

TABLE OF CONTENTS

PAGE

I. GENERAL INFORMATIONS & ABBREVIATIONS	3
II. USEFUL INFORMATIONS ABOUT THE EXECUTION OF THE PROCEDURES	4
AKTION (LGPZ - GREECE) - IAP ILS/DME RWY 08	6
AMENDOLA (LIBA - ITALY) - IAP TACAN RWY 29	7
AVIANO (LIPA - ITALY) - IAP TACAN RWY 03	8
AVIANO (LIPA - ITALY) - IAP ILS/DME RWY 03	9
BATAJNICA (LYBT - SERBIA) - IAP ILS/DME RWY 14L	10
BRNIK (LJLJ - SLOVENIA) - IAP ILS/DME RWY 30	11
CASALE (LIBR - ITALY) - IAP ILS/DME RWY 33	12
FALCONARA (LIPY - ITALY) - IAP ILS/DME RWY 20	13
GIOIA DEL COLLE (LIBV - ITALY) - IAP TACAN RWY 34L	14
GROSSETO (LIRS - ITALY) - IAP TACAN RWY 02	15
MIRAMARE (LIPR - ITALY) - IAP ILS/DME RWY 30	16
PESCARA (LIBP - ITALY) - IAP ILS/DME RWY 20	17
PLESO (LDZA - CROATIA) - IAP ILS/DME RWY 23R	18
RONCHI DEI LEGIONARI (LIPQ - ITALY) - IAP ILS/DME RWY 11	19
TASZAR (LHTA - HUNGARY) - IAP TACAN RWY 16R	20
TESSERA (LIPZ - ITALY) - IAP ILS/DME RWY 05R	21



FALCON BMS 4.32 BALKANS THEATER



I. GENERAL INFORMATIONS & ABBREVIATIONS

Distances in nautical miles.

Runway dimensions in feet.

Altitudes/Elevations in feet Mean Sea Level (MSL).

Radials/Headings are magnetic.

Vertical Descent Angle (VDA) is calculated from FAF to threshold.

ALT	Altitude
Chan	Channel
DME	Distance Measuring Equipment
FAF	Final Approach Fix
FT	Feet
IAF	Initial Approach Fix
IAS	Indicated Airspeed
Ldg	Landing
LOC	Localizer
LR-	Lead Radial (followed by 3 digits)
MDA	Minimum Descent Altitude
MSA	Minimum Sector Altitude
NM	Nautical Miles
R-	Radial (followed by 3 digits)
RWY	Runway
S-	Straight-in approach
TACAN	Tactical Air Navigation equipment
TDZE	Touchdown Zone Elevation
VORTAC	VOR and TACAN navigational facilities collocated
WPT	Waypoint

RATE OF CLIMB/DESCENT TABLE

CLIMB/DESCENT ANGLE (DEGREES)	CLIMB/DESCENT GRADIENT (FT/NM)
2.5°	265 ≈ 250
3.0°	318 ≈ 300
5.0°	530 ≈ 500
10.0°	1,060 ≈ 1,000

II. USEFUL INFORMATIONS ABOUT THE EXECUTION OF THE PROCEDURES

1) Maximum precise in DME (distance in Nautical Miles)

In order to have the maximum precise in indication of DME (distance from the NavAid in NM), do the follow: insert the GPS coordinates of the NavAid (TACAN or VORTAC station) over a steerpoint (STPT) and make this steerpoint as current. GPS coordinates of the NavAid given by the IAP chart. Then set the proper NavAid channel, the band to X (airports - ground) and the Instr Mode switch to TCN. In this way you will have indications for bearing and distance at the HSI from NavAid as in real life, but also indication for distance with one decimal digit in the lower right corner in the HUD. This is critical for the precise of the final turn due to the fact that very often the DME of the last steerpoint (that we turn to final approach course aligned with runway centerline) has a decimal digit and the indication for distance at the HSI reads only integer numbers.

2) Turns

If not published in the IAP charts, turns to join and to leave an arc, turns of missed approach and holding turns must be executed with IAS 250 KTS and bank angle of 30 degrees. Also if not published in the Departure charts, turns must be executed with IAS 300 KTS and bank angle of 30 degrees.

3) Final turn and impact of wind

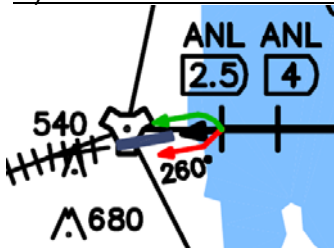
Even if you turn at final steerpoint at exactly DME, you may find yourself aligned with runway centerline but offset. This happens due to active wind and not of the inaccuracy of the IAP chart. So in this situation:

A) The NavAid is LEFT of the runway, example of Bocas Del Toro Intl with final turn at R-151/2.1 DME.



- i] if you fly offset of runway and left of it (red course in photo) execute a missed approach and at the next approach turn 0.1 DME sooner, means at R-151/2.2 DME.
- ii] if you fly offset of runway and right of it (green course in photo) execute a missed approach and at the next approach turn 0.1 DME later, means at R-151/2.0 DME.

B) The NavAid is RIGHT of the runway, example of Nea Anchialos with final turn at R-090/2.5 DME.



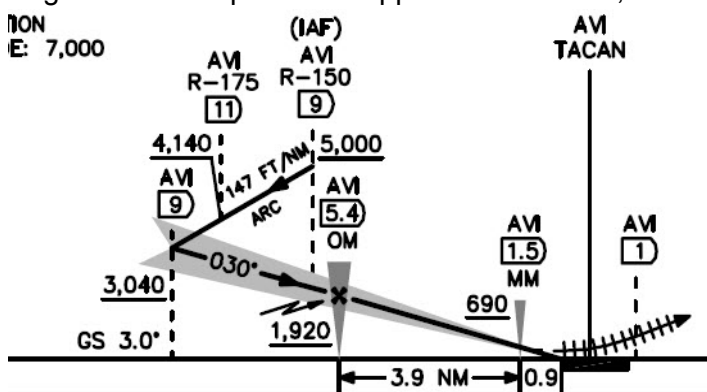
- i] if you fly offset of runway and left of it (red course in photo) execute a missed approach and at the next approach turn 0.1 DME later, means at R-090/2.4 DME.
- ii] if you fly offset of runway and right of it (green course in photo) execute a missed approach and at the next approach turn 0.1 DME sooner, means at R-090/2.6 DME.

All the previous can be applied when at the final steerpoint the AOA is 11-13 degrees and the CDI at HSI centered almost perfect or at least with 0.5 degree maximum variation.

4) Calculating the descent

In order to execute the descents with precise, you must convert the rate of descent that shown in the IAP charts in FT/NM to degrees. This can be done via the table "RATE OF CLIMB/DESCENT TABLE" in page 3 as follow: multiply the FT/NM of the rate of descent with 3 and then divide the result with 318.

E.g. at the example of ILS approach to Aviano, we have at the 11 DME arc rate of descent 147 FT/NM.



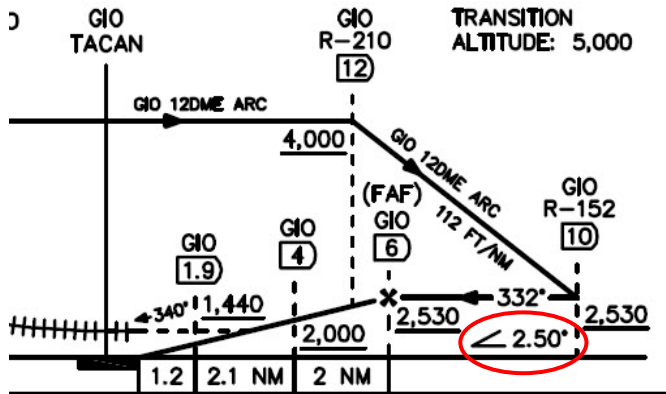
So this gives:

$(147 \times 3) / 318 = 1.39 \approx 1.4$ degrees, means that we must descent from IAF Fix at R-150/9 DME to 9 DME via the 11 DME arc with 1.4 degrees.

Note that we have the same result with any pair, e.g. 5 deg. - 530 FT/NM gives also 1.4 degrees: $(147 \times 5) / 530 = 1.39 \approx 1.4$ degrees.

Keep in mind that the rate of descent in FT/NM is independent of velocity of the aircraft, as also its conversion to degrees.

Also the descent from FAF Fix to runway threshold for non-precision approaches is given with the VDA (Vertical Descent Angle) and shown in the IAP charts in degrees just after its symbol (< or >). In the next example of TACAN approach to Gioia Del Colle, we see VDA of 2.50 degrees.



5) Setting the QNH

Don't forget to set the QNH of the altitude instrument while you transit from transition altitude to lower altitude by asking ATC (keys "T" and "T" and "1"). Transition altitude is given by the IAP charts in the profile at the lower left corner.

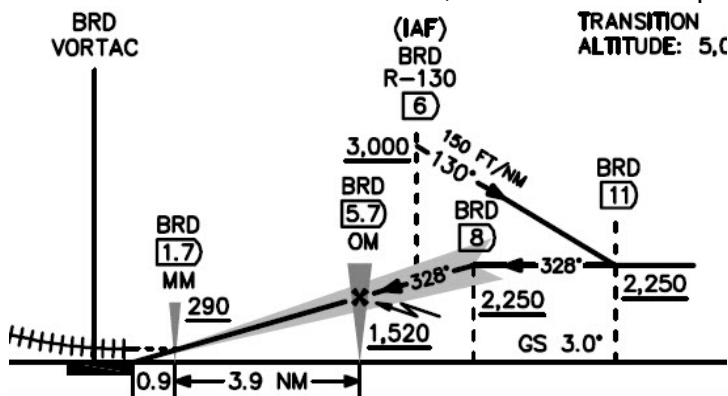
6) ILS limits

ILS Localizer provides course indications to 10 degrees either side of the course along a radius of 18 NM from the antenna and from 10 to 35 degrees either side of the course along a radius of 10 NM.

ILS Glide slope transmits a glide path beam 1.4 degrees wide. It is normally usable to the distance of 10 NM. In Falcon BMS 4.32 Glide slope's beam is 1.57 degrees wide (+0.085 degrees and -0.085 degrees).

Obviously Glide slope's zone of receiving signal is very narrow and a lot of Falcon pilots think very often that the ILS Glide slope is not transmitting and it's an issue of the simulator, but actually they aren't in the proper altitude at the specific DME from runway.

In order to understand this better, let's see the example of ILS approach to Casale:

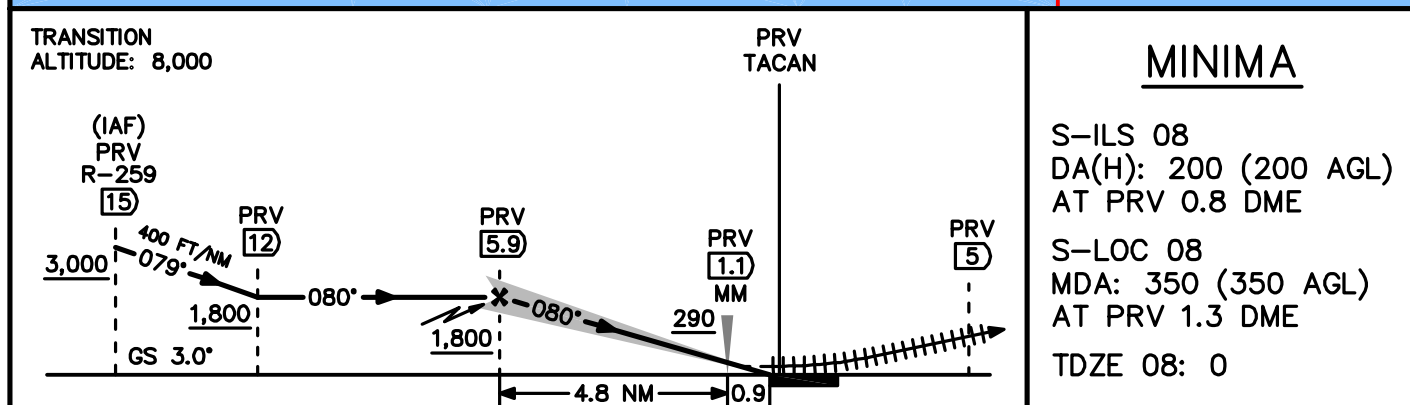
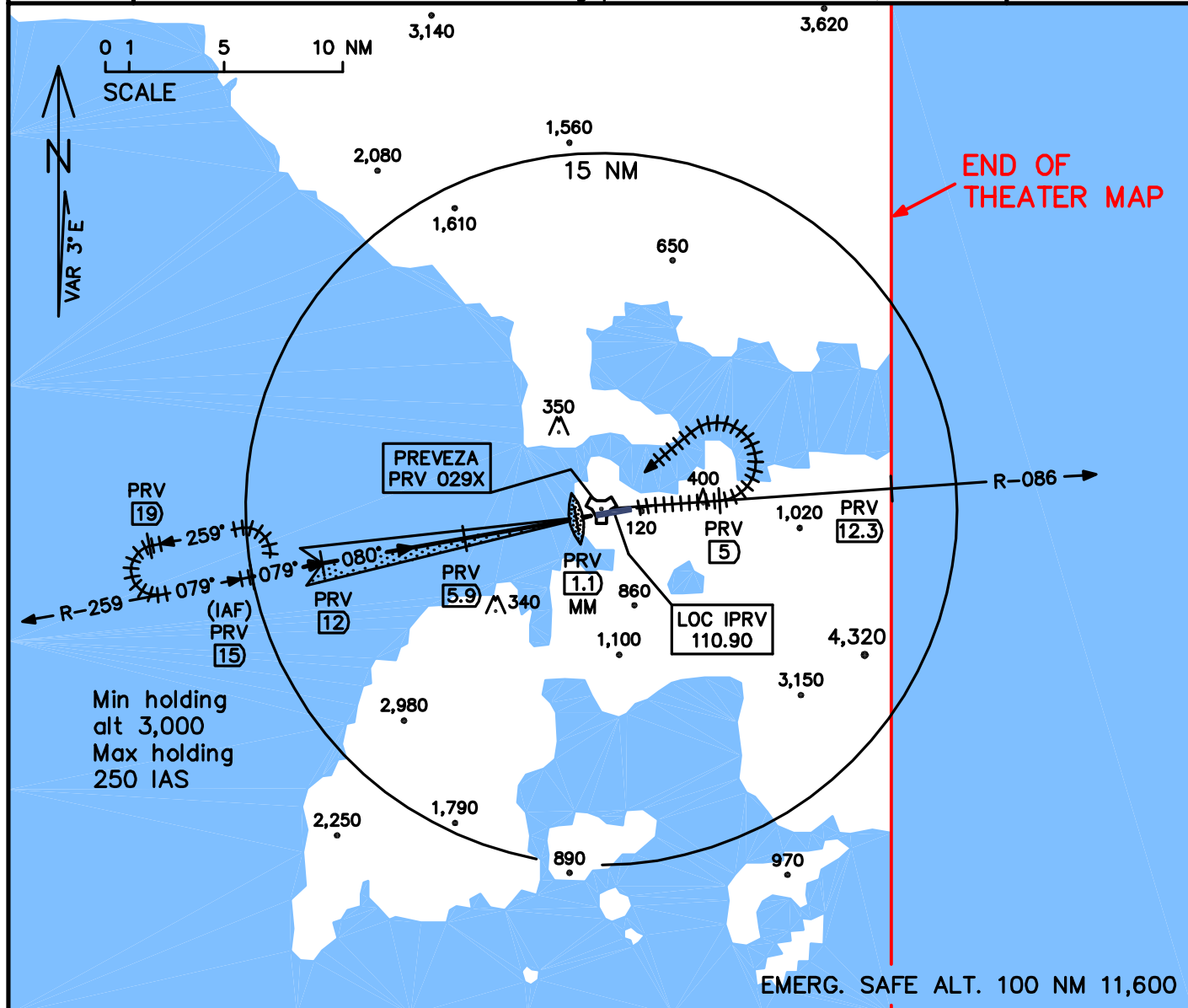


You see that at 5.7 DME from VORTAC station (and at 0.9+3.9=4.8 NM from runway threshold) must be at 1,520 FT. At the distance of 4.8 NM from runway threshold the Glide slope's beam has limits ± 400 FT, means from 1,520-400=1,120 FT up to 1,520+400=1,920 FT. In other words when you are exactly at 5.7 DME and on Localizer course, you will not have signal from Glide slope if you are below of 1,120 FT or if you are higher of 1,920 FT and the Glide slope bar inside HUD will be dashed and not moving. So pay special attention to altitude that intercepts the glidepath.

ILS/DME RWY 08

AKTION (LGPZ)
PREVEZA, GREECE

TACAN PRV Chan 029X	LOC IPRV 110.90	Aktion Tower 257.80 122.10 Final course 080	TACAN GPS N38° 43.318' E22° 31.696'	Rwy ldg 8,666 TDZE 0	MSA PRV 25NM 180° 7,200 8,000 090° 5,000 7,300 270° 360°
SSALR  MISSED APPROACH: Climb runway with min. rate 400 FT/NM and pass PRV TACAN to intercept PRV R-086 outbound. At PRV R-086/5 DME climb left turn direct to PRV TACAN. Then proceed via PRV R-259 outbound to holding pattern and hold at 3,000.					



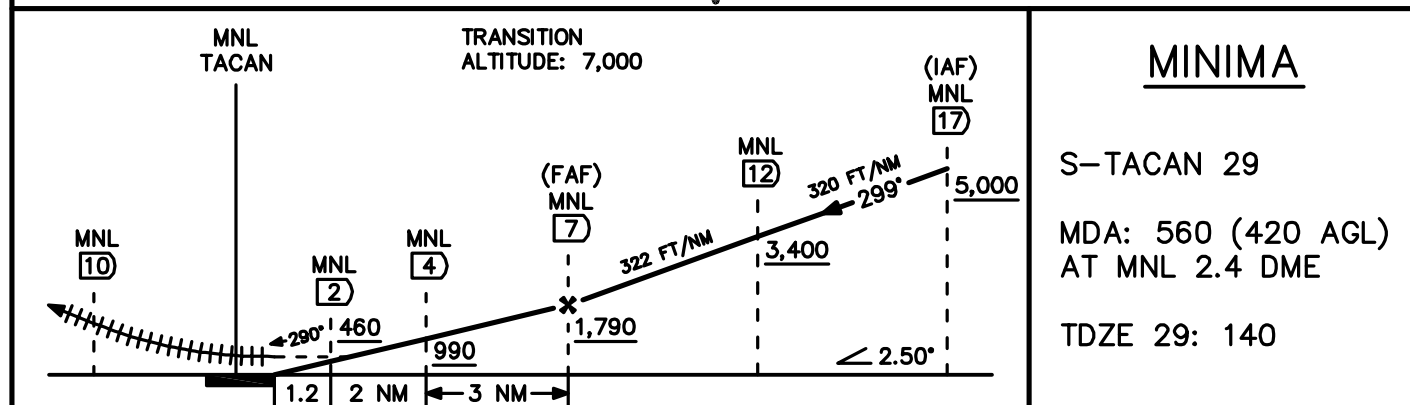
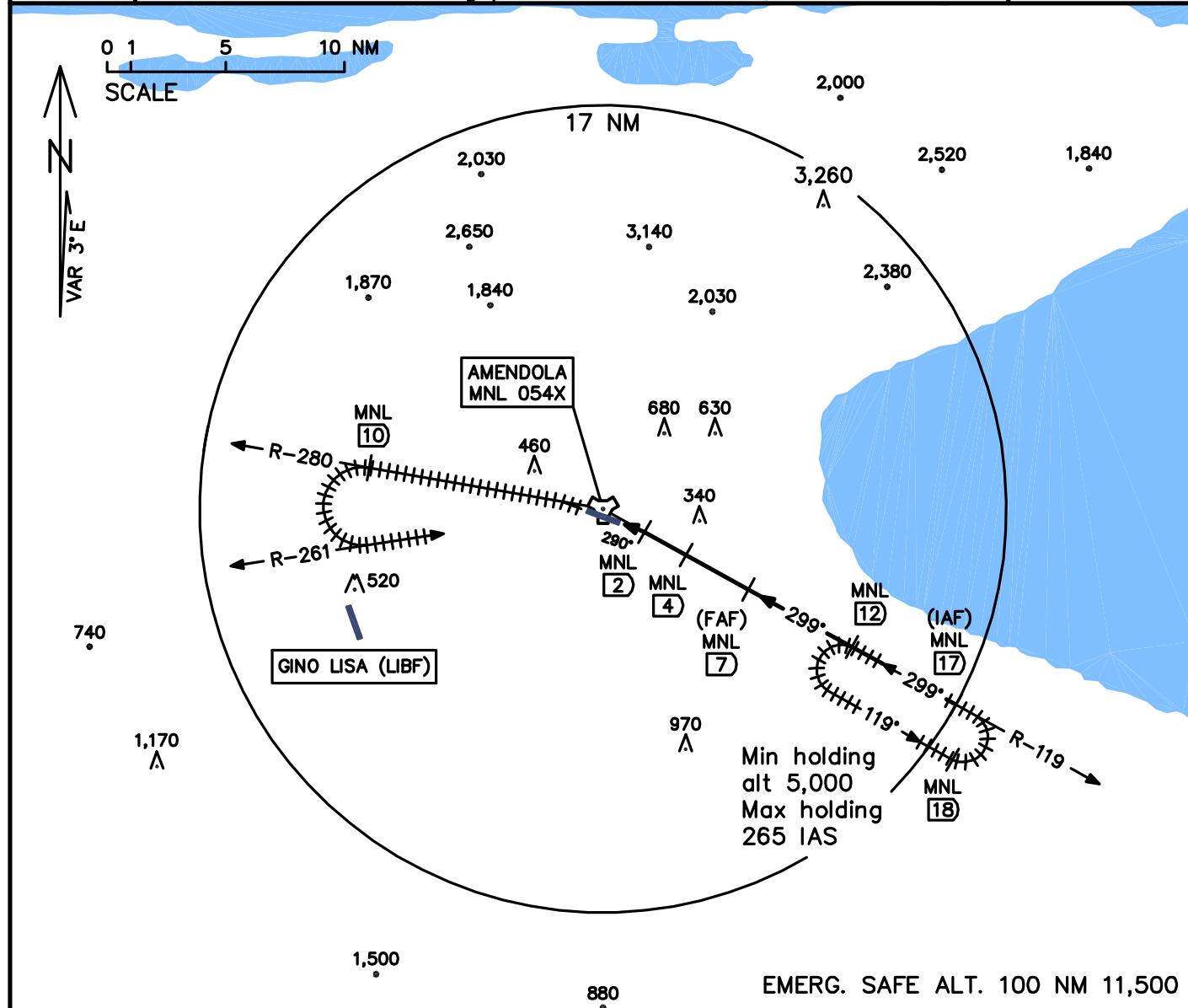
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TACAN RWY 29

