

MACAO SPECIAL ADMINISTRATIVE REGION
PEOPLE REPUBLIC OF CHINA
CIVIL AVIATION AUTHORITY

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AIP MACAO
AIRAC AMDT
01/23
27 JUL 2023

IMPLEMENTATION

05 OCT 2023

AIRAC

1. Significant Information and Changes :

- 1.1 WEF 0000 UTC 05 OCT 2023, the new allocation of five-letter name codes (5LNC) of “GUBLO” will be used. Existing way-point “GLN” will be replaced by “GUBLO” with the same coordinates.
- 1.2 To standarize the assignment of related Standard Instrument Departure (SID) due to new way-point “GUBLO”, the procedures are renamed and summarized as below:

	ZHUHAI TMA EXIT POINT	RNAV (GNSS)	CONVENTIONAL
VMMC RWY 34	BIGRO MIPAG NLG SHL	BIGRO 1G MIPAG 1G NLG 1G SHL 1G	BIGRO 1E MIPAG 2E NLG 1E SHL 2E
VMMC RWY 16	BIGRO MIPAG NLG SHL	BIGRO 1H MIPAG 1H NLG 1H SHL 1H	BIGRO 1F MIPAG 2F NLG 1F SHL 2F

2. Destroy the following pages and/or charts on implementation date

GEN 0.4-1/2	13 JUL 23/13 JUL 23
AD	
2 – VMMC – 57/57A	23 FEB 23/27 JAN 22
2 – VMMC – 57B/57C	23 FEB 23/28 MAR 19
2 – VMMC – 58/59	28 JAN 21/23 FEB 23
2 – VMMC – 60/-	23 FEB 23/-
2 – VMMC – -/60C	-/23 FEB 23
2 – VMMC – 60D/60E	27 JAN 22/23 FEB 23
2 – VMMC – 60F/61	20 FEB 14/27 JAN 22
2 – VMMC – 62J/63	04 JAN 18/23 FEB 23
2 – VMMC – 63A/-	23 FEB 23/-
2 – VMMC – -/64A	-/23 FEB 23
2 – VMMC – 64B/64C	27 JAN 22/27 JAN 22
2 – VMMC – 64D/64E	20 FEB 14/27 JAN 22

3. Insert the following new pages and/or charts on implementation date

GEN 0.4-1/2	05 OCT 23/05 OCT 23
AD	
2 – VMMC – 57/57A	23 FEB 23/05 OCT 23
2 – VMMC – 57B/57C	05 OCT 23/28 MAR 19
2 – VMMC – 58/59	05 OCT 23/05 OCT 23
2 – VMMC – 60/-	05 OCT 23/-
2 – VMMC – -/60C	-/05 OCT 23
2 – VMMC – 60D/60E	05 OCT 23/05 OCT 23
2 – VMMC – 60F/61	05 OCT 23/27 JAN 22
2 – VMMC – 62J/63	04 JAN 18/05 OCT 23
2 – VMMC – 63A/-	05 OCT 23/-
2 – VMMC – -/64A	-/05 OCT 23
2 – VMMC – 64B/64C	05 OCT 23/05 OCT 23
2 – VMMC – 64D/64E	05 OCT 23/27 JAN 22

4. INCORPORATE the following manuscript amendments :

NIL.

5. Record entry of Amendment on page GEN 0.2 – 1

6. This Amendment incorporates information contained in the following AIP Supplement and/or NOTAM which are hereby cancelled:

AIP Supplement: NIL.

NOTAM: NIL.

GEN 0.4 CHECKLIST OF AIP PAGES

PART 1 - GENERAL (GEN)		2.1-2	27 MAR 08	4.2-1	02 JAN 97
		2.2-1	02 JAN 97		
GEN 0		2.2-2	02 JAN 97	PART 2 - EN-ROUTE (ENR)	
0.1-1	01 FEB 07	2.2-3	02 JAN 97		
0.1-2	01 FEB 07	2.2-4	02 JAN 97	ENR 0	
0.1-3	01 FEB 07	2.2-5	02 JAN 97	0.6-1	02 JAN 97
0.2-1	11 JUN 15	2.2-6	02 JAN 97	0.6-2	02 JAN 97
0.3-1	02 JAN 97	2.2-7	16 JUN 22		
0.4-1	05 OCT 23	2.2-8	02 JAN 97	ENR 1	
0.4-2	05 OCT 23	2.2-9	26 APR 18	1.1-1	01 FEB 07
0.5-1	02 JAN 97	2.3-1	30 JUL 98	1.1-2	01 FEB 07
0.6-1	05 APR 01	2.4-1	25 JUL 02	1.2-1	01 FEB 07
0.6-2	05 APR 01	2.5-1	20 FEB 14	1.2-2	04 JAN 18
0.6-3	02 JAN 97	2.6-1	02 JAN 97	1.3-1	01 FEB 07
		2.6-2	02 JAN 97	1.4-1	05 APR 01
GEN 1		2.7-1	30 JUL 98	1.5-1	24 JUN 04
1.1-1	20 FEB 14	2.7-2	02 JAN 97	1.5-2	24 JUN 04
1.1-2	20 FEB 14			1.5-3	24 JUN 04
1.1-3	16 JUN 22	GEN 3		1.6-1	11 AUG 11
1.2-1	16 JUN 22	3.1-1	26 APR 18	1.7-1	10 FEB 00
1.2-2	24 NOV 16	3.1-2	01 DEC 22	1.7-2	30 JUL 98
1.2-3	24 NOV 16	3.1-3	01 FEB 07	1.8-1	02 JAN 97
1.2-4	24 NOV 16	3.1-4	13 JUL 23	1.9-1	02 JAN 97
1.2-5	24 NOV 16	3.1-5	16 JUN 22	1.10-1	01 DEC 22
1.2-6	24 NOV 16	3.1-6	16 JUN 22	1.10-2	16 JUN 22
1.3-1	24 NOV 16	3.1-7	16 JUN 22	1.11-1	23 APR 20
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1.3-6	24 NOV 16	3.3-2	26 APR 18	1.14-1	01 FEB 07
1.3-7	24 NOV 16	3.4-1	26 APR 18	1.14-2	01 FEB 07
1.3-8	24 NOV 16	3.4-2	11 AUG 11	1.14-3	01 FEB 07
1.3-9	20 FEB 14	3.4-3	12 JUL 12	1.14-4	01 FEB 07
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1.4-1	19 NOV 20	3.4-5	10 FEB 00	1.14-7	17 APR 14
1.4-2	19 NOV 20	3.4-6	02 JAN 97	1.14-8	17 APR 14
1.5-1	19 NOV 20	3.5-1	20 FEB 14	1.14-9	17 APR 14
1.6-1	13 JUL 23	3.5-2	20 MAR 14	1.14-10	17 APR 14
1.6-2	13 JUL 23	3.5-3	20 FEB 14	1.14-11	17 APR 14
1.6-3	23 MAY 19	3.5-4	20 MAR 14	ENR 2	
1.6-4	13 JUL 23	3.5-5	23 NOV 17	2.1-1	25 FEB 10
1.6-5	13 JUL 23	3.5-6	23 NOV 17	2.2-1	02 JAN 97
1.6-6	01 DEC 22	3.5-7	23 NOV 17		
1.6-7	13 JUL 23	3.6-1	13 JUL 23	ENR 3	
1.6-8	13 JUL 23	3.6-2	11 JUN 15	3.1-1	02 JAN 97
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1.7-3	01 DEC 22	GEN 4		3.4-2	08 SEP 22
1.7-4	24 FEB 22	4.1-1	01 FEB 07	3.4-2A	28 JAN 21
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		4.1-4	18 APR 13		

