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AMDT
05/2016
Effective date
15 SEP 2016
Publication date
15 SEP 2016

wp-AMDT-2016-05

1. SIGNIFICANT INFORMATION AND CHANGES

1.1 Singapore FIR

- a. Coordinates for Waypoint KETOD on RNAV Routes M761 and Y336 amended.

1.2 Singapore Changi Airport (WSSS)

- a. Locations of new Runway 02C ILS components changed.
- b. Stopbar light position at Taxiway SA updated

2. THIS AMENDMENT INCORPORATES INFORMATION CONTAINED IN THE FOLLOWING WHICH ARE HEREBY SUPERSEDED:

NOTAMs

A1862/16 dated 04/08/16
A1873/16 dated 05/08/16
A1879/16 dated 08/08/16
A1987/16 dated 16/08/16

AIP Supplements:

045/2016 dated 01/06/16
078/2016 dated 01/09/16

Amended Pages

GEN 0.2-1:	: <i>replace.</i>
GEN 0.3-1/2:	: <i>replace.</i>
GEN 0.3-3/4:	: <i>replace.</i>
GEN 0.3-5/6:	: <i>replace.</i>
GEN 0.4-1/2:	: <i>replace.</i>
GEN 0.4-3:	: <i>replace.</i>
GEN 0.6-1/2:	: <i>replace.</i>
GEN 0.6-3:	: <i>replace.</i>
GEN 1.2-1/2:	: <i>replace.</i>
GEN 1.2-3/4:	: <i>replace.</i>
GEN 1.2-5/6:	: <i>replace.</i>
GEN 1.2-7:	: <i>insert.</i>
GEN 3.2-3/4:	: <i>replace.</i>
GEN 3.5-5/6:	: <i>replace.</i>
GEN 4.1-1:	: <i>replace.</i>
ENR 1.1-13/14:	: <i>replace.</i>
ENR 1.14-1/2:	: <i>replace.</i>
ENR-1.14-3 to ENR-1.14-4:	: <i>insert.</i>

ENR-1.14-5 to ENR-1.14-6: : *insert.*
ENR-1.14-7 to ENR-1.14-8: : *insert.*
ENR 1.14-3 to 1.14-4: : *remove.*
ENR 1.14-5 to 1.14-6: : *remove.*
ENR-1.15-1 : : *remove.*
ENR-1.15-3 to 1.15-4: : *remove.*
ENR-2.1-9: : *replace.*
ENR-2.1-15: : *replace.*
ENR-3.1/ATS Chart: : *insert.*
ENR-3.1-17: : *remove.*
ENR 3.3-15/16: : *replace.*
ENR 3.3-35/36: : *replace.*
ENR 4.4-1/2: : *replace.*
ENR 4.4-3/4: : *replace.*
ENR 4.4-5/6: : *replace.*
ENR 6-1: : *replace.*
ERC-6-1 En-Route Chart: : *insert.*
ERC-6-1 EN-ROUTE CHART: : *remove.*
AD 2.WSSS-3/4: : *replace.*
AD 2.WSSS-23/24: : *replace.*
AD 2.WSSS-25/26: : *replace.*
AD 2.WSSS-27/28: : *replace.*
AD 2.WSSS-31/32: : *replace.*
AD 2.WSSS-39/40: : *replace.*
AD 2.WSSS-41/42: : *replace.*
AD 2.WSSS-53: : *replace.*
AD-2-WSSS-ADC-1: : *replace.*
AD-2-WSSS-ADC-2: : *replace.*
AD-2-WSSS-SID-1 to 1.1: : *replace.*
AD-2-WSSS-SID-2 to 2.1: : *insert.*
AD-2-WSSS-SID-5 to 5.1: : *replace.*
AD-2-WSSS-SID-6 to 6.1: : *replace.*
AD-2-WSSS-SID-7 to 7.1: : *replace.*
AD-2-WSSS-SID-8 to 8.1: : *replace.*
AD-2-WSSS-SID-9 to 9.1: : *replace.*
AD-2-WSSS-SID-10 to 10.1: : *replace.*
AD-2-WSSS-SID-11 to 11.1: : *replace.*
AD-2-WSSS-SID-12 to 12.1: : *replace.*
AD-2-WSSS-SID-13 to 13.1: : *replace.*
AD-2-WSSS-SID-14 to 14.1: : *replace.*
AD-2-WSSS-SID-15 to 15.1: : *replace.*
AD-2-WSSS-SID-16 to 16.1: : *replace.*
AD-2-WSSS-SID-17 to 17.1: : *replace.*
AD-2-WSSS-SID-18 to 18.1: : *replace.*
AD-2-WSSS-SID-2 to 2.2: : *remove.*
AD 2.WSSL-3/4: : *replace.*
AD 2.WSSL-5/6: : *replace.*
AD 2.WSSL-9/10: : *replace.*
AD-2-WSSL-ADC-1: : *replace.*
AD-2-WSSL-ADC-2: : *replace.*
AD 2.WSAP-11: : *replace.*
AD-2-WSAP-IAC-1: : *replace.*
AD-2-WSAP-IAC-2: : *replace.*
AD-2-WSAP-IAC-3: : *replace.*
AD-2-WSAP-IAC-4: : *replace.*
AD-2-WSAP-IAC-5: : *insert.*
AD-2-WSAP-IAC-6: : *insert.*

GEN 0.2 RECORD OF AIP AMENDMENTS***AIP AMENDMENT***

<i>NR/Year</i>	<i>Publication date</i>	<i>Date inserted</i>	<i>Inserted by</i>
5/2014	18 SEP 2014	18 SEP 2014	
6/2014	13 NOV 2014	13 NOV 2014	
1/2015	08 JAN 2015	08 JAN 2015	
2/2015	05 MAR 2015	05 MAR 2015	
3/2015	30 APR 2015	30 APR 2015	
4/2015	25 JUN 2015	25 JUN 2015	
5/2015	20 AUG 2015	20 AUG 2015	
6/2015	15 OCT 2015	15 OCT 2015	
07/2015	10 DEC 2015	10 DEC 2015	
01/2016	04 FEB 2016	04 FEB 2016	
02/2016	31 MAR 2016	31 MAR 2016	
03/2016	26 MAY 2016	26 MAY 2016	
04/2016	21 JUL 2016	21 JUL 2016	
05/2016	15 SEP 2016	15 SEP 2016	

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GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
1/2014	Paya Lebar AP - Luffer Cranes	AD	03 JAN 2014 / 31 DEC 2016	
2/2014	Paya Lebar AP - Luffer Cranes	AD	03 JAN 2014 / 31 DEC 2016	
3/2014	Paya Lebar AP - Luffer Cranes	AD	03 JAN 2014 / 31 DEC 2016	
4/2014	Paya Lebar AP - Topless Cranes	AD	03 JAN 2014 / 31 DEC 2016	
5/2014	Paya Lebar AP - Topless Cranes	AD	03 JAN 2014 / 31 DEC 2016	
218/2014	Paya Lebar AP - Luffer Cranes	AD	01 AUG 2014 / 30 DEC 2017	
219/2014	Paya Lebar AP - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
220/2014	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
221/2014	Paya Lebar AP - Luffer Crane	AD	01 AUG 2014 / 31 DEC 2017	
222/2014	Paya Lebar AP - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2017	
238/2014	Paya Lebar AP - Luffer Cranes	AD	01 AUG 2014 / 01 DEC 2016	
239/2014	Paya Lebar AP - Topless Cranes	AD	01 AUG 2014 / 31 DEC 2016	
240/2014	Paya Lebar AP - Topless Cranes	AD	01 AUG 2014 / 31 DEC 2016	
241/2014	Paya Lebar AP - Luffer Cranes	AD	01 AUG 2014 / 31 DEC 2016	
242/2014	Paya Lebar AP - Topless Cranes	AD	01 AUG 2014 / 31 DEC 2016	
380/2014	Paya Lebar AP - Hammerhead and Topless Cranes	AD	01 DEC 2014 / 31 DEC 2016	
381/2014	Paya Lebar AP - Topless Cranes / A Frames	AD	01 DEC 2014 / 31 DEC 2016	
382/2014	Paya Lebar AP - Topless Cranes	AD	01 DEC 2014 / 31 DEC 2016	
383/2014	Paya Lebar AP - Luffer and Hammerhead Canes	AD	01 DEC 2014 / 31 DEC 2016	
384/2014	Paya Lebar AP - Topless and Hammerhead Cranes	AD	01 DEC 2014 / 31 DEC 2016	
21/2015	Paya Lebar AP - Saddle Crane	AD	02 JAN 2015 / 04 DEC 2017	
22/2015	Paya Lebar AP - Luffer Cranes	AD	02 JAN 2015 / 09 DEC 2017	
23/2015	Paya Lebar AP - Topless Cranes	AD	02 JAN 2015 / 31 DEC 2017	
24/2015	Paya Lebar AP - Luffer Crane	AD	02 JAN 2015 / 31 DEC 2017	
25/2015	Paya Lebar AP - Hammerhead Cranes	AD	02 JAN 2015 / 31 DEC 2017	
27/2015	Singapore Changi AP - Work activities due to construction of new aircraft stands and modification of engine run-up bays at East Cargo Area	AD	12 JAN 2015 / 31 MAR 2017	
29/2015	Paya Lebar AP - Mobile Cranes	AD	02 FEB 2015 / 01 JAN 2017	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
30/2015	Paya Lebar AP - Luffer Cranes	AD	02 FEB 2015 / 02 JAN 2017	
31/2015	Paya Lebar AP - Topless Cranes	AD	02 FEB 2015 / 03 JAN 2017	
32/2015	Paya Lebar AP - Luffer Crane	AD	02 FEB 2015 / 31 JAN 2017	
33/2015	Paya Lebar AP - Luffer Crane and Topless Cranes	AD	02 FEB 2015 / 31 JAN 2017	
60/2015	Paya Lebar AP - Luffer Crane	AD	16 APR 2015 / 30 SEP 2016	
61/2015	Paya Lebar AP - Topless Cranes	AD	16 APR 2015 / 30 SEP 2016	
62/2015	Paya Lebar AP - Topless Cranes	AD	16 APR 2015 / 31 DEC 2016	
68/2015	Paya Lebar AP - Luffer Crane	AD	16 APR 2015 / 07 JUL 2017	
69/2015	Paya Lebar AP - Tower Cranes	AD	16 APR 2015 / 31 JUL 2017	
70/2015	Paya Lebar AP - Luffer Cranes and Saddle Cranes	AD	16 APR 2015 / 19 AUG 2017	
71/2015	Paya Lebar AP - Tower Cranes	AD	16 APR 2015 / 10 SEP 2017	
72/2015	Paya Lebar AP - Tower Cranes	AD	16 APR 2015 / 10 SEP 2017	
73/2015	Paya Lebar AP - Saddle Cranes	AD	16 APR 2015 / 09 OCT 2017	
74/2015	Paya Lebar AP - Topless Cranes and Luffer Crane	AD	16 APR 2015 / 31 DEC 2017	
75/2015	Paya Lebar AP - Hydraulic Crawler Cranes	AD	16 APR 2015 / 07 JAN 2018	
76/2015	Paya Lebar AP - Tower Cranes	AD	16 APR 2015 / 31 MAR 2018	
77/2015	Paya Lebar AP - Saddle Cranes	AD	16 APR 2015 / 01 MAY 2018	
78/2015	Paya Lebar AP - Tower Cranes	AD	16 APR 2015 / 01 MAR 2017	
79/2015	Paya Lebar AP - Hammerhead Cranes	AD	16 APR 2015 / 04 MAR 2017	
80/2015	Paya Lebar AP - Topless Cranes	AD	16 APR 2015 / 01 APR 2017	
81/2015	Paya Lebar AP - Hammerhead Cranes	AD	16 APR 2015 / 29 APR 2017	
82/2015	Paya Lebar AP - Topless Cranes	AD	16 APR 2015 / 10 MAY 2017	
83/2015	Paya Lebar AP - Luffer Cranes	AD	16 APR 2015 / 01 FEB 2017	
84/2015	Paya Lebar AP - Hammerhead Cranes	AD	16 APR 2015 / 28 FEB 2017	
85/2015	Paya Lebar AP - Crane	AD	16 APR 2015 / 28 FEB 2017	
86/2015	Paya Lebar AP - Luffer Crane	AD	16 APR 2015 / 28 FEB 2017	
87/2015	Sembawang AP - Hammerhead Cranes	AD	16 APR 2015 / 01 FEB 2017	
109/2015	Singapore Changi AP - Shortening of Runway 20C approach lighting to 720m to facilitate the construction of the northern end-around-taxiway	AD	02 OCT 2015 / 31 OCT 2018	
116/2015	Paya Lebar AP - Luffer Crane	AD	01 JUL 2015 / 14 NOV 2016	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
117/2015	Paya Lebar AP - Crane	AD	01 JUL 2015 / 30 NOV 2016	
118/2015	Paya Lebar AP - Tower Cranes	AD	01 JUL 2015 / 31 DEC 2016	
119/2015	Paya Lebar AP - Luffer Cranes	AD	01 JUL 2015 / 31 DEC 2016	
120/2015	Paya Lebar AP - Topless Tower Cranes	AD	01 JUL 2015 / 01 APR 2017	
121/2015	Paya Lebar AP - Luffer Crane	AD	01 JUL 2015 / 01 JUN 2017	
122/2015	Paya Lebar AP - Topless Cranes	AD	01 JUL 2015 / 30 JUN 2017	
123/2015	Paya Lebar AP - Topless Cranes	AD	01 JUL 2015 / 30 JUN 2017	
124/2015	Paya Lebar AP - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2017	
125/2015	Paya Lebar AP - Luffer Crane	AD	01 JUL 2015 / 01 JUL 2017	
126/2015	Paya Lebar AP - Luffer Crane	AD	01 JUL 2015 / 30 DEC 2017	
127/2015	Tengah AD - Topless Cranes and Luffer Crane	AD	01 SEP 2015 / 31 AUG 2017	
128/2015	Tengah AD - Topless Cranes	AD	01 SEP 2015 / 31 AUG 2017	
129/2015	Tengah AD - Luffer Crane	AD	01 JUL 2015 / 31 DEC 2017	
130/2015	Sembawang AD - Luffer Cranes	AD	01 JUL 2015 / 31 DEC 2017	
131/2015	Paya Lebar AP - Topless Cranes	AD	01 JUL 2015 / 31 DEC 2017	
132/2015	Paya Lebar AP - Cranes	AD	01 JUL 2015 / 12 APR 2018	
133/2015	Paya Lebar AP - Luffer Crane and Topless Crane	AD	01 JUL 2015 / 30 JUN 2018	
134/2015	Paya Lebar AP - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2018	
135/2015	Tengah AD - Luffer Cranes	AD	01 JUL 2015 / 30 JUN 2018	
138/2015	Paya Lebar AP- Luffer Crane	AD	03 AUG 2015 / 30 JUN 2017	
139/2015	Paya Lebar AP- Topless Cranes and Luffer Crane	AD	03 AUG 2015 / 30 JUN 2017	
140/2015	Paya Lebar AP - Luffer Cranes	AD	03 AUG 2015 / 30 DEC 2017	
141/2015	Paya Lebar AP - Saddle Crane	AD	03 AUG 2015 / 30 DEC 2017	
142/2015	Paya Lebar AP - Topless Cranes	AD	03 AUG 2015 / 31 AUG 2018	
153/2015	Paya Lebar AP - Topless Crane	AD	21 SEP 2015 / 30 SEP 2016	
154/2015	Paya Lebar AP - Crawler Crane and Mobile Crane	AD	21 SEP 2015 / 13 OCT 2016	
155/2015	Paya Lebar AP - Luffer Crane	AD	21 SEP 2015 / 31 MAY 2017	
156/2015	Paya Lebar AP - Topless Cranes	AD	21 SEP 2015 / 01 JUN 2017	
157/2015	Paya Lebar AP- Luffer Crane	AD	21 SEP 2015 / 14 AUG 2017	
158/2015	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	21 SEP 2015 / 30 JUN 2017	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
159/2015	Paya Lebar AP - Luffer Cranes	AD	21 SEP 2015 / 31 JUL 2017	
160/2015	Paya Lebar AP - Luffer Cranes	AD	21 SEP 2015 / 15 AUG 2018	
161/2015	Paya Lebar AP - Luffer Cranes	AD	21 SEP 2015 / 01 SEP 2018	
162/2015	Sembawang AD - Topless Cranes	AD	31 OCT 2015 / 31 OCT 2018	
167/2015	Singapore Changi AP - Introduction of Airport Collaborative Decision Making (A-CDM) Operational	AD	22 FEB 2016 UFN	
002/2016	Singapore Changi AP - Works Schedule and Movement Area Restrictions Pertaining to Runway Resurfacing Works, Diversion of Airside Services and Soil Improvement Works at Singapore Changi Airport	AD	26 MAR 2016 / 29 OCT 2016	
004/2016	Singapore Changi Airport - Shortening of Runway 02C Approach Lighting System to 810M to Facilitate southern End-Round-Taxiway Construction	AD	01 JUN 2016 / 30 APR 2020	
009/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 30 SEP 2016	
010/2016	Paya Lebar AP - Crawler Tower Crane	AD	04 MAR 2016 / 30 SEP 2016	
011/2016	Paya Lebar AP - Crawler Crane	AD	04 MAR 2016 / 30 SEP 2016	
012/2016	Paya Lebar AP - Crawler Luffer Crane	AD	04 MAR 2016 / 26 OCT 2016	
013/2016	Paya Lebar AP - Luffer Cranes	AD	04 MAR 2016 / 31 OCT 2016	
014/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 31 OCT 2016	
015/2016	Paya Lebar AP - Mobile Crane	AD	04 MAR 2016 / 23 NOV 2016	
016/2016	Paya Lebar AP - Crawler Crane	AD	04 MAR 2016 / 30 NOV 2016	
017/2016	Paya Lebar AP - Topless Cranes	AD	04 MAR 2016 / 31 JAN 2017	
018/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2016	
019/2016	Sembawang AD - Luffer and Topless Cranes	AD	04 MAR 2016 / 31 DEC 2016	
020/2016	Paya Lebar AP - Topless Crane	AD	04 MAR 2016 / 31 DEC 2016	
021/2016	Paya Lebar AP - Crawler Cranes	AD	04 MAR 2016 / 31 DEC 2016	
022/2016	Sembawang AD - Tower Cranes and Piling Rigs	AD	04 MAR 2016 / 20 JAN 2017	
023/2016	Paya Lebar AP - Topless Cranes and Luffer Cranes	AD	04 MAR 2016 / 31 JAN 2017	
024/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 31 JAN 2017	
025/2016	Paya Lebar AP - Luffer Cranes	AD	04 MAR 2016 / 31 DEC 2017	
026/2016	Paya Lebar AP - Topless Cranes	AD	04 MAR 2016 / 31 DEC 2017	
027/2016	Paya Lebar AP - Topless Cranes and Luffer Cranes	AD	04 MAR 2016 / 31 DEC 2017	
028/2016	Paya Lebar AP - Tower Cranes	AD	04 MAR 2016 / 26 MAR 2018	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
029/2016	Paya Lebar AP - Luffer Cranes	AD	04 MAR 2016 / 01 JUN 2018	
030/2016	Paya Lebar AP - Saddle Cranes	AD	04 MAR 2016 / 17 JUN 2018	
031/2016	Paya Lebar AP - Saddle Cranes	AD	04 MAR 2016 / 31 DEC 2018	
032/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2018	
033/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 31 DEC 2018	
034/2016	Paya Lebar AP - Saddle Cranes	AD	04 MAR 2016 / 31 DEC 2018	
036/2016	Paya Lebar AP - Luffer Crane	AD	04 MAR 2016 / 01 AUG 2017	
037/2016	Paya Lebar AP - Mobile Cranes and Crawler Cranes	AD	04 MAR 2016 / 07 JAN 2018	
039/2016	Paya Lebar AP - Topless Cranes	AD	04 MAR 2016 / 31 JAN 2019	
044/2016	Singapore Changi Airport -Construction of New Aircraft Stands 605 and 600 at East Cargo Area	AD	03 MAY 2016 / 31 OCT 2016	
047/2016	Seletar Airport - Construction of New Sunken Glide Path Building, Service Road and Associated Works at Northeast Apron	AD	14 JUL 2016 / 01 JUL 2017	
048/2016	Seletar Airport - Opening of New Aircraft Stands D50, D51, D52, D53 and D54, Taxiway EN, Ground Run-Up Enclosure and Aircraft Fire Training Ground at Northeast Apron, and Extension of Runway 21 Runway End Safety Area (RESA)	AD	14 JUL 2016 UFN	
049/2016	Paya Lebar AP - Implementation of RNAV (GNSS) Approach Procedures for Runway 02 and Runway 20	AD	15 SEP 2016 UFN	
050/2016	Airspace Closure Kuala Lumpur and Singapore FIRs Exercise Bersama Lima 16 110001UTC to 191100UTC October 2016	AD/FIR	11 OCT 2016 / 19 OCT 2016	
051/2016	Paya Lebar AP - Crawler Crane and Piling Rig	AD	04 AUG 2016 / 14 DEC 2016	
052/2016	Paya Lebar AP - Obstacles	AD	04 AUG 2016 / 31 DEC 2016	
053/2016	Paya Lebar AP - Luffer Crane	AD	04 AUG 2016 / 30 MAR 2017	
054/2016	Paya Lebar AP - Crawler Cranes	AD	04 AUG 2016 / 22 MAY 2017	
055/2016	Paya Lebar AP - Mobile Crane and Crawler Crane	AD	04 AUG 2016 / 30 JUN 2017	
056/2016	Paya Lebar AP - Mobile Crane and Crawler Cranes	AD	04 AUG 2016 / 30 JUL 2017	
057/2016	Paya Lebar AP - Mobile Crane	AD	04 AUG 2016 / 31 JUL 2017	
058/2016	Paya Lebar AP - Saddle Cranes	AD	04 AUG 2016 / 15 NOV 2017	
059/2016	Paya Lebar AP - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2017	
060/2016	Paya Lebar AP - Luffer Crane	AD	04 AUG 2016 / 31 MAY 2018	
061/2016	Paya Lebar AP - Luffer Crane and Topless Crane	AD	04 AUG 2016 / 29 JUN 2018	
062/2016	Paya Lebar AP - Luffer Cranes	AD	04 AUG 2016 / 31 JUL 2018	

