQC
K
S
MATF1
MATF2
177
128

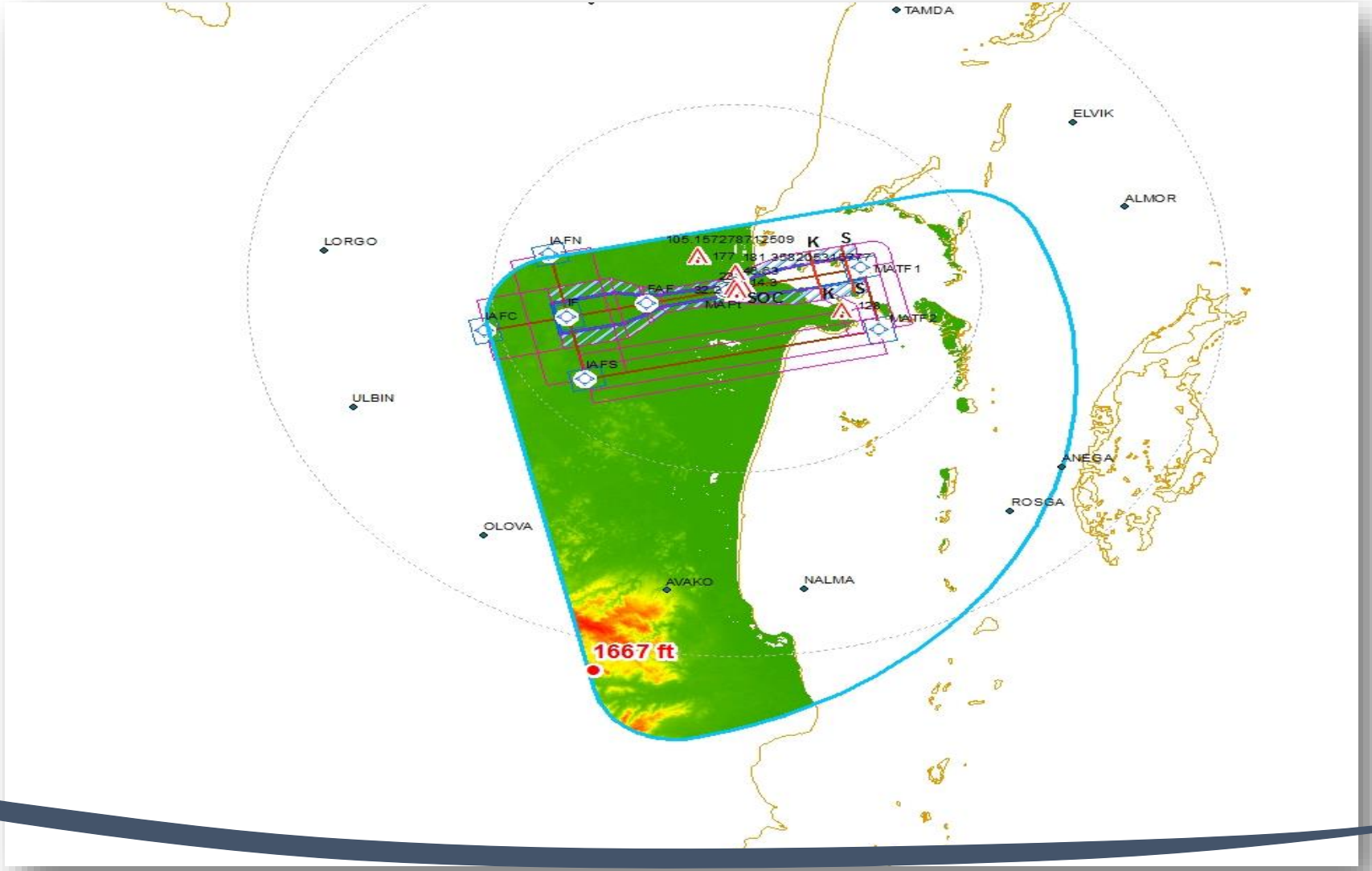
TAA NORTH CONTROL DTM OBSTACLES



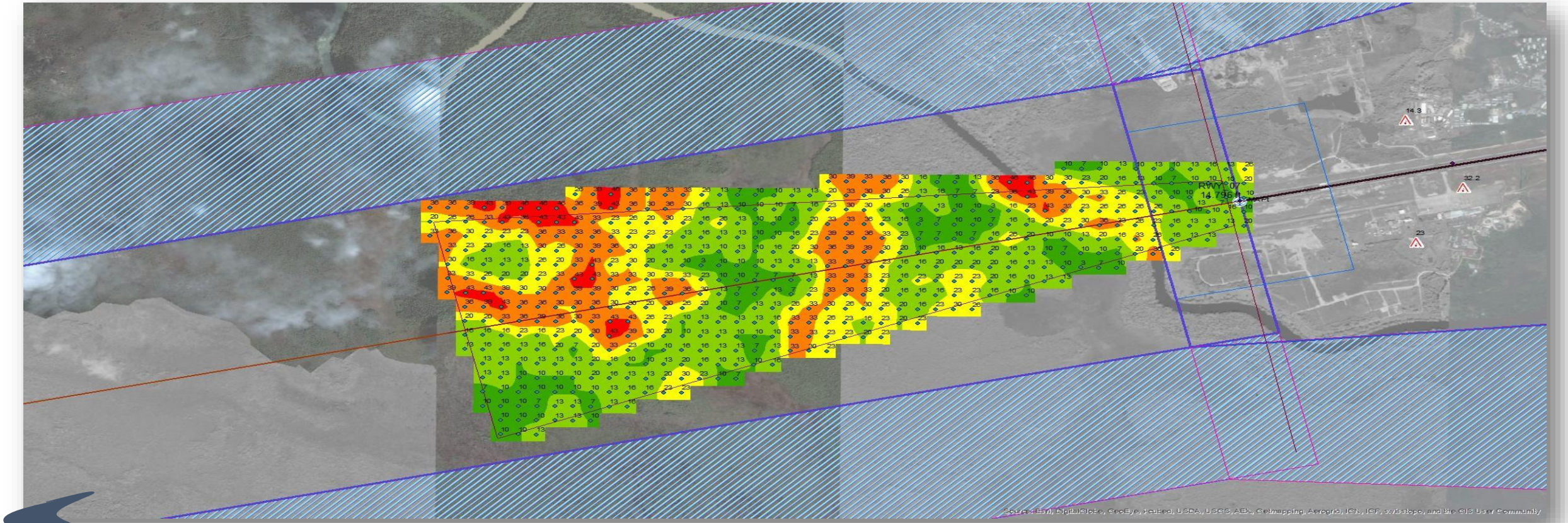
TAA SOUTH


LORGO
IARN
105.157278712509
K
S
MATF1
177
FAF
IF
SOC
IAFC
MATF2
IARS
ULBIN
ALMOR
ANEGA
ROSGA
OLOVA
AVAKO
NALMA
KIRAP

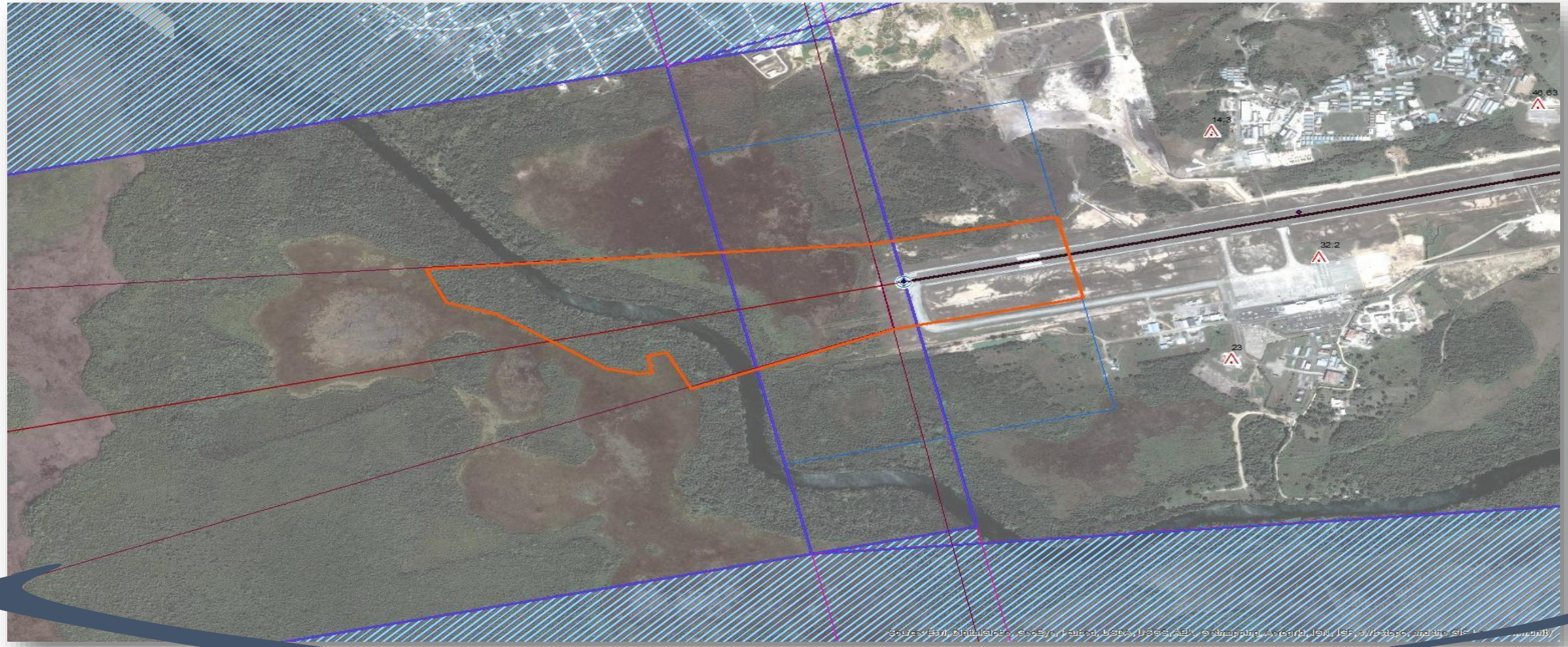
TAA SOUTH CONTROL DTM OBSTACLES



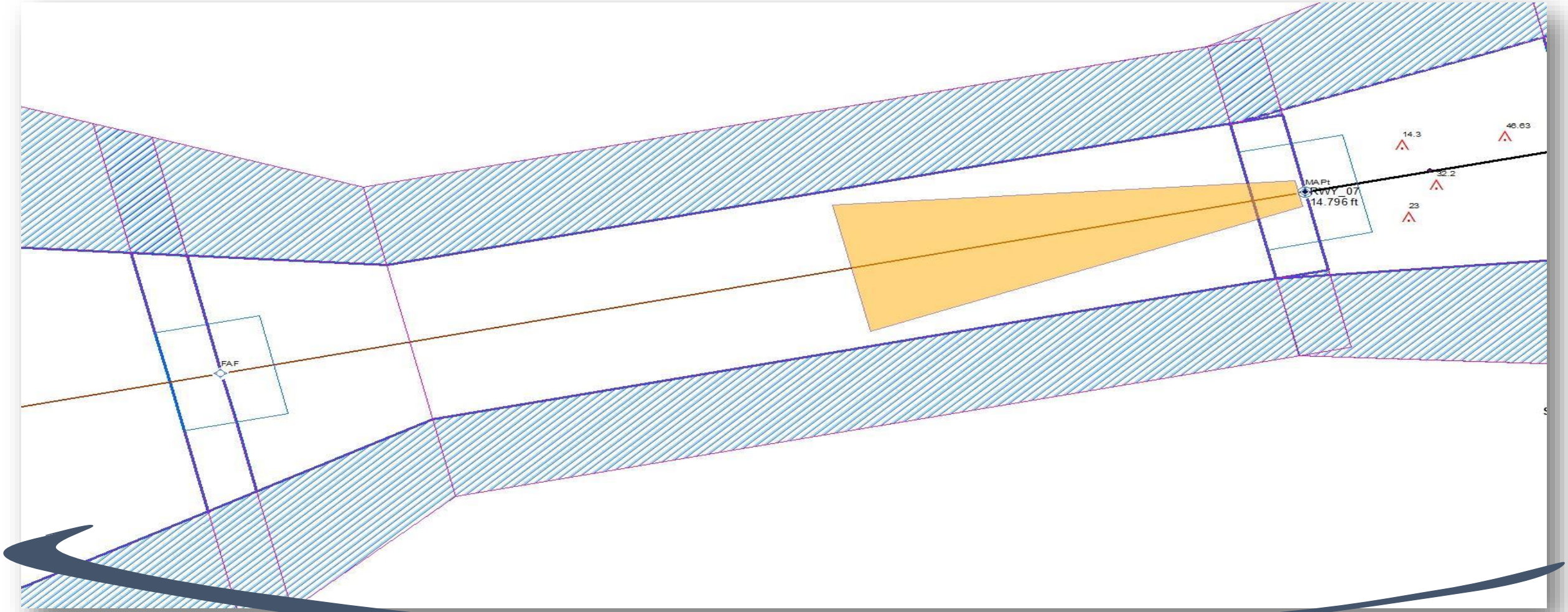
VSS SRTM ANALYSIS



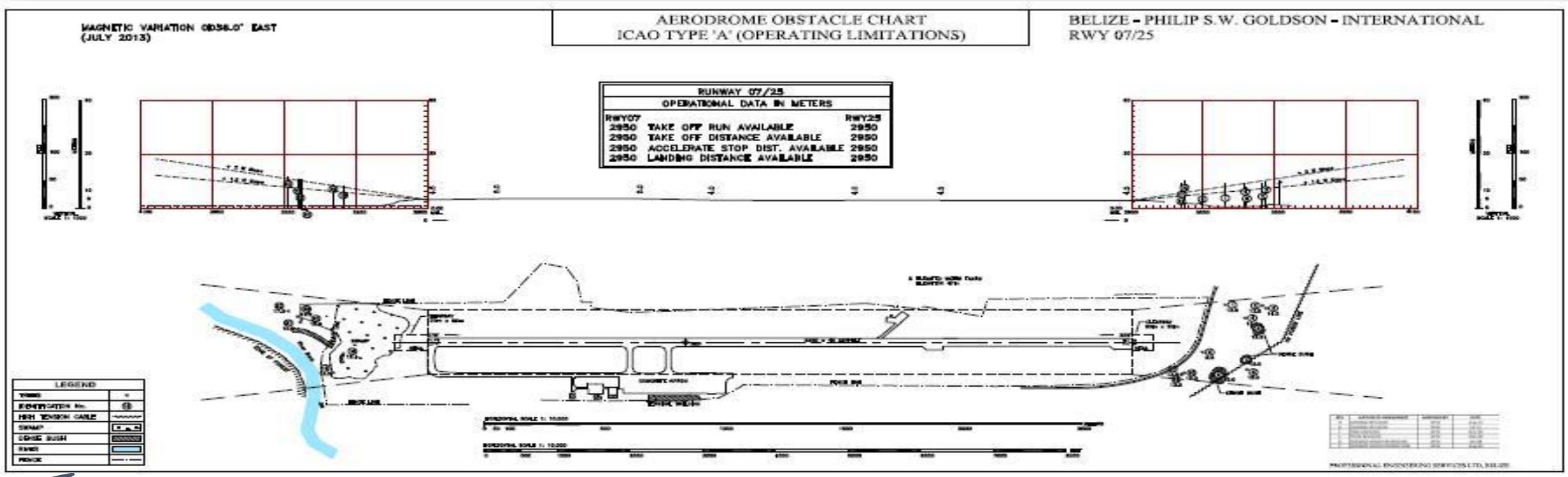
VSS SUGGESTED SURVEY AREA



VSS SURVEY OBSTACLES



OBSTACLE SURVEY 2013



OBSTACLE ASSESMENT

ADDITIONAL TASK DONE ACCORDING WITH THE DOC 9906

a) To elaborate a fulfillment certificate in which it is indicated that it has been completed the criteria approved by the State;

b) The State must elaborate a Risk Assessment and a mitigation plan;

c) The procedure must be evaluated by an IFP which is not working in the original design, for it the use of methods and an independent tool increases the effectiveness of evaluation;

