

GENERAL**Operational Hours****ATS Hours:** 2200-1500, other times O/R.**ATS ADMIN Hours:** MON-THU 2330-0830, FRI 2330-0900.**AD ADMIN Hours:** MON-THU 0000-0830, FRI 2330-0730.**Airport Information****RFF:** CAT 7**PCN:** RWY 18/36: 80/F/C/W/T**Operation****RWY Restriction**

After LDG ACFT must turn at the RWY end.

Warnings

Birds in vicinity of AD.

ARRIVAL**Communication****COM Failure****In VMC**

- Continue fly in VMC.
- Fly full circuit over AD, endeavor to transmit blindly his position, intention, etc., so as to be monitored by APCH or any other traffic.

In IMC

- Proceed according to current FPL to the appropriate designated navigation and serving APCH and hold over this aid until commencement of descent.
- Commence descent from the navigation aid as close as possible to ETA indicated in the filled FPL and revised in accordance with current FPL.
- Land if possible within 30min after ETA.

In case of MISAP**ILS + VOR/DME 18**

Continue on track 304° at 4500ft QNH. Turn right to MNO VOR/DME and join the HLDG.

ILS + VOR/DME 36

Continue on R352 at 4500ft QNH. Turn left to MNO VOR/DME and join the HLDG.

DEPARTURE**Take-off Minima**

RWY		18	
All ACFT	ft - m/km	0 - 400V	-
		c400 - 2.0V	SID RNAV (RNP) AR
RWY		36	
All ACFT	ft - m/km	0 - 400V	-
		c400 - 2.4V	SID RNAV (RNP) AR: MNM climb gradient 5.2% up to 700

27-APR-2017/UFN

20-APR-2017

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NIL

AFC

AFC

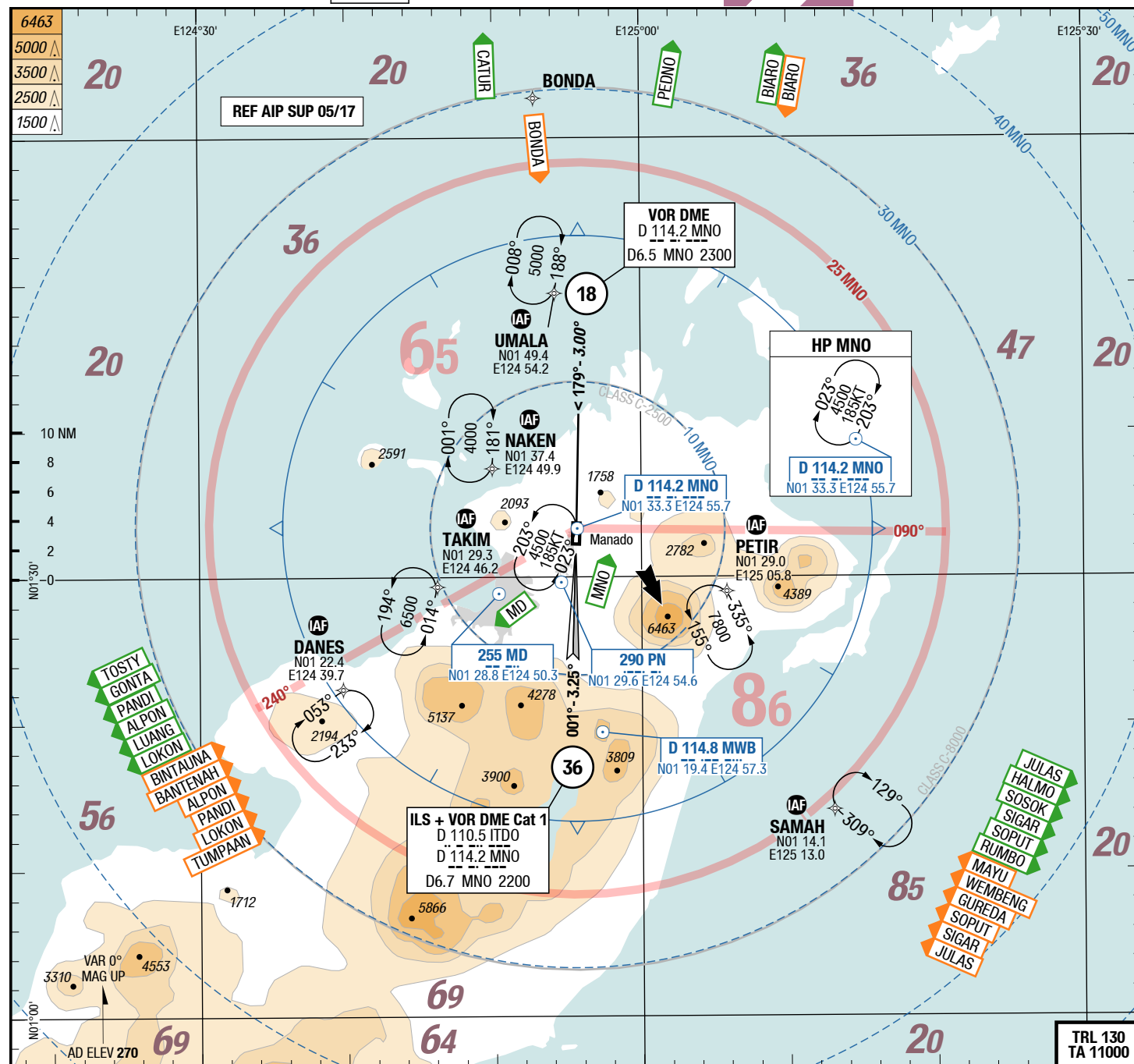
Sam Ratulangi Manado Indonesia

NIL

Tempo AFC

2-08

Tempo AFC



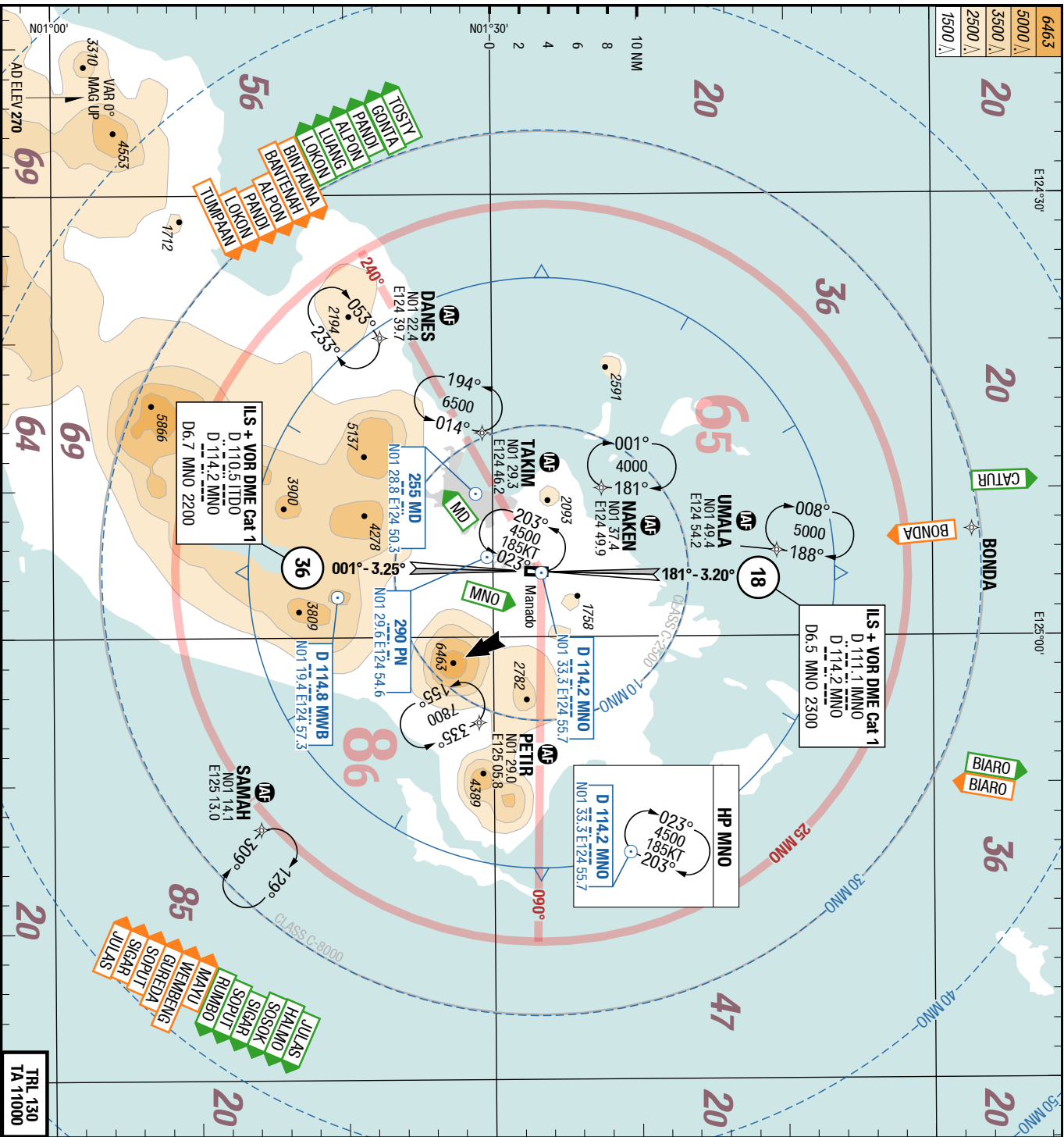
ATIS 126.400 2200-1500
APP 119.000 2200-1500
Ratulangi TWR 118.100 2200-1500