NR/Year	Subject	AIP section(s) affected	Period of validity (from/to)	Cancellation record
063/2016	Paya Lebar AP - Topless Cranes	AD	04 AUG 2016 / 31 DEC 2018	
064/2016	Paya Lebar AP - Topless Cranes	AD	04 AUG 2016 / 31 DEC 2018	
065/2016	Paya Lebar AP - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2018	
066/2016	Paya Lebar AP - Piling Rig and Crawler Crane	AD	04 AUG 2016 / 01 AUG 2018	
067/2016	Paya Lebar AP - Topless Cranes and Luffer Crane	AD	04 AUG 2016 / 31 MAR 2019	
068/2016	Paya Lebar AP - Topless Cranes and Luffer Cranes	AD	04 AUG 2016 / 01 JUN 2019	
069/2016	Paya Lebar AP - Saddle Cranes	AD	04 AUG 2016 / 30 JUN 2019	
070/2016	Paya Lebar AP - Luffer Cranes and Topless Cranes	AD	04 AUG 2016 / 31 DEC 2019	
071/2016	Paya Lebar AP - Luffer Crane	AD	04 AUG 2016 / 31 DEC 2016	
072/2016	Paya Lebar AP - Saddle Cranes	AD	04 AUG 2016 / 10 MAR 2017	
073/2016	Paya Lebar AP - Crawler Cranes	AD	04 AUG 2016 / 22 MAY 2017	
074/2016	Paya Lebar AP - Luffer Cranes	AD	04 AUG 2016 / 04 JUL 2017	
075/2016	Paya Lebar AP - Topless Cranes	AD	04 AUG 2016 / 31 OCT 2017	
076/2016	Singapore Changi AP - Revisions to the Instrument Landing system (ILS) Instrument Approach Procedures (IAPs) for Runway 20C and Runway 20R	AD	10 NOV 2016 UFN	
077/2016	Singapore Changi AP - Revisions to Standard Instrument Departures (SIDs) for Runway 20C and Runway 20R	AD	10 NOV 2016 UFN	
079/2016	Singapore Changi AP - Introduction of new aircraft stand 461; new multiple aircraft receiving stands (MARS) 462, 463; and new taxiway S1 connecting to existing taxiways U3 WA, WP and W10	AD	30 NOV 2016 UFN	
080/2016	Singapore Changi AP - Introduction of new aircraft stand 461; new multiple aircraft receiving stands (MARS) 462, 463; and new taxiway S1 connecting to existing taxiways U3 WA, WP and W10	AD	29 OCT 2016 / 24 MAR 2017	
081/2016	Singapore Changi Airport - Operational Trials for Simultaneous Independent Parallel Approaches	AD	23 SEP 2016 / 20 OCT 2016	
082/2016	Singapore Changi Airport - Air Traffic Flow Management (ATFM) Operations during Airport Closure for Exercise Bersama Lima 16 on 18 and 19 October 2016	AD	18 OCT 2016 / 19 OCT 2016	

GEN 0.4 CHECKLIST OF AIP PAGES

Part 1 – General (GEN)			
GEN 0			
GEN 0.1-1	12 NOV 2015	GEN 3.2-5	31 MAR 2016
GEN 0.1-2	10 DEC 2015	GEN 3.2-6	31 MAR 2016
GEN 0.1-3	21 JUL 2016	GEN 3.3-1	12 NOV 2015
GEN 0.2-1	15 SEP 2016	GEN 3.3-2	21 JUL 2016
GEN 0.3-1	21 JUL 2016	GEN 3.4-1	12 NOV 2015
GEN 0.3-2	15 SEP 2016	GEN 3.4-2	12 NOV 2015
GEN 0.3-3	15 SEP 2016	GEN 3.4-3	12 NOV 2015
GEN 0.3-4	15 SEP 2016	GEN 3.4-4	12 NOV 2015
GEN 0.3-5	15 SEP 2016	GEN 3.4-5	12 NOV 2015
GEN 0.3-6	15 SEP 2016	GEN 3.4-7	21 JUL 2016
GEN 0.4-1	15 SEP 2016	GEN 3.4-9	21 JUL 2016
GEN 0.4-2	15 SEP 2016	GEN 3.5-1	12 NOV 2015
GEN 0.4-3	15 SEP 2016	GEN 3.5-2	21 JUL 2016
GEN 0.5-1	12 NOV 2015	GEN 3.5-3	12 NOV 2015
GEN 0.6-1	15 SEP 2016	GEN 3.5-4	12 NOV 2015
GEN 0.6-2	15 SEP 2016	GEN 3.5-5	15 SEP 2016
GEN 0.6-3	15 SEP 2016	GEN 3.5-6	12 NOV 2015
GEN 1			
GEN 1.1-1	21 JUL 2016	GEN 3.5-7	12 NOV 2015
GEN 1.1-2	12 NOV 2015	GEN 3.5-8	12 NOV 2015
GEN 1.2-1	15 SEP 2016	GEN 3.6-1	12 NOV 2015
GEN 1.2-2	15 SEP 2016	GEN 3.6-2	12 NOV 2015
GEN 1.2-3	15 SEP 2016	GEN 3.6-3	12 NOV 2015
GEN 1.2-4	15 SEP 2016	GEN 3.6-4	12 NOV 2015
GEN 1.2-5	15 SEP 2016	GEN 3.6-5	21 JUL 2016
GEN 1.2-6	15 SEP 2016	GEN 4	
GEN 1.2-7	15 SEP 2016	GEN 4.1-1	15 SEP 2016
GEN 1.3-1	21 JUL 2016	GEN 4.2-1	12 NOV 2015
GEN 1.3-2	12 NOV 2015	GEN 4.2-2	12 NOV 2015
GEN 1.3-3	12 NOV 2015	GEN 4.2-3	12 NOV 2015
GEN 1.3-5	21 JUL 2016	GEN 4.2-4	12 NOV 2015
GEN 1.3-7	21 JUL 2016	GEN 4.2-5	12 NOV 2015
GEN 1.4-1	12 NOV 2015	GEN 4.2-6	12 NOV 2015
GEN 1.4-2	12 NOV 2015	Part 2 – EN-ROUTE (ENR)	
GEN 1.4-3	12 NOV 2015	ENR 0	
GEN 1.5-1	12 NOV 2015	ENR 0.6-1	21 JUL 2016
GEN 1.6-1	12 NOV 2015	ENR 0.6-2	21 JUL 2016
GEN 1.6-2	12 NOV 2015	ENR 0.6-3	21 JUL 2016
GEN 1.6-3	12 NOV 2015	ENR 1	
GEN 1.7-1	12 NOV 2015	ENR 1.1-1	12 NOV 2015
GEN 1.7-2	12 NOV 2015	ENR 1.1-2	12 NOV 2015
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GEN 1.2 ENTRY, TRANSIT AND DEPARTURE OF AIRCRAFT

1 INTRODUCTION

- 1.1 International flights into, from or over Singapore territory shall be subject to the current Singapore regulations relating to civil aviation. These regulations correspond in all essentials to the Standards and Recommended Practices contained in Annex 9 to the Convention on International Civil Aviation.
- 1.2 Aircraft flying into or departing from Singapore territory shall make their first landing at, or final departure from an international aerodrome (see AIP Singapore page AD 1.3-1 and section AD 2).
- 1.3 Notwithstanding the regulations relating to civil aviation over Singapore territory, aircraft operators should consult the respective AIPs for other documentary and / or permit requirements for flights intending to enter, depart, and / or overfly the sovereign airspaces of States along the planned flight routes.