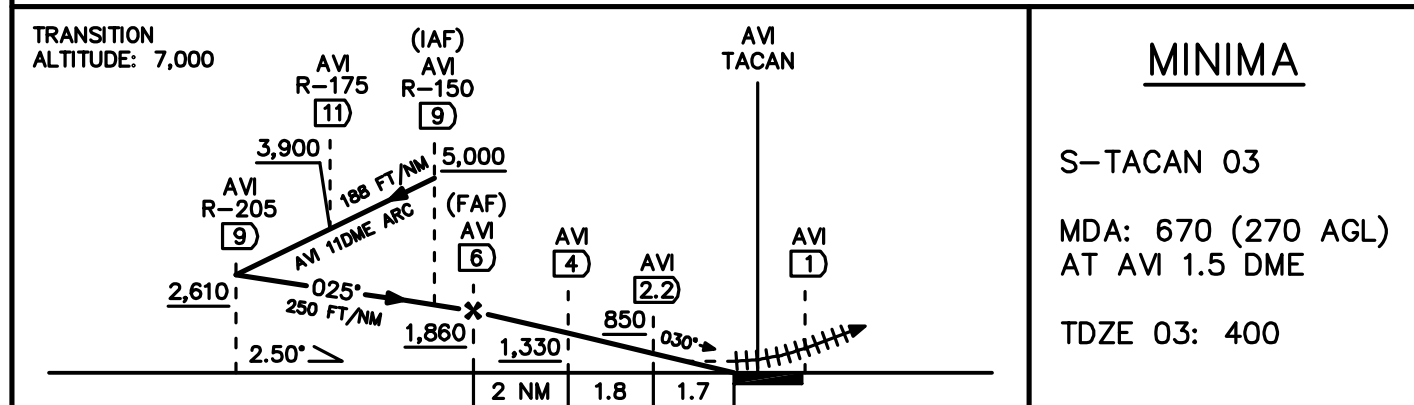
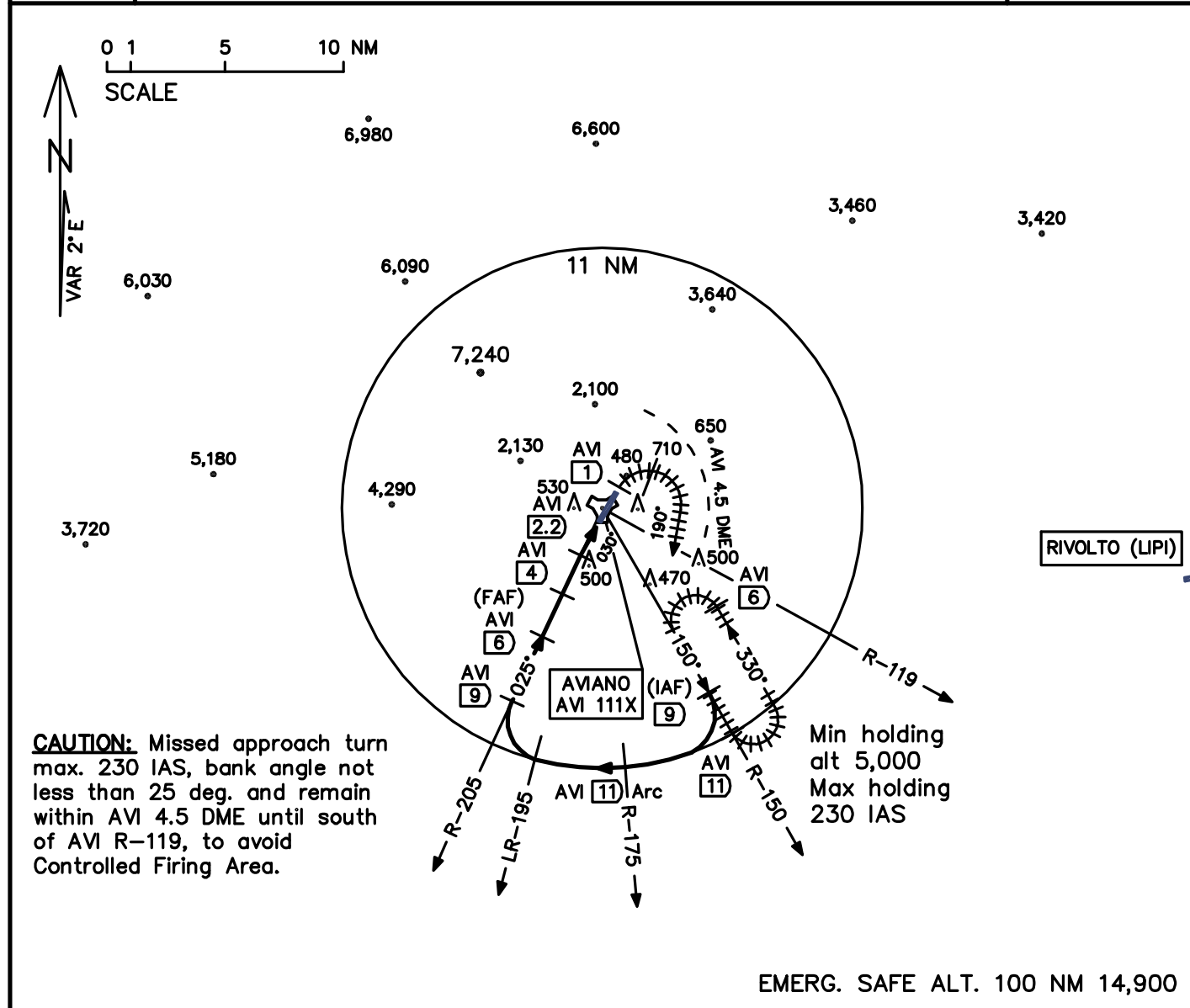
AMENDOLA (LIBA)
AMENDOLA, ITALY

TACAN MNL Chan 054X	LOC —	Amendola Tower 257.80 118.20 Final course 290	TACAN GPS N41° 07.729' E16° 46.601'	Rwy ldg 8,666 TDZE 140	MSA MNL 25NM 160° 5,500 250° 2,800 340°
ODALS 	MISSED APPROACH: Climb runway and pass MNL TACAN to intercept MNL R-280 outbound. At MNL R-280/10 DME climb left turn direct to MNL TACAN via MNL R-261 inbound. Then proceed via MNL R-119 outbound to holding pattern and hold at 5,000.				



AVIANO (LIPA)
AVIANO, ITALY

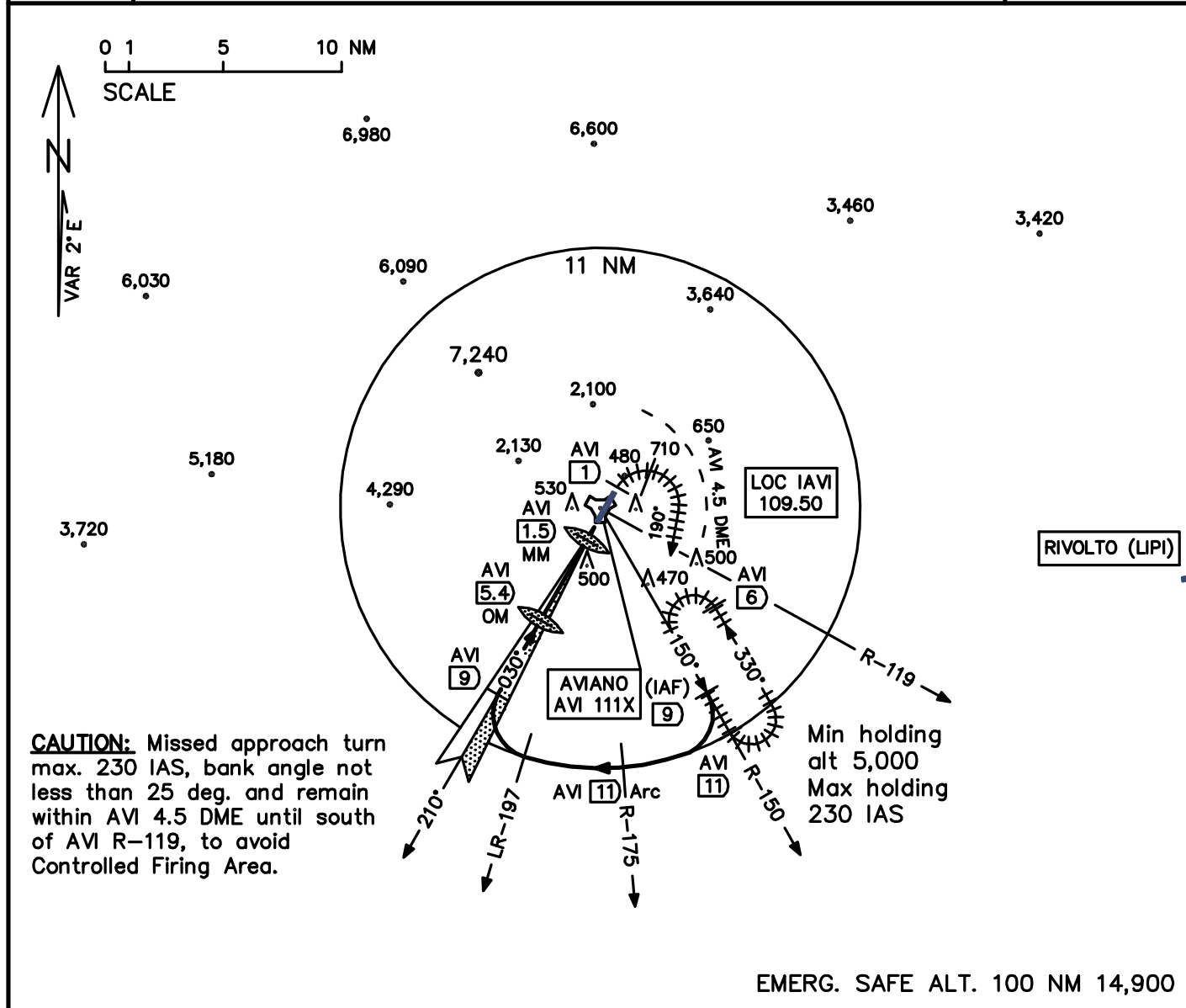
TACAN AVI Chan 111X	LOC IAVI 109.50	Aviano Tower 284.65 142.05 Final course 030	TACAN GPS N45° 16.137' E13° 04.417'	Rwy Idg 8,666 TDZE 400	
ODALS 	MISSED APPROACH: Climb runway and pass AVI TACAN. Not later than AVI 1 DME climb right turn heading 190 to intercept and follow AVI R-150 outbound to holding pattern and hold at 5,000.				



ILS/DME RWY 03

AVIANO (LIPA)
 AVIANO, ITALY

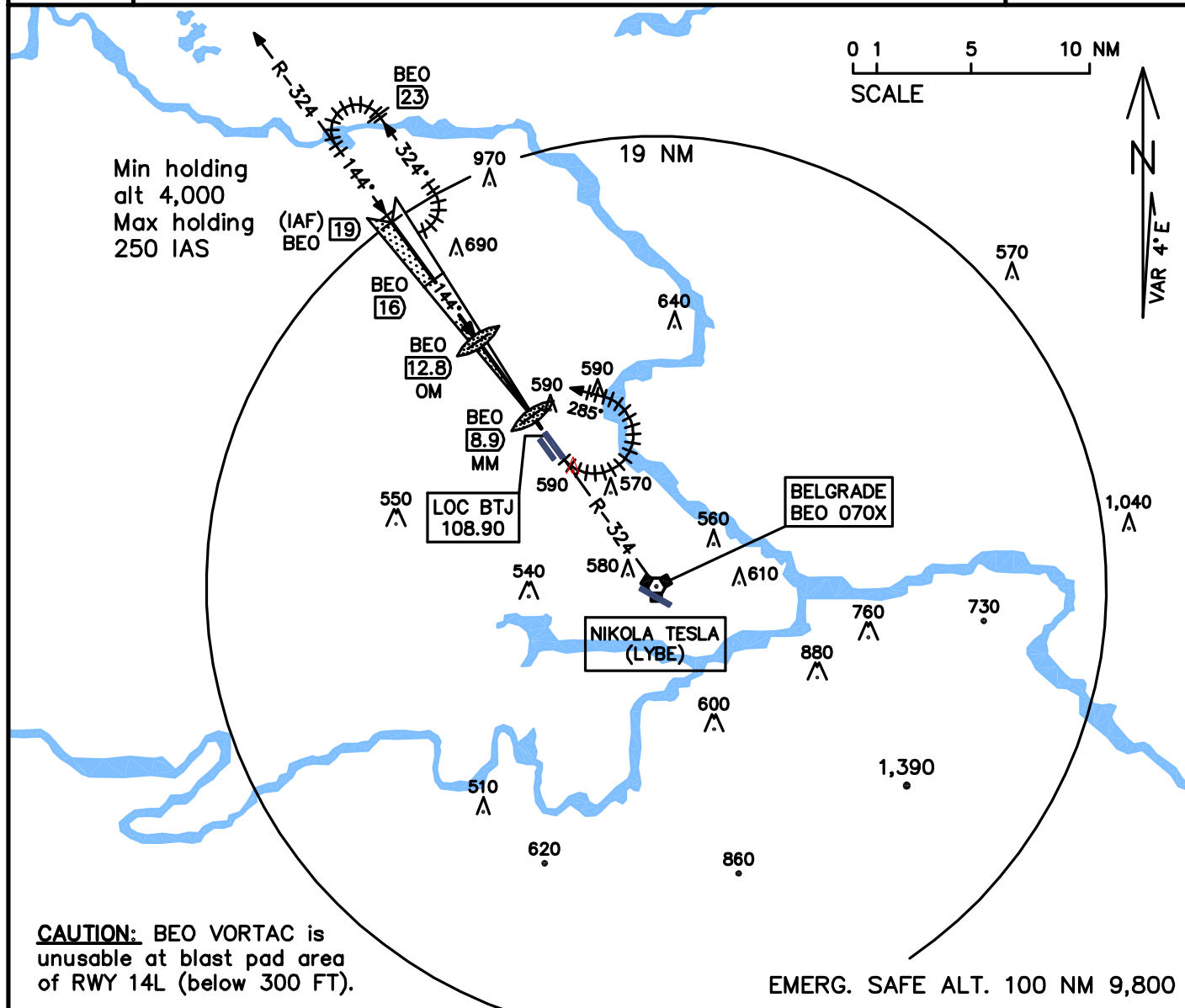
TACAN AVI Chan 111X	LOC IAVI 109.50	Aviano Tower 284.65 142.05 Final course 030	TACAN GPS N45° 16.137' E13° 04.417'	Rwy ldg 8,666 TDZE 400	MSA AVI 25NM 12,800 11,600 6,300 030°
ODALS	MISSED APPROACH: Climb runway and pass AVI TACAN. Not later than AVI 1 DME climb right turn heading 190 to intercept and follow AVI R-150 outbound to holding pattern and hold at 5,000.				