Landing RWY system:

18 Unknown config. 2650 x 45
L-N 270 / 10hPa TDZ ---% -0.1%

36 Unknown config. 45 x 2650
L-N 264 / 10hPa TDZ ---% +0.1%

Changes: new



ATIS 126.400 2200-1500
APP 119.000 2200-1500
Ratulangi TWR 118.100 2200-1500

Landing RWY system:

18 Unknown config. 2650 x 45 PAPI angle not AVBL
L-N 270 / 10hPa TDZ ---% -0.1%

45 x 2650 Unknown config.
PAPI angle not AVBL
+0.1% TDZ ---% 264 / 10hPa L-N

E124°55.5'

E124°56'

18

181°
270

ATIS
Ratulangi TWR

126.400 2200-1500
118.100 2200-1500

Caution:
Chart contents are based on the best available information.

D 114.2 MNO

RWY	TORA	ASDA	TODA
18	2650	2710	2800
36	2650	2650	2800



ARP
N 01 32.7
E 124 55.5

TERMINAL

APRON

CARGO

MNA
HANGAR

C

PARALLEL

D

36

001°
264

COORDINATES

1-3	N01 32.7	E124 55.4
4-7	N01 32.6	E124 55.4
8-10	N01 32.5	E124 55.4
11-15	N01 32.4	E124 55.4
16-22	N01 32.3	E124 55.4

TERMINAL

CARGO

APRON

PARALLEL

C

PARALLEL

Not to scale

17 18 19
20 21 22

20-APR-2017

MDC-WAMM

4-10

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RNAV SIDs RWY 36

RNAV SIDs RWY 18

SID

SID

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RNAV SIDs RWY 36

RNAV SIDs RWY 18



Changes: ALT, Speed RESTR

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RNAV SIDs RWY 36

SID

SID

RNAV SIDs RWY 36



Changes: ALT, Speed RESTR

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SID RWY 36

4-30

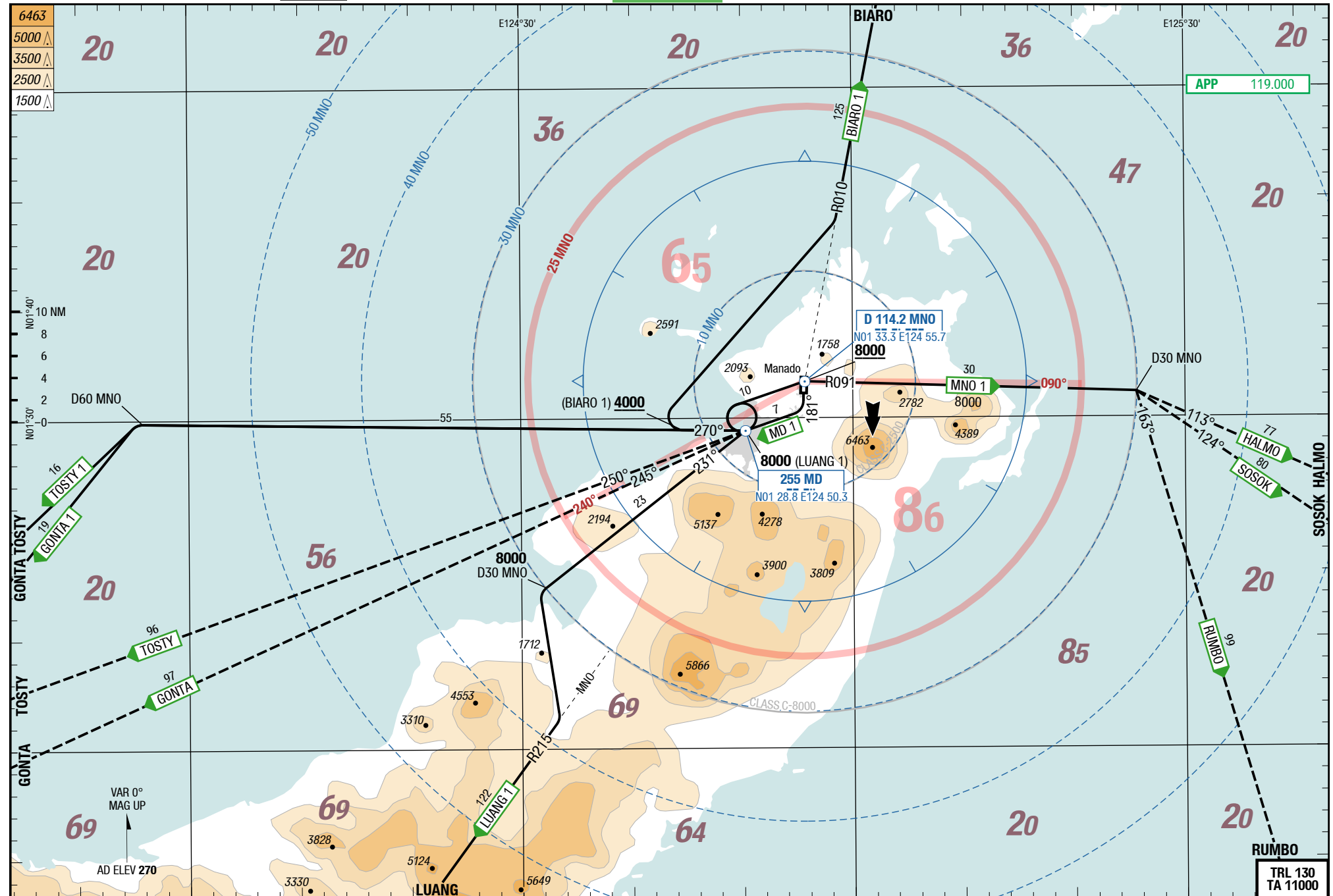
SIDs RWY 18

SID

SID

SID RWY 36

SIDs RWY 18



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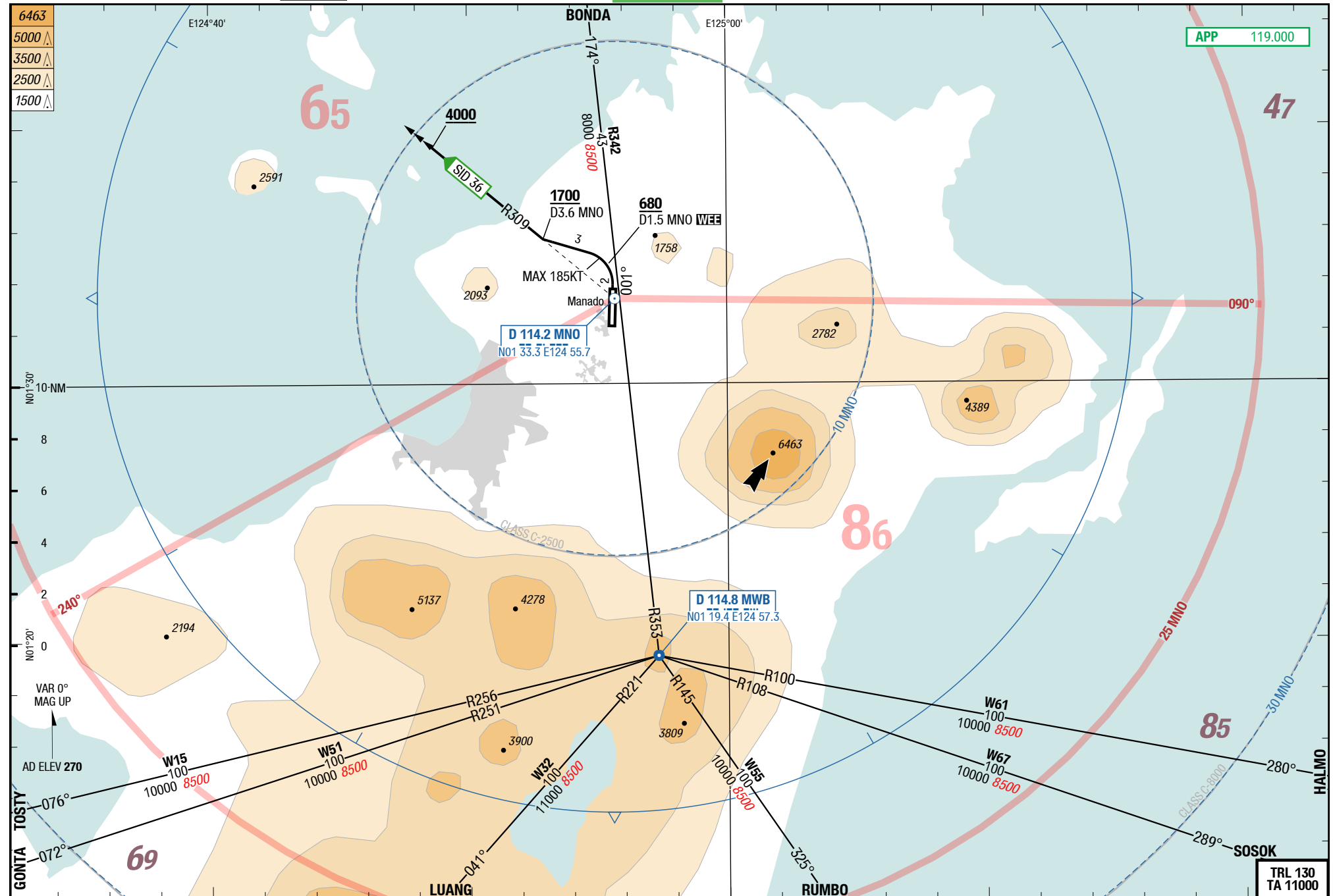
4-40

SID RWY 36

SID

SID

SID RWY 36



Changes: ALT, AWY

20-APR-2017

MDC-WAMM

5-10

RNAV SIDs RWY 18
ALPON 1A / CATUR 1A / JULAS 1A / LOKON 1A / PANDI 1A / SIGAR 1A
 RWY 18 (181°)

DESIGNATOR	ROUTING	ALTITUDES
	Runway 18	
ALPON 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;R] - MM608 [K230-] - MM613 - MM614 [L] - MM615 [K250-] - MM616 - ALPON - GONTA	MM601 MNM 400 MM602 MNM 1200 MM608 MNM 1600 MM613 at 4000 MM614 MNM 5000 MM616 at 9000
CATUR 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;R] - MM608 [K230- ;R] - MM609 - MM610 [R] - MM611 [K230-] - MM612 - BONDA - CATUR	MM601 MNM 400 MM602 MNM 1200 MM608 MNM 1600 MM610 at 3000 MM611 MNM 4000 MM612 MNM 5000 BONDA at 9000
JULAS 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;L] - MM603 [K210-] - MM604 - MM605 - JULAS - HALMO	MM601 MNM 400 MM602 MNM 1200 MM603 MNM 2200 MM604 MNM 4000 MM605 at 8000
LOKON 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;R] - MM608 [K230-] - MM613 - MM614 [L] - MM615 [K250-] - MM616 - LOKON - LUANG	MM601 MNM 400 MM602 MNM 1200 MM608 MNM 1600 MM613 at 4000 MM614 MNM 5000 MM616 at 9000
PANDI 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;R] - MM608 [K230-] - MM613 - MM614 [L] - MM615 [K250-] - MM616 - PANDI - TOSTY	MM601 MNM 400 MM602 MNM 1200 MM608 MNM 1600 MM613 at 4000 MM614 MNM 5000 MM616 at 9000
SIGAR 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;L] - MM603 [K210-] - MM604 - MM605 - SIGAR - SOSOK	MM601 MNM 400 MM602 MNM 1200 MM603 MNM 2200 MM604 MNM 4000 MM605 at 8000

① Obstacles: Trees 600ft from DER, 175ft left of centerline, 304ft AMSL. Trees 831ft from DER, 819ft right of centerline, 426ft AMSL. Trees 1395ft from DER, 994ft left of centerline, 478ft AMSL

Changes: Speed RESTR, PROC, ALT

20-APR-2017

MDC-WAMM

5-20

RNAV SIDs RWY 18**SIDPT****SOPUT 1A**

RWY 18 (181°)

DESIGNATOR	ROUTING	ALTITUDES
	Runway 18	
SOPUT 1A 119.000 ①	MM600 - MM601 [R] - MM602 [K210- ;L] - MM603 [K210-] - MM604 [R] - MM606 [K250-] - MM617 - MM607 - SOPUT - RUMBO	MM601 MNM 400 MM602 MNM 1200 MM603 MNM 2200 MM604 MNM 4000 MM606 MNM 5000 MM617 at 7000 MM607 at 8000

① Obstacles: Trees 600ft from DER, 175ft left of centerline, 304ft AMSL. Trees 831ft from DER, 819ft right of centerline, 426ft AMSL. Trees 1395ft from DER, 994ft left of centerline, 478ft AMSL

Changes: Speed RESTR, PROC, ALT

20-APR-2017

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5-30

RNAV SIDs RWY 36**ALPON 1B / CATUR 1B / JULAS 1B / LOKON 1B / PANDI 1B / SIGAR 1B**

RWY 36 (001°)

	GS	120	150	180	210	240	270
5.2%	ft/MIN	700	800	1000	1200	1300	1500

DESIGNATOR	ROUTING	ALTITUDES
	Runway 36	
ALPON 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190-] - MM503 [L] - MM504 [K230-] - MM505 - MM706 - MM707 - ALPON - GONTA	MM502 MNM 1000 MM504 at 3000 MM505 at 4000 MM706 MNM 5000 MM707 MNM 8000
CATUR 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190- ;R] - MM507 [K230-] - MM713 - MM714 - CATUR	MM502 MNM 1000 MM507 at 3000 MM713 at 4000 MM714 MNM 6000 CATUR MNM 8000
JULAS 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190-] - MM503 [L] - MM504 [K230- ;L] - MM506 [K230-] - MM603 - MM604 - MM605 - JULAS - HALMO	MM502 MNM 1000 MM504 at 3000 MM506 MNM 7000 MM603 MNM 8000 MM604 at 10000 MM605 at 10000 JULAS at 10000
LOKON 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190-] - MM503 [L] - MM504 [K230-] - MM505 - MM706 - MM707 - LOKON - LUANG	MM502 MNM 1000 MM504 at 3000 MM505 at 4000 MM706 MNM 5000 MM707 MNM 8000
PANDI 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190-] - MM503 [L] - MM504 [K230-] - MM505 - MM706 - MM707 - PANDI - TOSTY	MM502 MNM 1000 MM504 at 3000 MM505 at 4000 MM706 MNM 5000 MM707 MNM 8000
SIGAR 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190-] - MM503 [L] - MM504 [K230- ;L] - MM506 [K230-] - MM603 - MM604 - MM605 - SIGAR - SOSOK	MM502 MNM 1000 MM504 at 3000 MM506 MNM 7000 MM603 MNM 8000 MM604 at 10000 MM605 at 10000 SIGAR at 10000

① Trees 380ft from DER, 400ft left of centerline, 385ft AMSL.