2 APPLICATION FOR SLOTS AT SINGAPORE CHANGI AIRPORT

- 2.1 Singapore Changi Airport is a slot coordinated airport, with Changi Airport Group (CAG) as the Slot Coordinator. To ensure efficiency of aircraft operations and optimisation of airport resources, all operators of scheduled and non-scheduled (commercial and non-commercial) flights must obtain slots from the Changi Slot Coordinator prior to the operation of such flights.
- 2.2 To apply for slots for access to Singapore Changi Airport, all operators or agents of non-scheduled, commercial and non-commercial flights shall submit applications for slots via either a Slot Clearance Request (SCR) to the Changi Slot Coordinator, or for operators without a 2-letter IATA airline code, a General (Aviation) Clearance Request (GCR) through the Online Coordination System (OCS) (at www.online-coordination.com).
Changi Slot Coordinator
c/o Changi Airport Group (Singapore) Pte Ltd
Singapore Changi Airport
P.O. Box 168
Singapore 918146
[Email: csc@changiairport.com](mailto:csc@changiairport.com)
Tel: +65 6541 2378 or +65 6541 3064
- 2.3 Operators or agents of non-scheduled, commercial and non-commercial flights shall submit their slot requests to the Changi Slot Coordinator no earlier than 7 calendar days and but no later than 24 hours prior to the operation of the flight, for which the slot will be utilized.
- 2.4 To facilitate the optimisation of aircraft parking resources at Singapore Changi Airport, operators or agents of non-scheduled, commercial and non-commercial flights are strongly advised to limit their ground time to no more than 48 hours from the arrival slot timing.
- 2.5 For urgent non-scheduled, commercial and non-commercial flight operations that are less than 24 hours from the proposed date of operation, in addition to submitting the SCR/GCR, operators/agents must also inform the Airside Operations Section of CAG (Airside Management Centre) at +65 6603 4906 / +65 6541 2275 / +65 6541 2273.
- 2.6 **EXEMPT FLIGHTS**
- 2.6.1 Notwithstanding paragraph 2.1, the following types of flights may operate to / from Singapore Changi Airport without obtaining slots from the Changi Slot Coordinator:
- Emergency landings. e.g. diversions or quick returns after takeoff, oil spill response operations
 - Flights operating under diplomatic cover
 - Flights operated by the military, including those carrying supplies but excluding those chartered on a commercial basis by the military
 - Humanitarian flights including those responding to medical emergencies where the safety of human life is concerned or involved in search and rescue operations
 - Technical flights including radar and NAVAID calibration / check flights
- 2.7 **RESTRICTIONS ON OPERATION OF PROPELLER AIRCRAFT AT SINGAPORE CHANGI AIRPORT**
- 2.7.1 Both scheduled and non-scheduled (commercial and non-commercial) propeller aircraft operations will not be allocated new slots at Singapore Changi Airport.

3 CIVIL SCHEDULED FLIGHTS

3.1 GENERAL

3.1.1 Before a scheduled service is permitted to operate into the Republic of Singapore, it must be appropriately covered by either an air services agreement, a licence issued in accordance with the Air Navigation (Licensing of Air Services) Regulations or other aeronautical arrangements. All scheduled flights are subject to prior approval.

3.2 APPLICATION FOR TRAFFIC LANDINGS AND UPLIFTS (SCHEDULED FLIGHTS)

3.2.1 Only the airline operator may apply for permission to operate scheduled flights.

3.2.2 All airline operators are to submit their applications for scheduled flights for each IATA schedule season one month before the start of the season for approval by CAAS.

← 3.2.3 In addition, airline operators are also required to apply for CAAS' approval for any revisions to their schedule filings for the season, ad-hoc changes to flight schedules and flight cancellations. Such applications should be filed through the CAAS Air Transport Licensing and Administration System (ATLAS) at <http://www.caas.gov.sg/atlas> 5 working days before flight changes take place.

← 3.2.4 If insufficient notice as specified in paragraphs 3.2.2 and 3.2.3 is given, the application may not be considered.

3.2.5 Airline operators are to ensure that a copy of the following documents, which are to remain valid during the period of operations, are lodged with CAAS:

- a. Certificate(s) of Registration(s) for aircraft used;
- b. Certificate(s) of Airworthiness for aircraft used; and
- c. Air Operator's Certificate

| 3.2.6 All applications and required documents listed in paragraph 3.2.5 should be submitted via ATLAS.

←

3.3 DOCUMENTARY REQUIREMENTS FOR CLEARANCE OF AIRCRAFT

3.3.1 It is necessary that the undermentioned aircraft documents be submitted by airline operators for clearance on entry and departure of their aircraft to and from Singapore. All documents listed below must follow the ICAO standard format as set forth in the relevant appendices to ICAO Annex 9. They are acceptable in English only and must be completed in legible handwriting. No visas are required in connection with such documents.

3.3.2 *Aircraft Documents Requirements (arrival/departure)*

	<u>Required by</u>	<u>General Declaration</u>	<u>Passenger Manifest</u>	<u>Cargo Manifest</u>
Immigration	2	2	-	
Customs	1	1	1	
Health	1	1	-	

- a. *One copy of the General Declaration is endorsed and returned by Customs, signifying clearance.*
- b. *If no passengers are embarking (disembarking) and no articles are laden (unladen), no aircraft documents except copies of the General Declaration need be submitted to the above authorities.*

4 CIVIL NON-SCHEDULED FLIGHTS**4.1 PROCEDURES****4.1.1 Overflights**

4.1.1.1 Prior notification is necessary. Subject to the observance of the terms of the Convention on International Civil Aviation, Singapore facilitates overflights by civil aircraft registered in any ICAO Contracting States with which Singapore has diplomatic relations provided adequate advance notification shall have been given.

4.1.1.2 Notification by flight plan addressed to the Singapore Air Traffic Control Centre (WSJCZQZX) if received at least 2 hours in advance of the aircraft's arrival into the Singapore Flight Information Region will normally be accepted as advance notification in this respect.

4.1.1.3 In all other cases, prior permission must be sought and obtained through diplomatic means from the Ministry of Foreign Affairs, Republic of Singapore.

4.1.2 Non-Traffic or Technical Landings

4.1.2.1 Prior notification is necessary. Subject to the observance of the terms of the Convention on International Civil Aviation, Singapore facilitates such non-traffic or technical landings by civil aircraft registered in any ICAO Contracting States with which Singapore has diplomatic relations provided adequate advance notification shall have been given.

4.1.2.2 Notification by flight plan addressed to the Singapore Air Traffic Control Centre (WSJCZQZX) if received at least 2 hours in advance of the aircraft's arrival at Singapore Changi Airport or Seletar Aerodrome or 2 hours prior to entering the Singapore Flight Information Region whichever is the earlier will normally be accepted as advance notification in this respect.

4.1.2.3 The operator of a business aviation aircraft or its appointed local ground handling agent may apply for permission for the aircraft to operate into Singapore Changi Airport for the purpose of non-traffic or technical landing. The following information should be submitted together with the application:

- a. Name, address and nationality of operator;
- b. Type, registration mark and carrying capacity of aircraft;
- c. Purpose of flight and name of passengers;
- d. Details of route, points of landing and final destination;
- e. Date and time of arrival at, and departure from Singapore;
- f. Name, address and telephone number of operator's local agent and ground handling agent;
- g. Any other information that may be relevant to the proposed flight.

4.1.2.4 All applications in para 4.1.2.3 above must be made in the prescribed form which can be downloaded from the website below. Applications must reach the Airside Operations of the Changi Airport Group via email or posted to the address below with sufficient notice prior to the aircraft's arrival or departure into/from Singapore Changi Airport. The application may not be considered if insufficient notice is given.

Post:

Airside Operations
Singapore Changi Airport
P.O. Box 168
Singapore 918146

Fax: (65) 65453845

Email: changi.airside@changiairport.com

URL: www.changiairportgroup.com

4.1.2.5 All business aviation aircraft shall park in a nose-in position and be pushed back with the aid of an aircraft tow-bar and tow-tractor. Reverse thrust or variable pitch propellers shall not be used. The aircraft must carry its own tow-bar. The aircraft operator may make arrangements with the ground handling agent to provide the tow-bar. The aircraft shall be required to be towed to another aircraft stand should the need arise.

4.1.2.6 All passengers of the business aviation flight will have to clear CIQ via the Commercially-Important- Persons facility located at Terminal 2.

4.1.2.7 All business aviation flights must engage a ground handling agent at Singapore Changi Airport.

4.1.2.8 In all other cases, prior permission must be sought and obtained through diplomatic means from the Ministry of Foreign Affairs, Republic of Singapore.

4.1.3 ***Application for Traffic Landings and Uplifts (Non-Scheduled Flights)***

4.1.3.1 All non-scheduled flights are subject to prior approval.

4.1.3.2 Only the operator may apply for permission to operate a non-scheduled flight. The following information should be submitted together with the application:

- a. Name, address and nationality of operator;
- b. Name, address and business of charterer;
- c. Type, registration mark and carrying capacity of aircraft;
- d. Aircraft documents listed in para 3.2.5;
- e. Nature of flight including details of whether the flight is to carry passengers or cargo or both;
 - i. for passenger flights: points of origin and destination of passengers, purpose of flight e.g. special event charter, inclusive tours and own-use charter; and the names of passengers.
 - ii. for cargo flights: the origin, destination, description, quantities and dimensions of cargo; outbound/inbound or transshipment, as well as whether any item is perishable or classified as dangerous, explosive or munitions of war. (Please see regulations concerning importation, transshipment and exportation of cargo in subsection GEN 1.4).
- f. Details of route, points of landing and final destination;
- g. Date and time of arrival at, and departure from Singapore (Please see para 4.1.3.4 below);
- h. Name, address and telephone number of operator's local agent and ground handling agent;
- i. Name and address of consignees and consignor, where applicable;
- j. Any other information that may be relevant to the proposed operations.

4.1.3.3 All applications must be submitted via <http://www.caas.gov.sg/atlas>

The complete application and its supporting documents must reach the Civil Aviation Authority of Singapore Air Transport Division via the weblink provided at least 3 working days prior to the aircraft's arrival or departure into/from Singapore to be considered for a "normal permit". Operators who wish to obtain a permit under 3 working days may submit their applications. Such applications must reach the Air Transport Division at least 24 hours before the proposed flight to be considered for an "express permit". Applicants for express permits should alert the Air Transport Duty Officer at +65 98331775. Applications will not be considered if insufficient notice is given (not applicable for emergency flights e.g. flights on humanitarian grounds).

← 4.1.3.4 Operators, other than operators of business aviation aircraft as stated in para 4.1.3.5, should schedule their arrivals and departures at Singapore Changi Airport outside the hours 0001 to 0200 UTC (0801-1000 LT) and 0900 to 1559 UTC (1700-2359 LT). Subject to approval (depending on aircraft stand availability), aircraft may be permitted to remain on the ground during the above times on condition that the aircraft vacates the aircraft stand if the need arises. (*Please see GEN 4.1 para 1.5 b) regarding off-peak discount of 40% on landing charges*).

4.1.3.5 All business aviation aircraft operating as executive jet charter may be permitted to remain on the ground or layover at Singapore Changi Airport.

4.1.3.6 All business aviation aircraft shall park in a nose-in position and be pushed back with the aid of an aircraft tow-bar and tow-tractor. Reverse thrust or variable pitch propellers shall not be used when parking or pushing

back aircraft. The aircraft operator must ensure that an appropriate tow-bar for the aircraft type is available to facilitate push back operations from the aircraft stand. The aircraft operators may use their own tow-bar or approach ground handling agents in either Seletar or Singapore Changi Airport to secure the appropriate tow-bar.

4.1.3.7 All passengers of the business aviation flight will have to clear CIQ via the Commercially-Important-Persons facility located beside Terminal 2.

← 4.1.3.8 Requests to handle executive jet charter or charter flights via the main terminals are to be sent via email to csc@changiairport.com for exceptional consideration at all times.

4.1.3.9 All business aviation flights must engage a ground handling agent at Singapore Changi Airport.

4.1.3.10 The appropriate legislation dealing with non-scheduled flights for hire or reward is contained in PART III - *Permits For Journeys Other Than Scheduled Journeys* of the Air Navigation (Licensing of Air Services) Regulations. Any person who uses any aircraft in contravention of the provisions of Regulation 15 of the legislation shall be guilty of an offence and shall be liable on conviction to a fine not exceeding S\$2,500 or to imprisonment for a term not exceeding 3 months or to both and in the case of a second or subsequent offence, to a fine not exceeding S\$20,000 or to imprisonment for a term not exceeding 2 years or to both.

4.1.3.11 **Permit Fees**

← (a) Normal Permits

The following fees shall be paid to the Authority [in accordance with Regulation 18 of the Air Navigation (Licensing of Air Services) Regulations] to obtain a permit which must be applied at least 3 whole working days before the first flight:

- i. S\$84 for a single one-way or return flight;
- ii. S\$162 for 2 or more one-way or return flights but not more than 5 such flights;
- iii. S\$326 for 5 one-way or return flights but not more than 10 such flights; or
- iv. S\$810 for more than 10 one-way or return flights.

(b) Express Permits

← Operators who wish to obtain a permit under 3 working days, but at least 24 hours before the flight, should contact the Duty Officer at +65 98331775 and submit a complete application via this weblink: <http://www.caas.gov.sg/atlas>. The following fee shall be paid:

- i. S\$252 for a single one-way or return flight.

Note 1: "Working Day" means:

- i. a period that begins at 8.30am and ends at 6pm on any Monday to Thursday that CAAS is open for business; and
- ii. a period that begins at 8.30am and ends at 5.30pm on any Friday that CAAS is open for business.

Note 2: Any application that is made after the close of business shall be deemed to have been made on the next working day.

Definitions:

Non-scheduled flight - a flight for the carriage of passengers, mail or cargo by air for hire and reward on journeys other than scheduled.

Business aviation flight - a flight that is owned and operated privately by a business corporation or chartered privately by business or corporate executives for non-revenue purposes.

Charterer - a person, company or corporate body who charts the aircraft and whose name and address appear in the Aircraft Charter Agreement.

Operator - in relation to an aircraft, the person for the time being having the business management of that aircraft.

4.2 **DOCUMENTARY REQUIREMENTS FOR CLEARANCE OF AIRCRAFT**

4.2.1 Same requirements as for SCHEDULED FLIGHTS.

4.3 **PERMIT CONDITIONS**

4.3.1 The Director-General of Civil Aviation may attach such conditions to a permit as he considers necessary.

4.4 APPLICATION FOR DIPLOMATIC CLEARANCE FOR FOREIGN STATE AIRCRAFT

4.4.1 Procedures for Applying Diplomatic Clearance for Landing and Overflight for Foreign State Aircraft in Singapore

4.4.1.1 Except where otherwise agreed, all Foreign State aircraft intending to land at or overfly Singapore are to obtain diplomatic clearance for such landing or overflight from the Ministry of Foreign Affairs, giving information as in para 4.4.2.