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3.4-5	28 JAN 21	2 - VMMC - 13	13 JUL 23	2 - VMMC - 64 E	27 JAN 22
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5.5-1	02 JAN 97	2 - VMMC - 50	23 MAY 19	2 - VMMC - 68 D	28 JAN 21
5.6-1	02 JAN 97	2 - VMMC - 51	03 MAY 01	2 - VMMC - 68 E	27 JAN 22
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0.6-2	20 MAR 14	2 - VMMC - 58	05 OCT 23	2 - VMMC - 71 B	27 JAN 22
0.6-3	20 MAR 14	2 - VMMC - 59	05 OCT 23	2 - VMMC - 71 C	27 JAN 22
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1.1-1	15 JUL 10	2 - VMMC - 60 D	05 OCT 23	2 - VMMC - 71 F	27 JAN 22
1.1-2	11 AUG 11	2 - VMMC - 60 E	05 OCT 23	2 - VMMC - 71 G	24 FEB 22
1.1-3	26 APR 18	2 - VMMC - 60 F	05 OCT 23	2 - VMMC - 72	04 JAN 18
1.2-1	13 JUL 23	2 - VMMC - 61	27 JAN 22	2 - VMMC - 73	04 JAN 18
1.3-1	02 JAN 97	2 - VMMC - 62	04 JAN 18	2 - VMMC - 74	04 JAN 18
1.4-1	02 JAN 97	2 - VMMC - 62 A	24 FEB 22		
1.5-1	16 JUL 20	2 - VMMC - 62 B	04 JAN 18	AD 3	
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AD 2		2 - VMMC - 62 D	23 APR 20	3 - 2	24 NOV 16
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2 - VMMC - 2	23 MAY 17	2 - VMMC - 62 F	04 JAN 18	3 - 4	24 FEB 22
2 - VMMC - 3	13 JUL 23	2 - VMMC - 62 G	27 JAN 22	3 - 5	24 NOV 16
2 - VMMC - 4	17 JUN 21	2 - VMMC - 62 H	04 JAN 18	3 - 6	04 JAN 18
2 - VMMC - 5	20 MAR 14	2 - VMMC - 62 I	27 JAN 22	3 - 7	24 NOV 16
2 - VMMC - 6	24 MAY 18	2 - VMMC - 62 J	04 JAN 18	3 - 8	24 NOV 16
2 - VMMC - 7	24 MAY 18	2 - VMMC - 63	05 OCT 23	3 - 9	04 JAN 18
2 - VMMC - 8	23 FEB 23	2 - VMMC - 63 A	05 OCT 23		
2 - VMMC - 9	23 FEB 23	2 - VMMC - 64 A	05 OCT 23		
2 - VMMC - 10	01 FEB 07	2 - VMMC - 64 B	05 OCT 23		
2 - VMMC - 11	01 FEB 07	2 - VMMC - 64 C	05 OCT 23		

1. Navigation aids related to Macao Instrument Flight Procedures:

Navigation aids	Frequency	Coordinates	
CH DME	1094 MHz/CH70X	22°13'10.35"N	114°01'48.20"E
CON DVOR/DME	113.0MHz/CH77X	23°35.3'N	113°35.2'E
GAOLAN NDB	UJ 204	21°55.2'N	113°17.6'E
LKC DVOR/DME	113.2MHz/CH79X	22°22'44.12"N	113°53'01.50"E
MCU DVOR/DME	116.4MHz/CH111X	22°08'08"N	113°35'52"E
NLG DVOR/DME	117.7MHz/CH124X	22°31.9'N	113°33.7'E
POU DVOR/DME	114.1MHz/CH88X	23°01.3'N	113°11.4'E
SANZAO NDB	U 272	21°59.3'N	113°21.3'E
SHL DVOR/DME	115.7MHz/CH104X	23°05.5'N	113°51.0'E
SMT DVOR/DME	114.8MHz/CH95X	22°20'15.43"N	113°58'55.46"E
TD DVOR/DME	116.1MHz/CH108X	22°14'52.42"N	114°17'35.30"E
ZAO DVOR/DME	117.2MHz/CH119X	22°14.7'N	113°36.7'E
ZUH DVOR/DME	116.7MHz/CH114X	22°13.3'N	113°28.0'E
CEN DVOR/DME	114.6MHz/CH93X	23°09.1'N	113°25.0'E

2. Way-Points related to Macao Instrument Flight Procedures:

Way-Point	Radial & Distance	Coordinates	
ALLEY	TD R205° DME 75.0	21°05'11.2"N	113°47'09.5"E
ATI KO		21 48 29.56N	113 32 26.04E
BIGRO		21°34.2'N	111°49.6'E
BOKAT		22°02.3'N	113°00.0'E
BREAM		21°46'46.00"N	114°03'28.00"E
BUMDI		22°21'39.62"N	114°18'52.61"E
CAMRI	LKC R156° DME 23.4 SMT R167° DME 19.1	21°01'46.2"N	114°04'28.7"E
CHALI		21°17'45.00"N	113°36'41.00"E
CONGA	TD R105° DME 142.3	21°44'02.5"N	116°47'05.9"E

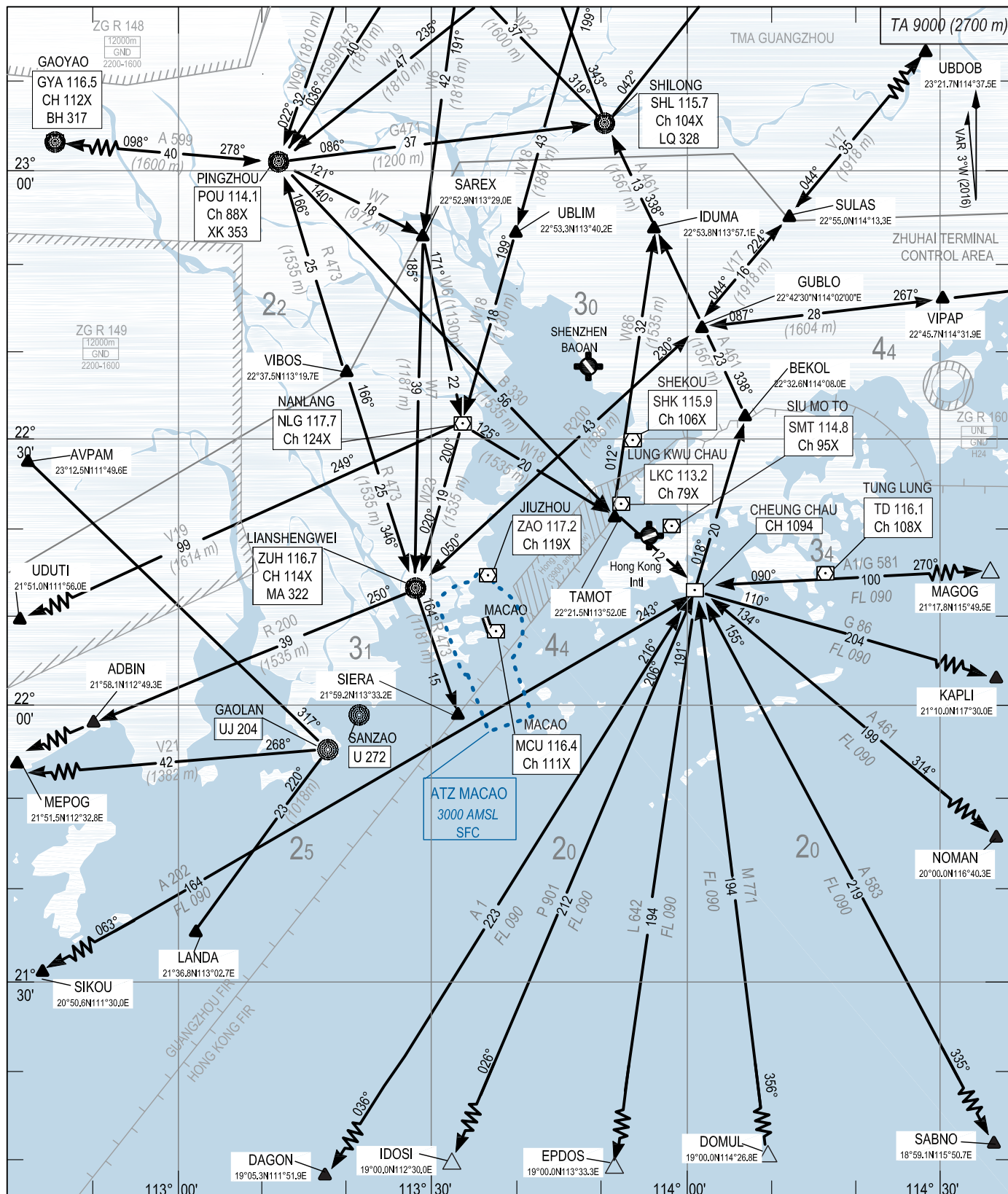
DOCTA	LKC R168° DME 26.8 SMT R179° DME 23.4	21°56'49.5"N	114°00'33.4"E
FUSU	CON R191° DME 32.5	23°03.2'N	113°30.5'E
GRUPA	TD R135° DME 125.0	20°50'44.0"N	115°56'59.0"E
GURIN	MCU R246° DME 37.0	21°51.1'N	113°00.0'E
HAZEL	LKC R211° DME 24.0	22°01'26.49"N	113°40'56.63"E
IDUMA	SHL R158 ° DME 13.0	22°53.8'N	113°57.1'E
INDUS		22°02'41.0"N	113°36'01.0"E
KIBAS	NLG R220° DME 29.5 ZUH R250° DME 14.0	22°08.3'N	113°14.5'E
LAKES	TD R118° DME 38.0	21°58'41.3"N	114°54'38.6"E
LATOP	MCU DME 9.0 ZAO R041° NLG R167° DME 15.6	22°16.9'N	113°38.6E
MIPAG	CEN R131 ° DME 22.6	22 ° 55.3'N	113 ° 44.5'E
MULET	MCU R164° DME 35	21°35'02.0"N	113°47'52.0"E
OCEAN	TD R135° DME 39.0	21°48'43.0"N	114°48 48.0'E
Papa "P"	MCU R164° DME 10.0	21°58'39"N	113°39'22"E
PECAN	TD R200° DME 50.5	21°26'20.2"N	114°02'05.6"E
RASSE	TD R118° DME 63.9	21°47'34.5"N	115°19'49.1"E
Romeo "R"	MCU R209° DME 18.0	21°51.8'N	113°26.9'E
RUNLI		21°26'59.72"N	113°40'51.00"E
SAREX	POU R120° DME 18.2 CON R191° DME 43.0	22°52.9'N	113°29.0'N
SHELY	TD R118° DME 22.2	22°05'26.65"N	114°39'13.94"E
SKATE	TD R135° DME 64.0	21°31'55.0"N	115°08'40.0"E
SOUSA	TD R100° DME 106.6	22°01'10.4"N	116°11'27.8"E
TITAN	TD R205° DME 36.9	21°40'27.4"N	114°03'02.5"E
TUNNA	NLG R156° DME 49.7	21°47'25.0"N	113°57'54.0"E