Changes: PROC, ALT, Speed RESTR

20-APR-2017

MDC-WAMM**5-40****RNAV SIDs RWY 36****SOPUT 1B**

RWY 36 (001°)

	GS	120	150	180	210	240	270
5.2%	ft/MIN	700	800	1000	1200	1300	1500

DESIGNATOR	ROUTING	ALTITUDES
	Runway 36	
SOPUT 1B 5.2% to 700 119.000 ①	MM501 [L] - MM502 [K190-] - MM503 [L] - MM504 [K230- ;L] - MM506 [K230-] - MM603 - MM604 [R] - MM606 [K230-] - MM617 - MM607 - SOPUT - RUMBO	MM502 MNM 1000 MM504 at 3000 MM506 MNM 7000 MM603 MNM 8000 MM604 at 10000 MM606 at 10000 MM617 at 10000 MM607 at 10000

① Trees 380ft from DER, 400ft left of centerline, 385ft AMSL.

Changes: PROC, ALT, Speed RESTR

20-APR-2017

MDC-WAMM

5-50

SIDs RWY 18**SIDPT**

BIARO 1 / GONTA 1 / LUANG 1 / MANADO 1 / MD 1 / TOSTY 1
 RWY 18 (181°)

DESIGNATOR	ROUTING	ALTITUDES
	Runway 18	
BIARO 1 119.000	RT to MD - QDR 270 MD - at MNM 4000 RT intercept R010 MNO to BIARO	
GONTA 1 119.000	RT to MD - QDR 270 MD - at D60 MNO LT direct GONTA	
LUANG 1 119.000	RT to MD - climb overhead MD - QDR 231 MD - at D30 MNO LT intercept R215 MNO to LUANG	leave MD at 8000 D30 MNO at 8000
MANADO 1 MNO 1 119.100	RT to MD - RT direct MNO - R091 MNO - at D30 MNO RT	MNO MNM 8000
	TRANSITION	
	HALMO 113° to HALMO	
	RUMBO 163° to RUMBO	
	SOSOK 124° to SOSOK	
MD 1 119.100	RT to MD	
	TRANSITION	
	GONTA MD - 245° to GONTA	
	TOSTY MD - 250° to TOSTY	
TOSTY 1 119.000	RT to MD - QDR 270 MD - at D60 MNO LT direct TOSTY	

Changes: ALT

20-APR-2017

MDC-WAMM**5-60****SID RWY 36****SIDPT****SID 36**

RWY 36 (001°)

	GS	120	150	180	210	240	270
6.5%	ft/MIN	800	1000	1200	1400	1600	1800

DESIGNATOR	ROUTING	ALTITUDES
SID 36 6.5% to 1700 119.000 ①	at MNM 680 or D1.5 MNO , whichever is earlier, LT (MAX 185KT) - at D3.6 MNO intercept R309 MNO - at MNM 4000 proceed to BONDA / GONTA / HALMO / LUANG / RUMBO / SOSOK / TOSTY or as instructed by ATC.	D3.6 MNO MNM 1700

① Climb gradient 6.5% due avoid hills of 1227ft NE of APT and overfly high terrain 1404ft NW of APT.