ILS/DME RWY 14L

BATAJNICA (LYBT)
BELGRADE, SERBIA

VORTAC BEO Chan 070X	LOC BTJ 108.90	Batajnica Tower 230.15 118.15 Final course 144	VORTAC GPS N44° 10.398' E22° 57.850'	Rwy Idg 7,769 TDZE 260	MSA BEO 25NM 3,300
MISSED APPROACH: Climb runway and before the end of RWY 32R (due to obstacle 590 FT) climb left turn heading 285 to intercept BEO R-324 outbound to holding pattern and hold at 4,000.					



TRANSITION ALTITUDE: 10,000 	BEO VORTAC	MINIMA S-ILS 14L DA(H): 460 (200 AGL) AT BEO 8.6 DME S-LOC 14L MDA: 530 (270 AGL) AT BEO 8.8 DME TDZE 14L: 260
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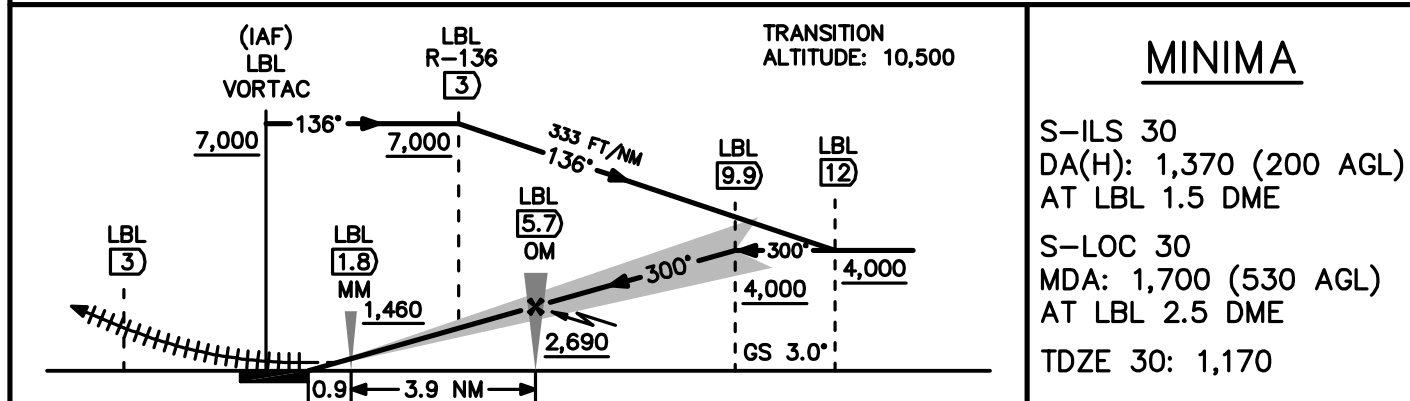
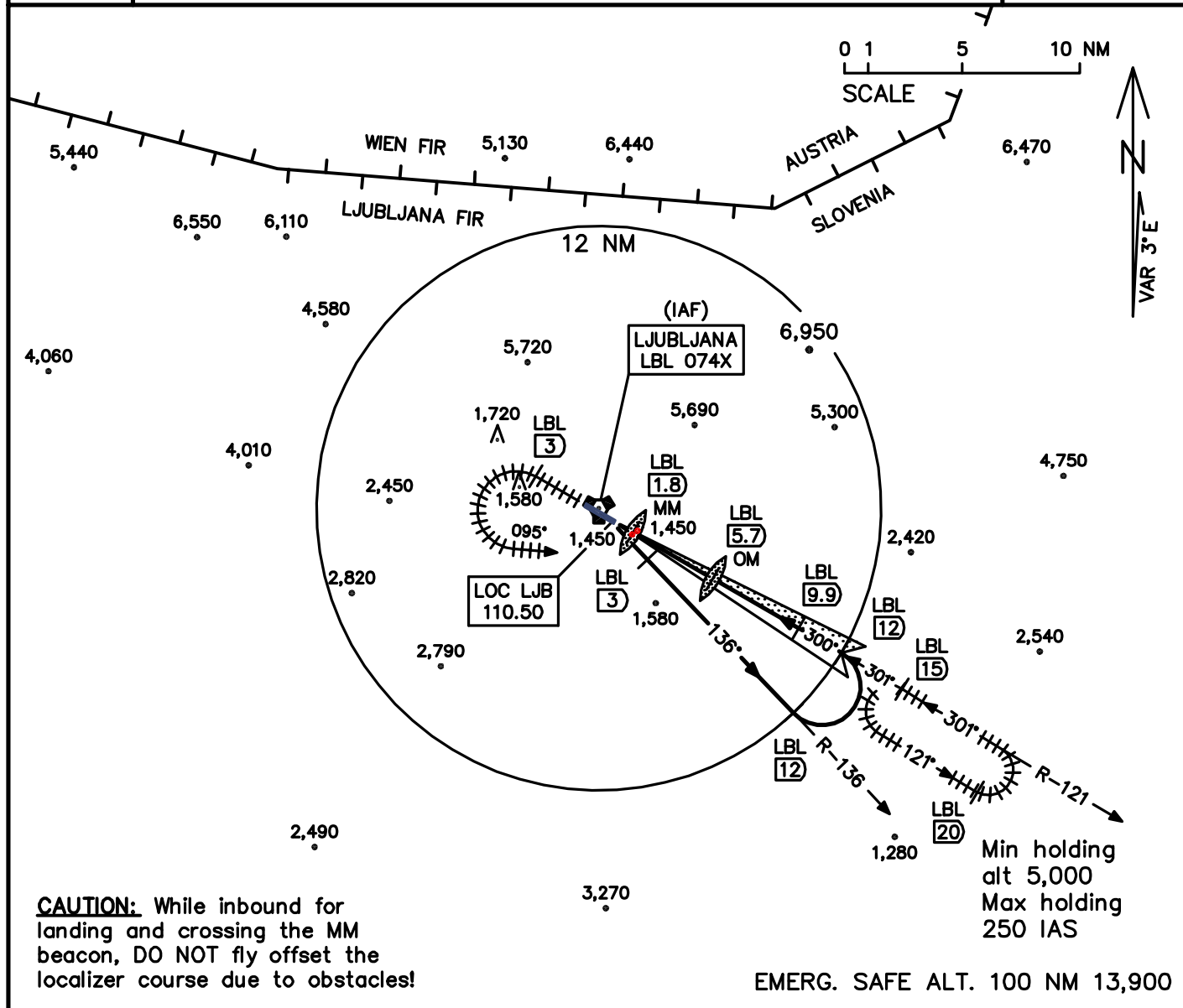
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ILS/DME RWY 30

BRNIK (LJLJ)
LJUBLJANA, SLOVENIA

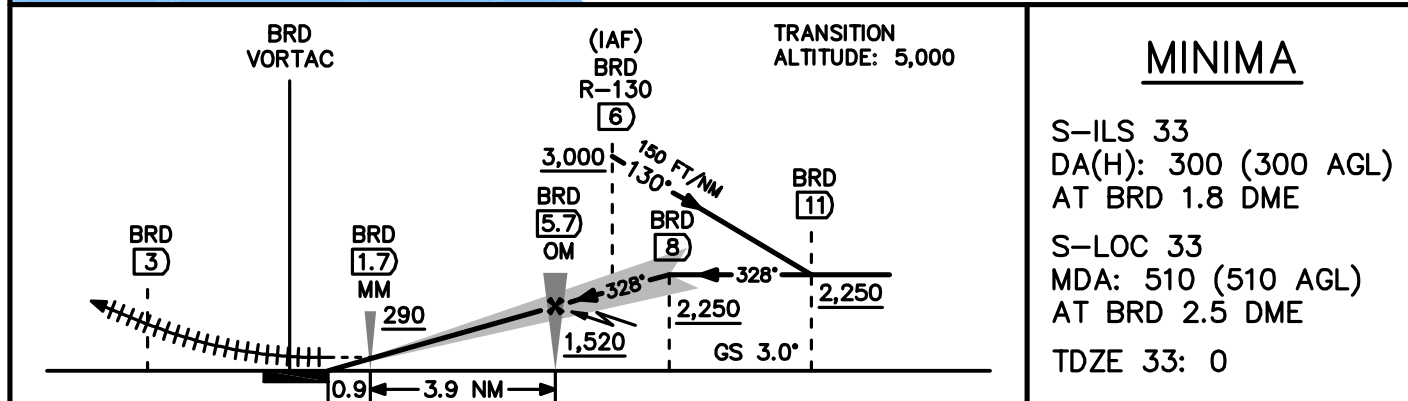
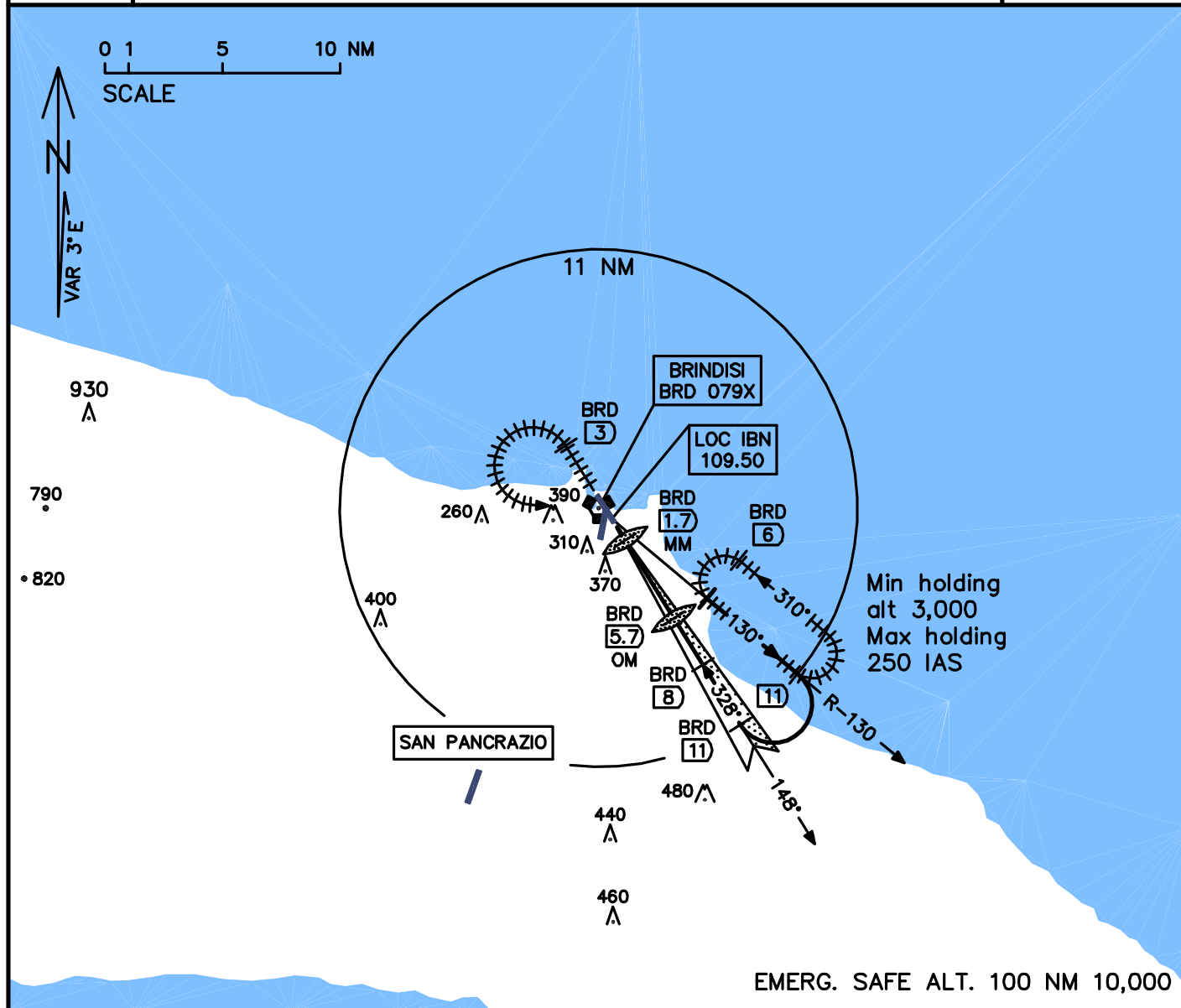
VORTAC LBL Chan 074X	LOC LJB 110.50	Ljubljana Tower 385.15 118.00 Final course 300	VORTAC GPS N45° 26.914' E15° 32.285'	Rwy Idg 8,666 TDZE 1,170	MSA LBL 25NM 10,500 090°-270° 8,000
ODALS 	MISSED APPROACH: Climb runway and pass LBL VORTAC. At LBL 3 DME climb left turn heading 095 to intercept LBL R-121 outbound to holding pattern and hold at 5,000.				