d) A procedure ground validation shall be conducted once has completed step c);

ADDITIONAL TASK TO BE DEVELOPED ACCORDING WITH THE DOC 9906

e) A flight simulation validation will be tested with the collaboration from an airline user or another mean available;

f) Presentation of the procedures to the Stakeholders, adapted to also make it at informative level, to review commentaries before do it a validation in flight;

g) Flight validation; and

h) To publish the AIP Supplement according with the recommended and anticipated AIRAC cycles.

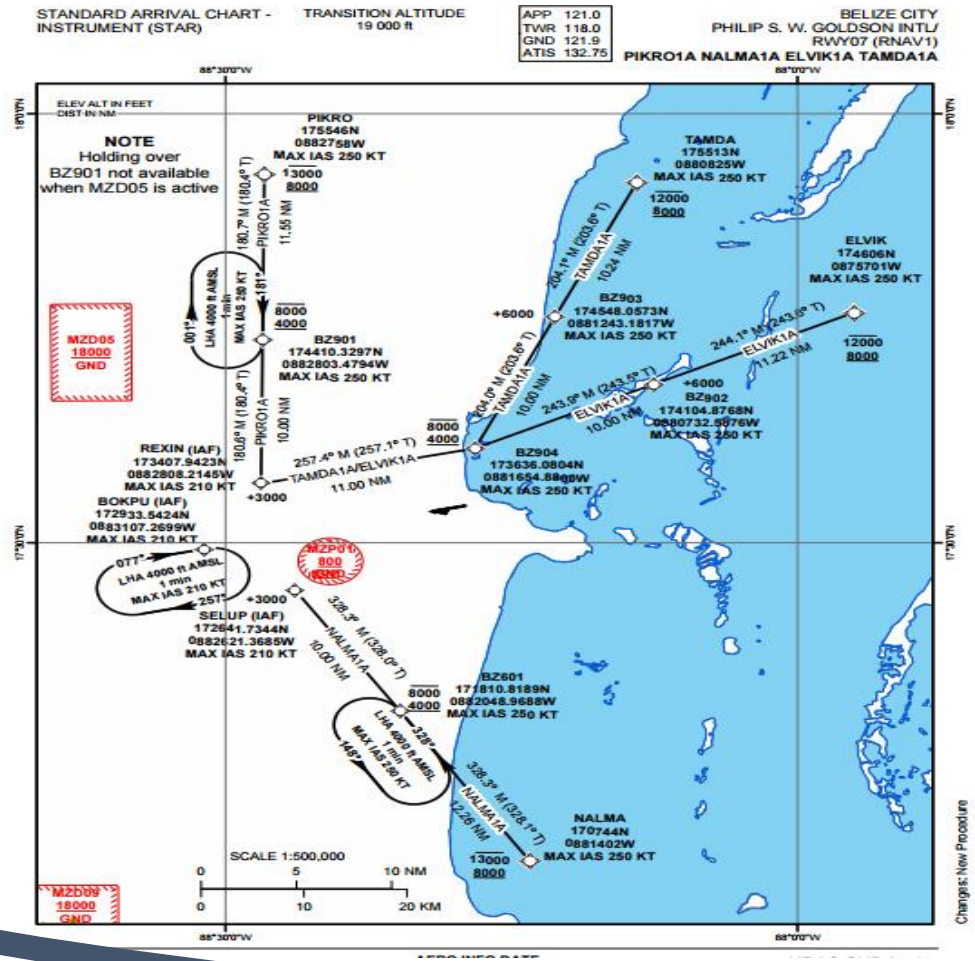
ADDITIONAL TASK TO BE DEVELOPED ACCORDING WITH THE DOC 9906

All the aboves tasks were performed with collaboration of industry (Jeppesen, Southwest Airlines, American Airlines), flight validated through COCESNA Flight Inspection, training at ICCAE, etc

Belize has now published the following procedures

- MZBZ STAR RWY07 RNAV1
- MZBZ RNAV GNSS RWY07 LNAV/VNAV Y LNAV minima
- MZBZ ILS Z RWY07 RNAV1 transitions

MZBZ Procedures