3. Way-Points related to Macao RNP Flight Procedures:

Waypoint	Coordinates (WGS84)	
GUBLO	22°42'30.00"N	114°02'00.00"E
RW16	22°09'38.31"N	113°35'14.14"E
RW34	22°08'17.46"N	113°35'43.91"E
MC411	22°21'41.20"N	113°47'37.58"E
MC417	22°21'22.48"N	113°25'20.13"E
MC418	22°20'59.43"N	113°37'16.98"E
MC419	22°26'25.37"N	113°46'47.49"E
MC420	22°20'32.29"N	113°41'43.59"E
MC501	22°00'03.00"N	113°38'45.76"E
MC502	22°02'43.76"N	113°00'50.39"E
MC508	22°12'25.79"N	113°34'59.76"E
MC509	22°14'34.78"N	113°36'37.67"E
MC510	22°17'02.13"N	113°38'29.61"E
MC511	22°21'49.23"N	113°36'58.39"E
MC512	22°21'49.25"N	113°33'45.41"E
MC513	22°01'09.95"N	113°37'20.04"E
MC514	22°06'52.19"N	113°32'56.82"E
MC601	22°19'43.55"N	113°56'43.60"E
MC608	22°11'14.42"N	113°34'38.75"E
MC609	22°02'35.07"N	113°37'49.87"E
MC610	21°52'31.46"N	113°41'36.15"E
MC611	21°39'36.00"N	113°46'30.00"E
MC612	21°50'42.92"N	113°36'08.19"E
MC613	21°54'20.84"N	113°34'45.32"E
MC614	21°58'12.27"N	113°36'03.19"E
MC615	22°18'12.10"N	113°50'26.77"E

MC800	22°19'24.7490"N	113°37'43.8130"E
MC802	22°17'31.0330"N	113°38'19.5450"E
MC806	22°14'58.1330"N	113°37'25.5250"E
MC808	22°14'12.4680"N	113°36'21.1390"E
MC810	22°13'20.0870"N	113°35'07.3230"E
MC812	22°11'32.2130"N	113°34'32.1820"E
MC820	22°07'12.5500"N	113°36'07.8040"E
MC822	22°04'45.1840"N	113°37'02.0200"E
MCC80	22°16'51.1470"N	113°35'53.0160"E
MCC82	22°12'03.4710"N	113°36'10.0330"E
MCC84	22°02'24.8370"N	113°29'43.4130"E

BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
ALTITUDES AND ELEVATIONS ARE IN FEET AND /OR (METERS / m)
DISTANCES IN NAUTICAL MILES

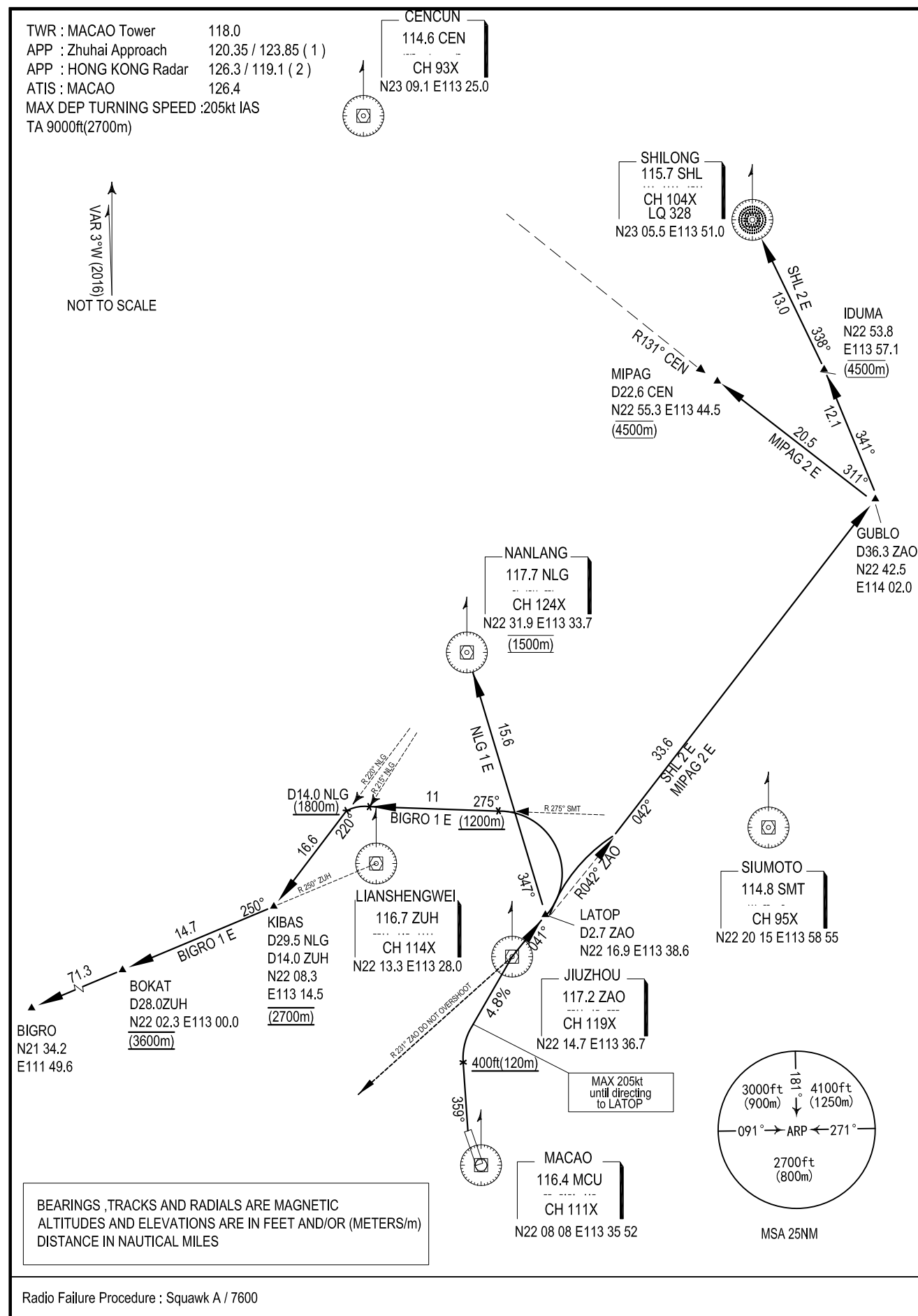


AIRAC AMDT 01/23

AD2-VMMC-59
05 OCT 2023

GUANG ZHOU FIR - HONG KONG FIR
SID MACAO RWY 34
(BIGRO 1 E, MIPAG 2 E, NLG 1 E, SHL 2 E)
CAT A, B, C, D

AIP MACAO



BIGRO 1 E (minimum climb gradient of 4.8% required until leaving 1800 m)