21-APR-2016

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6-10

RNAV STARs RWY 18

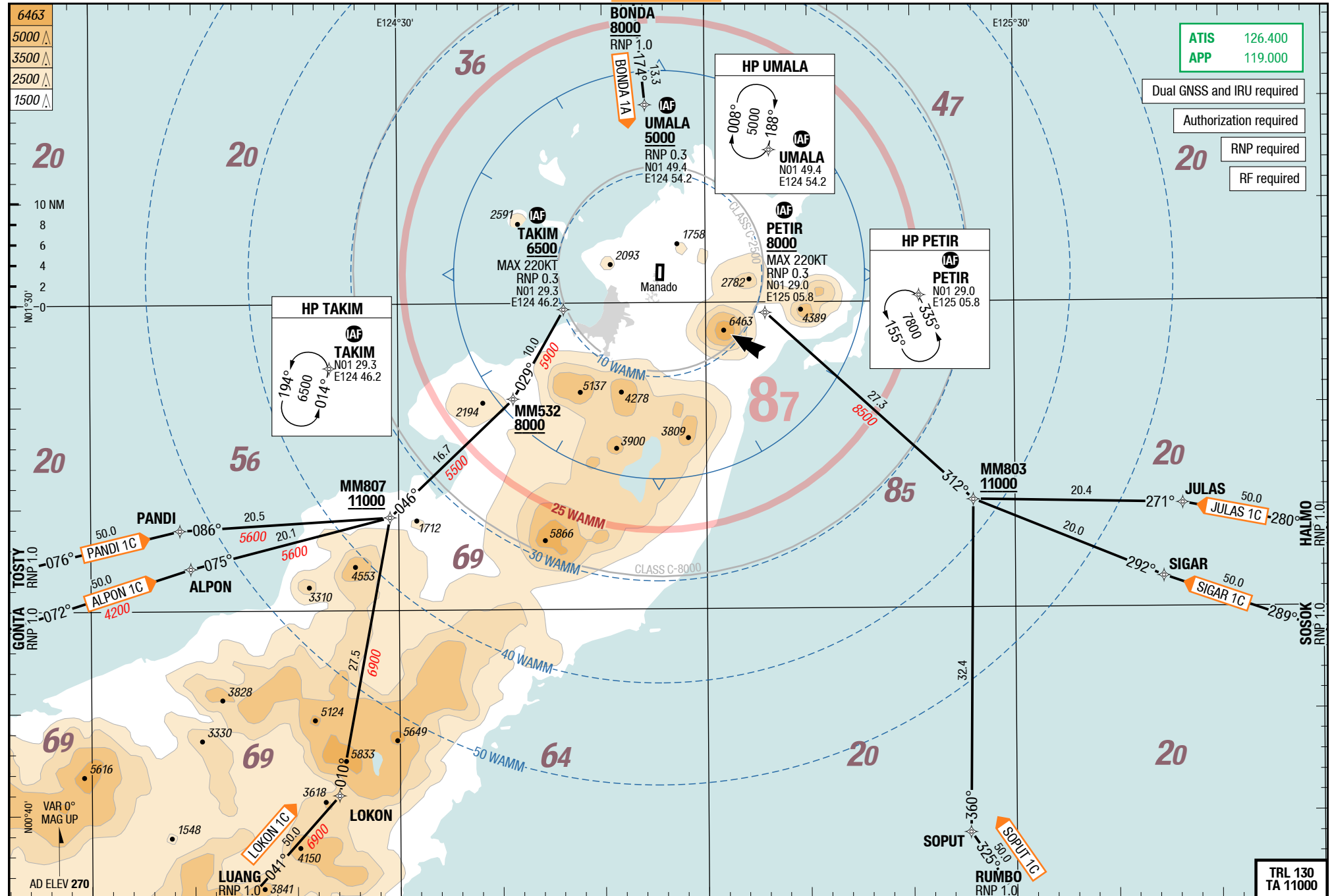
STAR

STAR

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RNAV STARs RWY 36

RNAV STARs RWY 18



Changes: new

21-APR-2016

MDC-WAMM

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6-20