STANDARD ARRIVAL CHART - INSTRUMENT (STAR) | TRANSITION ALTITUDE 19 000 ft | APP 121.0 TWR 118.0 GND 121.9 ATIS 132.75 | BELIZE CITY PHILIP S. W. GOLDSON INTL/ RWY07 (RNAV1) | PIKRO1A NALMA1A ELVIK1A TAMDA1A

Designator	Path Descriptor	Fix Identifier (Waypoint Name)	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	Navigation Performance
PIKRO1A	IF	PIKRO	175546N	0882758W	-	-	-	-13000 +8000	-	250	0°15'W	RNAV1
PIKRO1A	TF	BZ901	174410.3297N	0882803.4794W	-	180.7 (180.4)	-	-8000 +4000	11.55	250	0°13'W	RNAV1
PIKRO1A	TF	REXIN	173407.9423N	0882808.2145W	-	180.6 (180.4)	-	+3000	10.00	210	0°12'W	RNAV1

Designator	Path Descriptor	Fix Identifier (Waypoint Name)	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	Navigation Performance
NALMA1A	IF	NALMA	170744N	0881402W	-	-	-	-13000 +8000	-	250	0°16'W	RNAV1
NALMA1A	TF	BZ601	171810.8189N	0882048.9688W	-	328.3 (328.1)	-	-8000 +4000	12.26	250	0°14'W	RNAV1
NALMA1A	TF	SELUP	172641.7344N	0882621.3685W	-	328.3 (328.0)	-	+3000	10.00	210	0°12'W	RNAV1