ILS/DME RWY 33

CASALE (LIBR)
BRINDISI, ITALY

VORTAC BRD Chan 079X	LOC IBN 109.50	Brindisi Tower 257.80 118.10 Final course 328	VORTAC GPS N40° 19.771' E19° 23.621'	Rwy ldg 8,168 TDZE 0	MSA BRD 25NM 179° 2,600 359° 1,700
MISSED APPROACH: Climb runway and pass BRD VORTAC. At BRD 3 DME climb left turn direct to BRD VORTAC. Then proceed via BRD R-130 outbound to holding pattern and hold at 3,000.					



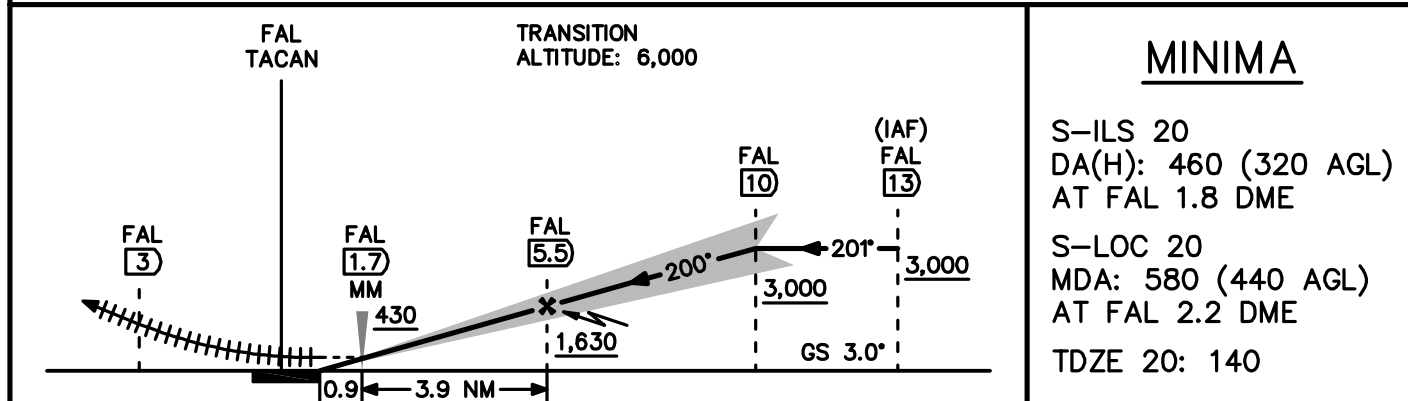
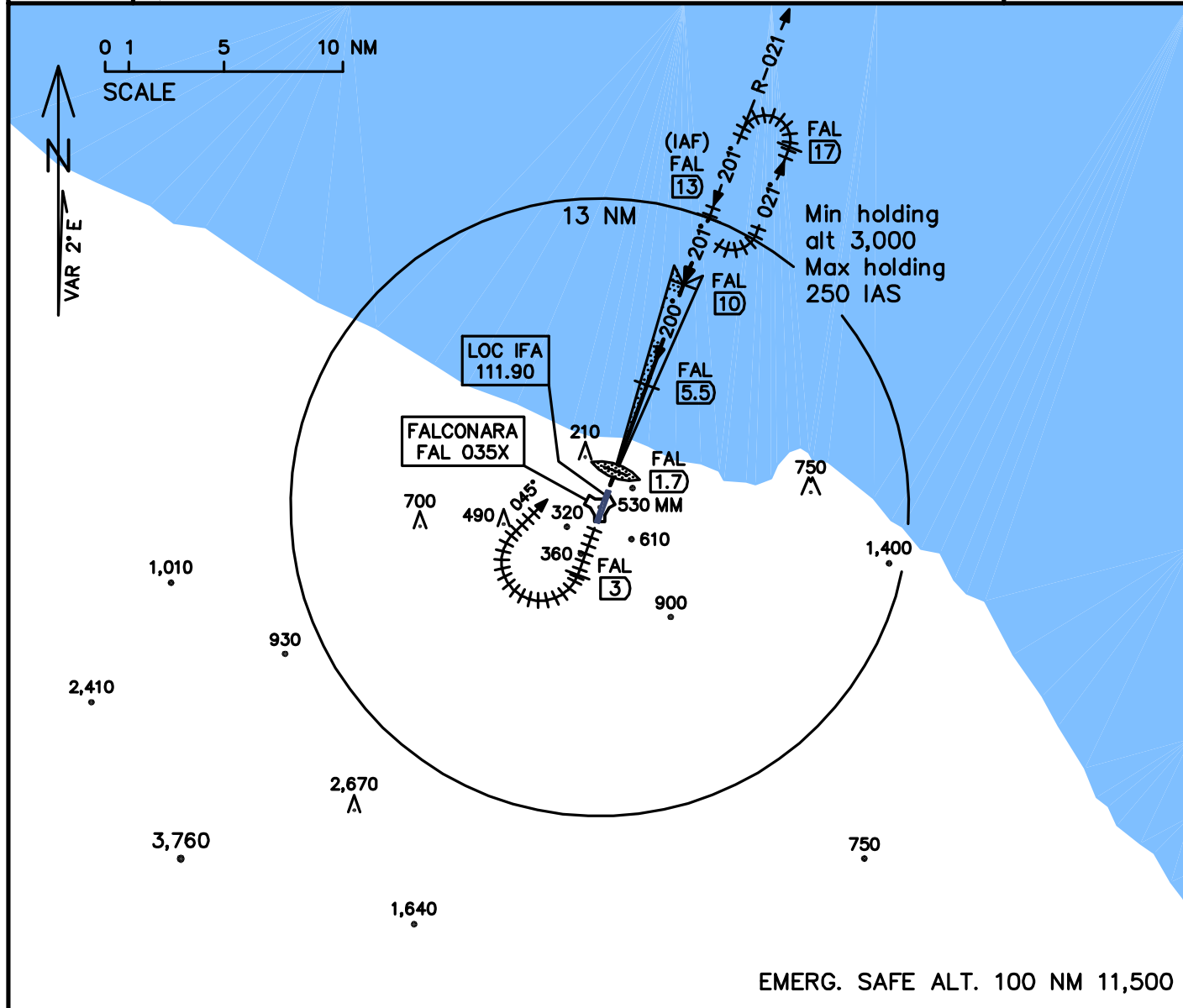
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ILS/DME RWY 20

FALCONARA (LIPY)
ANCONA, ITALY

TACAN FAL Chan 035X	LOC IFA 111.90	Falconara Tower 257.80 119.80 Final course 200	TACAN GPS N43° 01.425' E13° 59.475'	Rwy Idg 8,467 TDZE 140	MSA FAL 25NM 3,000 7,600 350° 110°
SSALR (A3)	MISSED APPROACH: Climb runway with min. rate 300 FT/NM and pass FAL TACAN. At FAL 3 DME climb right turn heading 045 to intercept FAL R-021 outbound to holding pattern and hold at 3,000.				



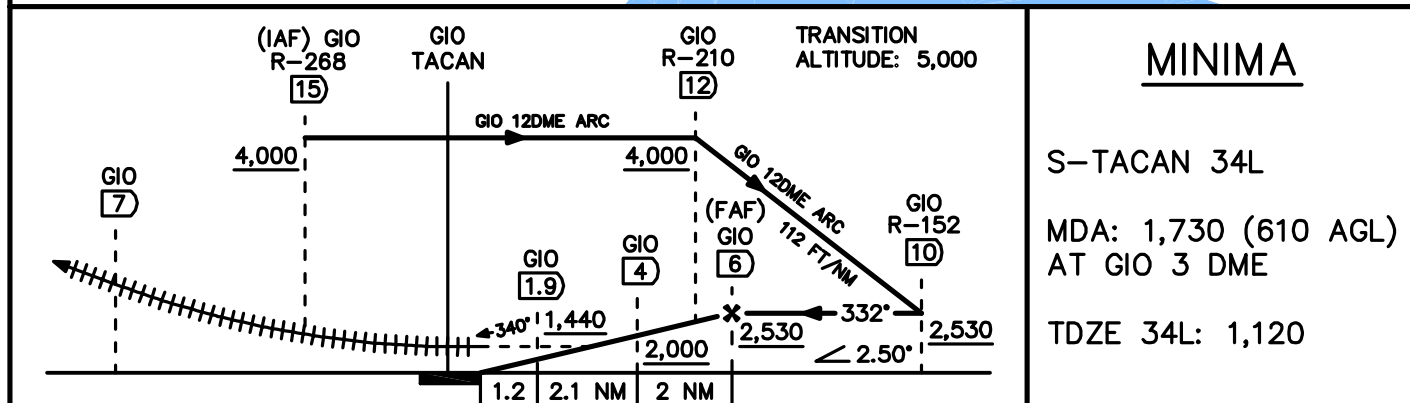
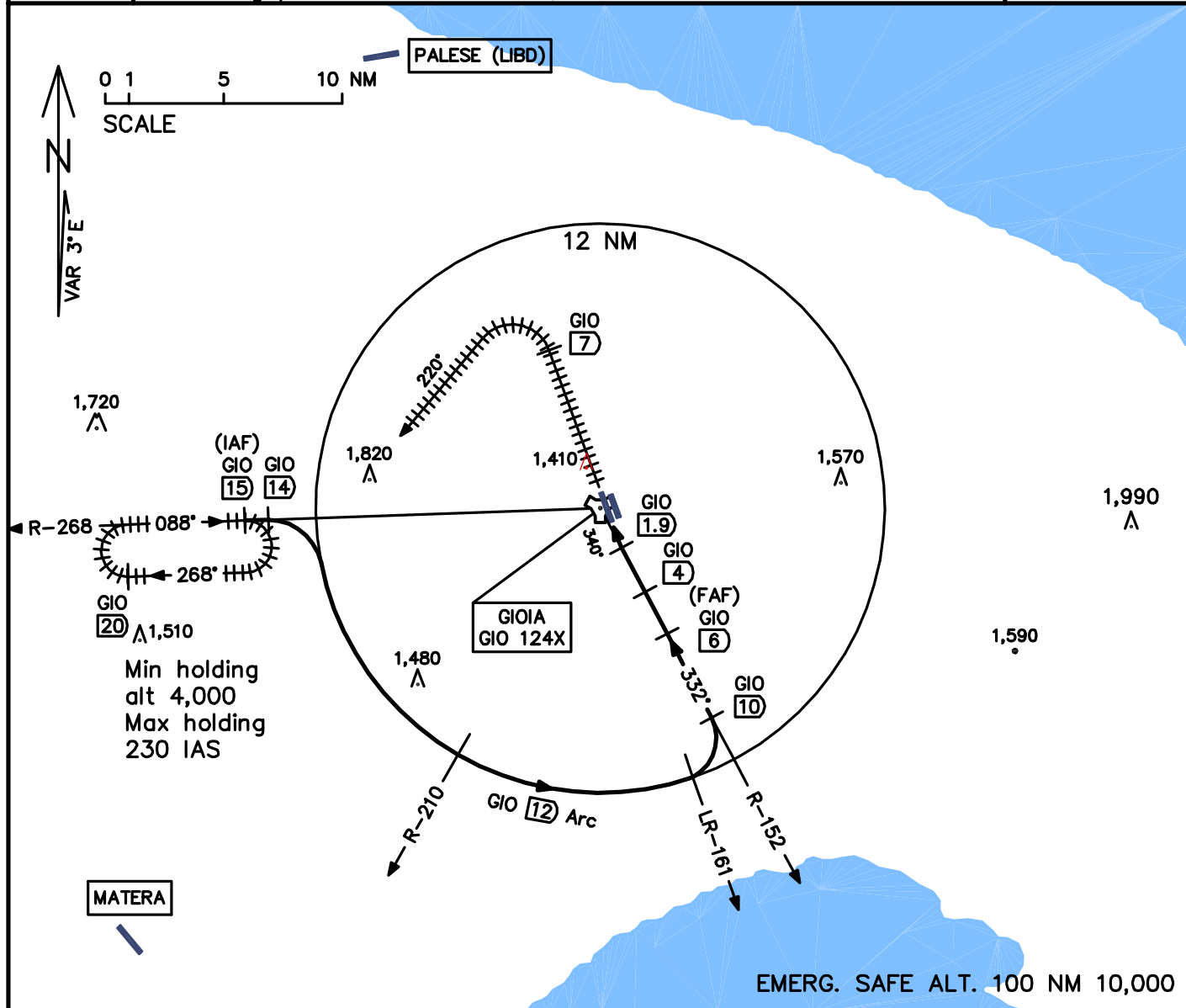
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TACAN RWY 34L

GIOIA DEL COLLE (LIBV)
GIOIA DEL COLLE, ITALY

TACAN GIO Chan 124X	LOC —	Gioia Tower 275.325 122.10 Final course 340	TACAN GPS N40° 26.237' E18° 10.091'	Rwy ldg 7,769 TDZE 1,120	MSA GIO 25NM 3,400 095° 3,100 005° 185° 3,200
SSALR 					
MISSED APPROACH: Climb runway with min. rate 400 FT/NM and pass GIO TACAN. Proceed on track 340 outbound until GIO 7 DME. Then climb left turn heading 220 to intercept GIO R-268 outbound to holding pattern and hold at 4,000.					