4.4.1.2 The application is to be made giving at least 14 days' notice.

← 4.4.2 Information to be provided when applying for Diplomatic Clearance

← 4.4.2.1 All applications for diplomatic clearance should contain the following information:

- ←
- a. Name of Mission/Organisation;
 - b. Liaison Officer;
 - c. Telephone Number;
 - d. Number and Type of Aircraft;
 - e. Callsign;
 - f. Aircraft Registration;
 - g. Full flight itinerary;
 - h. Route after entering and before leaving Singapore FIR;
 - i. Date of Arrival;
 - j. Time of Arrival;
 - k. Date of Departure;
 - l. Time of Departure;
 - m. Arrival from;
 - n. Departing to;
 - o. Airfield requested;
 - p. Name of Pilot;
 - q. Number of Crew;
 - r. Number of Passengers;
 - s. If VIP flight, Name of VIP and number of other officials;
 - t. Purpose;
 - u. Photograph and sensory equipment if any;
 - v. Nature of freight or cargoes carried if any;
 - w. Dangerous cargoes, if any (e.g. arms, ammunition, explosives, toxic chemicals);
 - x. Types of services required (e.g. type of fuel, APU/GPU, ground handling etc.);
 - y. Additional/Special request

Note: Aircraft used in military, customs or police services are deemed to be State aircraft.

5 APPLICATION FOR TEST FLIGHTS

5.1 All applications for test flights are subject to prior approval.

5.2 All applications are to be made at least 2 working days but not more than 2 weeks in advance. If notice is not complied with, the application may not be considered.

5.3 Applicants should provide details as listed in items a. to e. below and ensure that the documents as listed in items f. to h. of the aircraft undergoing test flights remain valid during the period of operation:

- a. Aircraft Registration;
- b. Aircraft Callsign;
- c. Aircraft Type;
- d. Date / Time / Duration of flight;
- e. Point of Departure and Arrival;
- f. Certificate of Registration;
- g. Certificate of Airworthiness;
- h. A Permit to Fly, issued by CAAS, in the absence of a valid Certificate of Airworthiness.

5.4 All applications should be submitted to:

← Post:
Duty Manager, Singapore Air Traffic Control Centre
Civil Aviation Authority of Singapore
60 Biggin Hill Road, Singapore 509950
Email: caas_atops@caas.gov.sg
Fax: 65457526

5.5 Details on flight planning for test flights are listed at ENR 1.10 FLIGHT PLANNING.

6 AIRCRAFT BANNED FROM OPERATIONS AT SINGAPORE AERODROMES

← 6.1 The Antonov-12 aircraft is banned from all operations to/from Singapore aerodromes due to concerns over its continuing airworthiness.

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k. **Visual Approach Chart - ICAO**

This chart is produced for aerodromes used by civil aviation where:

- * only limited navigation facilities are available; or
- * radio communication facilities are not available; or
- * no adequate aeronautical charts of the aerodrome and its surroundings at 1:500 000 or greater scale are available; or
- * visual approach procedures have been established

The aeronautical data shown include information on aerodromes obstacles, designated airspace, visual approach information, radio navigation aids and communication facilities, as appropriate.

5 LIST OF AERONAUTICAL CHARTS AVAILABLE

GEN 3.2.5 LIST OF AERONAUTICAL CHARTS AVAILABLE					
<i>Title of Chart Series</i>	<i>Scale</i>	<i>Name and/or number</i>		<i>Price (\$)</i>	<i>Date</i>
World Aeronautical Chart ICAO (WAC)	1:1 000 000	WAC 2860		In AIP	21 JUL 16
Enroute Chart ICAO (ENRC)		ERC 6-1		In AIP	15 SEP 16
Instrument Approach Chart ICAO (IAC)	1:400 000	Singapore Changi RWY 02L - ICW ILS/DME	AD-2-WSSS-IAC-1	In AIP	31 MAR 16
	1:400 000	RWY 02C - ICE ILS/DME	AD-2-WSSS-IAC-2	In AIP	31 MAR 16
	1:400 000	RWY 20R - ICH ILS/DME	AD-2-WSSS-IAC-5	In AIP	31 MAR 16
	1:400 000	RWY 20C - ICC ILS/DME	AD-2-WSSS-IAC-6	In AIP	31 MAR 16
	1:400 000	RWY 20C - VTK DVOR/DME	AD-2-WSSS-IAC-7	In AIP	31 MAR 16
	1:400 000	RWY 02L - RNAV(GNSS)	AD-2-WSSS-IAC-9	In AIP	31 MAR 16
	1:400 000	RWY 02C - RNAV(GNSS)	AD-2-WSSS-IAC-10	In AIP	31 MAR 16
	1:400 000	RWY 20R - RNAV(GNSS)	AD-2-WSSS-IAC-11	In AIP	31 MAR 16
	1:400 000	RWY 20C - RNAV(GNSS)	AD-2-WSSS-IAC-12	In AIP	31 MAR 16
		Paya Lebar			
	1:400 000	RWY 20 - PU DVOR/DME	AD-2-WSAP IAC-1	In AIP	15 SEP 16
	1:400 000	RWY 02 - PU DVOR/DME	AD-2-WSAP IAC-2	In AIP	15 SEP 16
	1:400 000	RWY 20 - IPS ILS/DME	AD-2-WSAP IAC-3	In AIP	15 SEP 16
	1:400 000	RWY 02 - IPN ILS/DME	AD-2-WSAP IAC-4	In AIP	15 SEP 16
	1:400 000	RWY 02 - RNAV(GNSS)	AD-2-WSAP-IAC-5	In AIP	15 SEP 16
	1:400 000	RWY 20 - RNAV(GNSS)	AD-2-WSAP-IAC-6	In AIP	15 SEP 16
Visual Approach Chart ICAO (VAC)	1:400 000	Singapore Changi	AD-2-WSSS-VAC-1	In AIP	21 JUL 16
		Seletar			
	1:100 000	RWY 03	AD-2-WSSL-VAC-1	In AIP	31 MAR 16
	1:100 000	RWY 21	AD-2-WSSL-VAC-2	In AIP	31 MAR 16
	1:100 000	RWY 03	AD-2-WSSL-VAC-3	In AIP	31 MAR 16
Visual Departure Chart	1:100 000	RWY 03	AD-2-WSSL-VDC-1	In AIP	21 JUL 16
	1:100 000	RWY 21	AD-2-WSSL-VDC-2	In AIP	21 JUL 16
Aerodrome Chart ICAO (AC)		Singapore Changi	AD-2-WSSS-ADC-2	In AIP	15 SEP 16
		Seletar	AD-2-WSSL-ADC-1	In AIP	15 SEP 16
		Paya Lebar	AD-2-WSAP-ADC-1	In AIP	12 NOV 15
Aerodrome Obstacle Chart ICAO TYPE A (AOC)	1:10 000	Singapore Changi RWY 20R/02L	AD-2-WSSS-AOC-1	In AIP	12 NOV 15
	1:10 000	RWY 20C/02C	AD-2-WSSS-AOC-2	In AIP	21 JUL 16
		Seletar			
	1:10 000	RWY 03/21	AD-2-WSSL-AOC-1	In AIP	12 NOV 15
		Paya Lebar			
	1:20 000	RWY 20/02	AD-2-WSAP-AOC-1	In AIP	12 NOV 15
Aerodrome Obstacle Chart ICAO TYPE B (AOC)	1:25 000	Singapore Changi RWY 02L/20R and 02C/20C	AD-2-WSSS-AOC-3	In AIP	31 MAR 16
	1:12 500	Seletar RWY 03/21	AD-2-WSSL-AOC-2	In AIP	12 NOV 15
Precision Approach Terrain Chart ICAO (PATC)	1:2 500	Singapore Changi RWY 02L	AD-2-WSSS-PATC-1	In AIP	12 NOV 15
	1:2 500	RWY 20C	AD-2-WSSS-PATC-2	In AIP	12 NOV 15

“.....(callsign) WIND SHEAR WARNING
SEVERE LOW LEVEL WIND SHEAR OBSERVED IN THE VICINITY OF
SELETAR AIRPORT AT(time)”

5 NOTIFICATION REQUIRED FROM OPERATORS

- 5.1 It is the responsibility of the operator or the pilot-in-command to notify the meteorological office of any flight for which meteorological documentation is required (ref. ICAO Annex 3, paragraph 2.3). As much prior notice as possible should be given, and at least one hour notice at Singapore Changi Airport and two hours at Seletar Aerodrome would be required for nonscheduled flights.

6 AIRCRAFT REPORTS REQUIRED FROM OPERATORS

6.1 AIREP

- 6.1.1 Routine aircraft meteorological observations shall be made and the reports transmitted at ATS/ MET reporting points listed on page GEN 3.5-6 and as indicated in subsection ENR 3.1 - ATS ROUTES.
- 6.1.2 Special aircraft observations and aircraft observations during climb-out and approach shall be made and the reports transmitted as necessary.
- 6.1.3 Special aircraft observations of pre-eruption volcanic activity, volcanic eruption or volcanic ash cloud shall be recorded on the special Air-Report of Volcanic Activity form which can be downloaded from URL <https://fpl-1.caasaim.gov.sg/>. A copy of the completed Volcanic Activity Report shall be delivered by the operator or a flight crew member, without delay, either personally or by telephone facsimile (TEL: 65425026 or 65429978) to the Meteorological Office, Singapore Changi Airport.

6.2 REPORTING OF LOW LEVEL WIND SHEAR

- 6.2.1 Pilots encountering wind shear shall report to ATC as soon as possible.
- 6.2.2 When reporting wind shear on radiotelephony, the information should be transmitted in this order:
- Aircraft callsign;
 - WIND SHEAR report;
 - Time (of wind shear occurrence);
 - Position (of wind shear);
 - Intensity (moderate, strong or severe);
 - Average height of wind shear layer.
- 6.2.3 On receipt of a wind shear report from a pilot, ATC will pass it to other aircraft in the vicinity. The following phraseology will be used:

“WIND SHEAR WARNING
ARRIVING (or DEPARTING) (type of aircraft)
REPORTED (moderate, strong, severe)
WIND SHEAR IN APPROACH (or DEPARTURE)
RUNWAY (number) AT (time)
HEIGHT OF WIND SHEAR LAYER (feet)”

- 6.2.4 The presence of wind shear as reported by a pilot will also be broadcast in the ATIS for the next half an hour unless subsequent reports indicate that wind shear no longer exists.

6.3 AIRCRAFT ATS/MET REPORTING POINTS IN THE SINGAPORE FIR

- 6.3.1 Aircraft Meteorological Observations shall be made in relation to and transmitted in flight by all aircraft at the following selected Air Traffic Services position reporting points within the Singapore FIR except when:

- The flight duration is less than 2 hours, or
- The altitude of the flight path is less than 5 000ft, or
- The aircraft is less than 1 hour's flying time from the next intended point of landing.

- ← 6.3.2 The aircraft ATS/MET reporting points listed below are indicated in page ENR 3.1/ATS Chart.

- 6.3.3 The position of the mean wind or spot wind, to the nearest whole degree latitude and longitude, shall be recorded and transmitted in flight.

ATS ROUTE	AIRCRAFT ATS/MET REPORTING POINTS IN THE SINGAPORE FIR
G580	NIMIX
L642	ESPOB
L644	KIKOR
M635	SURGA
M758 / M767	TERIX
M767	TEGID
M768 / N884	LAGOT
M774	KADAR
L504	BAVUS
N875	ARUPA
N892	MELAS

7 VOLMET SERVICE

TABLE GEN 3.5.7 VOLMET SERVICE

<i>Name of station</i>	<i>CALLSIGN IDENT (EM)</i>	<i>Frequency</i>	<i>Broadcast period</i>	<i>HR of SER</i>	<i>Aerodromes included</i>	<i>Contents and format of REP and FCST</i>
1	2	3	4	5	6	7
SINGAPORE	SINGAPORE RADIO (A3J)	6676KHz (1230-2230) 11387KHz (2230-1230)	H + 20 to H + 25 and H + 50 to H + 55	H24	SINGAPORE (1) SINGAPORE (2) KUALA LUMPUR (3)(4) SUBANG AIRPORT (4) SOEKARNO-HATTA (3)(4) KUCHING (3)(4) BRUNEI (3)(4) KOTA KINABALU (3)(4) DEN PASAR (3) (4) PENANG (3)(4) SINGAPORE (5) KUALA LUMPUR (4)(8) SINGAPORE (1) SINGAPORE (6) KUALA LUMPUR (4)(7) SUBANG AIRPORT (4) SOEKARNO-HATTA (4)(7) KUCHING (4)(7) BRUNEI (4)(7) KOTA KINABALU (4)(7) DEN PASAR (4)(7) PENANG (4)(7) SINGAPORE (5) SOEKARNO HATTA (4)(8)	SIGMET METAR METAR METAR METAR METAR METAR METAR METAR TAF TAF SIGMET METAR METAR METAR METAR METAR METAR METAR METAR TAF TAF
Plain Language EN. (1) SIGMET message or 'NIL' is transmitted. (2) Latest routine report H+00 including trend statement; repeated at end of broadcast, time permitting. (3) H+00 (or the previous H+30 report when the H+00 report is not available) including trend statement when appended. (4) As available. (5) Valid for 12 hours. (6) Latest routine report H+30 including trend statement; repeated at end of broadcast, time permitting. (7) H+30 (or the H+00 report when the H+30 report is not available) including trend statement when appended. (8) Valid for 30 hours.						

GEN 4 CHARGES FOR AERODROMES/HELIPORT AND AIR NAVIGATION SERVICES

GEN 4.1 AERODROME CHARGES

1 AIRPORT FEES AND CHARGES APPLICABLE AT SINGAPORE CHANGI AIRPORT

- 1.1 These charges are set out in the website of the airport operator, Changi Airport Group (Singapore) Pte Ltd:
<http://changiairportgroup.com/cag/html/our-services/airport-fees-and-charges.html>
- 1.2 Exemption from payment of any Singapore Changi Airport charges are set out in the CAAS (Licensing of Airport Operators) Regulations 2009, accessible from the link below:
http://www.caas.gov.sg/caas/en/Regulations/Legislations/Civil_Aviation_Authority_of_Singapore_Act.html

2 AIRPORT FEES AND CHARGES APPLICABLE AT SELETAR AIRPORT

- 2.1 These charges are set out in the website of the airport operator, Changi Airport Group (Singapore) Pte Ltd:
<http://www.seletarairport.com/list-of-charges/>
- 2.2 Exemption from payment of any Seletar Airport charges are set out in the CAAS (Licensing of Airport Operators) Regulations 2009, accessible from the link below:
http://www.caas.gov.sg/caas/en/Regulations/Legislations/Civil_Aviation_Authority_of_Singapore_Act.html

3 HANGAR FEES

- 3.1 Hangar facilities at Singapore Changi Airport are managed by Singapore Airlines Ltd. Information on hangar fees may be obtained from Singapore Airlines (SIA).
- 3.2 Hangar facilities at Seletar Airport are managed by JTC's tenants. Information on hangar fees may be obtained directly from the tenants.

4 NOISE RELATED ITEMS

- 4.1 Please refer to AIP Singapore, Aerodrome sections of the respective airports.