Designator	Path Descriptor	Fix Identifier (Waypoint Name)	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	Navigation Performance
ELVIK1A	IF	ELVIK	174606N	0875701W	-	-	-	-12000 +8000	-	250	0°31'W	RNAV1
ELVIK1A	TF	BZ902	174104.8768N	0880732.5876W	-	244.1 (243.6)	-	+6000	11.22	250	0°24'W	RNAV1
ELVIK1A	TF	BZ904	173636.0804N	0881654.8800W	-	243.9 (243.5)	-	-8000 +4000	10.00	250	0°19'W	RNAV1
ELVIK1A	TF	REXIN	173407.9423N	0882808.2145W	-	257.4 (257.1)	-	+3000	11.00	210	0°12'W	RNAV1

Designator	Path Descriptor	Fix Identifier (Waypoint Name)	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	Navigation Performance
TAMDA1A	IF	TAMDA	175513N	0880825W	-	-	-	-12000 +8000	-	250	0°28'W	RNAV1
TAMDA1A	TF	BZ903	174548.0573N	0881243.1817W	-	204.1 (203.6)	-	+6000	10.24	250	0°22'W	RNAV1
TAMDA1A	TF	BZ904	173636.0804N	0881654.8800W	-	204.0 (203.6)	-	-8000 +4000	10.00	250	0°19'W	RNAV1
TAMDA1A	TF	REXIN	173407.9423N	0882808.2145W	-	257.4 (257.1)	-	+3000	11.00	210	0°12'W	RNAV1

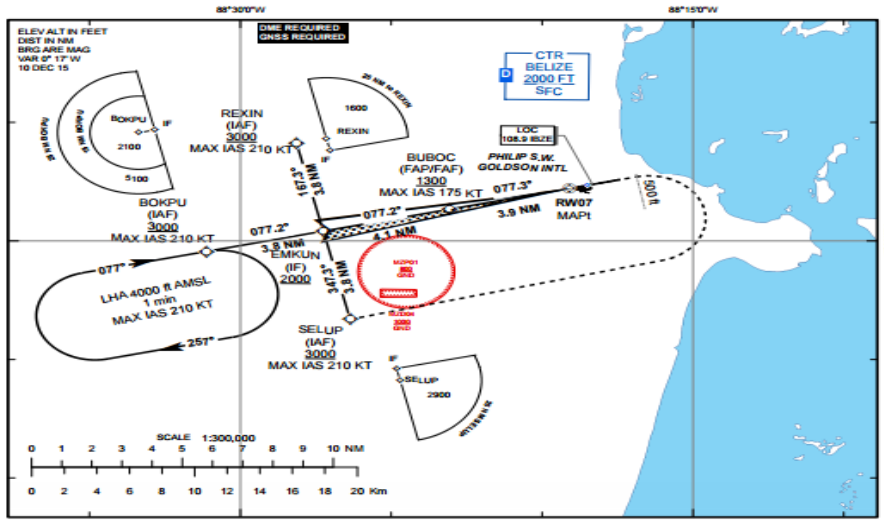
Changes: New Procedure

INSTRUMENT APPROACH CHART

THR ELEV 15 ft
HEIGHTS RELATED TO THR ELEVATION
TRANSITION ALTITUDE 19 000 ft

APP	121.0
TWR	118.0
GND	121.9
ATIS	132.75

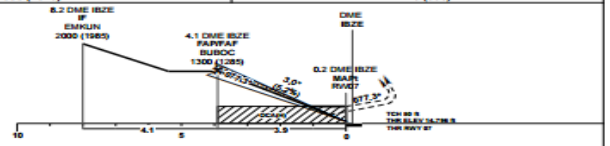
BELIZE CITY
PHILIP S. W. GOLDSON INTL/
ILS Z RWY 07



RECOMMENDED PROFILE - (LNAV 5.2%), 320 ft/NM		
DIST THR	3	2
ALTITUDE	1030 (1015)	710 (695)

MISSED APPROACH:
Climb on RWY heading to at or above 500 ft turn Right direct to SELUP +4000 ft and request ATC instructions.
Max IAS 175 KT during turn

For loss of RNAV capability
Climb on RWY heading to 1500 ft and request ATC instructions



OCA/H	A	B	C	D
ILS CAT I	320 (305)	320 (305)	320 (305)	320 (305)
LLZ (GP OUT)	370 (355)	370 (355)	370 (355)	370 (355)
VM(C) OCA	1000 (985)	1000 (985)	1100 (1085)	1100 (1085)

Ground Speed	70	90	100	120	140	160
Rate of Descent FAF-MAPt 3.0° (5.2%)	372	478	531	637	743	849

Note:
1. No Turn before MAPt 2. Timing not authorized for defining the MAPt 3. NM to/from THR RWY 07 4. Visual Circling not allowed North of Runway 5. Uncontrolled light aircraft activity at Belize Municipal AD and in entry/exit area 6. All procedures and circuits QNH (QFE not used)

CHANGES: New Procedure

INSTRUMENT APPROACH CHART

THR ELEV 15 ft
HEIGHTS RELATED TO THR ELEVATION
TRANSITION ALTITUDE 19 000 ft

APP 121.0
TWR 118.0
GND 121.9
ATIS 132.75

BELIZE CITY
PHILIP S. W. GOLDSON INTL/
ILS Z RWY 07

IAF REXIN

Designator	Path Descriptor	Waypoint Identifier	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	VPA/°V TCH (ft)	Navigation Specification
ILS Z RWY 07	IF	REXIN	173407.9423N	0882808.2145W	-	-	-	+ 3 000	-	210	0°12' W	-	RNP APCH
ILS Z RWY 07	TF	EMKUN	173024.8410N	0882714.7734W	-	167.3 (167.1)	L	+ 2 000	3.8	-	0°12' W	-	RNP APCH
ILS Z RWY 07	TF	BUBOC	173120.1927N	0882303.9023W	-	077.2 (077.0)	-	+ 1 300	4.1	175	0°14' W	-	RNP APCH
ILS Z RWY 07	TF	RW07	173212.8422N	0881905.2488W	Y	077.3 (077.0)	-	@ 65	3.9	-	0°17' W	-3°/50'	RNP APCH
ILS Z RWY 07	CA	-	-	-	-	077.3 (077.0)	-	+ 500	-	175	-	-	RNP APCH
ILS Z RWY 07	DF	SELUP	172641.7344N	0882621.3685W	-	-	-	+ 4 000	-	210	0°12' W	-	RNP APCH

IAF BOKPU

Designator	Path Descriptor	Waypoint Identifier	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	VPA/°V TCH (ft)	Navigation Specification
ILS Z RWY 07	IF	BOKPU	172933.5424N	0883107.2699W	-	-	-	+ 3 000	-	210	0°09' W	-	RNP APCH
ILS Z RWY 07	TF	EMKUN	173024.8410N	0882714.7734W	-	077.2 (077.0)	-	+ 2 000	3.8	-	0°12' W	-	RNP APCH
ILS Z RWY 07	TF	BUBOC	173120.1927N	0882303.9023W	-	077.2 (077.0)	-	+ 1 300	4.1	175	0°14' W	-	RNP APCH
ILS Z RWY 07	TF	RW07	173212.8422N	0881905.2488W	Y	077.3 (077.0)	-	@ 65	3.9	-	0°17' W	-3°/50'	RNP APCH
ILS Z RWY 07	CA	-	-	-	-	077.3 (077.0)	-	+ 500	-	175	-	-	RNP APCH
ILS Z RWY 07	DF	SELUP	172641.7344N	0882621.3685W	-	-	-	+ 4 000	-	210	0°12' W	-	RNP APCH