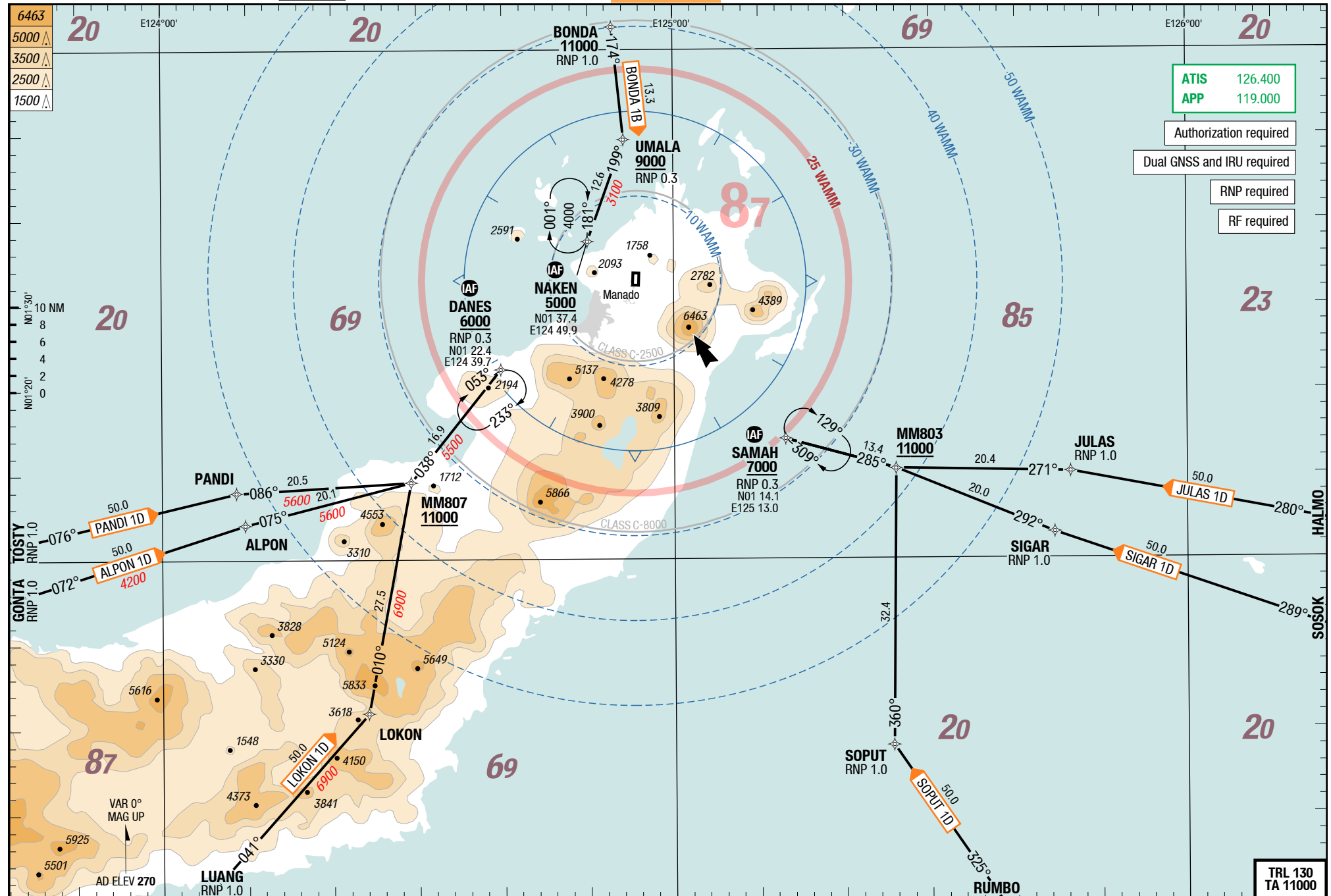
RNAV STARs RWY 36

STAR

STAR

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RNAV STARs RWY 36



MDC-WAMM

NIL

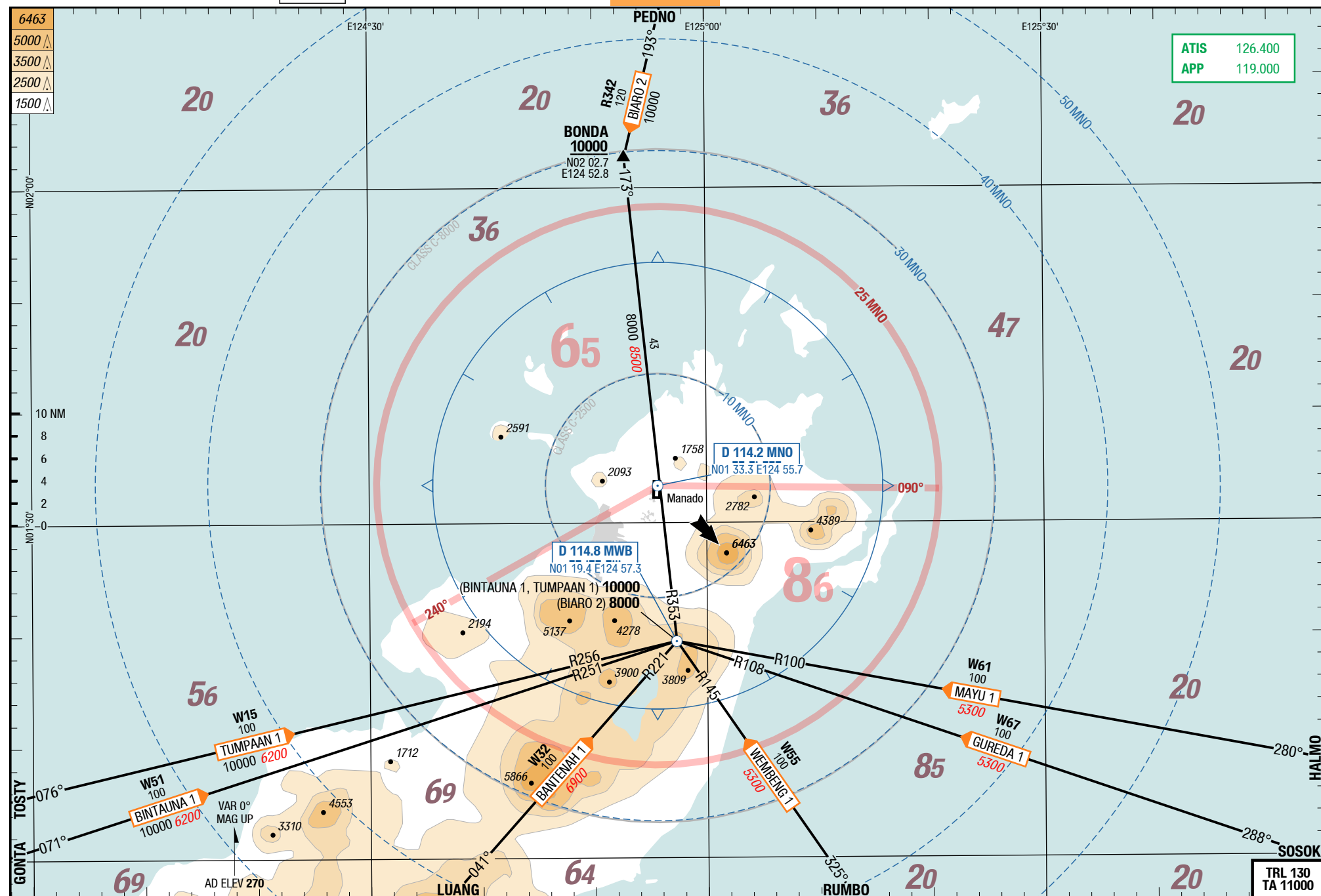
STARS

TA

TA

NIL

STARS



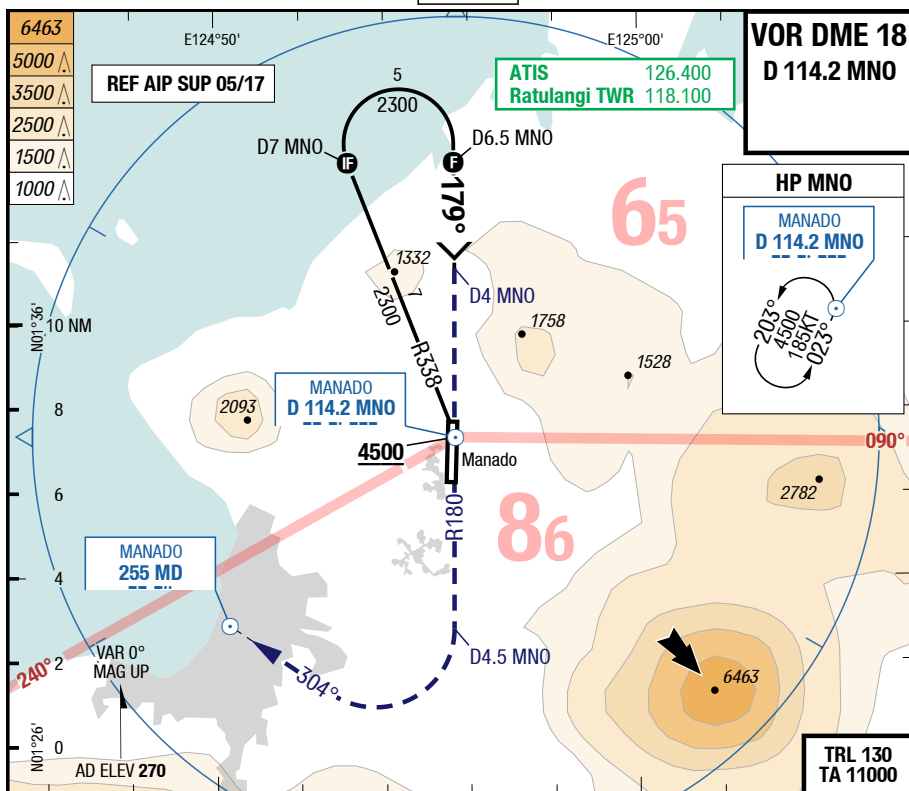
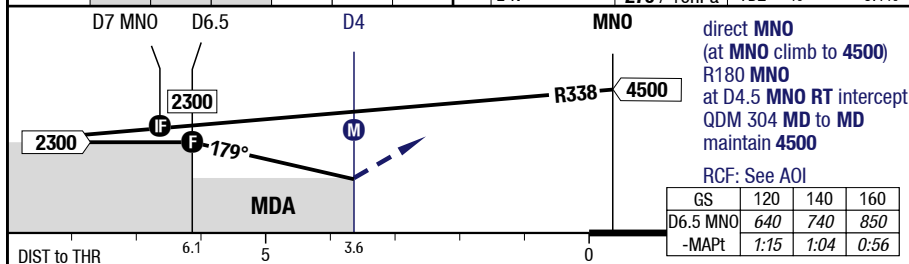
Changes: chart layout, ASP, WPT , VAR