Depart on track 359°M and climb to at or above 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041°. Turn left at LATOP to intercept SMT R275° at or above 1200 m. Then continue climbing, at NLG R215° turn left to intercept NLG R220° at or above 1800 m. To KIBAS at 2700 m, turn right at KIBAS on ZUH 250°M, to BOKAT at 3600 m, to BIGRO.

If ZAO is unserviceable, depart on track 359°M, at MCU DME 3.3NM turn right on track 041°M and continue climbing. Turn left at MCU DME 9.0NM to intercept SMT 275°M at or above 1200m. Then join original procedure.

MIPAG 2 E (minimum climb gradient of 4.8% required until leaving 4500m)

Depart on track 359°M and climb to at or above 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041°. At LATOP turn right to proceed on ZAO R042° and continue climbing to 4500 m and maintain. At ZAO DME 36.3NM turn left to establish on CEN R131° to MIPAG at 4500m.

NLG 1 E (minimum climb gradient of 4.8% required until reaching 1500 m)

Depart on track 359°M and climb to at or above 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041°. At LATOP turn left to establish on NLG R167° and reach 1500m by NLG.

If ZAO is unserviceable, depart on track 359°M, at MCU DME 3.3NM turn right on track 041°M and continue climbing. At MCU DME 9.0NM turn left to establish on NLG R167°M. Then join original procedure.

SHL 2 E (minimum climb gradient of 4.8% required until leaving 4500m)

Depart on track 359°M and climb to 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041°. At LATOP turn right to proceed on ZAO R042° and continue climbing to 4500 m and maintain. At ZAO DME 36.3NM turn left on track 341°M to IDUMA at 4500m. Turn left at IDUMA and proceed to SHL via SHL R158°.

REMARK:

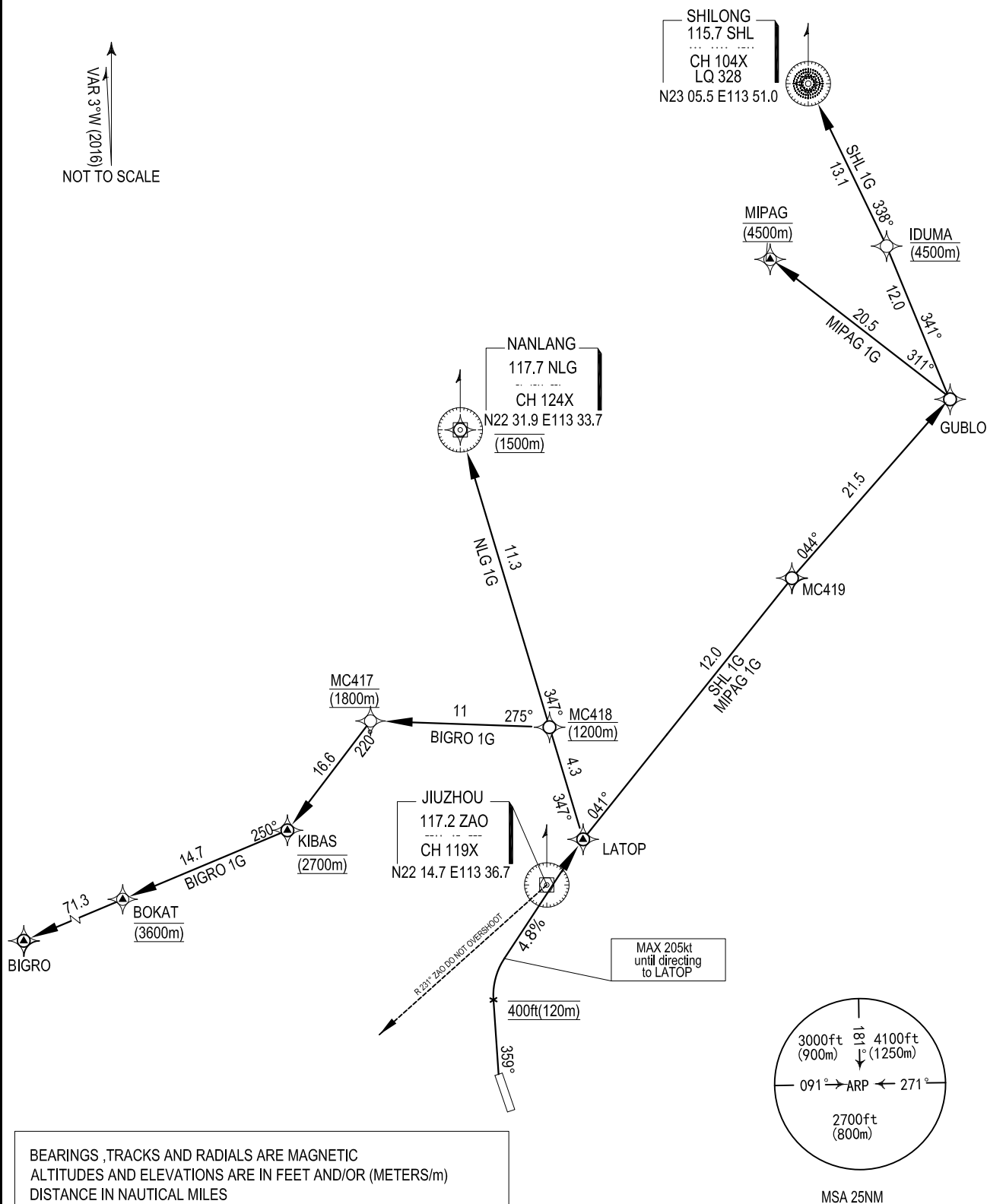
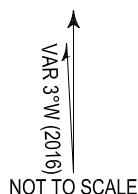
- (1) Aircraft are NOT TO OVERSHOOT JIUZHOU DVOR (ZAO 117.2 MHz) R231° which defines the northern limit for flights taking off RWY 34 due to NOISE ABATEMENT for Zhuhai City.
- (2) Aircraft unable to comply with the minimum climb gradient must inform Macao ground control at first contact to allow special coordination.
- (3) Maximum departure turning speed: 205 kt IAS.
- (4) Owing to the proximity of the Hong Kong international airport, pilots departing on RWY 34 towards Hong Kong direction are reminded the need to follow the standard SID track until LKC DVOR. Any deviation from the standard SID track could result in direct conflict with Hong Kong traffic.

AD2-VMMC-60 C
05 OCT 2023

GUANG ZHOU FIR - HONG KONG FIR
RNAV(GNSS) SID MACAO RWY 34
(BIGRO 1 G, MIPAG 1 G, NLG 1 G, SHL 1 G)
CAT A, B, C, D

AIP MACAO

TWR : MACAO Tower 118.0
APP : Zhuhai Approach 120.35 / 123.85 (1)
APP : HONG KONG Radar 126.3 / 119.1 (2)
ATIS : MACAO 126.4
MAX DEP TURNING SPEED :205kt IAS
TA 9000ft(2700m)



The procedure applied to BASIC RNP1, GNSS required.