IAF SELUP

Designator	Path Descriptor	Waypoint Identifier	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	VPA/°V TCH (ft)	Navigation Specification
ILS Z RWY 07	IF	SELUP	172641.7344N	0882621.3685W	-	-	-	+ 3 000	-	210	0°12' W	-	RNP APCH
ILS Z RWY 07	TF	EMKUN	173024.8410N	0882714.7734W	-	347.3 (347.1)	R	+ 2 000	3.8	-	0°12' W	-	RNP APCH
ILS Z RWY 07	TF	BUBOC	173120.1927N	0882303.9023W	-	077.2 (077.0)	-	+ 1 300	4.1	175	0°14' W	-	RNP APCH
ILS Z RWY 07	TF	RW07	173212.8422N	0881905.2488W	Y	077.3 (077.0)	-	@ 65	3.9	-	0°17' W	-3°/50'	RNP APCH
ILS Z RWY 07	CA	-	-	-	-	077.3 (077.0)	-	+ 500	-	175	-	-	RNP APCH
ILS Z RWY 07	DF	SELUP	172641.7344N	0882621.3685W	-	-	-	+ 4 000	-	210	0°12' W	-	RNP APCH

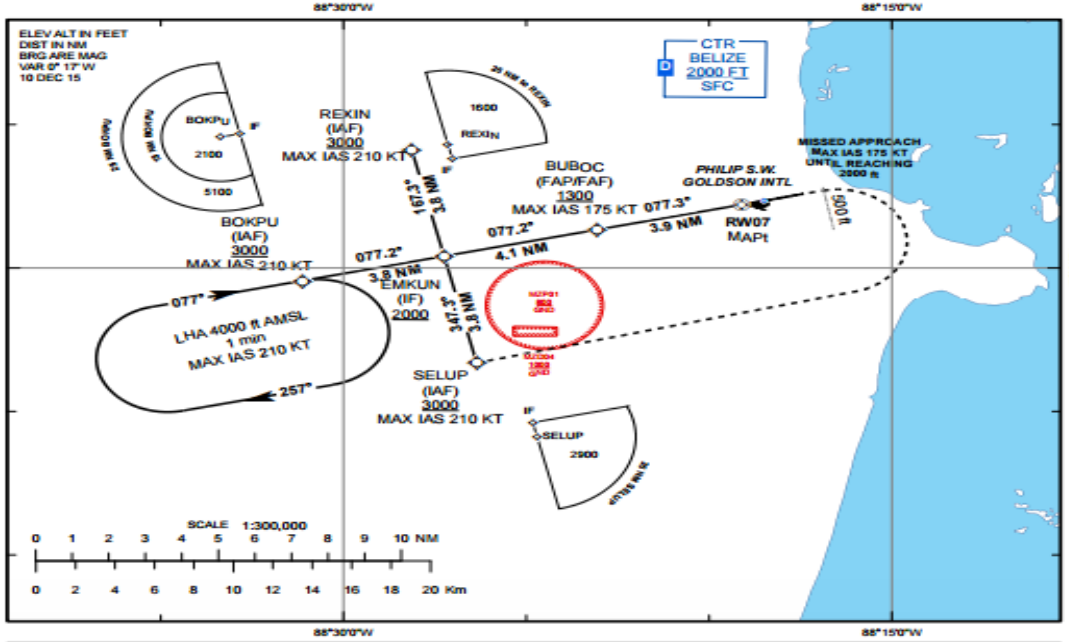
CHANGES: New Procedure

INSTRUMENT APPROACH CHART

THR ELEV 15 ft
HEIGHTS RELATED TO THR ELEVATION
TRANSITION ALTITUDE 19 000 ft

APP	121.0
TWR	118.0
GND	121.9
ATIS	132.75

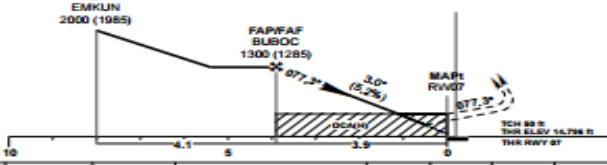
BELIZE CITY
PHILIP S. W. GOLDSON INTL/
RNAV (GNSS) **RWY 07**



RECOMMENDED PROFILE - (LNAV 5.2%), 320 ft/NM		
DIST THR	3	2
ALTITUDE	1030 (1015)	710 (695)

MISSED APPROACH:
Climb on RWY heading to at or above 500 ft turn Right direct to SELUP +4000 ft and request ATC instructions.

For loss of RNAV capability
Climb on RWY heading to 1500 ft and request ATC instructions



OCA/H	A	B	C	D
LNAV/VNAV	320 (305)	320 (305)	320 (305)	320 (305)
LNAV	420 (405)	420 (405)	420 (405)	420 (405)
VM(C) OCA	500 (485)	510 (495)	610 (595)	710 (695)

Ground Speed	70	90	100	120	140	160
Rate of Descent FAF-MAPt 3.0° (5.2%)	372	478	531	637	743	849

1. No [illegible] not authorized for defining the MAPt 3. NM to/from THR RWY 07 4. Visual Circling not allowed North of Runway
5. BARO-VNAV NOT [illegible]

CHANGE & New Procedure

INSTRUMENT APPROACH CHART

THR ELEV 15 ft
HEIGHTS RELATED TO THR ELEVATION
TRANSITION ALTITUDE 19 000 ft

APP	121.0
TWR	118.0
GND	121.9
ATIS	132.75

BELIZE CITY
PHILIP S. W. GOLDSON INTL/
RNAV (GNSS) **RWY 07**

IAF REXIN

Designator	Path Descriptor	Waypoint Identifier	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	VPA(°)/ TCH (ft)	Navigation Specification
RNAV (GNSS) RWY07	IF	REXIN	173407.9423N	0882808.2146W	-	-	-	+ 3 000	-	210	0°12' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	EMKUN	173024.8410N	0882714.7734W	-	167.3 (167.1)	L	+ 2 000	3.8	-	0°12' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	BUBOC	173120.1927N	0882303.9023W	-	077.2 (077.0)	-	+ 1 300	4.1	175	0°14' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	RW07	173212.8422N	0881905.2488W	Y	077.3 (077.0)	-	@ 65	3.9	-	0°17' W	-3°/50'	RNP APCH
RNAV (GNSS) RWY07	CA	-	-	-	-	077.3 (077.0)	-	+ 500	-	175	-	-	RNP APCH
RNAV (GNSS) RWY07	DF	SELUP	172641.7344N	0882621.3585W	-	-	-	+ 4 000	-	210	0°12' W	-	RNP APCH

IAF BOKPU

Designator	Path Descriptor	Waypoint Identifier	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	VPA(°)/ TCH (ft)	Navigation Specification
RNAV (GNSS) RWY07	IF	BOKPU	172933.5424N	0883107.2699W	-	-	-	+ 3 000	-	210	0°09' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	EMKUN	173024.8410N	0882714.7734W	-	077.2 (077.0)	-	+ 2 000	3.8	-	0°12' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	BUBOC	173120.1927N	0882303.9023W	-	077.2 (077.0)	-	+ 1 300	4.1	175	0°14' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	RW07	173212.8422N	0881905.2488W	Y	077.3 (077.0)	-	@ 65	3.9	-	0°17' W	-3°/50'	RNP APCH
RNAV (GNSS) RWY07	CA	-	-	-	-	077.3 (077.0)	-	+ 500	-	175	-	-	RNP APCH
RNAV (GNSS) RWY07	DF	SELUP	172641.7344N	0882621.3585W	-	-	-	+ 4 000	-	210	0°12' W	-	RNP APCH