5 GROUND HANDLING SERVICE CHARGES

- 5.1 The ground handling services at Singapore Changi Airport have been out-sourced by the airport operator, Changi Airport Group (Singapore) Pte Ltd to the licensed ground handlers. Unlike the other 2 licensed ground handlers, SIA Engineering Company Limited is licenced to provide only a subset of the apron handling services. Please contact the following licensed ground handlers for information on ground handling services and related charges:

DNATA Singapore Pte Ltd http://www.dnata.sg/contact.html
SATS Ltd http://www.sats.com.sg/ContactUs/Pages/ContactUs.aspx
SIA Engineering Company Limited http://www.siaec.com.sg/contact_us.html

- 5.2 The ground handling services at Seletar Airport have been out-sourced by the airport operator, Changi Airport Group (Singapore) Pte Ltd to the licensed ground handlers. Please contact the licensed ground handlers for information on ground handling services and related charges. The licensed ground handlers' contact details are set out in the website of the airport operator, Changi Airport Group (Singapore) Pte Ltd:
<http://www.seletarairport.com/ground-handling-agents-at-seletar-airport/>

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8 DATA LINK SERVICES IN SINGAPORE FIR

8.1 INTRODUCTION

- 8.1.1 Data link services are available to FANS 1/A compatible aircraft (which are compliant to RTCA DO- 258A or ED EUROCAE 100A) on Airways G334, L625, L642, L644, M753, M758, M761, M767, M768, M771, M772, N875, N884, N891 and N892 in the Singapore FIR daily on a 24-hour basis.
- 8.1.2 The introduction of data link services does not affect current procedures for non-data link equipped aircraft operating in the same airspace.

8.2 BACKGROUND

- 8.2.1 Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance (ADS) data link applications will be used to provide services to FANS 1/A equipped aircraft, in particular over the South China Sea beyond the range of existing radar and VHF voice communications.
- 8.2.2 Messages will be transferred by VHF and satellite data link.
- 8.2.3 CPDLC supports the following services:
- Emergency alerting;
 - Pilot to Controller downlink of position reports and clearance requests;
 - Controller to Pilot uplink of ATC clearances and instructions; and
 - Free text as a supplement to pre-formatted message elements.
- 8.2.4 Pre-Departure Clearance (PDC) via CPDLC is not available.
- 8.2.5 Automatic Dependent Surveillance (ADS) supports automatic reporting by the aircraft Flight Management System (FMS) of aircraft position and intent information. The FMS reports the required information in accordance with parameters selected by the ground system.

8.3 LOGON PROCEDURES

- 8.3.1 The AFN LOGON address for the Singapore FIR is WSJC.
- 8.3.2 To avoid automatic rejection of the LOGON, the flight identification number used by the pilot in the LOGON process must be identical to the flight identification number filed in the flight plan.
- 8.3.3 A LOGON must be received from the aircraft before any data link connections can be initiated by the ground system. This is achieved via the ATS facility notification (AFN) LOGON process to be initiated by the pilot in accordance with company procedures.
- 8.3.4 Aircraft requesting data link services inbound to Singapore FIR are required to manually LOGON onto WSJC at least 10 minutes prior to the estimated time for entering Singapore FIR. Data link equipped aircraft departing from aerodromes within the Singapore FIR and requesting data link may LOGON to WSJC prior to departure. Pilots who are unable to establish a data link connection are to inform ATC on VHF or HF RTF.
- 8.3.5 Pilots are reminded to provide the flight level on first contact with HF, including when established on data link.

8.4 APPLICATION OF CPDLC

- 8.4.1 Aircraft that have established data link communications may transmit their position reports by CPDLC instead of HF RTF. When using CPDLC, the primary and secondary HF voice frequencies will be used as the back-up communications medium.
- 8.4.2 To ensure the correct synchronisation of messages, controller/pilot dialogues opened by CPDLC must be closed by CPDLC. Controller/pilot dialogues opened by voice must be closed by voice.
- 8.4.3 Due to inherent integrity checks and a coded reference to any preceding related message contained within CPDLC messages, a clearance issued by CPDLC requires only the appropriate CPDLC response, not a read-back as would be required if the clearance had been issued by voice.
- 8.4.4 The down link response "WILCO" indicates that the pilot accepts the full terms of the whole uplink message.
- 8.4.5 A down link response "AFFIRM" is not an acceptable acknowledgement or reply to a CLEARANCE issued by CPDLC.
- 8.4.6 To avoid ambiguity in message handling and response, a CPDLC downlink message should not contain more than one clearance request.
- 8.4.7 If multiple clearance requests are contained in a single downlink message and the controller cannot approve all requests, the uplink message element "UNABLE" will be sent as a response to the entire message. A separate message containing a response to those requests that can be complied with will be sent by the controller.
- 8.4.8 If any ambiguity exists as to the intent of a particular message, clarification must be sought by voice.
- 8.4.9 Standard pre-formatted message elements must be used whenever possible. Free text messages should be used only when an appropriate pre-formatted message element does not exist or to supplement the pre-formatted message element. The use of free text should be kept to a minimum.
- 8.4.10 When CPDLC connection is established, aircraft will be instructed to transfer from voice to CPDLC. The phraseology used is:
TRANSFER TO SINGAPORE CONTROL ON DATA LINK [position];
MONITOR [HF frequency primary/secondary]
- 8.4.11 Pilots should down link a CPDLC position report upon position over first compulsory reporting point when aircraft enters Singapore FIR. Pilots are also required to make AIREPS at ATS/MET reporting points using CPDLC regardless of ADS connection.
- 8.4.12 CPDLC connections will be terminated at the FIR boundary position or when entering radar coverage. The CONTACT [unit name][frequency] message and the END SERVICE message will be sent as separate messages. The END SERVICE message will be sent as soon as possible after receipt of the WILCO response to the CONTACT message.

8.5 APPLICATION OF ADS

- 8.5.1 ADS Periodic contracts will be established automatically on receipt of a LOGON.
- 8.5.2 The Periodic reporting rate is 10 minutes for aircraft operating outside radar coverage and 20 minutes for aircraft operating within radar coverage.
- ← 8.5.3 For ADS logged-on aircraft, CPDLC position reports are not required except when the following event occurs:
- a. upon position over first compulsory reporting point when aircraft enters Singapore FIR;
 - b. aircraft at ATS/MET reporting point.
- 8.5.4 ADS contracts will be terminated automatically at a system parameter time after the aircraft has left the Singapore FIR.

ENR 1.14 AIR TRAFFIC INCIDENTS

1 DEFINITION OF AIR TRAFFIC INCIDENTS

- 1.1 An incident is an occurrence other than an accident associated with the operation of an aircraft which affect or could affect the safety of operation.
- 1.2 An incident may be caused by any of the following:
- a. Ground Organisation:
 - i. abnormal function or operation of radio communication or navigational aids, faulty organisation or procedure;
 - ii. personal negligence, incompetence, error or misapplication of procedures or instructions.
 - b. Aircrew - negligence, incompetence, error of judgement, misapplication of procedures or failure to comply with procedures or instructions.
 - c. Aircraft - defects in the aircraft or its equipment.
 - d. Severe meteorological conditions.

2 USE OF AIR TRAFFIC INCIDENT REPORTING FORMS

- 2.1 Pilots shall file all incident reports on the "Air Traffic Incident Report Form" (see pages ENR 1.14-3 to ENR 1.14-6) in order to speed up the process of investigation of the various categories of incidents.

3 AIR TRAFFIC INCIDENT REPORTING PROCEDURES

- 3.1 A pilot should proceed as follows regarding an incident in which he is or has been involved:
- a. during flight, use the appropriate air/ground frequency for reporting an incident of major significance, particularly if it involves other aircraft, so as to permit the facts to be ascertained immediately;
 - b. as promptly as possible after landing submit a completed "Air Traffic Incident Report Form":
 - i. for confirming a report of an incident made initially as in 3.1 a) above, or for making the initial report on such an incident if it had not been possible to report it by radio;
 - ii. for reporting an incident which did not require immediate notification at the time of occurrence.
- 3.2 An initial report made by radio should contain the following information:
- A - Type of incident, e.g. near collision.
 - F - Radio call sign of aircraft making report.
 - J - Position, heading or route, true airspeed.
 - K - FL, altitude or height, and aircraft altitude.
 - L - IMC or VMC.
 - M - Time of incident, in UTC.
 - N - Description of other aircraft, if relevant.
 - O - Brief details of incident, including when appropriate, sighting distance and miss distance.
- 3.3 The confirmatory report on an incident of major significance initially reported by radio or the initial report on any other incident should be submitted to the Aeronautical Information Services located at Passenger Terminal 1, East, 4th Storey, Room 041-52 on the "Air Traffic Incident Report Form." A copy of the incident report form should also be forwarded to the Co-ordination/Investigation Authority as shown in page ENR 1.14-2 para 5 and the operating company or agency concerned.
- 3.4 The Duty Air Traffic Control Officer will complete the "Air Traffic Incident Report Form" on receipt of the initial report and forward it as soon as possible to the Chief Air Traffic Control Officer as well as to the operating agency concerned, unless it is apparent that the reporting pilot has already done so.

4 INVESTIGATION

- 4.1 All Incident Reports filed will be thoroughly investigated and the complainant will be notified of the results of the investigation as soon as possible.

5 CO-ORDINATION/INVESTIGATION AUTHORITY

- 5.1 Co-ordination/Investigation Authority responsible for the Co-ordination/Investigation of Near Collision/Infringements, ATC Complaints, Fault Reporting and Post-Flight Information Service:

Co-ordination/Investigation Authority	Area Of Responsibility
Director-General of Civil Aviation Civil Aviation Authority of Singapore Singapore Changi Airport P O Box 1 Singapore 918141	Within Singapore FIR, the airspace within Kuala Lumpur FIR for which Singapore ACC is responsible for providing ATS and the airspace above the South China Sea Corridor. (Refer to pages ENR 2.1-1 to ENR 2.1-4)

← 6 OTHER REPORTS UNDER ICAO INITIATIVE FOR DATA COLLECTION AND ANALYSIS PURPOSES

- 6.1 Wake Vortex
- 6.1.1 Pilots experiencing any wake vortex encounters within the Singapore Flight Information Region should report such encounters by filling out the Wake Vortex Encounter Reporting Form and submitting the form to CAAS. The contact address, facsimile and e-mail address can be found on the form.
- 6.1.2 Alternatively, pilots can submit the report online direct to ICAO at:
<http://www.icao.int/fsix/wakevortexformpilot.html>

7 INDEX OF REPORTING FORMS APPENDED TO THIS SECTION

S/N	Form	Page
1	Air Traffic Incident Report Form	ENR 1.14-3 to ENR 1.14-6
2	Wake Vortex Encounter Reporting Form for Pilots	ENR 1.14-7 to ENR 1.14-8



Civil Aviation Authority of Singapore

CIVIL AVIATION AUTHORITY OF SINGAPORE
REPUBLIC OF SINGAPORE**AIR TRAFFIC INCIDENT REPORT FORM***For use when submitting and receiving reports on air traffic incidents. In an initial report by radio, shaded items should be included.***A – AIRCRAFT IDENTIFICATION****B – TYPE OF INCIDENT**AIRPROX / OBSTRUCTION ON RUNWAY / RUNWAY INCURSION /
PROCEDURE / FACILITY***C — THE INCIDENT****1. General**

a) Date / time of incident _____ UTC

b) Position _____

2. Own aircraft

a) Heading and route _____

b) True airspeed _____ measured in () kt _____ () km/h _____

c) Level and altimeter setting _____

d) Aircraft climbing or descending

() Level flight

() Climbing

() Descending

e) Aircraft bank angle

() Wings level

() Slight bank

() Moderate bank

() Steep bank

() Inverted

() Unknown

f) Aircraft direction of bank

() Left

() Right

() Unknown

g) Restrictions to visibility (select as many as required)

() Sun glare

() Windscreen pillar

() Dirty windscreen

() Other cockpit structure

() None

h) Use of aircraft lighting (select as many as required)

() Navigation lights

() Strobe lights

() Cabin lights

() Red anti-collision lights

() Landing / taxi lights

() Logo (tail fin) lights

() Other

() None

i) Traffic avoidance advice issued by ATS

() Yes, based on ATS surveillance
system

() Yes, based on visual sighting

() Yes, based on other
information

() No

j) Traffic information issued

() Yes, based on ATS surveillance
system

() Yes, based on visual sighting

() Yes, based on other
information

() No

* Delete as appropriate

k) Airborne collision avoidance system — ACAS

☐ Not carried ☐ Type ☐ Traffic advisory issued

☐ Resolution advisory issued ☐ Traffic advisory or resolution advisory not issued

l) Identification

☐ No ATS surveillance system Available ☐ Identification ☐ No identification

m) Other aircraft sighted

☐ Yes ☐ No ☐ Wrong aircraft sighted

n) Avoiding action taken

☐ Yes ☐ No

o) Type of flight plan IFR / VFR / none*

3. Other aircraft

a) Type and call sign / registration (if known) _____

b) If a) above not known, describe below

☐ High wing ☐ Mid wing ☐ Low Wing

☐ Rotorcraft

☐ 1 engine ☐ 2 engines ☐ 3 engines

☐ 4 engines ☐ More than 4 engines

Marking, colour or other available details

c) Aircraft climbing or descending

☐ Level flight ☐ Climbing ☐ Descending

☐ Unknown

d) Aircraft bank angle

☐ Wings level ☐ Slight bank ☐ Moderate bank

☐ Steep bank ☐ Inverted ☐ Unknown

e) Aircraft direction of bank

☐ Left ☐ Right ☐ Unknown

f) Lights displayed

☐ Navigation lights ☐ Strobe lights ☐ Cabin lights

☐ Red anti-collision lights ☐ Landing / taxi lights ☐ Logo (tail fin) lights

☐ Other ☐ None ☐ Unknown

* Delete as appropriate

g) Traffic avoidance advice issued by ATS

- | | | |
|--|--|--|
| ☐ Yes, based on ATS surveillance system | ☐ Yes, based on visual sighting | ☐ Yes, based on other information |
| ☐ No | ☐ Unknown | |

h) Traffic information issued

- | | | |
|--|--|--|
| ☐ Yes, based on ATS surveillance system | ☐ Yes, based on visual sighting | ☐ Yes, based on other information |
| ☐ No | ☐ Unknown | |

i) Avoiding action taken

- | | | |
|------------------------------|-----------------------------|----------------------------------|
| ☐ Yes | ☐ No | ☐ Unknown |
|------------------------------|-----------------------------|----------------------------------|

4. Distance

- a) Closest horizontal distance _____
- b) Closest vertical distance _____

5. Flight meteorological conditions

- a) IMC / VMC*
- b) Above / below* clouds / fog / haze or between layers*
- c) Distance vertically from cloud _____ m / ft* below _____ m / ft* above
- d) In cloud / rain / snow / sleet / fog / haze*
- e) Flying into / out of* sun
- f) Flight visibility _____ m / km*