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GROSSETO (LIRS)
GROSSETO, ITALY

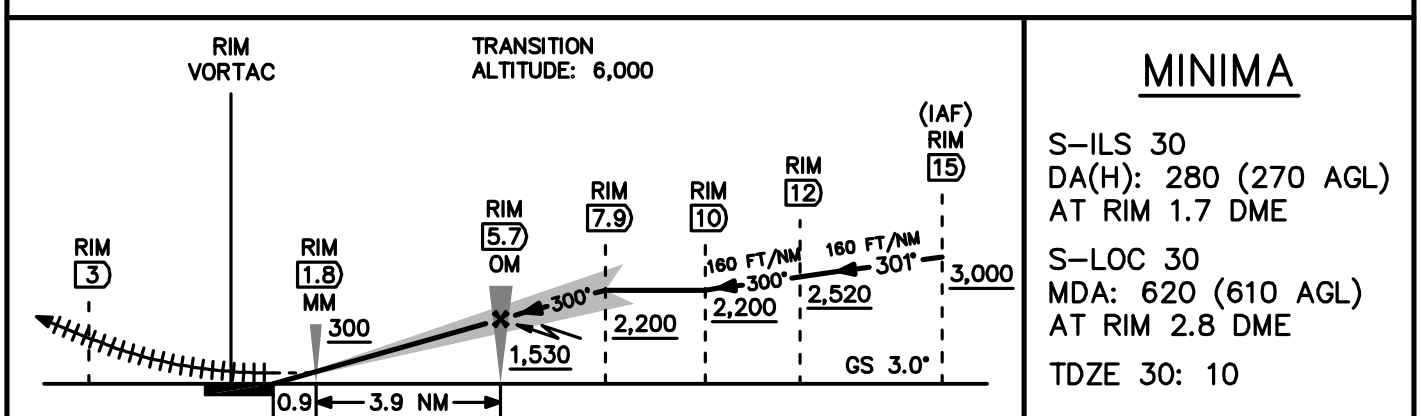
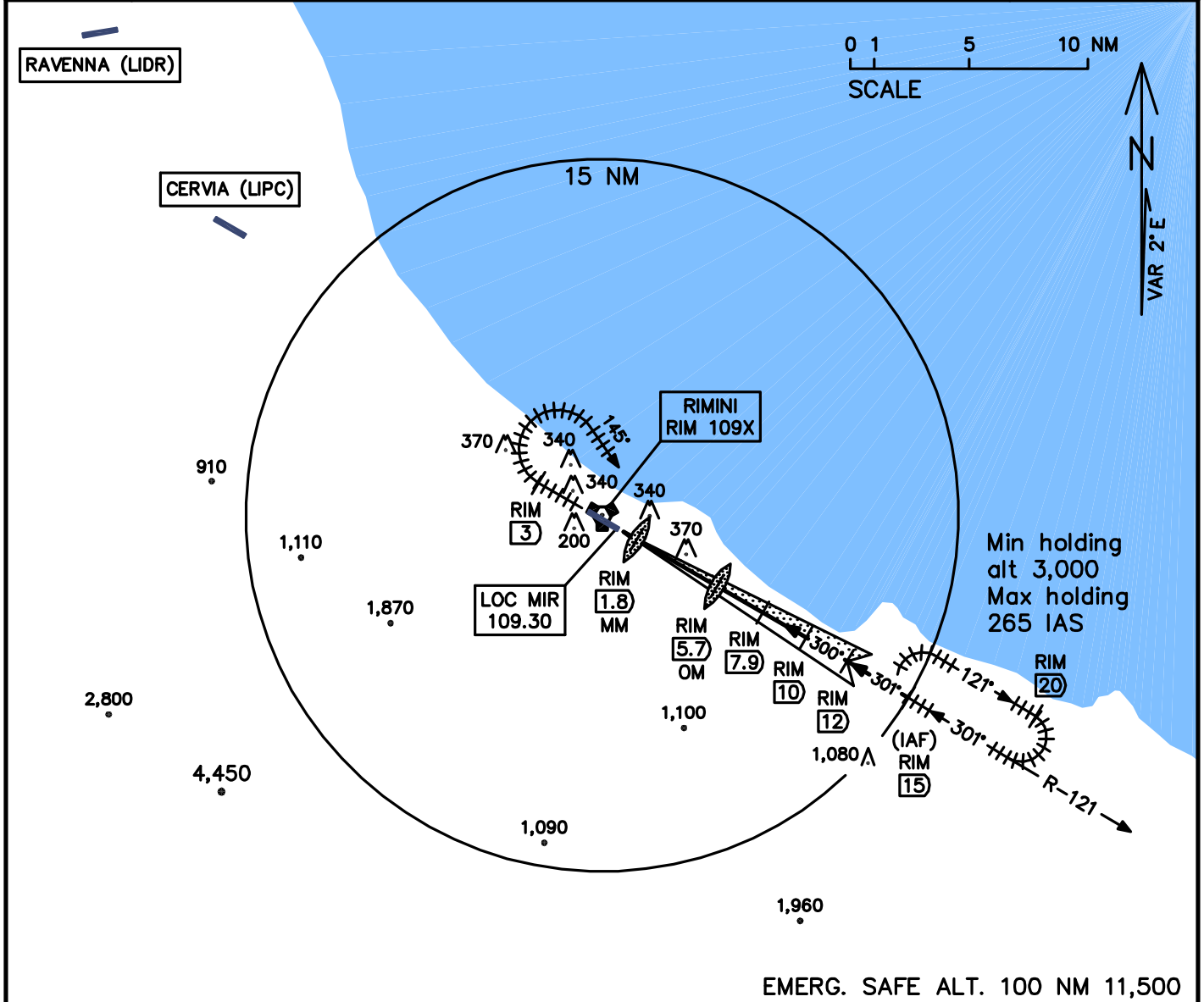


TDZE 02: 10

ILS/DME RWY 30

MIRAMARE (LIPR)
RIMINI, ITALY

VORTAC RIM Chan 109X	LOC MIR 109.30	Rimini Tower 278.10 119.10 Final course 300	VORTAC GPS N43° 24.596' E13° 02.017'	Rwy ldg 8,666 TDZE 10	
ODALS 	MISSED APPROACH: Climb runway and pass RIM VORTAC. At RIM 3 DME climb right turn heading 145 to intercept RIM R-121 outbound to holding pattern and hold at 3,000.				



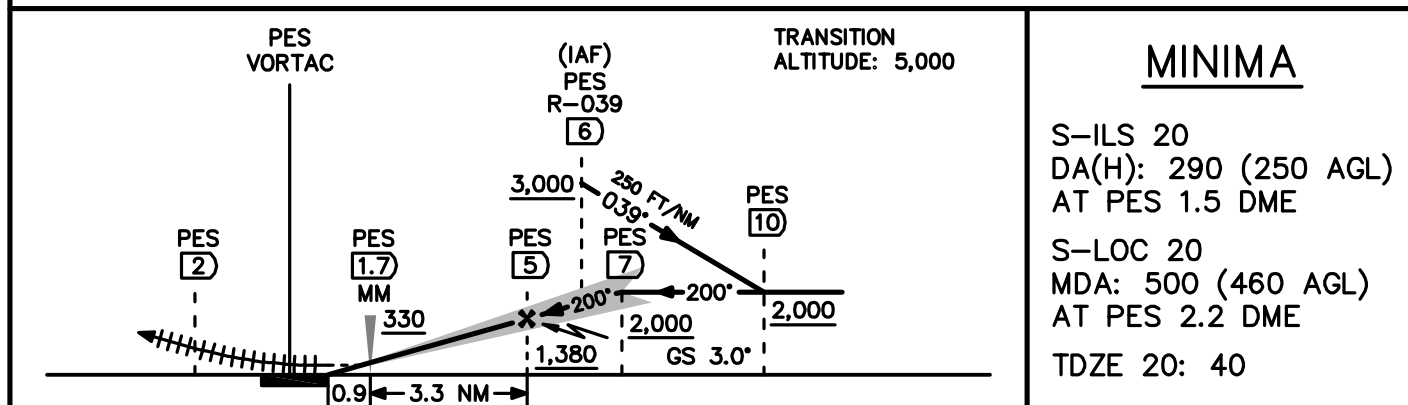
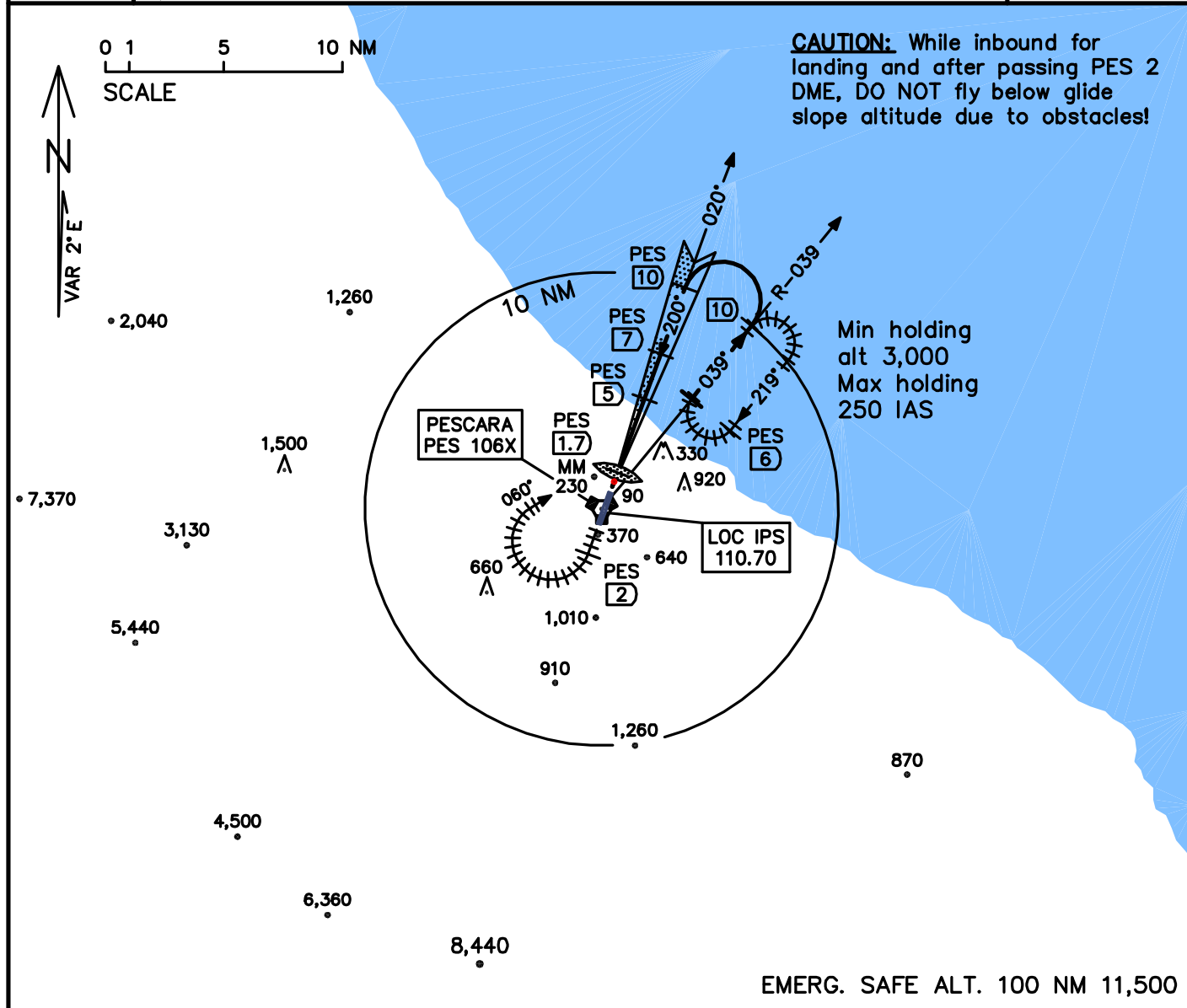
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ILS/DME RWY 20