IAF SELUP

Designator	Path Descriptor	Waypoint Identifier	Latitude	Longitude	Flyover	Course °M (°T)	Turn Direction	Altitude (ft)	Distance (Nm)	Speed Limit (Kt)	Magnetic Variation	VPA(°)/ TCH (ft)	Navigation Specification
RNAV (GNSS) RWY07	IF	SELUP	172641.7344N	0882621.3585W	-	-	-	+ 3 000	-	210	0°12' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	EMKUN	173024.8410N	0882714.7734W	-	347.3 (347.1)	R	+ 2 000	3.8	-	0°12' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	BUBOC	173120.1927N	0882303.9023W	-	077.2 (077.0)	-	+ 1 300	4.1	175	0°14' W	-	RNP APCH
RNAV (GNSS) RWY07	TF	RW07	173212.8422N	0881905.2488W	Y	077.3 (077.0)	-	@ 65	3.9	-	0°17' W	-3°/50'	RNP APCH
RNAV (GNSS) RWY07	CA	-	-	-	-	077.3 (077.0)	-	+ 500	-	175	-	-	RNP APCH
RNAV (GNSS) RWY07	DF	SELUP	172641.7344N	0882621.3585W	-	-	-	+ 4 000	-	210	0°12' W	-	RNP APCH

CHANGE & New Procedure

We have the following email for consultation for all stakeholders.

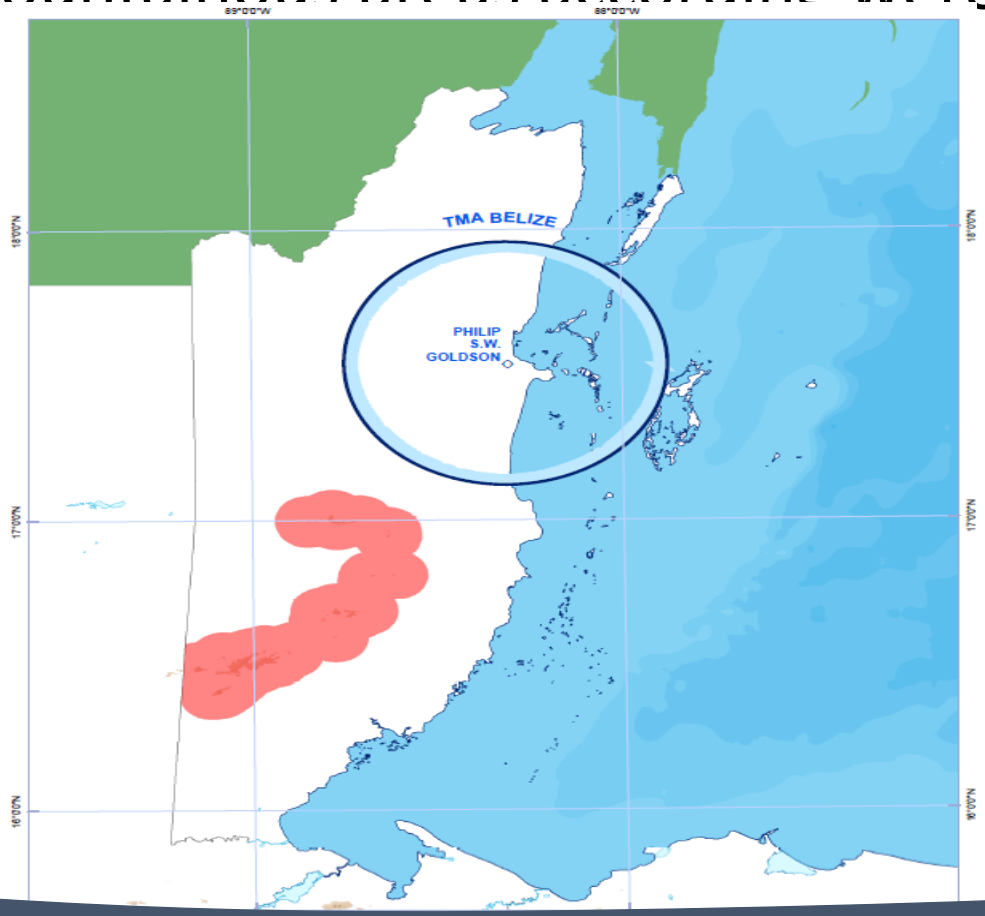
- belize.pbn@civilaviation.gov.bz

AIP Belize

- Belize due to its PBN Project made an effort and together with COCESNA worked on a new edition of Belize AIP which put all information up to date.

AIP Belize

- For the first time Mountainous áreas according were declared

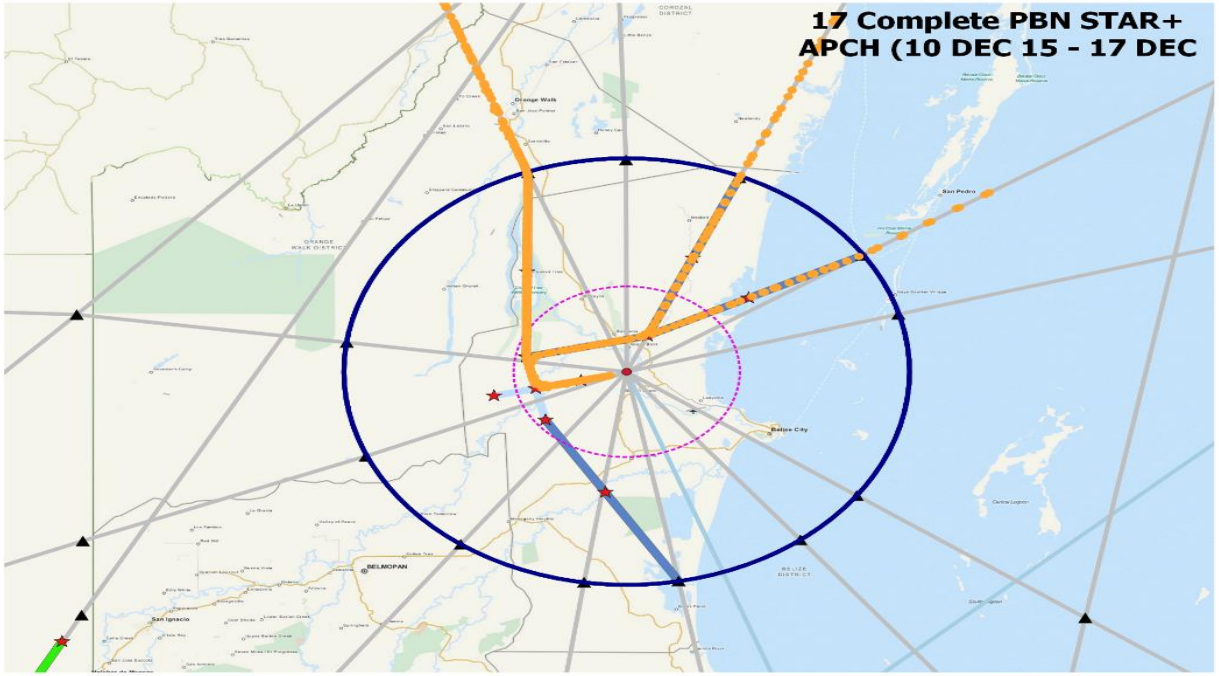


Procedure Use

- PBN STAR and approaches including ILS with RNAV transitions were used from day 1