BIGRO 1 G (minimum climb gradient of 4.8% required until leaving 1800 m)

Climb on track 359°M, at 400 ft (120 m) turn right. Direct to LATOP, to MC418 at 1200m, turn left to MC417 at 1800 m, to KIBAS at 2700 m, to BOKAT at 3600 m and BIGRO.

MIPAG 1 G (minimum climb gradient of 4.8% required until leaving 4500m)

Climb on track 359°M, at 400 ft (120 m) turn right. Direct to LATOP, MC419, GUBLO, Turn left to MIPAG at 4500 m.

NLG 1 G (minimum climb gradient of 4.8% required until reaching 1500 m)

Climb on track 359°M, at 400 ft (120 m) turn right. Direct to LATOP, to MC418 at 1200m and to NLG at 1500m.

SHL 1 G (minimum climb gradient of 4.8% required until leaving 4500m)

Climb on track 359°M, at 400 ft (120 m) turn right. Direct to LATOP, MC419, GUBLO. Turn left to IDUMA at 4500 m and SHL.

REMARK :

- (1) For RNAV_(GNSS) SID aircraft must be approved by State of Registry in accordance with ICAO RNP1 standard or equivalent. Carriage of certified GNSS receiver is mandatory.
- (2) Aircraft that do not have approval or whose RNP1/ P-RNAV capability has been degraded before departure shall use the Conventional Departure Procedure: BIGRO 1 E, MIPAG 2 E, NLG 1 E, SHL 2 E.
- (3) Aircraft are NOT TO OVERSHOOT JIUZHOU DVOR (ZAO 117.2 MHz) R231° which defines the northern limit for flights taking off RWY 34 due to NOISE ABATEMENT for Zhuhai City.
- (4) Aircraft unable to comply with the minimum climb gradient must inform Macao ground control at first contact to allow special coordination.
- (5) Maximum departure turning speed: 205 kt IAS.
- (6) Owing to the proximity of the Hong Kong international airport, pilots departing on RWY 34 towards Hong Kong direction are reminded the need to follow the standard SID track until LKC DVOR. Any deviation from the standard SID track could result in direct conflict with Hong Kong traffic.

FMC Database Coding Reference for RNAV_(GNSS) SIDs**BIGRO 1 G**

Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CA	—	—	359(356)	—	—	@ 400	-205
002	DF	LATOP	—	—	—	R	—	-205
003	TF	MC418	—	347(344)	4.3	—	@ 3900	—
004	TF	MC417	—	275(272)	11	—	@ 5900	—
005	TF	KIBAS	—	220(217)	16.6	—	@ 8900	—
006	TF	BOKAT	—	250(247)	14.7	—	@ 11800	—
007	TF	BIGRO	—	250(247)	71.3	—	—	—
001	IF	BIGRO	—	—	—	—	—	—

MIPAG 1 G

Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CA	—	—	359(356)	—	—	@ 400	-205
002	DF	LATOP	—	—	—	R	—	-205
003	TF	MC419	—	041(038)	12.0	—	—	—
004	TF	GUBLO	—	044(041)	21.5	—	—	—
005	TF	MIPAG	—	311(308)	20.5	L	@ 14800	—

NLG 1 G

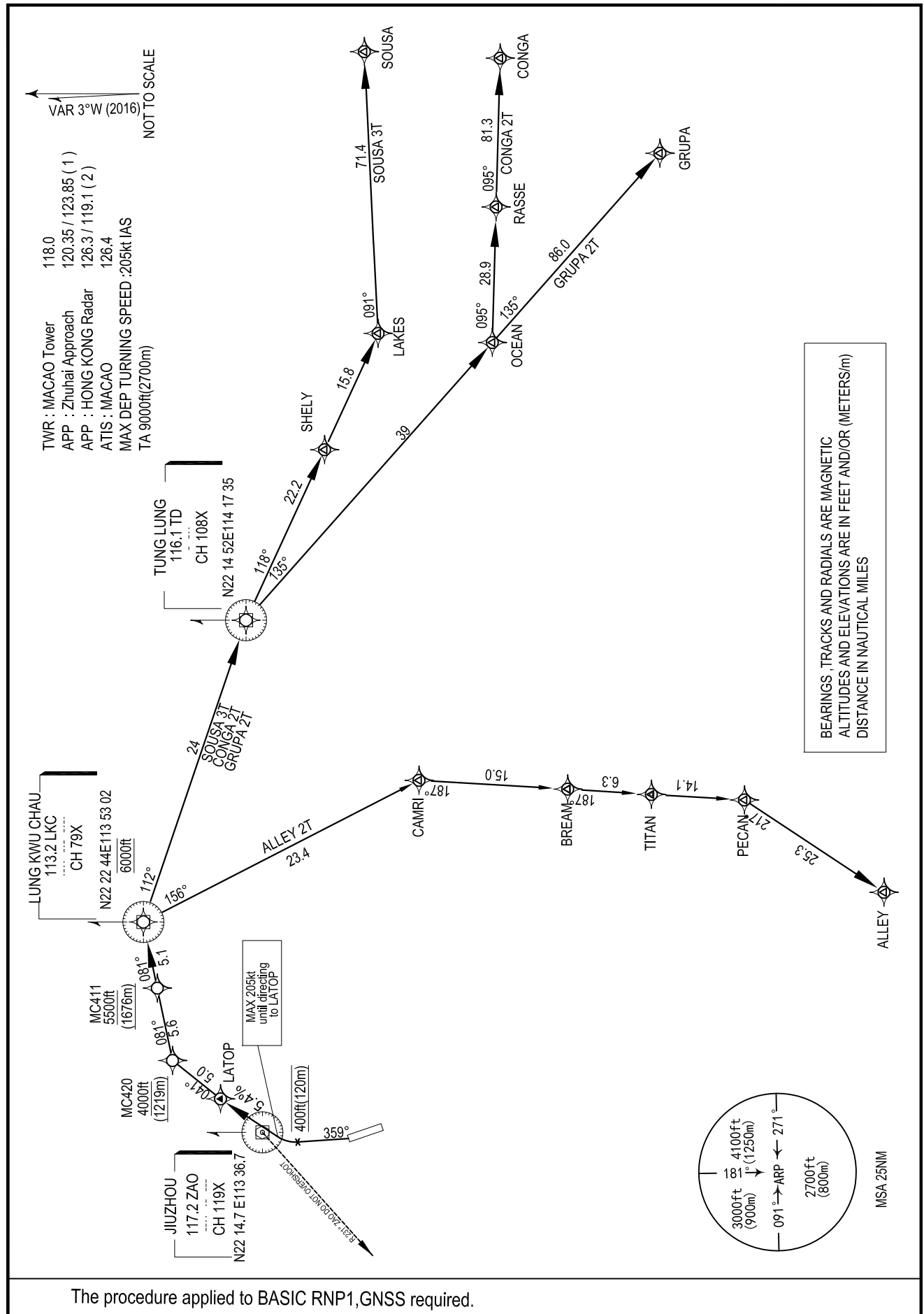
Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CA	—	—	359(356)	—	—	@ 400	-205
002	DF	LATOP	—	—	—	R	—	-205
003	TF	MC418	—	347(344)	4.3	—	@ 3900	—
004	TF	NLG	—	347(344)	11.3	—	@ 4900	—

SHL 1 G

Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CA	—	—	359(356)	—	—	@ 400	-205
002	DF	LATOP	—	—	—	R	—	-205
003	TF	MC419	—	041(038)	12.0	—	—	—
004	TF	GUBLO	—	044(041)	21.5	—	—	—
005	TF	IDUMA	—	341(338)	12.0	—	@ 14800	—
006	TF	SHL	—	338(335)	13.1	—	—	—

Waypoint Coordinates

Waypoint Name	Coordinates (WGS84)	
LATOP	22°16.9'N	113°38.6'E
MC418	22°20'59.43"N	113°37'16.98"E
MC417	22°21'22.48"N	113°25'20.13"E
KIBAS	22°08.3'N	113°14.5'E
BOKAT	22°02.3'N	113°00.0'E
NLG	22°31.9'N	113°33.7'E
MC419	22°26'25.37"N	113°46'47.49"E
MIPAG	22°55.3'N	113°44.5'E
GUBLO	22°42.5'N	114°02.0'E
IDUMA	22°53.8'N	113°57.1'E
SHL	23°05.5'N	113°51.0'E



ALLEY 1 W (minimum climb gradient of 5.4% required until leaving 5500 ft)

Depart on track 359°M and climb to 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041° climbing to 4000 ft, at SMT DME 16.1 (MCU DME 12.5) turn right to establish on SMT R275°, continue climbing to pass 5500 ft by SMT DME 11.0 and reach 6000 ft by SMT DME 6.0. Further climb when instructed by ATC. From SMT DME 6.0 turn right to DOCTA and then BREAM. From BREAM turn right direct to TITAN and then PECAN. From PECAN turn right to ALLEY. Continue on Terminal Transition Routes published on Hong Kong AIP.