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7-08

Tempo VOR DME 18

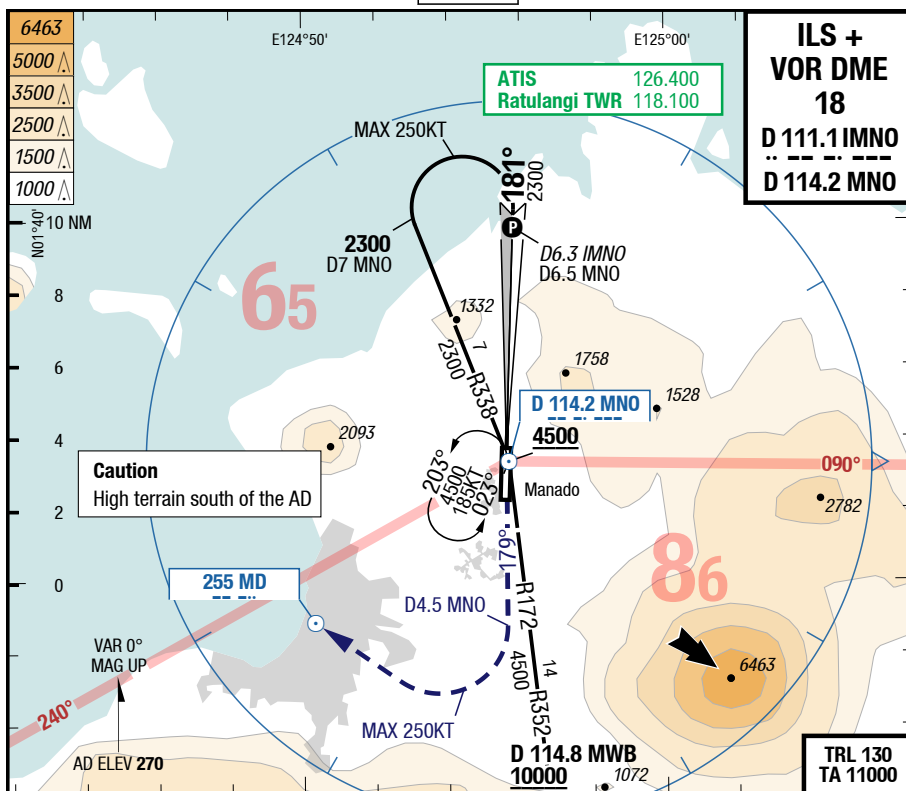
[illegible]

18		VOR DME					Circling W of AD only
C	ft - m/km ft	1230 - 5.0V 1500					1560 - 5.0V 1830
D	ft - m/km ft	1230 - 5.0V 1500					2320 - 5.0V 2590

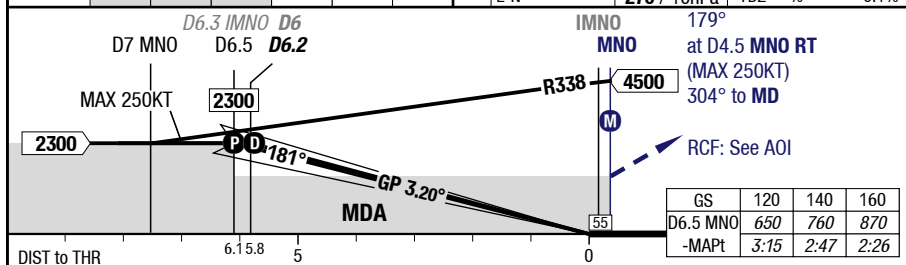
MDC-WAMM

7-10

ILS + VOR DME 18



LOC 3.06°			6.5	6	5	<div> <div>18</div> <div>Unknown config.</div> <div> <div>2650 x 45</div> <div> <div>270 / 10hPa</div> <div> <div>PAPI angle not AVBL</div> <div>TDZ ---% -0.1%</div> </div> </div> </div> </div>
D MNO			2300	2150	1830	



18		Cat 1 DME MNO ¹⁾	LOC DME MNO			Circling
C	ft - m/km ft	600 - 2.4V 870	1290 - 5.0V 1560			2330 - 5.0V 2600
D	ft - m/km ft	600 - 2.4V 870	1290 - 5.0V 1560			2330 - 5.0V 2600