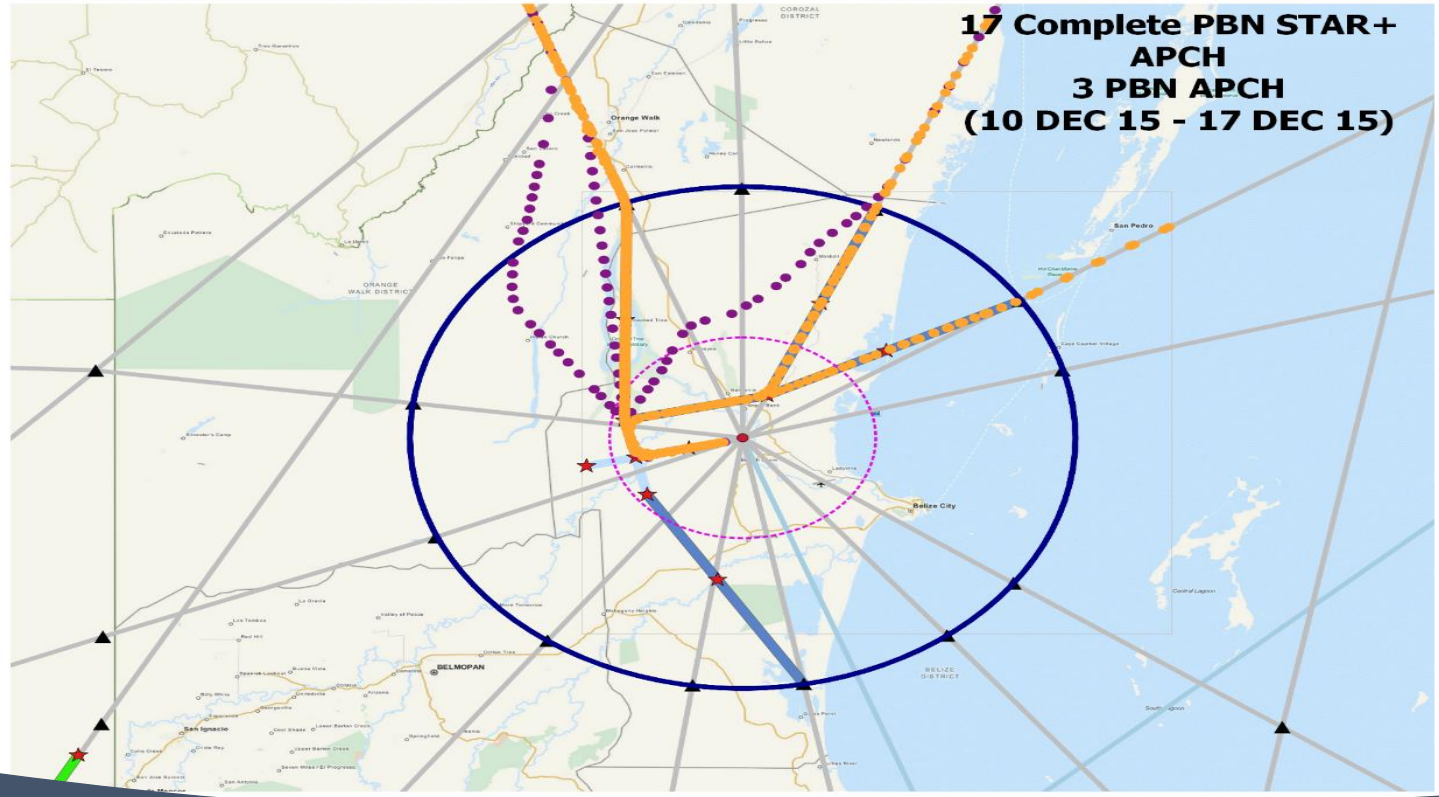
Procedure Use

- PBN STAR and approaches including ILS with RNAV transitions were used from day 1