6. Any other information considered important by the pilot-in-command

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

D — MISCELLANEOUS**1. Information regarding reporting aircraft**

- a) Aircraft registration _____
- b) Aircraft type _____
- c) Operator _____
- d) Aerodrome of departure _____
- e) Aerodrome of first landing _____ Destination _____
- f) Reported by radio or other means to _____ (name of ATS unit) at date/time _____ UTC
- g) Date / time / place of completion of form _____

* Delete as appropriate

2. Function, address and signature of person submitting report

- a) Function _____
- b) Address _____
- c) Signature _____
- d) Telephone number _____

3. Function and signature of person receiving report

- a) Function _____ b) Signature _____

E — SUPPLEMENTARY INFORMATION BY ATS UNIT CONCERNED**1. Receipt of report**

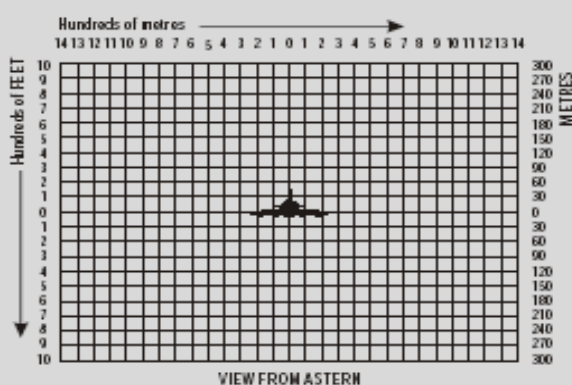
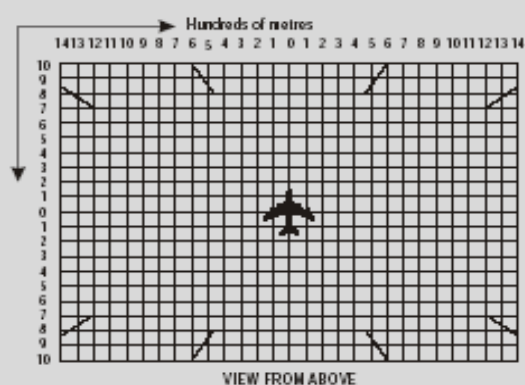
- a) Report received via AFTN / radio / telephone / other (specify)* _____
- b) Report received by _____ (name of ATS unit)

2. Details of ATS action

Clearance, incident seen (ATS surveillance system/visually, warning given, result of local enquiry, etc.)

DIAGRAMS OF AIRPROX

Mark passage of other aircraft relative to you, in plan on the left and in elevation on the right, assuming YOU are at the centre of each diagram. Include first sighting and passing distance.



WAKE VORTEX ENCOUNTER REPORTING FORM FOR PILOTS		
Date and Time	Date of incident	
	Time (UTC)	
Aircraft Type	Make	
	Model	
	Series	
Altitude	Height	☐ m or ☐ ft
	Altitude	☐ m or ☐ ft
	Flight level	
Geographical Position	Location	
	State	
	Airport	
	Runway	☐ L ☐ C ☐ R
Details	Phase of flight	☐ take-off ☐ initial climb ☐ climb ☐ cruise ☐ descent ☐ approach ☐ final ☐ touch-down ☐ taxiing ☐ other
	Were you turning?	☐ yes ☐ no ☐ L ☐ R
	Which holding pattern were you in, if any?	
	Were you:	☐ high ☐ low ☐ on the glide path
	Were you:	☐ left of ☐ right of ☐ on the centre-line
	Weight:	kg
	IAS	kts
	Heading	degrees
	Other	What led you to suspect wake vortex as the cause of the disturbance?
Did you experience vertical acceleration?	☐ yes ☐ no	Please describe:
What was the change in attitude? Please estimate angle.	Pitch: Roll: Yaw:	

Was there any change in altitude?	☐ yes ☐ no ☐ n/a
Was there buffeting?	☐ yes ☐ no ☐ n/a
Was there stall warning?	☐ yes ☐ no ☐ n/a
Was the autopilot engaged?	☐ yes ☐ no ☐ n/a
What control action was taken?	☐ none ☐ go-around ☐ runway change ☐ other Please describe briefly:
Could you see the aircraft suspected of generating the wake vortex?	☐ yes ☐ no ☐ n/a
If yes, what was it?	Make – Model – Series -
Where was it relative to your position?	Separation distance: Clock reference:
Were you aware of the preceding aircraft type before the encounter?	☐ yes ☐ no ☐ n/a

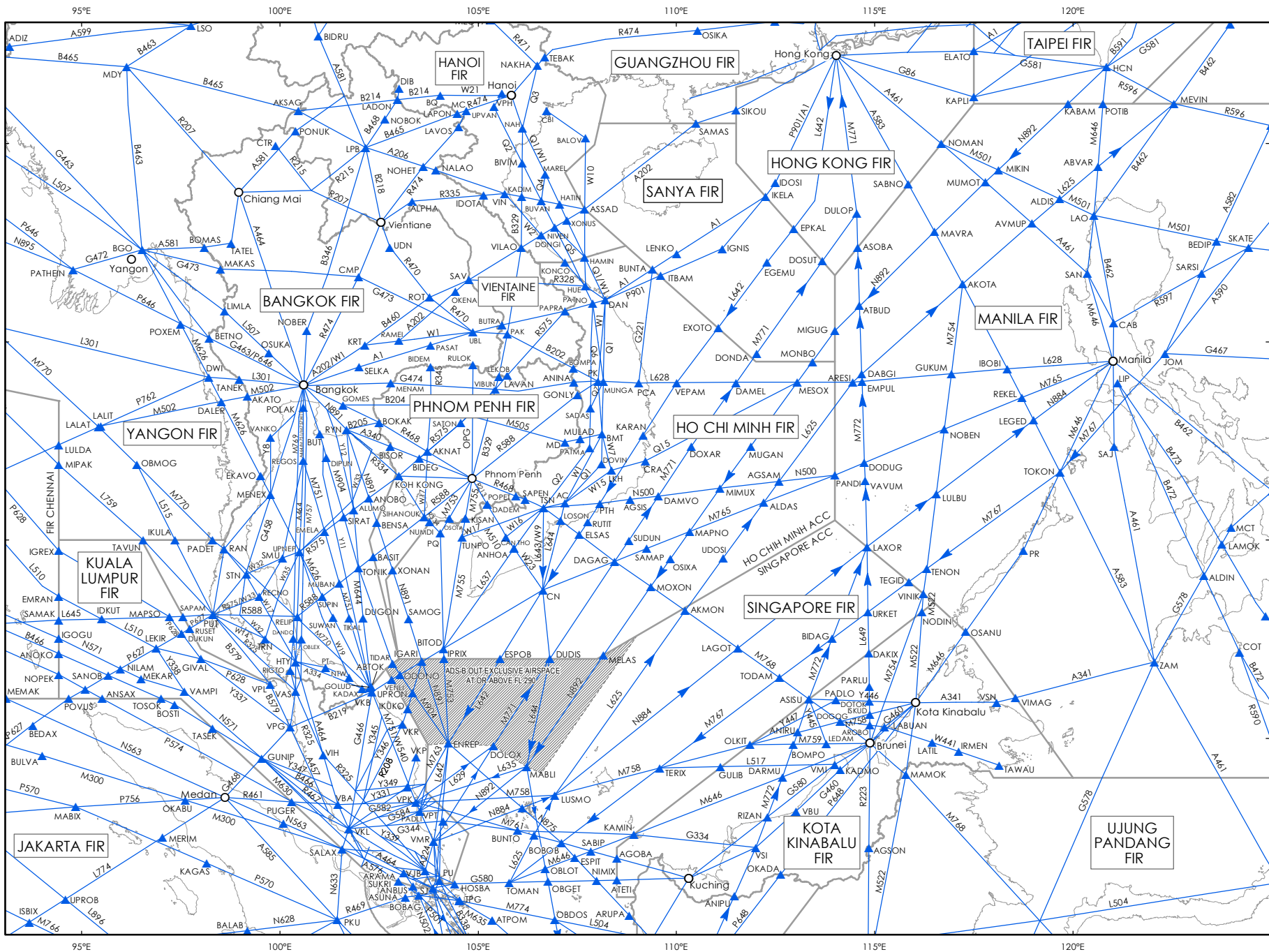
Please submit the completed form to CAAS via fax: +65 65423869 or via post to:

Head (ATS Oversight)
Civil Aviation Authority of Singapore
P. O. Box 1, Singapore Changi Airport,
Singapore 918141

or email to: lim_lam_seng@caas.gov.sg

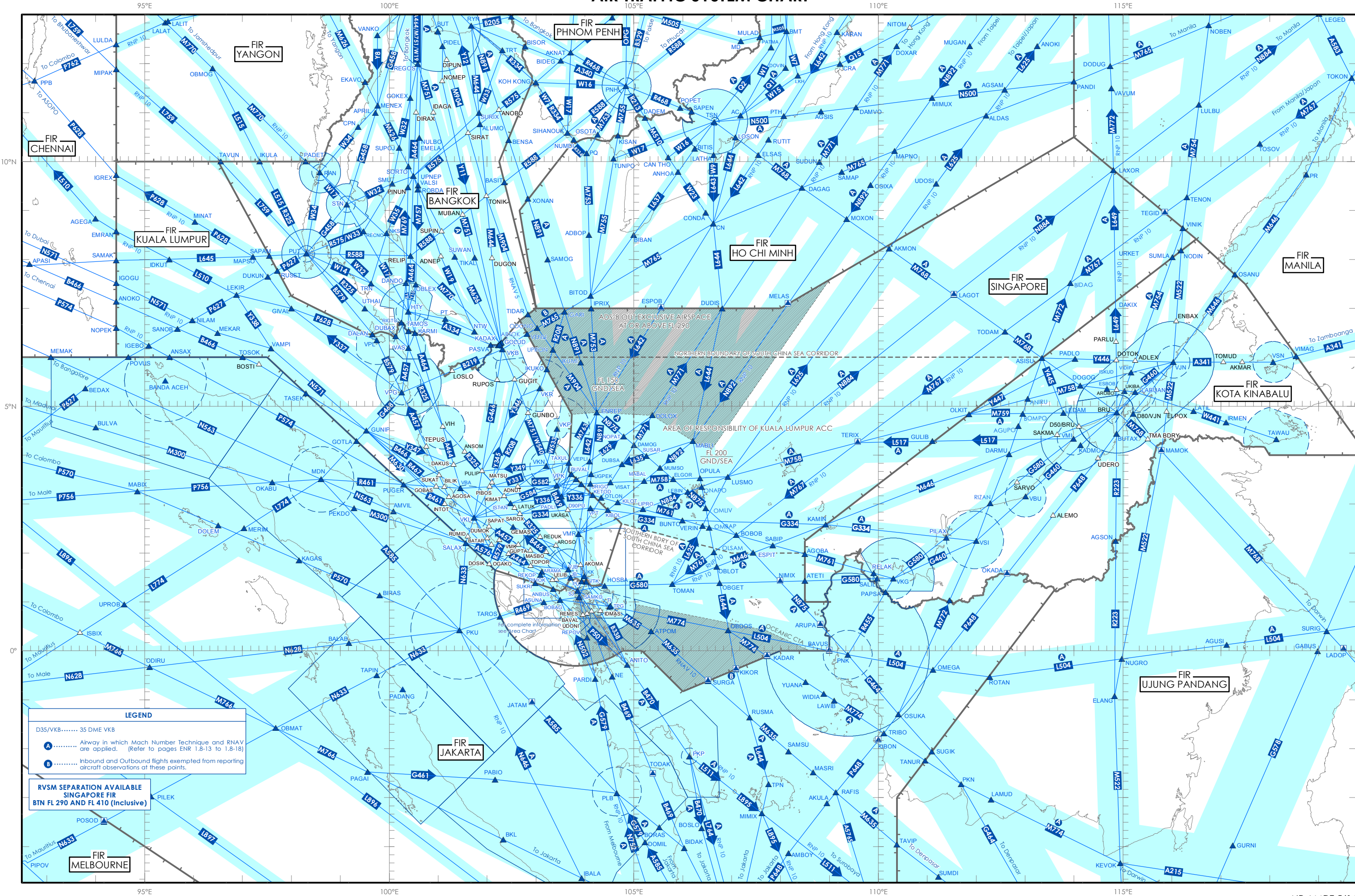
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ATS ROUTE STRUCTURE WITHIN SINGAPORE & ADJACENT FIRS



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AIR TRAFFIC SYSTEM CHART



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Route Designator {RNP Type}		[Route Usage Notes]					
Significant Point Name		Significant Point Coordinates				Remarks	
{RNP Type}		Initial Track MAG	Great Circle Dist NM	Upper limit Lower limit	FL series	Controlling unit Frequency {Airspace class} Remarks	
		↓ ↑			↓ ↑		
1		2	3	4	5	6	7
M758		Route availability: (1) H24					
▲	PEKAN DVOR/DME (VPK)	032259N 1032524E					
			30.4NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	IDSEL (WMFC/WSJC FIR BDRY)	032432N 1035544E					
			11.1NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	URIGO	032505N 1040647E					
			24.8NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	VISAT	032620N 1043134E					
			41.1NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	MABAL	032826N 1051236E					
			35.7NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	ELGOR	033014N 1054818E					
			67.4NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	LUSMO	033341N 1065534E					
			164.6NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (2)
▲	TERIX	041521N 1093456E					
			140.5NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾	[Class A] (3)
▲	OLKIT (WSJC/WBFC FIR BDRY)	045010N 1115118E					
Route Remarks:							
Lateral Limits:							
10NM either side of line joining VPK DVOR/DME to IDSEL and 25NM either side of line joining IDSEL to OLKIT.							
Singapore ACC FREQ:							
P123.7 MHz							
S127.3 MHz							
Point/Segment Remarks:							
(2) NIL							
(3) VJN 255°							
258.0NM							

Route Designator {RNP Type}		[Route Usage Notes]				
Significant Point Name		Significant Point Coordinates				Remarks
{RNP Type}		Initial Track MAG	Great Circle Dist NM	Upper limit Lower limit	FL series	Controlling unit Frequency {Airspace class} Remarks
		↓ ↑			↓ ↑	
1		2	3	4	5	6
M761		Route availability: (1) H24				
▲	PEKAN DVOR/DME (VPK)	032259N 1032524E				
			46.0NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	KETOD (WMFC/WSJC FIR BDRY)	031042N 1040942E				
			10.8NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	OTLON	030752N 1042006E				
			21.0NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	KILOT	030217N 1044023E				
			32.3NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	LIPRO	025342N 1051128E				
			118.8NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	BOBOB	022206N 1070558E				
			46.5NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	SABIP	020940N 1075044E				
			40.8NM	FL 460 FL 240	Odd ⁽¹⁾	Even ⁽¹⁾
▲	AGOBA (WSJC/WBFC FIR BDRY)	015840N 1083000E				
Route Remarks:						
Lateral Limits:						
10NM either side of line joining VPK DVOR/DME to KETOD and 25NM either side of line joining KETOD to AGOBA.						
Singapore ACC FREQ: P123.7 MHz S127.3 MHz						
Portion of M761 within Singapore FIR between AGOBA and 1080000E has been delegated to Kuching ACC for provision of ATS.						
Kuching ACC FREQ:						
134.5 MHz						
Point/Segment Remarks:						
(2) NIL						
(3) VKG 285°						
112.7NM						