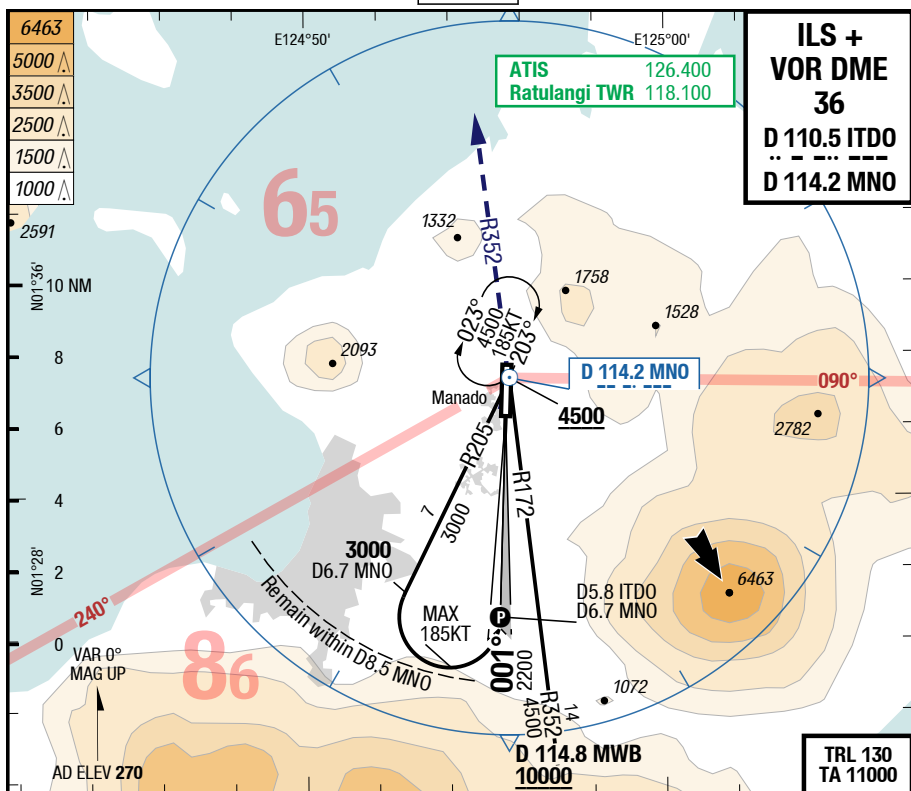
1) With EVS VIS 1.6km

Changes: Reprint

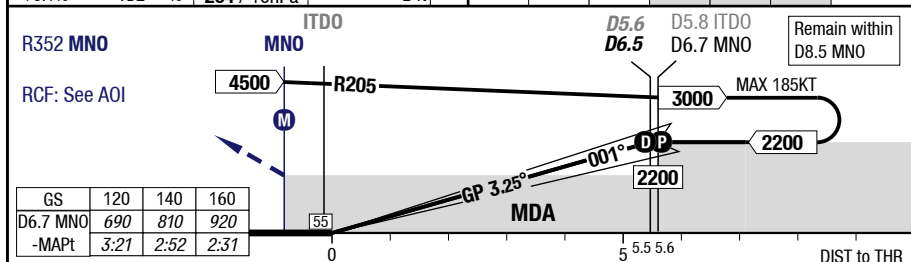
MDC-WAMM

7-20

ILS + VOR DME 36



<p>L</p> <p>45 x 2650</p> <p>Unknown config.</p> <p>PAPI angle not AVBL</p> <p>+0.1% TDZ ---%</p> <p>264 / 10hPa</p> <p>L-N</p>	<p>5</p> <p>1670</p>	<p>6</p> <p>2020</p>	<p>6.5</p> <p>2200</p>							<p>LOG 3.25°</p> <p>D MNO</p>
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36		Cat 1 DME MNO ¹⁾	LOC DME MNO				Circling
C	ft - m/km ft	610 - 2.5V 870	1240 - 5.0V 1500				2330 - 5.0V 2600
D	ft - m/km ft	610 - 2.5V 870	1240 - 5.0V 1500				2330 - 5.0V 2600

1) With EVS VIS 1.7km

Changes: Reprint

21-APR-2016

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7-30

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RNAV (RNP) 36

RNAV (RNP) 18

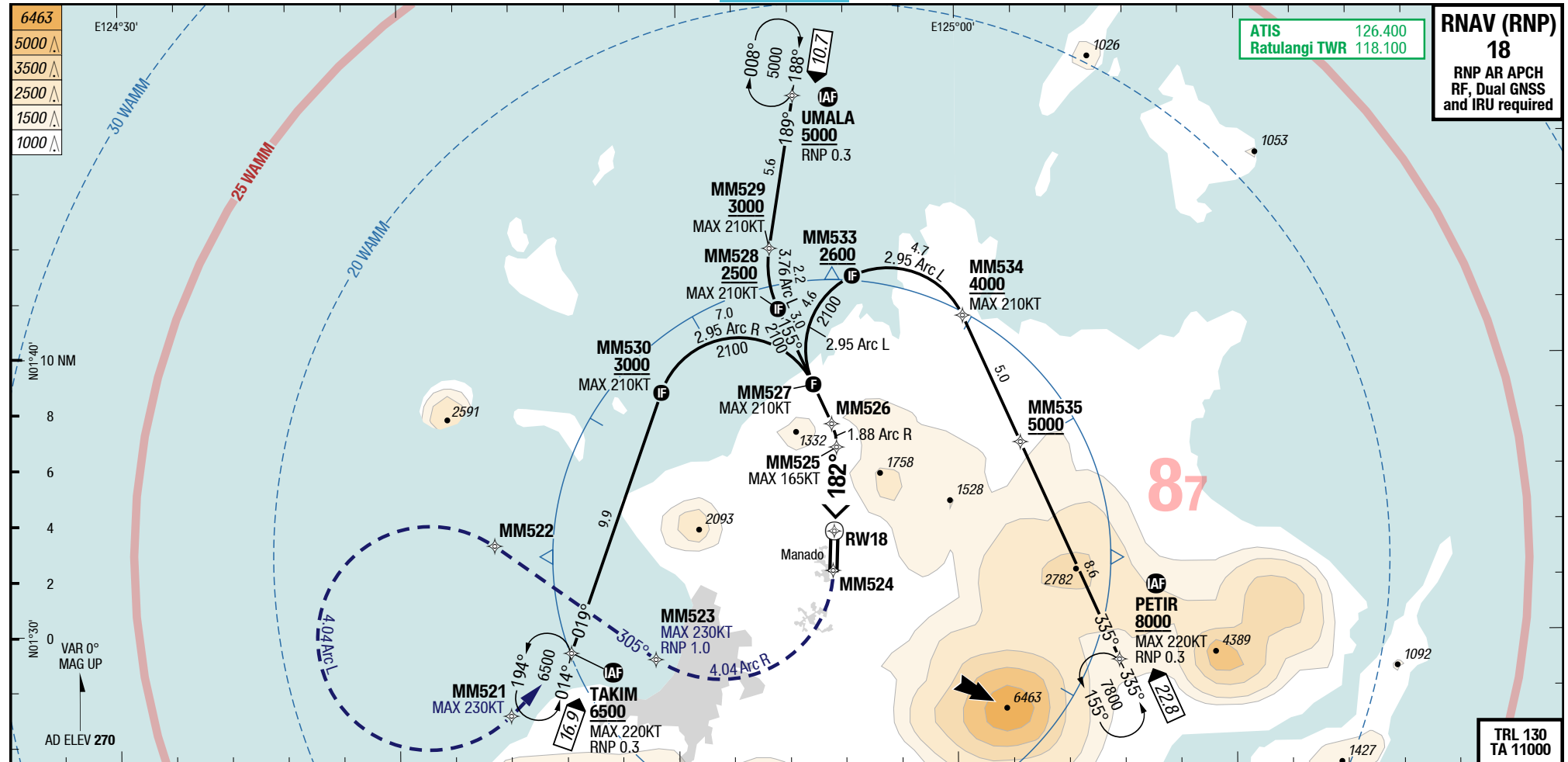
IAC

IAC

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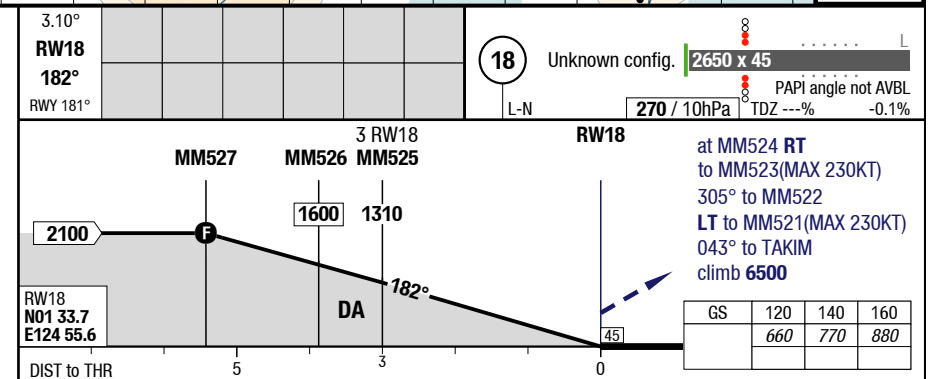
RNAV (RNP) 36

RNAV (RNP) 18



18	RNAV RNP 0.15 VNAV 1) 2)	RNAV RNP 0.30 VNAV 1)				Circling
C	ft - m/km ft	550 - 3.6V 820	1000 - 5.2V 1270			Not published
D	ft - m/km ft	550 - 3.6V 820	1000 - 5.2V 1270			Not published

1) Uncompensated BARO VNAV NA below 15°C (59°F) or above 38°C (100°F)
2) With EVS VIS 2.4km