If SMT is not available, ALLEY 1 W is not permitted.

CONGA 2 W (minimum climb gradient of 5.4% required until leaving 5500 ft)

Depart on track 359°M and climb to 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041° climbing to 4000 ft, at SMT DME 16.1 (MCU DME 12.5) turn right to establish on SMT R275°, continue climbing to pass 5500 ft by SMT DME 11.0 and reach 6000 ft by SMT DME 6.0. Further climb when instructed by ATC. At SMT DME 6.0 turn right direct to DOCTA. Expect to cross DOCTA FL140 or above. From DOCTA turn left direct to OCEAN then turn left direct to RASSE and CONGA. Continue on Terminal Transition Routes published in Hong Kong AIP.

If SMT is not available, CONGA 2 W is not permitted.

GRUPA 2 W (minimum climb gradient of 5.4% required until leaving 5500 ft)

Depart on track 359°M and climb to 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041° climbing to 4000 ft, at SMT DME 16.1 (MCU DME 12.5) turn right to establish on SMT R275°, continue climbing to pass 5500 ft by SMT DME 11.0 and reach 6000 ft by SMT DME 6.0. Further climb when instructed by ATC. At SMT DME 6.0 turn right direct to DOCTA. Expect to cross DOCTA FL140 or above. From DOCTA turn left direct to OCEAN then turn right direct to GRUPA. Continue on Terminal Transition Routes published in Hong Kong AIP.

If SMT is not available, GRUPA 2 W is not permitted.

SOUSA 2 W (minimum climb gradient of 5.4% required until leaving 5500 ft)

Depart on track 359°M and climb to 400 ft (120 m). Then turn right and continue climb to ZAO. Leave ZAO on R041° climbing to 4000 ft, at SMT DME 16.1 (MCU DME 12.5) turn right to establish on SMT R275°, continue climbing to pass 5500 ft by SMT DME 11.0 and reach 6000 ft by SMT DME 6.0. Further climb when instructed by ATC. At SMT DME 6.0 turn right direct to DOCTA. Expect to cross DOCTA FL140 or above. From DOCTA turn left direct to LAKES and SOUSA. Continue on Terminal Transition Routes published in Hong Kong AIP.

If SMT is not available, SOUSA 2 W is not permitted.

REMARK:

- (1) Aircraft are NOT TO OVERSHOOT JIUZHOU DVOR (ZAO 117.2 MHz) R231° which defines the northern limit for flights taking off RWY 34 due to NOISE ABATEMENT for Zhuhai City.
- (2) Procedure Design Gradient based only on airspace restriction.
- (3) Aircraft unable to comply with the minimum climb gradient must inform MACAO ground control at first contact to allow special coordination.
- (4) Maximum departure turning speed: 205 kt IAS until ZAO DVOR.
- (5) Standard Instrument Departure Procedures (SIDs) transiting Hong Kong Airspace

Speed Restriction

Aircraft shall fly at 250 kt or less below FL 110.

Loss of communication

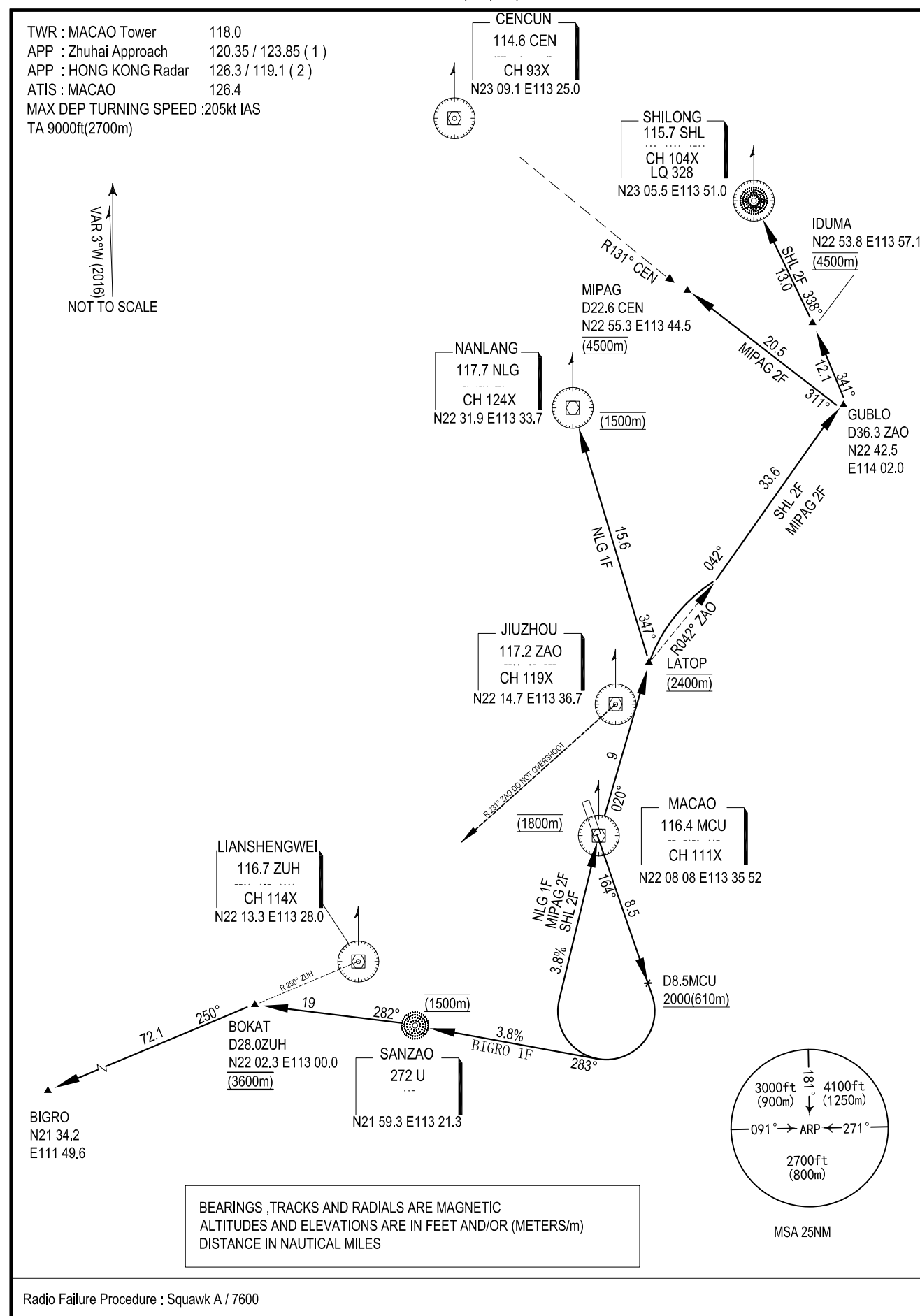
In the event of loss of communication, aircraft shall comply with the last acknowledged clearance up to the next reporting point in the SID, then climb to the flight planned cruising level and follow the flight planned route to join the appropriate airway.

- (6) Owing to the proximity of the Hong Kong international airport, pilots departing on RWY 34 towards Hong Kong direction are reminded the need to follow the standard SID track until LKC DVOR. Any deviation from the standard SID track could result in direct conflict with Hong Kong traffic.
- (7) If ZAO is unserviceable, Depart on track 359°M, at MCU DME 3.3NM turn right on track 041°M. Then turn right by MCU DME 13.8NM (SMT DME 16.2NM) at altitude 4000ft to intercept SMT R275°, continue climbing to pass 5500ft by SMT DME 11.0NM and reach 6000ft by SMT DME 6.0NM. Further climb when instructed by ATC and continues the original SID.