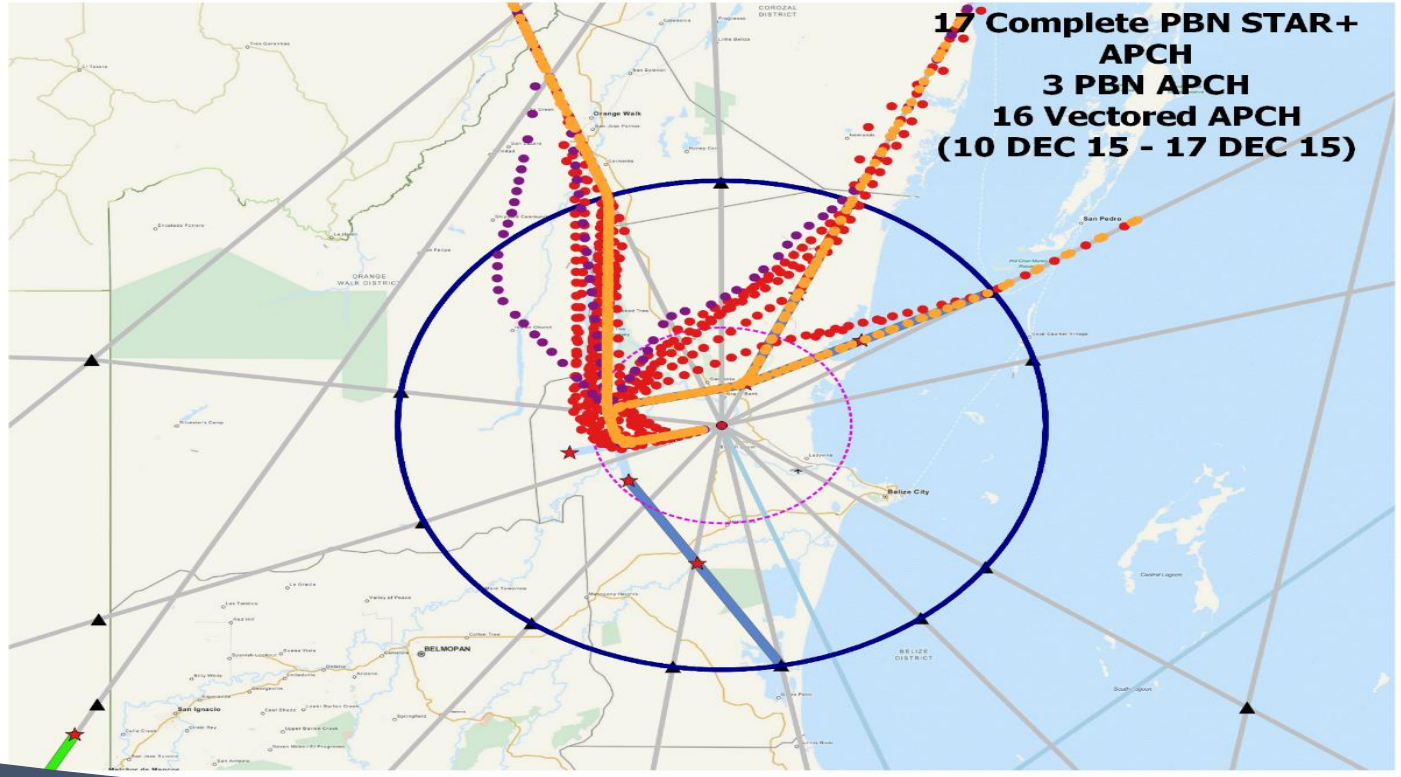
Procedure Use

- PBN STAR and approaches including ILS with RNAV transitions were used fro



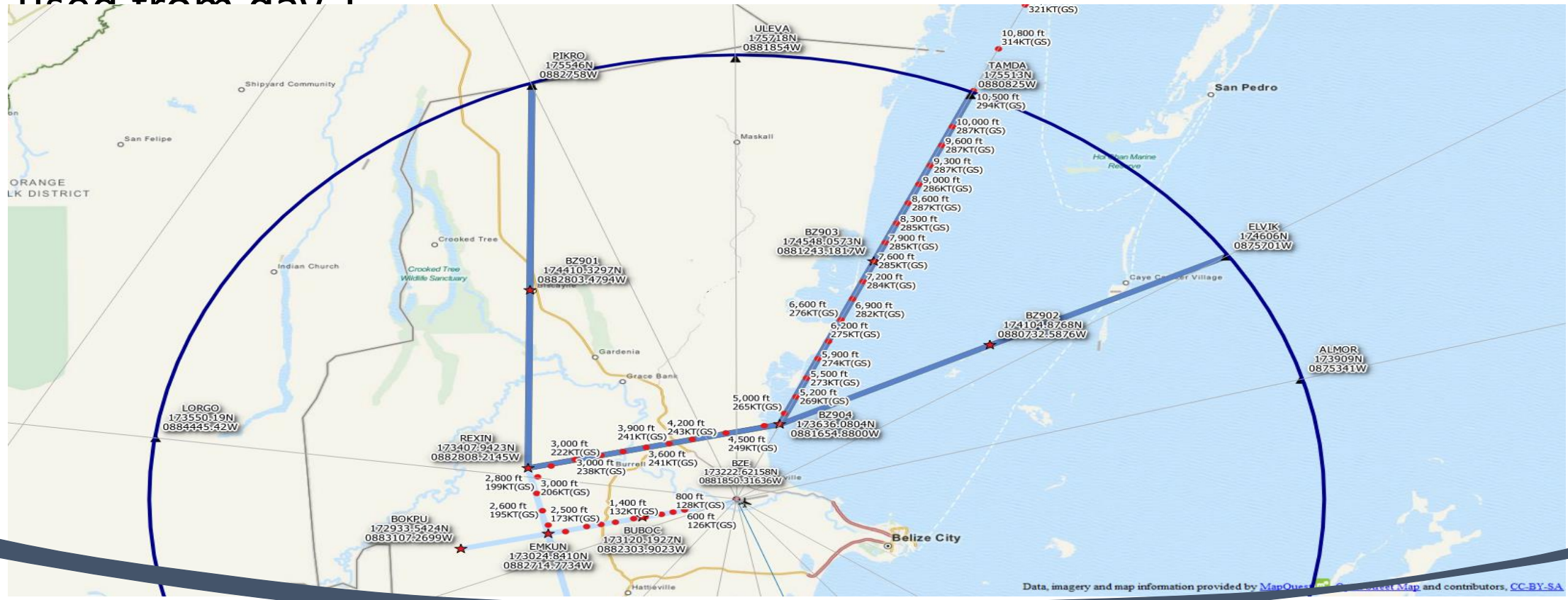
Procedure Use

- PBN STAR and approaches including ILS with RNAV transitions were used from day 1



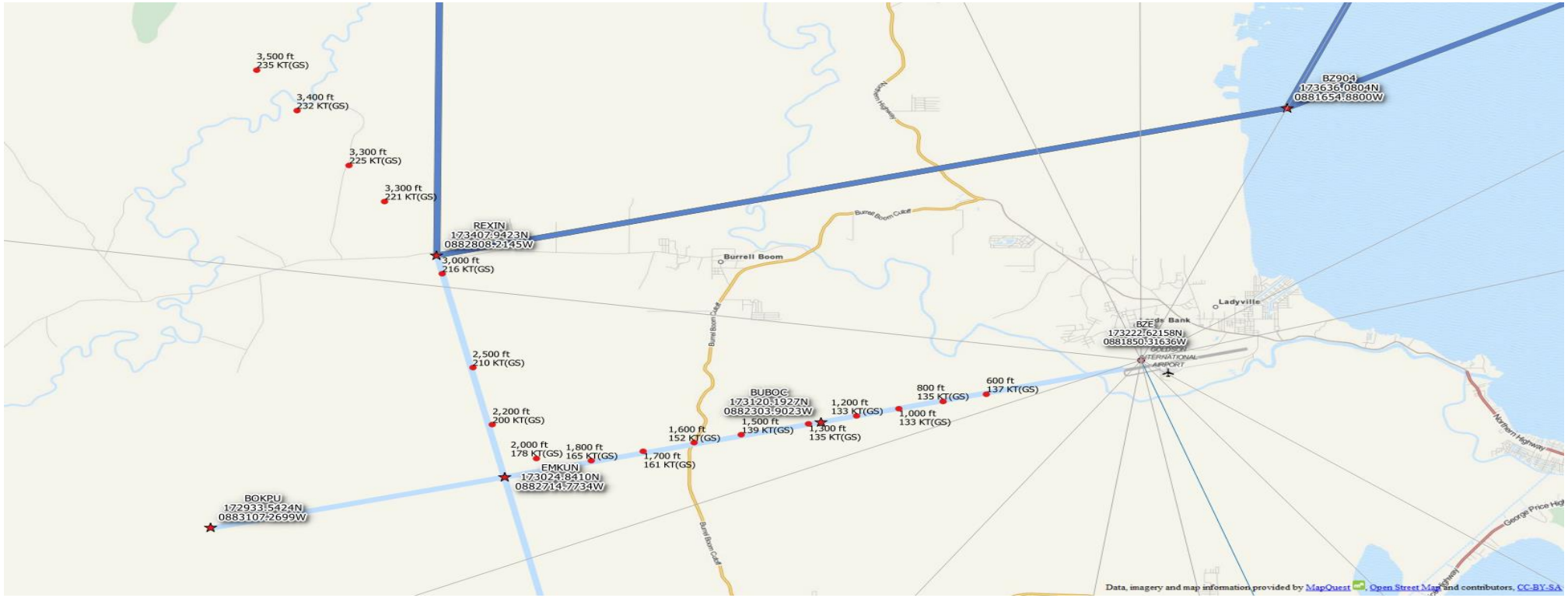
Procedure Analysis Post Implementation

- PBN STAR and approaches including ILS with RNAV transitions were used from day 1



Procedure Analysis Post Implementation

- PBN using Direct To WP



Tasks to be done

PBN implementation during first semester 2016

- VFR corridors
- Conventional Procedures review or withdrawal
- MZBZ STAR RWY25
- MZBZ RNAV GNSS RWY25
- Second Workshop with airlines (feedback + Collaborative Decision Making CDM)

Tasks to be done

PBN implementation during second semester 2016

- MZBZ SID RWY07
- MZBZ SID RWY25
- RNAV LNAV minima and SID RNAV1 at local aerodromes used by local carriers for example Tropic Air at San Pedro Airport

Conclusions

- Belize is reaching its PBN goal steadily according to plan
- Belize is working together with industry and its PANS OPS service provider COCESNA to deliver the PBN Project

- Participation of private companies is very important, it provides regulator with more tolos to validate and work on procedures. Jeppesen, Southwest, American Airlines, IATA all were key stakeholders in this endeavour.

ANALISIS REORGANIZACIONAL DEL ESPACIO AEREO CENTROAMERICANO

http://www.civilaviation.gov.bz/

FEB. 2016