Changes: New

21-APR-2016

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7-40

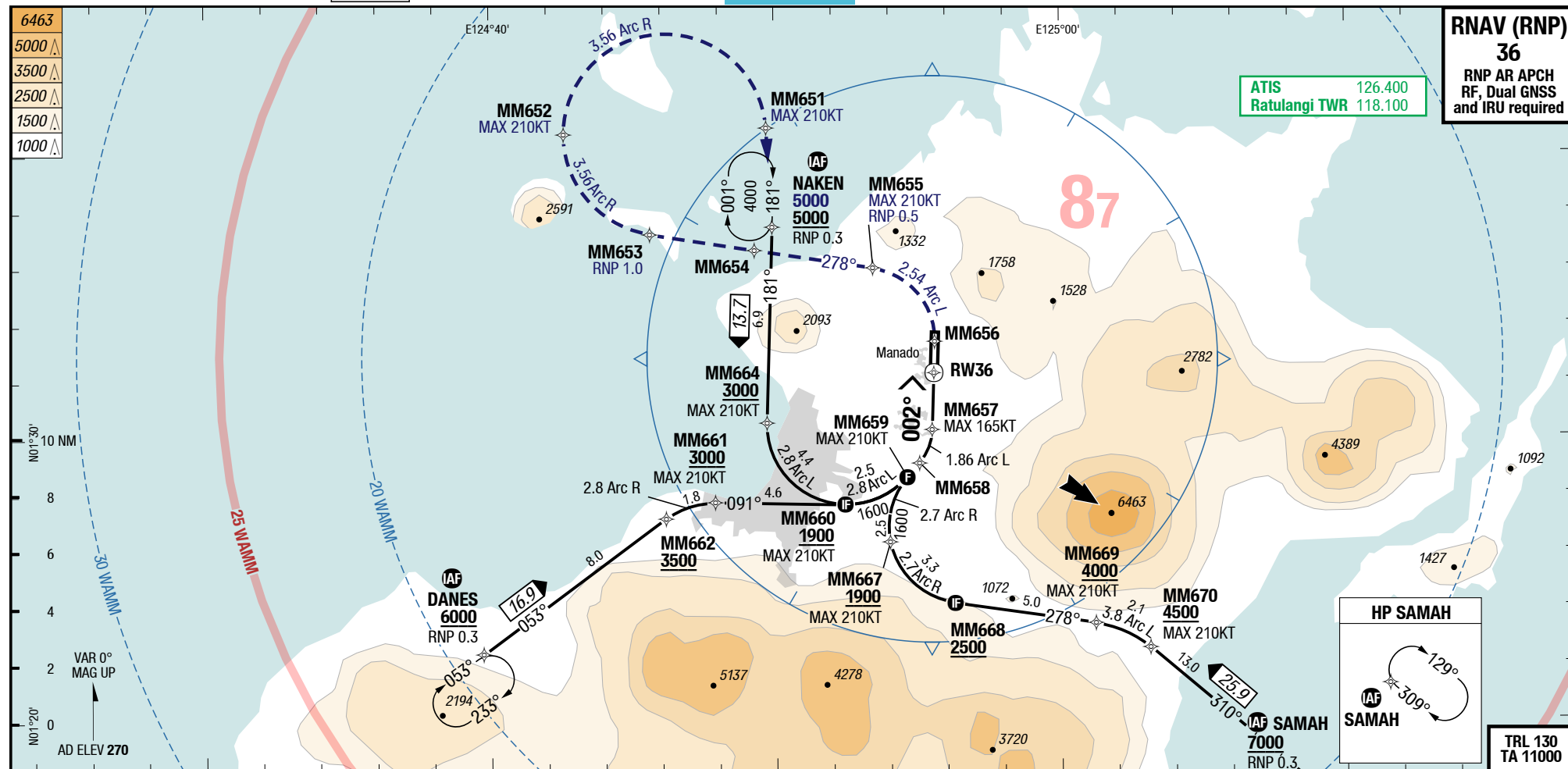
RNAV (RNP) 36

IAC

IAC

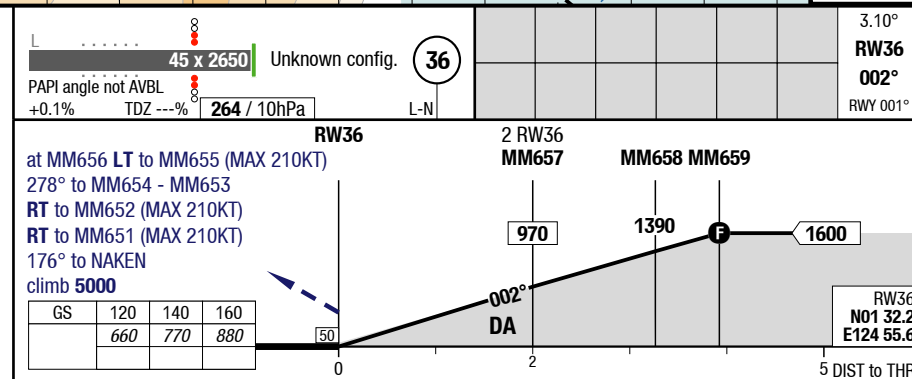
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RNAV (RNP) 36



36	RNAV RNP 0.30 VNAV 1) 2)	RNAV RNP 0.30 VNAV APL U/S 1) 3)			Circling
C	ft - m/km ft 670	410 - 2.4V 670	410 - 3.2V 670		Not published
D	ft - m/km ft 670	410 - 2.4V 670	410 - 3.2V 670		Not published

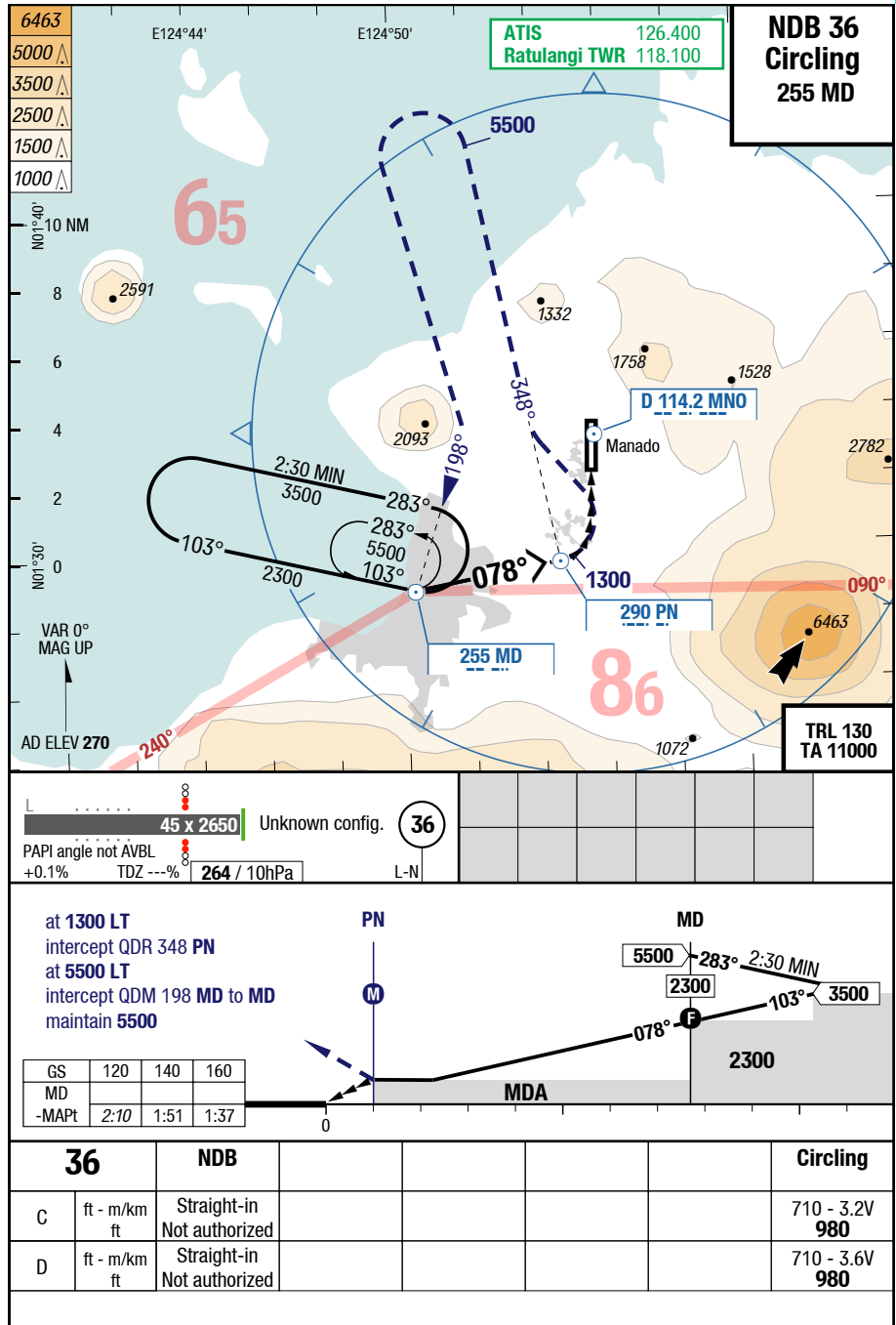
1) Uncompensated BARO VNAV NA below 15°C (59°F) or above 38°C (100°F) 2) With EVS VIS 1.6km 3) With EVS VIS 2.1km



Changes: New

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MDC-WAMM**7-50****NDB 36 Circling**

Changes: PROC, APL, Page Number, FAF, VAR