AD2-VMMC-63
05 OCT 2023

GUANG ZHOU FIR - HONG KONG FIR
SID MACAO RWY 16
(BIGRO 1 F, MIPAG 2 F, NLG 1 F, SHL 2 F)
CAT A, B, C, D

AIP MACAO



BIGRO 1 F (minimum climb gradient of 3.8% required until leaving 1500 m)

Climb straight ahead to cross MCU DME 8.5 at 2000 ft (610 m) or above, then turn right on track 283°M, continue climbing and pass Sanzaio beacon (U 272 kHz) at 1500 m. Climb on track 282°M and establish on ZUH R250° towards BIGRO, pass BOKAT at 3600 m.

If MCU is unserviceable, climb straight ahead to cross ZAO DME 14.8 NM at 2000 ft (610 m) or above then turn right on track 283°M. Then join original procedure.

MIPAG 2 F (minimum climb gradient of 3.8% required until leaving 2400 m)

Climb straight ahead to cross MCU DME 8.5 at 2000 ft (610 m) or above, then turn right to MCU via MCU R197° and cross MCU at 1800 m. Leave MCU on R020° and continue climbing to 2400 m, at LATOP turn right to establish on ZAO R042°. Continue climbing on ZAO R042° to 4500 m and maintain. At ZAO DME 36.3NM turn left to establish on CEN R131° to MIPAG at 4500m.

If MCU is unserviceable, climb straight ahead to cross ZAO DME 14.8 NM at 2000 ft (610 m) or above then turn right to ZAO via ZAO R195°M and cross ZAO DME 6.7 NM at 1800 m, leave ZAO on R041°M and cross 2400 m by LATOP. Then join original procedure.

NLG 1 F (minimum climb gradient of 3.8% required until reaching 2400 m)

Climb straight ahead to cross MCU DME 8.5 at 2000 ft (610 m) or above, then turn right to MCU via MCU R197° and cross MCU at 1800 m. Leave MCU on R020° and reach 2400 m by LATOP. At LATOP turn left to establish NLG R167° and descend to reach 1500m by NLG.

If MCU is unserviceable, climb straight ahead to cross ZAO DME 14.8 NM at 2000 ft (610 m) or above then turn right to ZAO via ZAO R195°M and cross ZAO DME 6.7 NM at 1800 m, leave ZAO on R041°M and cross 2400 m by LATOP. Then join original procedure.

SHL 2 F (minimum climb gradient of 3.8% required until leaving 2400 m)

Climb straight ahead to cross MCU DME 8.5 at 2000 ft (610 m) or above, then turn right to MCU via MCU R197° and cross MCU at 1800 m. Leave MCU on R020° and continue climbing to 2400 m, at LATOP turn right to establish on ZAO R042°. Continue climbing on ZAO R042° to 4500 m and maintain. At ZAO DME 36.3NM turn left on track 341°M to IDUMA at 4500m. Turn left at IDUMA and proceed to SHL via SHL R158°.

If MCU is unserviceable, climb straight ahead to cross ZAO DME 14.8 NM at 2000 ft (610 m) or above then turn right to ZAO via ZAO R195°M and cross ZAO DME 6.7 NM at 1800 m, leave ZAO on R041°M and cross 2400 m by LATOP. Then join original procedure.

REMARK:

- (1) Aircraft unable to comply with the minimum climb gradient must inform MACAO ground control at first contact to allow special coordination.
- (2) Maximum departure turning speed: 205 kt IAS.

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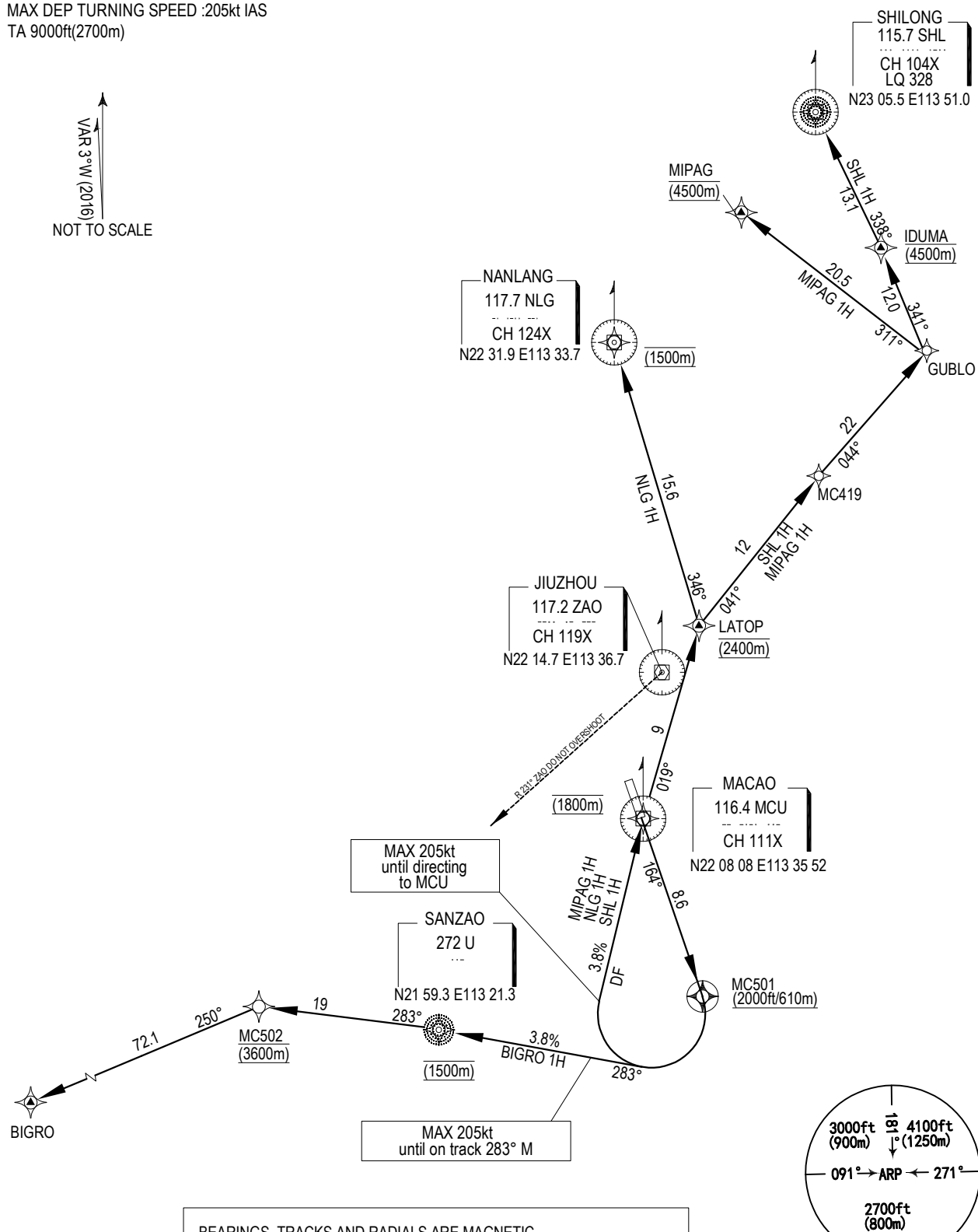
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AD2-VMMC-64 A
05 OCT 2023

GUANG ZHOU FIR - HONG KONG FIR
RNAV(GNSS) SID MACAO RWY 16
(BIGRO 1 H, MIPAG 1 H, NLG 1 H, SHL 1 H)
CAT A, B, C, D

AIP MACAO

TWR : MACAO Tower 118.0
APP : Zhuhai Approach 120.35 / 123.85 (1)
APP : HONG KONG Radar 126.3 / 119.1 (2)
ATIS : MACAO 126.4
MAX DEP TURNING SPEED :205kt IAS
TA 9000ft(2700m)



BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
ALTITUDES AND ELEVATIONS ARE IN FEET AND/OR (METERS/m)
DISTANCE IN NAUTICAL MILES

MSA 25NM

The procedure applied to BASIC RNP1, GNSS required.