PESCARA (LIBP)
PESCARA, ITALY

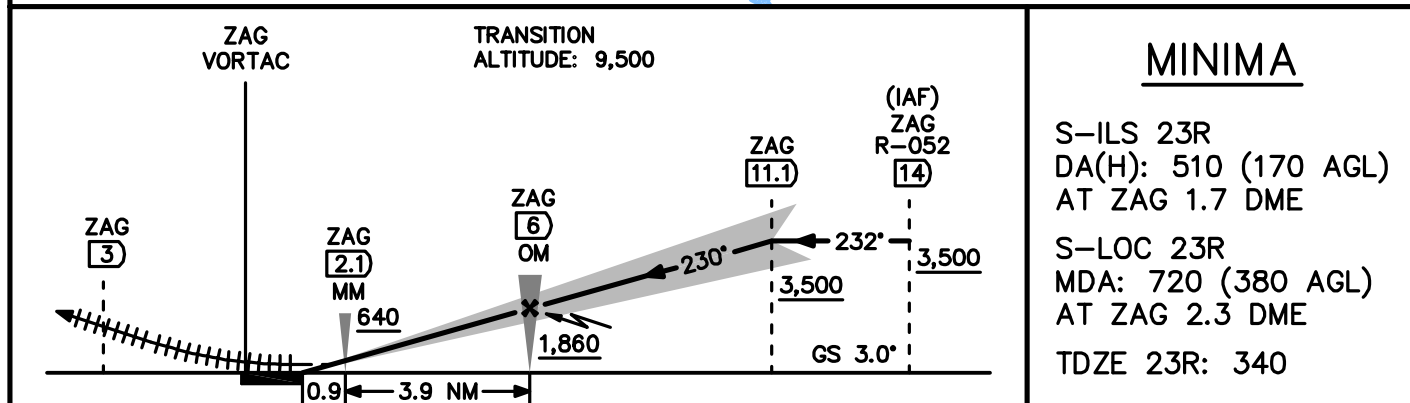
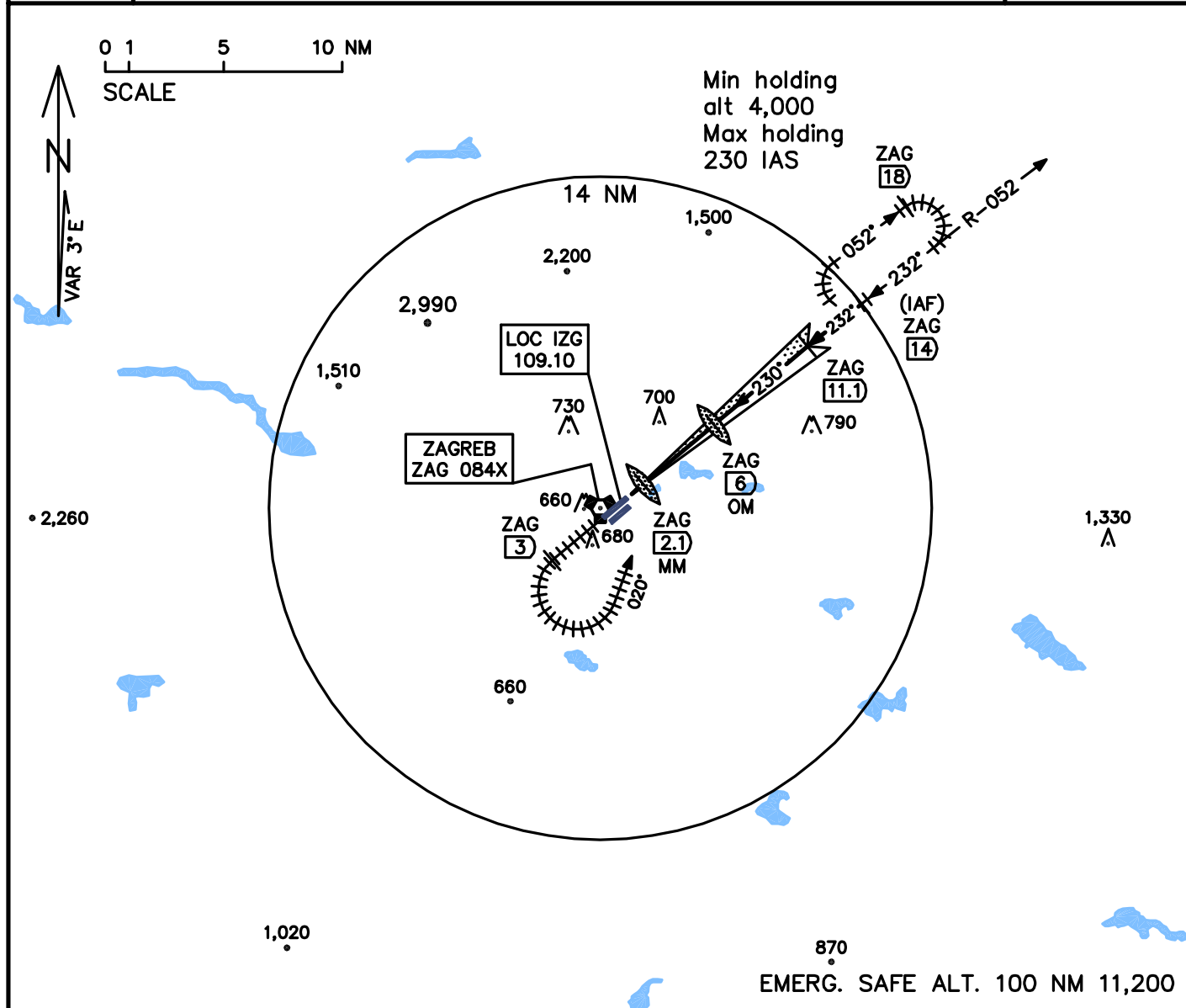
VORTAC PES Chan 106X	LOC IPS 110.70	Pescara Tower 257.80 118.45 Final course 200	VORTAC GPS N41° 57.303' E14° 55.125'	Rwy ldg 8,467 TDZE 40	MSA PES 25NM 140° 3,000 11,600 310°
SSALR  MISSED APPROACH: Climb runway with min. rate 400 FT/NM and pass PES VORTAC. At PES 2 DME climb right turn heading 060 to intercept PES R-039 outbound to holding pattern and hold at 3,000.					



ILS/DME RWY 23R

PLESO (LDZA)
ZAGREB, CROATIA

VORTAC ZAG Chan 084X	LOC IZG 109.10	Zagreb Tower 370.20 118.30 Final course 230	VORTAC GPS N45° 00.510' E17° 36.703'	Rwy Idg 7,769 TDZE 340	MSA ZAG 25NM 5,100 4,300 2,800 175° 059° 223°
ALSF-1 (A1) MISSED APPROACH: Climb runway and pass ZAG VORTAC. At ZAG 3 DME climb left turn heading 020 to intercept ZAG R-052 outbound to holding pattern and hold at 4,000.					



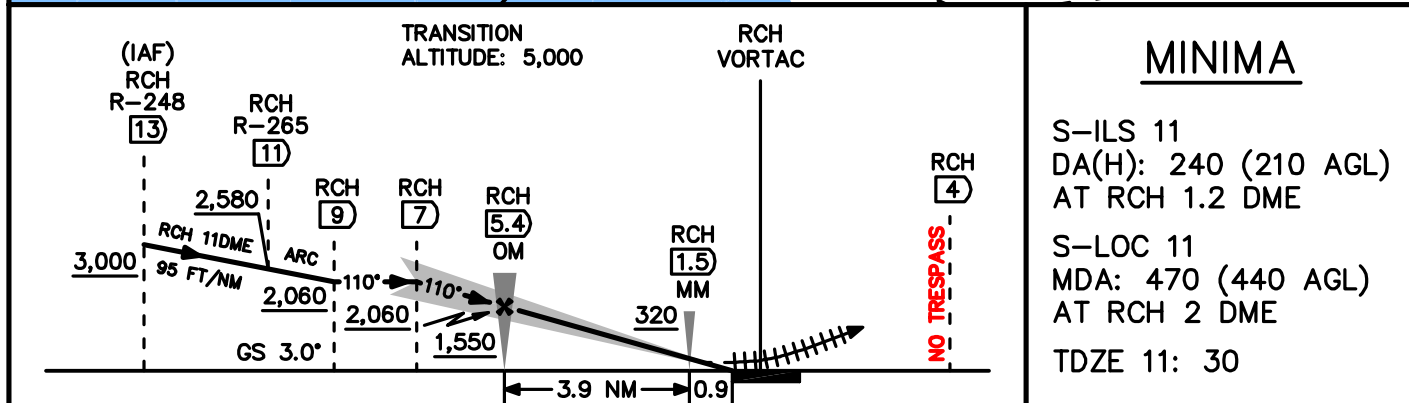
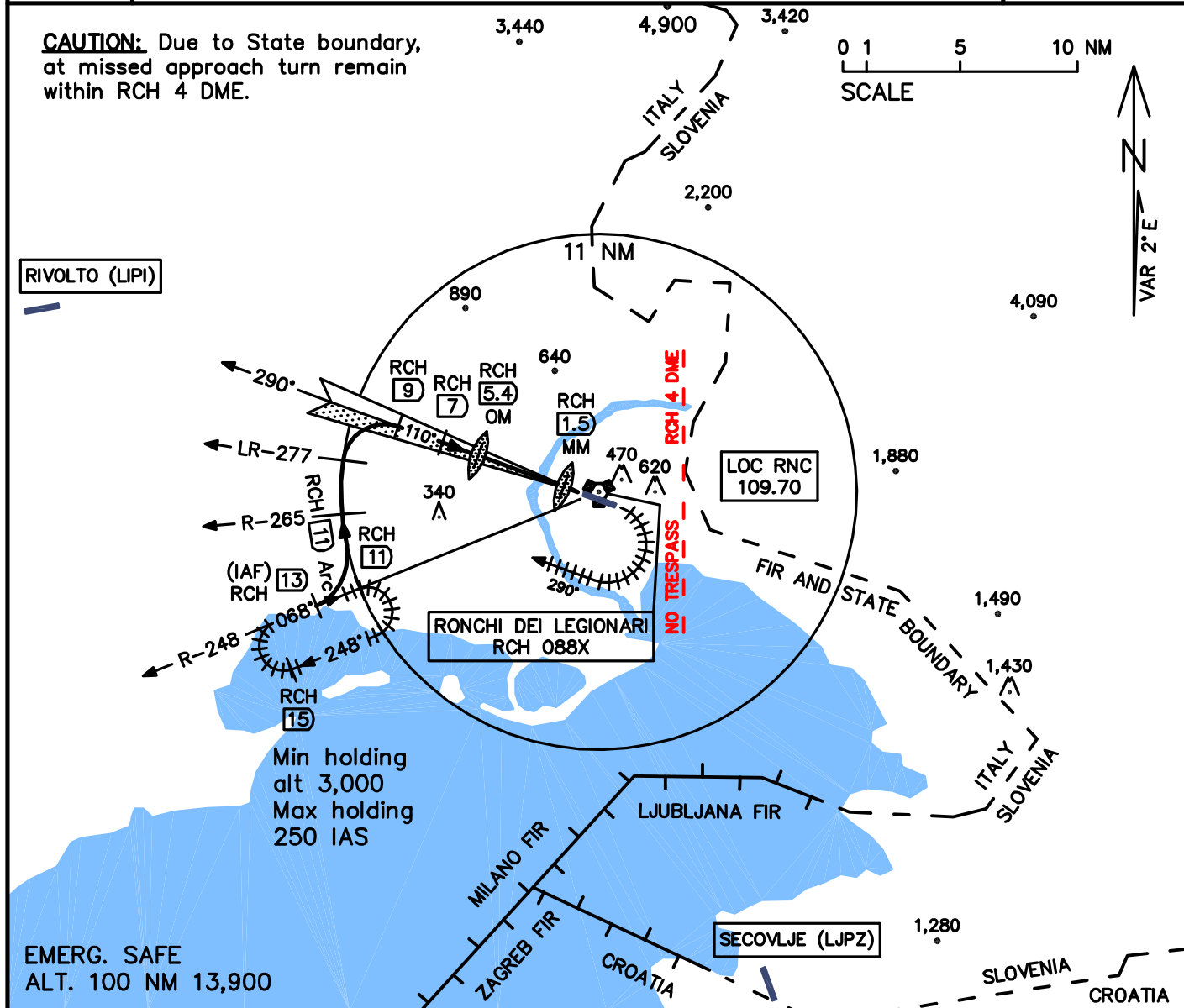
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ILS/DME RWY 11

RONCHI DEI LEGIONARI (LIPQ)
TRIESTE, ITALY

VORTAC RCH Chan 088X	LOC RNC 109.70	Ronchi Tower 257.80 130.20 Final course 110	VORTAC GPS N45° 05.360' E14° 13.480'	Rwy ldg 8,666 TDZE 30	MSA RCH 25NM 8,600 10,500 090° 270° 3,000 7,300
ODALS 	MISSED APPROACH: Climb runway and passing RCH VORTAC. Then climbing right turn heading 290 to intercept RCH R-248 outbound to holding pattern and hold at 3,000.				