Route Designator {RNP Type}		[Route Usage Notes]					
	Significant Point Name	Significant Point Coordinates				Remarks	
{RNP Type}		Initial Track MAG	Great Circle Dist NM	Upper limit Lower limit	FL series		Controlling unit Frequency {Airspace class} Remarks
		↓ ↑			↓	↑	
1		2	3	4	5	6	7
Y336		Route availability: (1) H24					
▲	KETOD (WMFC/WSJC FIR BDRY)	031042N 1040942E					
		087° 267°	38.2NM	FL 460 FL 245	Even ⁽¹⁾	Odd ⁽¹⁾	
▲	PADLI	030918N 1033133E					
Route Remarks:							
Lateral Limits:							
10NM on either side of line joining KETOD to PADLI.							
Singapore ACC FREQ:							
133.8MHz							

Route Designator {RNP Type}		[Route Usage Notes]					
Significant Point Name		Significant Point Coordinates				Remarks	
{RNP Type}		Initial Track MAG ↓ ↕ ↑	Great Circle Dist NM	Upper limit Lower limit	FL series		Controlling unit Frequency {Airspace class} Remarks
					↓	↑	
1		2	3	4	5	6	7
Y339		Route availability: (1) H24					
Δ	AKOMA (20 DME PU)	014522N 1035443E					
(5)			38.3NM	FL 460 5500 FT ALT	Even ⁽¹⁾		[Class A-ABV FL150 Class B-BLW FL150]
Δ	AROSO	020846N 1032421E					
Route Remarks: Lateral Limits: 11.5NM either side of line joining AKOMA to AROSO. Flight Planning Flight planning permitted for flights departing from or overflying Singapore to destinations north of Kuala Lumpur and Subang airports. Flight planning to operate at FL220 and below to flight plan on A457. Singapore ACC FREQ: P133.25MHz S135.8MHz							

ENR 4.4 NAME-CODE DESIGNATIONS FOR SIGNIFICANT POINTS

Name-code designator	Co-ordinates	ATS route or other route	Terminal Area
1	2	3	4
ABVIP	010008N 1035032E		SID-WSSS
ABVON	012028.18N 1035827.03E		IAC-WSSS
ADMIM	005733N 1033033E		SID-WSSS
ADNIK	011651.19N 1035655.43E		IAC-WSSS
AGOBA	015840N 1083000E	M761	
AGROT	010108N 1035808E		SID-WSSS
AGVAR	014719N 1034145E		SID-WSSS
AKIPO	011356.27N 1035541.59E		IAC-WSSS
AKMET	015355N 1034339E		SID-WSSS
AKMON	081256N 1101308E	L625 , M768	
AKOMA	014522N 1035443E	B469 , Y339	SID-WSSS, IAC-WSSS
ANBUS	011556N 1032102E	P501	STAR-WSSS
ANITO	001700S 1045200E	B338 , B470 , P501	SID-WSSS
ANUMA	011053.11N 1035424.35E		IAC-WSSS
APIPA	010618.43N 1035228.35E		IAC-WSSS
ARAMA	013654N 1030712E	A464 , P501	STAR-WSSS
AROSO	020846N 1032421E	Y339 , Y342	SID-WSSS
ARUPA	003140N 1084846E	N875	
ASISU	055906N 1132046E	M768 , M772	
ASUNA	005948N 1030954E	R469	STAR-WSSS
ATETI	012540N 1083000E	G580	
ATKAX	000512N 1065946E		SID-WSSS
ATPOM	002425N 1052114E	M635	
ATRUM	013256N 1040057E		SID-WSSS
BAVAL	004518N 1040242E	B469	
BAVUS	000000N 1090000E	L504	
BETBA	013302N 1035331E		STAR-WSSS
BIDAG	073101N 1135544E	M772	
BIDUS	013554.05N 1035754.86E		IAC-WSSS, STAR-WSSS
BIKTA	024337N 1034308E	B469	STAR-WSSS
BIPOP	013122N 1041018E		IAC-WSSS, STAR-WSSS
BOBAG	010230N 1032954E	R469 , M630 , N502 , P501	HLDG ID, SID-WSSS, STAR-WSSS
BOBOB	022206N 1070558E	M761 , M767 , N875	
BOKIP	010421N 1034353E		SID-WSSS, STAR-WSSS
BONSU	011928N 1033710E	A576	

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
BUNTO	024008N 1055953E	G334	
BUVAL	033622N 1034341E	L629, Y333	
DAMOG	041225N 1050014E	M771, N875	
DOGRA	010525N 1041423E		SID-WSSS
DOKTA	012606N 1041040E		SID-WSSS
DOLOX	044841N 1052247E	L629, M771	
DOSNO	004757N 1041409E		SID-WSSS
DOVAN	011938N 1041249E		STAR-WSSS
DOVOL	033047N 1034923E	L635, Y334	
DUBSA	034901N 1044540E	L635, M771	
DUDIS	070000N 1064834E	L644, M771	
EGOLO	031934N 1040047E	L642	
EGORA	013621.37N 1040607.23E		IAC-WSSS
ELALU	013439.87N 1040524.21E		IAC-WSSS
ELBEB	012844.66N 1040254.38E		IAC-WSSS
ELBEX	013148.96N 1040314.18E		IAC-WSSS
ELGAP	012820.28N 1040146.15E		IAC-WSSS
ELGOR	033014N 1054818E	M758, N875	
ELMIN	012549.68N 1040140.51E		IAC-WSSS
EMTAP	011655.88N 1035657.47E		IAC-WSSS
ENLES	010931.51N 1035349.83E		IAC-WSSS
ENREP	045223N 1041442E	L642, M753, M763, M904, N875, N891	
ENSUN	012602.56N 1040048.10E		IAC-WSSS
ERVOT	011120.09N 1035435.85E		IAC-WSSS
ESBIT	012212.07N 1040008.64E		IAC-WSSS
ESLUX	011844.31N 1035840.44E		IAC-WSSS
ESPIT	020011N 1072624E	M646, N875	
ESPOB	070000N 1053317E	L642	
EXOMO	010425.49N 1040933.17E		IAC-WSSS
HOSBA	011948N 1042418E	G580, W401	HLDG ID
IBULA	005036N 1043600E		STAR-WSSS
IDMAS	004900N 1041848E	B338	
IDSEL	032432N 1035544E	M758, Y335	
IDUNA	012305.80N 1035933.58E		IAC-WSSS
IDURO	012639.84N 1040103.94E		IAC-WSSS
IDVAS	012934.66N 1040217.75E		IAC-WSSS
IGARI	065610N 1033506E	R208, M765, N891	

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
IGNON	010847N 1041257E		STAR-WSSS
IGULA	013232.27N 1040332.66E		IAC-WSSS
IKAGO	003816N 1052931E		STAR-WSSS
IKIMA	004314N 1045500E		HLDG ID, STAR-WSSS
IKUKO	054512N 1031324E	R208	
IKUMI	055338N 1035509E	N891	
IPNAK	013711.93N 1040530.83E		IAC-WSSS
IPRIX	070000N 1040755E	M753	
KADAR	000647S 1074342E	M774	
KAKSA	011702.58N 1035757.92E		IAC-WSSS
KAMIN	023442N 1085536E	G334, M646	
KARTO	011124N 1053343E		HLDG ID, STAR-WSSS,
KASPO	011507.15N 1035709.20E		IAC-WSSS
KETOD	031042N 1040942E	M761, Y336	
KEXAS	011019N 1044818E		STAR-WSSS
KIBOL	025229N 1042805E	G334, N892	
KIKOR	002244S 1070524E	L644	
KILOT	030217N 1044023E	M761, N892	STAR-WSSS
KIMER	011105.74N 1035527.30E		IAC-WSSS
LAGOT	071632N 1113243E	M768, N884	
LAGUS	011915.29N 1035854.00E		IAC-WSSS
LAPOL	012622N 1034435E	G579	
LASIN	011538.25N 1035722.39E		IAC-WSSS
LAVAX	010950N 1042714E		HLDG ID, STAR-WSSS,
LAXOR	094937N 1144829E	L649, M772, N884	
LEBIN	031438N 1060604E	N875, N884	
LEGOL	012053N 1034723E	G579	
LELIB	012729N 1032450E	A464, W401	SID-WSSS, STAR-WSSS
LELON	011243.51N 1035608.62E		IAC-WSSS
LEND A	024124N 1043932E	N884	
LEPNA	010648.29N 1035338.82E		IAC-WSSS
LIDVA	010505.67N 1035255.38E		IAC-WSSS
LIPRO	025342N 1051128E	M761, N884	
LUSMO	033341N 1065534E	L625, M758, N884	
LUXOL	011802.73N 1035823.38E		IAC-WSSS
MABAL	032826N 1051236E	M758, N892	HLDG ID, STAR-WSSS
MABLI	041717N 1061247E	L635, L644, N892	

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
MANIM	031431N 1040553E	N891	
MASBO	020248N 1025251E	A457	SID-WSSS
MASNI	012037N 1033746E	A464	
MELAS	070520N 1080911E	N892	
MESOG	020103N 1031240E	B466	
MUMSO	034420N 1053213E	N875 , N892	
NIMIX	012452N 1075926E	G580 , N875	
NIVAM	023650N 1040228E	G219	
NODIN	081100N 1161142E	M522	
NOPAT	042313N 1044756E	L629 , N875	
NYLON	013656.90N 1040623.80E		HLDG ID, IAC-WSSS, SID-WSSS, STAR-WSSS
OBDA	031153N 1040538E	N891	
OBDO	002503N 1065551E	L504 , M774	STAR-WSSS
OBGE	012307N 1064531E	G580 , L644	
OBLO	014256N 1064147E	L644 , M646	
ODONO	063613.82N 1030129.41E	M904	
OLKIT	045010N 1115118E	M758	
OLSAM	020059N 1063824E	L644	
OMBAP	023116N 1063242E	L644	
OMLIV	025512N 1062812E	L644	
ONAPO	032116N 1062318E	L644	
OPULA	033155N 1062118E	L644	
OTLON	030752N 1042006E	M761 , M771	
PADLI	030918N 1033133E	B469 , Y332 , Y333 , Y334 , Y335 , Y336	
PALGA	011059N 1034759E		STAR-WSSS
PAMSI	010459N 1034845E		STAR-WSSS
PARDI	003400S 1041300E	G579 , N502	
PASPU	015915N 1040618E		STAR-WSSS,
PEKLA	023437N 1040618E	N892	
PIBAP	023023N 1040618E		STAR-WSSS
PIMOK	012648N 1032008E	A576 , W401	SID-WSSS, STAR-WSSS
POSUB	012725N 1040748E		STAR-WSSS,
RAXIM	030318N 1041713E	M771	
REDUK	021957N 1030459E	R325	
REKOP	013306N 1030521E	A576	STAR-WSSS
REMES	004342N 1035735E	G579	HLDG ID, STAR-WSSS
REPOV	001623N 1040300E	G579	HLDG ID, STAR-WSSS

<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
ROBMO	025440N 1035700E	L642	
RUVIK	011422N 1042033E		SID-WSSS, STAR-WSSS
SABIP	020940N 1075044E	M646, M761	
SABKA	015051N 1031713E	A457	
SAMKO	010529.5N 1035254.9E	R469, W407	HLDG ID, STAR-WSSS,
SANAT	010749N 1035930E		STAR-WSSS,
SAPTI	011218N 1035835E		SID-WSSS
SASGA	011037N 1040228E		SID-WSSS
SUDPO	011731N 1035808E		SID-WSSS
SUGAM	011318N 1035618E		SID-WSSS
SUKOK	011512N 1040428E		SID-WSSS
SUKRI	012306N 1025904E	M630	
SUMLA	080242N 1160054E	M754	
SUNGO	011338N 1035532E		SID-WSSS
SUNVA	011756N 1035722E		SID-WSSS
SURGA	003657S 1063119E	M635	
SUSAR	035848N 1051547E	L635, N875	
TAROS	004200N 1021607E	R469	
TAXUL	035035N 1034037E	M763, Y332	
TEGID	085656N 1155143E	M767	
TERIX	041521N 1093456E	L517, M758, M767	
TIDAR	065230.15N 1024959.82E	M904	
TODAM	063138N 1123536E	M767, M768	
TOKIM	012933N 1040315E		SID-WSSS
TOMAN	012147N 1054717E	G580, L625, M646, M767	SID-WSSS, STAR-WSSS
TOPOM	012955N 1040227E		SID-WSSS
TOPOR	014412N 1025330E	W534	
UDONI	004818N 1040806E	B470	
UGPEK	033647N 1040752E	L635, N891	
UPRON	060903.41N 1032039.98E	M904	
URIGO	032505N 1040647E	M758, N891	
VABRI	013114.96N 1040357.78E		IAC-WSSS
VENIX	002156S 1060521E		SID-WSSS
VENLI	062848N 1024900E	M765	
VENPA	002141N 1044955E		SID-WSSS
VEPLI	035223N 1040542E	L629, L642	HLDG ID, STAR-WSSS
VERIN	023332N 1062425E	L625	

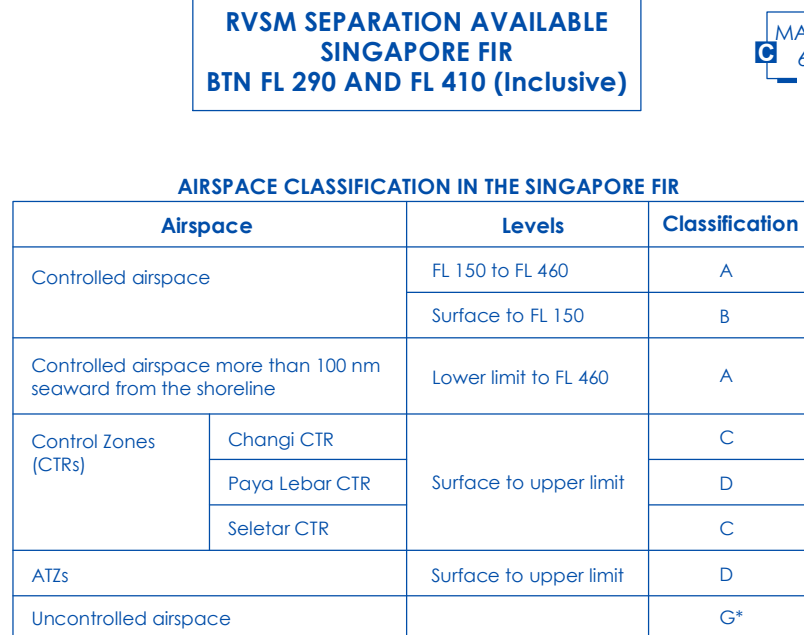
<i>Name-code designator</i>	<i>Co-ordinates</i>	<i>ATS route or other route</i>	<i>Terminal Area</i>
1	2	3	4
VILEV	012729.10N 1040222.42E		IAC-WSSS
VINIK	083830N 1161348E	M522 , M754	
VINIL	025500N 1040618E		HLDG ID, STAR-WSSS,
VISAT	032620N 1043134E	M758 , M771	

ENR 6 EN-ROUTE CHARTS

ENROUTE CHART - ICAO [ERC-6-1 En-Route Chart](#)
WORLD AERONAUTICAL CHART - ICAO [WAC-2860-Singapore-Island](#)

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CHANGES : Coordinates for waypoint KETOD amended.
RNAV routes Q1 and Q2 added.
ATS routes W2 revised and W15 to W17 added



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WSSS AD 2.7 SEASONAL AVAILABILITY - CLEARING

There is no requirement for clearing. The aerodrome is available throughout the year.