BIGRO 1 H (minimum climb gradient of 3.8% required until leaving 1500 m)

Depart and Climb to fly-over MC501 on course 164°M at 2000 ft (610 m) or above, then turn right to Sanzao beacon (U 272 kHz) at 1500 m on course 283°M. To MC502 at 3600 m and to BIGRO.

MIPAG 1 H (minimum climb gradient of 3.8% required until leaving 2400 m)

Depart and Climb to fly-over MC501 on course 164°M at 2000 ft (610 m) or above, then turn right direct to MCU at 1800 m. to LATOP at 2400m, to MC419, GUBLO, MIPAG at 4500 m.

NLG 1 H (minimum climb gradient of 3.8% required until reaching 2400 m)

Depart and Climb to fly-over MC501 on course 164°M at 2000 ft (610 m) or above, then turn right direct to MCU at 1800 m. to LATOP at 2400m, and to NLG at 1500m.

SHL 1 H (minimum climb gradient of 3.8% required until leaving 2400 m)

Depart and Climb to fly-over MC501 on course 164°M at 2000 ft (610 m) or above, then turn right direct to MCU at 1800 m. to LATOP at 2400m, to MC419, GUBLO, IDUMA at 4500 m and to SHL.

REMARK :

- (1) For RNAV_(GNSS) SID aircraft must be approved by State of Registry in accordance with ICAO RNP1 standard or equivalent. Carriage of certified GNSS receiver is mandatory.
- (2) Aircraft that do not have approval or whose RNP1/ P-RNAV capability has been degraded before departure shall use the Conventional Departure Procedure: BIGRO 1 F, NLG 1 F, SHL 2 F, MIPAG 2 F.
- (3) Aircraft unable to comply with the minimum climb gradient must inform MACAO ground control at first contact to allow special coordinations.
- (4) Maximum departure turning speed: 205 kt IAS.

FMC Database Coding Reference for RNAV_(GNSS) SIDs**BIGRO 1 H**

Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CF	MC501	Y	164 (161)	8.6	—	+2000	-205
002	CF	U	—	283(280)	—	R	@ 4900	-205
003	TF	MC502	—	283(280)	19	—	@ 11800	-
004	TF	BIGRO	—	250(247)	72.1	—	—	—

MIPAG 1 H

Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CF	MC501	Y	164 (161)	8.6	—	+2000	-205
002	DF	MCU	—	—	—	R	@ 5900	-205
003	TF	LATOP	—	019(016)	9	—	@ 7900	-
004	TF	MC419	—	041(038)	12	—	—	-
005	TF	GUBLO	—	044(041)	22	—	—	-
006	TF	MIPAG	—	311(308)	20.5	L	@ 14800	—

NLG 1 H

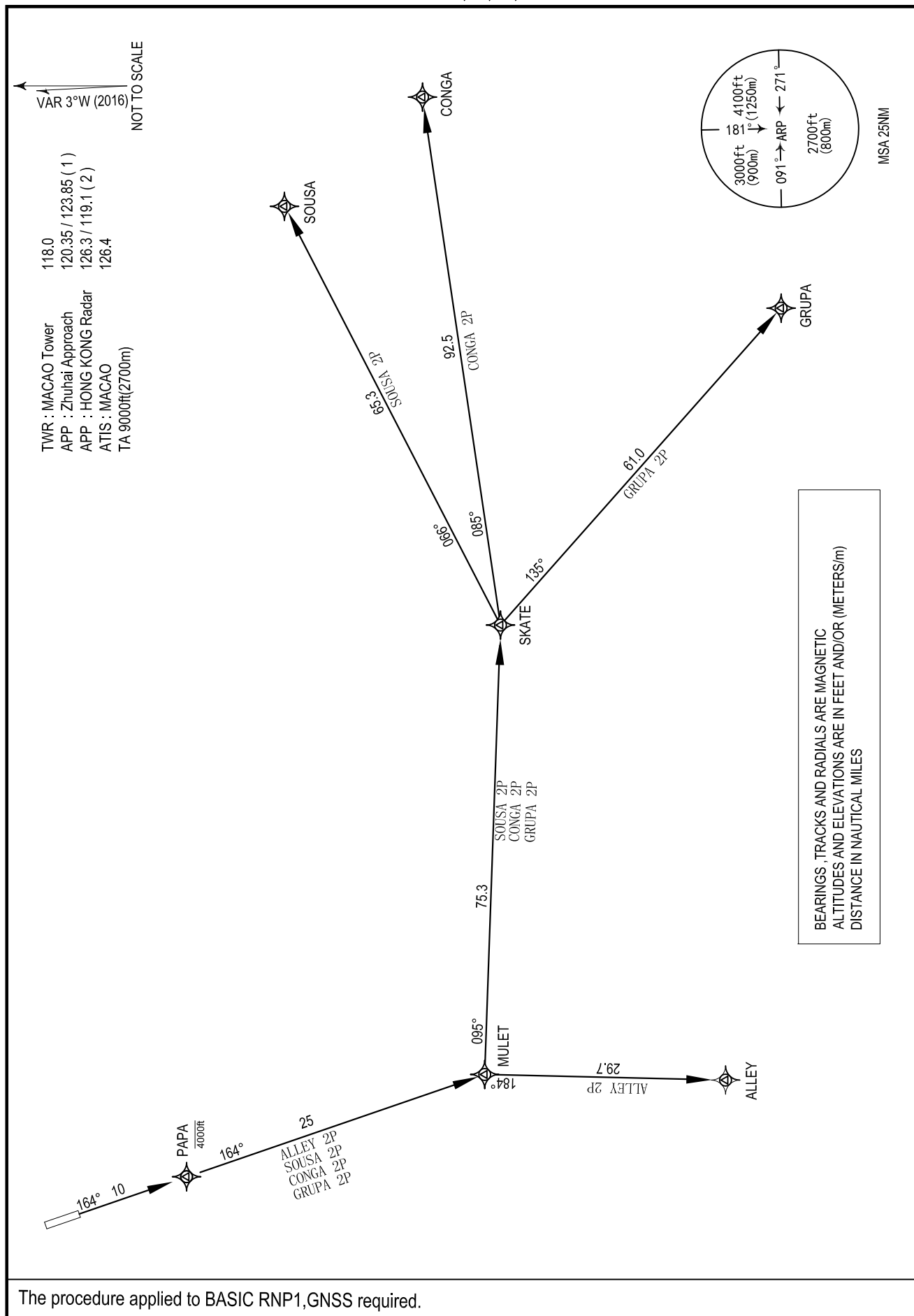
Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CF	MC501	Y	164 (161)	8.6	—	+2000	-205
002	DF	MCU	—	—	—	R	@ 5900	-205
003	TF	LATOP	—	019(016)	9	—	@ 7900	—
004	TF	NLG	—	346(343)	15.6	—	@ 4900	—

SHL 1 H

Sequence Number	Path Terminator	Waypoint	Fly-over	Track °M (°T)	Distance (NM)	Turn Dir	Altitude (ft)	Speed (knot)
001	CF	MC501	Y	164 (161)	8.6	—	+2000	-205
002	DF	MCU	—	—	—	R	@ 5900	-205
003	TF	LATOP	—	019(016)	9	—	@ 7900	-
004	TF	MC419	—	041(038)	12	—	—	-
005	TF	GUBLO	—	044(041)	22	—	—	-
006	TF	IDUMA	—	341(338)	12.0	—	@ 14800	—
007	TF	SHL	—	338(335)	13.1	—	—	—

Waypoint Coordinates

Waypoint Name	Coordinates (WGS84)	
MC501	22°00'03.00"N	113°38'45.76"E
U	21°59.3'N	113°21.3'E
MC502	22°02'43.76"N	113°00'50.39"E
BIGRO	21°34.2'N	111°49.6'E
LATOP	22°16.9'N	113°38.6'E
NLG	22°31.9'N	113°33.7'E
MC419	22°26'25.37"N	113°46'47.49"E
GUBLO	22°42.5'N	114°02.0'E
IDUMA	22°53.8'N	113°57.1'E
SHL	23°05.5'N	113°51.0'E
MIPAG	22°55.3'N	113°44.5'E



The procedure applied to BASIC RNP1,GNSS required.