MINIMA

S-ILS 11
DA(H): 240 (210 AGL)
AT RCH 1.2 DME
S-LOC 11
MDA: 470 (440 AGL)
AT RCH 2 DME
TDZE 11: 30

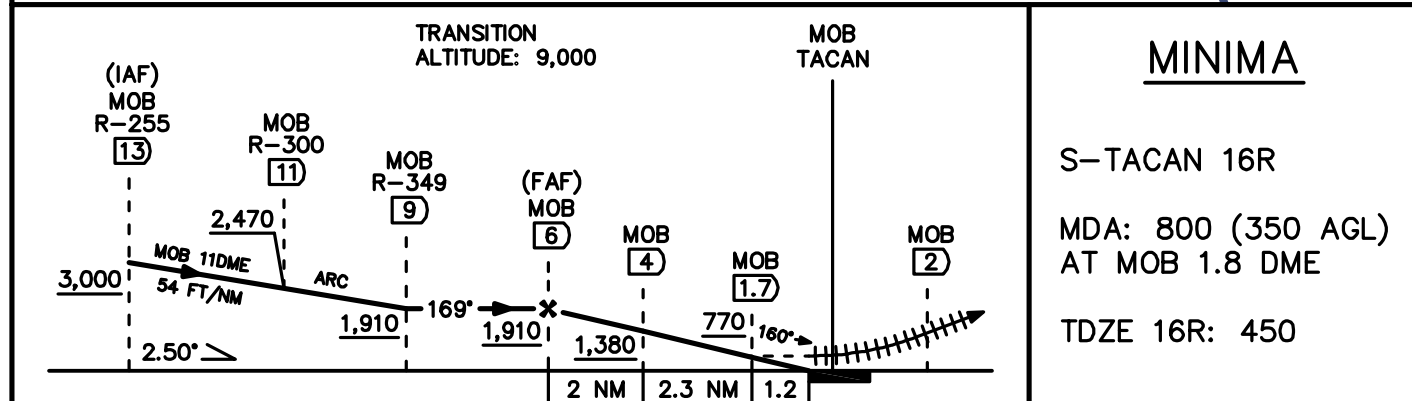
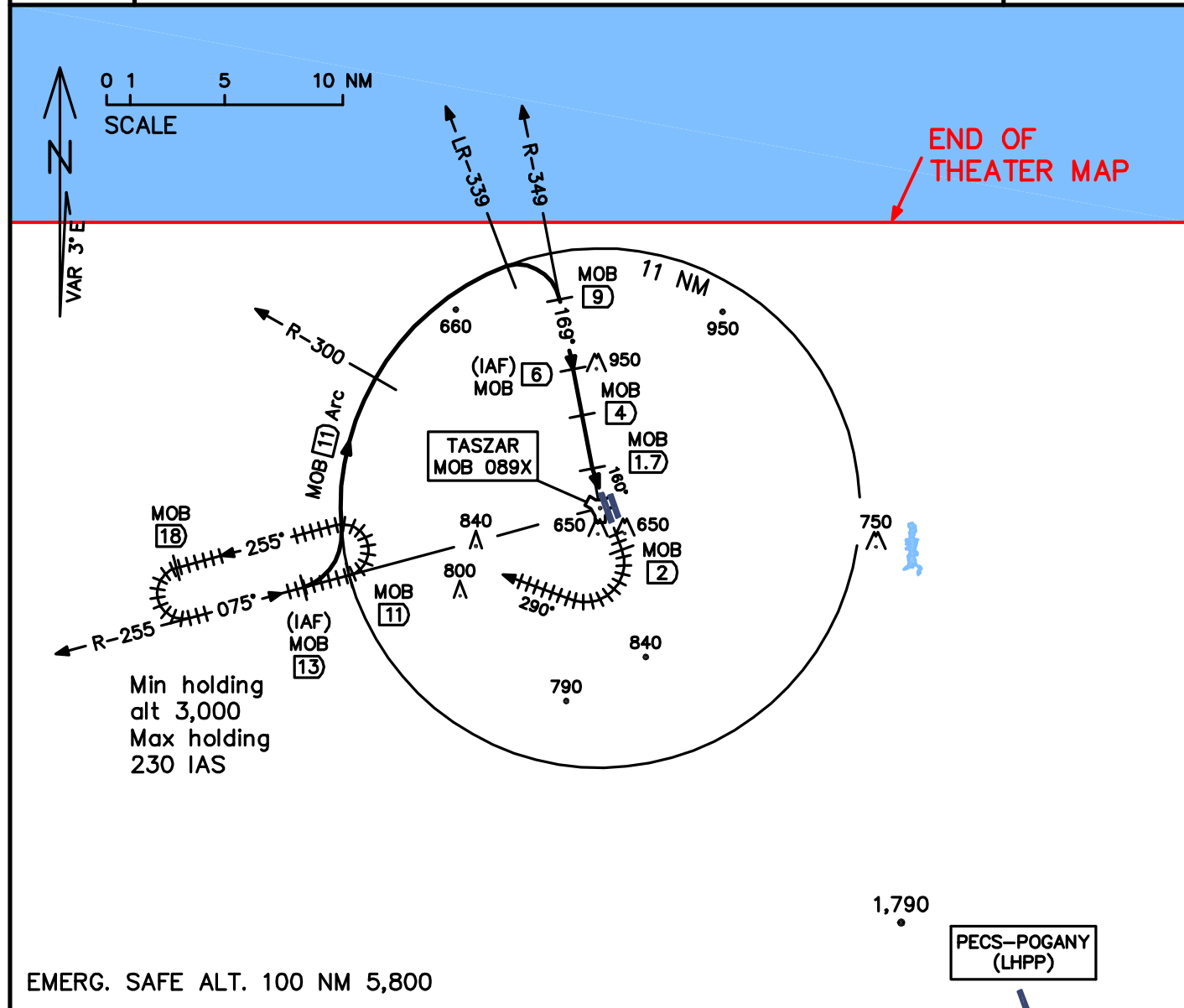
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TACAN RWY 16R

TASZAR (LHTA)
KALAND, HUNGARY

TACAN MOB Chan 089X	LOC —	Taszar Tower 230.15 123.00 Final course 160	TACAN GPS N45° 37.152' E20° 04.298'	Rwy Idg 7,769 TDZE 450	MSA MOB 25NM 3,400
SSALR (A3)	MISSED APPROACH: Climb runway and pass MOB TACAN. At MOB 2 DME climb right turn heading 290 to intercept MOB R-255 outbound to holding pattern and hold at 3,000.				



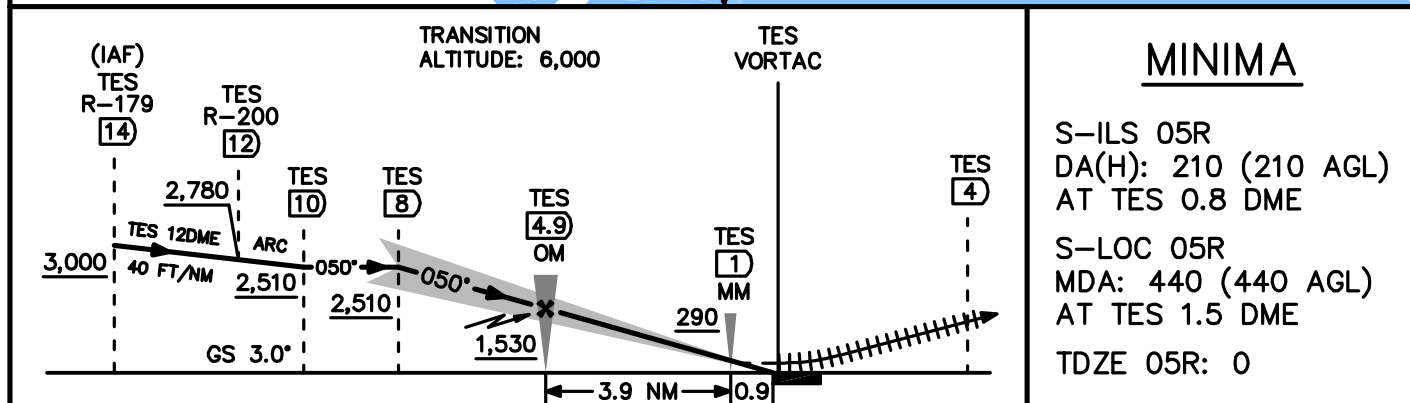
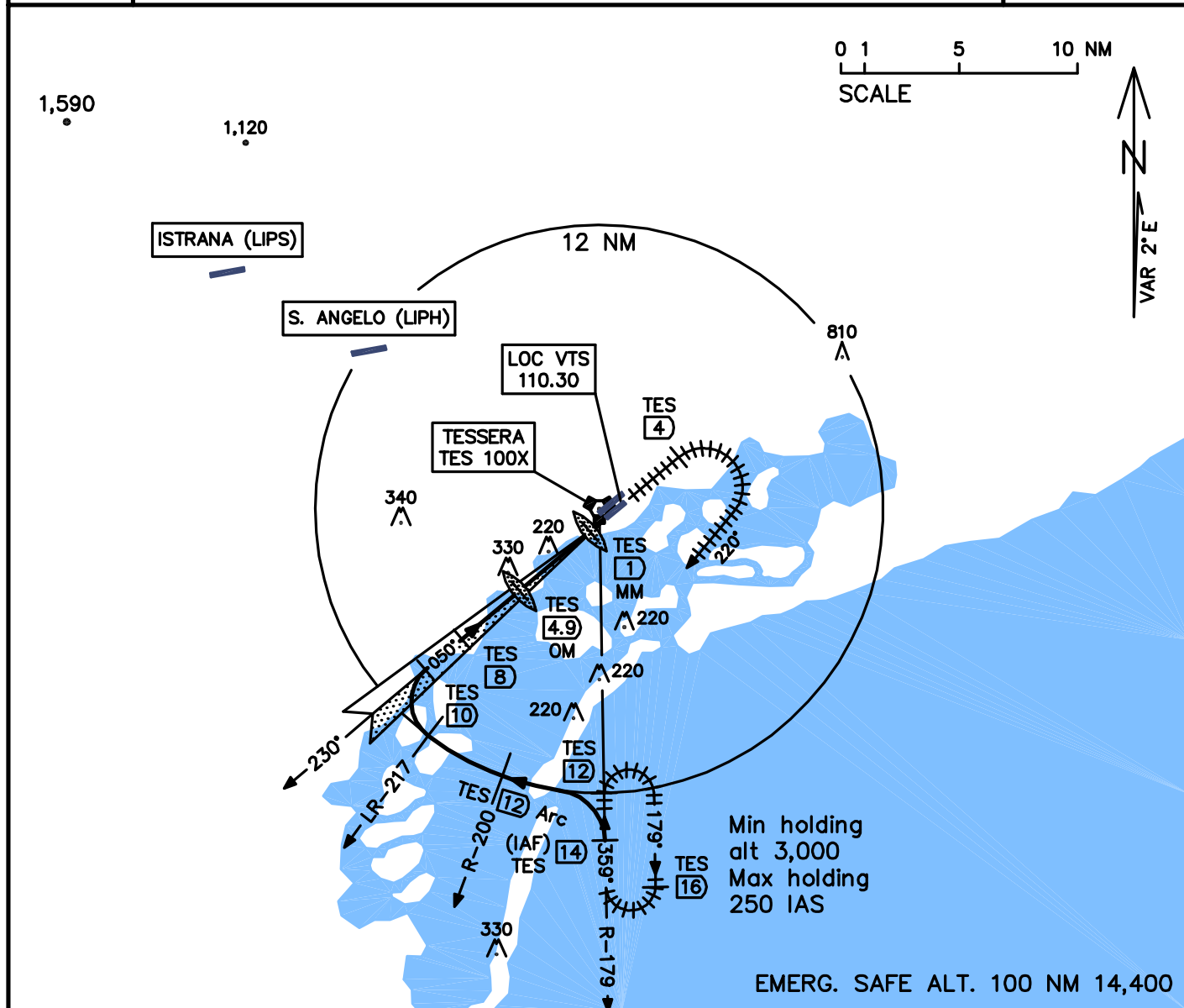
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ILS/DME RWY 05R

TESSERA (LIPZ)
VENICE, ITALY

VORTAC TES Chan 100X	LOC VTS 110.30	Venice Tower 257.80 120.20 Final course 050	VORTAC GPS N44° 48.117' E12° 45.939'	Rwy ldg 6,076 TDZE 0	MSA TES 25NM 7,200 200° 100° 2,300 1,600 020°
MISSED APPROACH: Climb runway and pass TES VORTAC. At TES 4 DME climb right turn heading 220 to intercept TES R-179 outbound to holding pattern and hold at 3,000.					



MINIMA

S-ILS 05R
DA(H): 210 (210 AGL)
AT TES 0.8 DME
S-LOC 05R
MDA: 440 (440 AGL)
AT TES 1.5 DME
TDZE 05R: 0