WSSS AD 2.8 APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA

1	Apron surface and strength	RWY 02L/20R RWY 02C/20C	Surface: Strength:	Concrete PCN 85/R/B/W/U
2	Taxiway width, surface and strength	RWY 02L/20R RWY 02C/20C	Width:	45m (147ft) Taxiway V2; 35m (115ft) Taxiways NC3, EP and WP; 25m (82ft) Taxiway EP (from Taxilanes B1 and B3); 23m (75ft) Taxiway SA; 30m (100ft) All other Taxiways
			Surface:	Cement Concrete - Taxiways W1, W9, E1, E3, E11 and EP (between E10 and E11); Bituminous Concrete - All other Taxiways
			Strength:	PCN 85/R/B/W/U - Taxiways W1, W9, E1, E3, E11 and EP (between E10 and E11); PCN 72/F/B/W/U - All other Taxiways
3	ACL location and elevation	See AD-2.WSSS-ADC-2/Chart (flip side) for coordinates and elevations of aircraft stands.		
4	INS checkpoints			
5	Remarks	NIL		

WSSS AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

1	<i>Use of aircraft stand ID signs, TWY guidelines and visual docking/parking guidance system of aircraft stands.</i> Taxiing guidance signs at all intersections with TWY and RWY at all holding positions. Guidelines at apron. Nose-in guidance at aircraft stands. For information on Safegate Aircraft Docking Guidance System, Aircraft Parking Restrictions, Procedures for Start-up and Pushback of Aircraft, Pushback Procedures for Aircraft (Diagrams), Taxiing Guidance System at Singapore Changi Airport, refer to WSSS AD 2-9. Aircraft stand manoeuvring guidance lights are provided at aircraft stands 1 to 17, 101 to 104 and aircraft stands at Terminal 3.
2	<i>RWY and TWY markings and LGT</i> <u>RWY 02L/02C and RWY 20C</u> RWY LGT: refer to WSSS AD 2-14 to WSSS AD 2-15. TWY LGT: Blue LGT on TWY curved edges, selected straight TWY edge sections and apron TWY edges only. Blue TWY edge markers along selected straight TWY edge sections. Red stop bar at TWY INT controllable on/off. Red stop bar LGT at TWY HLDG PSN entrances to RWY are controllable on/off and are supplemented with elevated RWY guard LGT at the sides. Internally/externally lighted mandatory or information TWY signboards. Yellow TWY centre line markings, supplemented by green centre line LGT with selective control along rapid exit TWY, taxi-routes to and from main RWY and aprons. MARKING AIDS: THR, touchdown zone, centre line, side stripe, RWY designations, aiming point markings, TWY centre line, taxi holding positions - all taxiways, apron guide lines. For positions of aircraft nosewheel in relation to stopbar and description of the Safegate Aircraft Docking Guidance System - refer to WSSS AD 2-9.
	<u>RWY 20R</u> RWY LGT: refer to WSSS AD 2-14 to WSSS AD 2-15. TWY LGT: same as for RWY 02L/02C and RWY 20C. MARKING AIDS: Pre-threshold centre-line, transverse stripe for displaced THR, RWY designations, THR, touchdown zone, aiming point marking, RWY centre-line and stripe marking aids.
3	<i>Stop bars: Stop bars where appropriate.</i>
4	<i>Remarks: Nil</i>

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
<u>EAST CARGO</u>		
601, 602	The aircraft (on idle thrust) shall be pushed back to face South until its nosewheel is at the intersection of the lead-in line and taxilane EA centreline.	Standard pushback approved
603	The aircraft (on idle thrust) shall be pushed back to face South until its nosewheel is at the intersection of the lead-in line and taxilane EA centreline. The aircraft shall then be towed forward along the centreline of taxilane EA till its nosewheel is on the "END OF TOW" marking behind aircraft stand 602.	Standard pushback approved
604	The aircraft (on idle thrust) shall be pushed back to face South until its nosewheel is at the position of "END OF PUSH". The aircraft shall then be towed forward along the centreline of taxilane EA till its nosewheel is on the "END OF TOW" marking behind aircraft stand 602.	Standard pushback approved
605	The aircraft (on idle thrust) shall be pushed back to face West until its nosewheel of the aircraft is at the position of "EOP" on Taxilane EC. The aircraft shall then be towed forward along the centreline of taxilane EA till its nosewheel is on the "END OF TOW" marking behind aircraft stand 602. The aircraft may breakaway from there.	Standard pushback approved
611, 612	The aircraft shall be pushed back to face North until its nosewheel is at the "END OF PUSH" position. The aircraft shall then be towed forward along the centreline of taxilane EC and turn left onto the centreline of taxilane EA until its nosewheel is at the "END OF TOW" marking behind aircraft stand 602. The aircraft may breakaway from there. Engine start-up is not permitted during standard pushback.	Standard pushback approved
	<u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall be pushed back to face North until its nosewheel is at the "END OF PUSH" position. Engine start-up is permitted only on the port engine. The aircraft shall then be towed forward along the centreline of taxilane EC and turn left onto the centreline of taxilane EA until its nosewheel is at the "END OF TOW" position (marking behind aircraft stand 602). The aircraft may breakaway from there. This alternate pushback procedure can only be exercised if the auxiliary power unit of the aircraft is unserviceable.	Alternate pushback approved
<u>T1 WEST</u>		
C1, C20, C22, C23, C24, C25	The aircraft (on idle thrust) shall be pushed back onto TWY U1 to face North (or South).	Pushback approved, to face North (or South).
C26	The aircraft (on idle thrust) shall be pushed back:	
	• onto TWY WA to face North. The aircraft may breakaway from there. <u>OR</u> • onto TWY WA to face South until its nosewheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft shall then be towed forward until its nosewheel is on the "END OF TOW" position. This is marked as "EOT" on the ground. The aircraft may breakaway from there.	Pushback approved, to face North. Pushback approved, to face South.
<u>T1 CENTRAL</u>		
C11	The aircraft (on idle thrust) shall be pushed back such that the pushback line is always kept midway between the aircraft main gear until the nosewheel of aircraft is at the "EOP 21" position. The aircraft shall then be towed forward until its nosewheel is at the "EOT 22A" position.	Standard pushback approved

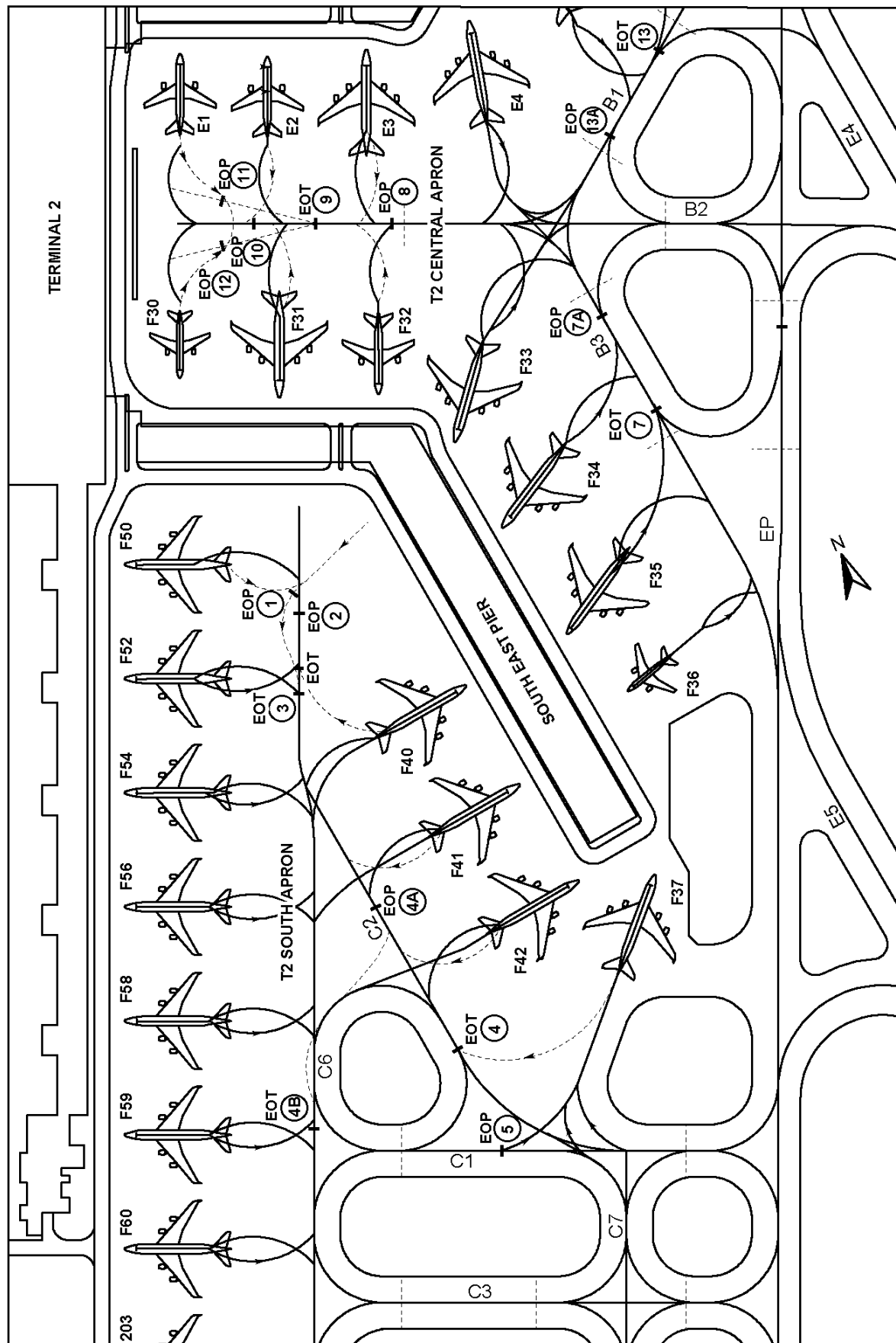
APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
C13	The aircraft (on idle thrust) shall push back to face North such that the pushback line is always kept midway between the aircraft main gear until its nosewheel is at the "EOP 22" position. The aircraft shall be towed forward until its nosewheel is at the "EOT 22A" position. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.	Standard pushback approved Pushback approved, onto TWY N3 to face South. Pushback approved, onto TWY N1 to face South.
C15	The aircraft (on idle thrust) shall push back facing North until its nosewheel is at the intersection of the lead-in line and TWY N2 centreline. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.	Standard pushback approved Pushback approved, onto TWY N3 to face South. Pushback approved, onto TWY N1 to face South.
← C16	The aircraft (on idle thrust) shall be pushed back to face North (or South) until its nosewheel is at the intersection of the lead-in line and TWY N1 centreline. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand C15 on Taxilane N2. The aircraft may breakaway from there.	Pushback approved, to face North (or South). Pushback approved, to face North on Taxilane N2.
← C17	The aircraft (on idle thrust) shall be pushed back to face North (or South) until its nosewheel is at the intersection of the lead-in line and TWY N1 centreline. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand C15 on Taxilane N2. The aircraft may breakaway from there.	Pushback approved, to face North (or South). Pushback approved, to face North on Taxilane N2.
C18	The aircraft (on idle thrust) shall be pushed back to face North until its nosewheel is at the intersection of the lead-in line and TWY N1 centreline. <u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall be pushed back onto Taxilane N1 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand C15 on Taxilane N2. The aircraft may breakaway from there.	Standard pushback approved Pushback approved, to face North on Taxilane N2.
C19	The aircraft (on idle thrust) shall be pushed back to face North along TWY N1 until the "END OF PUSH" position.	Standard pushback approved

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
D30	The aircraft (on idle thrust) shall be pushed back such that the pushback line is always kept midway between the aircraft main gear until the nosewheel of the aircraft is at the "EOP 20" position. The aircraft shall then be towed forward until its nosewheel is at the "EOT" 22A" position.	Standard pushback approved
D32	The aircraft (on idle thrust) shall push back to face North such that the pushback line is always kept midway between the aircraft main gear until its nosewheel is at the "EOP 22" position. The aircraft shall then be towed forward until its nosewheel is at the "EOT 22A" position.	Standard pushback approved
	<u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there. <u>Alternate Pushback Procedure</u>	Pushback approved, onto TWY N3 to face South.
	The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.	Pushback approved, onto TWY N1 to face South.
D34	The aircraft (on idle thrust) shall push back to face North until its nosewheel is at the intersection of the lead-in line and TWY N2 centreline.	Standard pushback approved
	<u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N3 until the nose of the aircraft is behind the stopbar line behind aircraft stand D35. The aircraft may breakaway from there.	Pushback approved, onto TWY N3 to face South.
	<u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.	Pushback approved, onto TWY N1 to face South.
	The aircraft (on idle thrust) shall push back onto TWY N2 to face South followed by TWY N1 until the nose of the aircraft is behind the stopbar line behind aircraft stand C16. The aircraft may breakaway from there.	Pushback approved, onto TWY N1 to face South.
← D35, D36	The aircraft (on idle thrust) shall be pushed back to face North (or South) until its nosewheel is at the intersection of the lead-in line and TWY N3 centreline.	Pushback approved, to face North (or South).
	<u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand D34 on Taxilane N2. The aircraft may breakaway from there.	Pushback approved, to face North on Taxilane N2.
← D37	The aircraft (on idle thrust) shall be pushed back to face North until its nosewheel is at the intersection of the lead-in line and TWY N3 centreline.	Standard pushback approved
	<u>Alternate Pushback Procedure</u> The aircraft (on idle thrust) shall be pushed back onto Taxilane N3 to face North until the nose of the aircraft is behind the stopbar line behind aircraft stand D34 on Taxilane N2. The aircraft may breakaway from there.	Pushback approved, to face North on Taxilane N2.
D38	The aircraft (on idle thrust) shall be pushed back to face North along TWY N3 until the "END OF PUSH" position.	Standard pushback approved
<u>T1 EAST</u>		
← D40, D41, D42, D44, D46, D47, D48, D49	The aircraft (on idle thrust) shall be pushed back to face North (or South) until its nosewheel is at the intersection of the lead in line and TWY A6 centreline.	Pushback approved, to face North (or South).

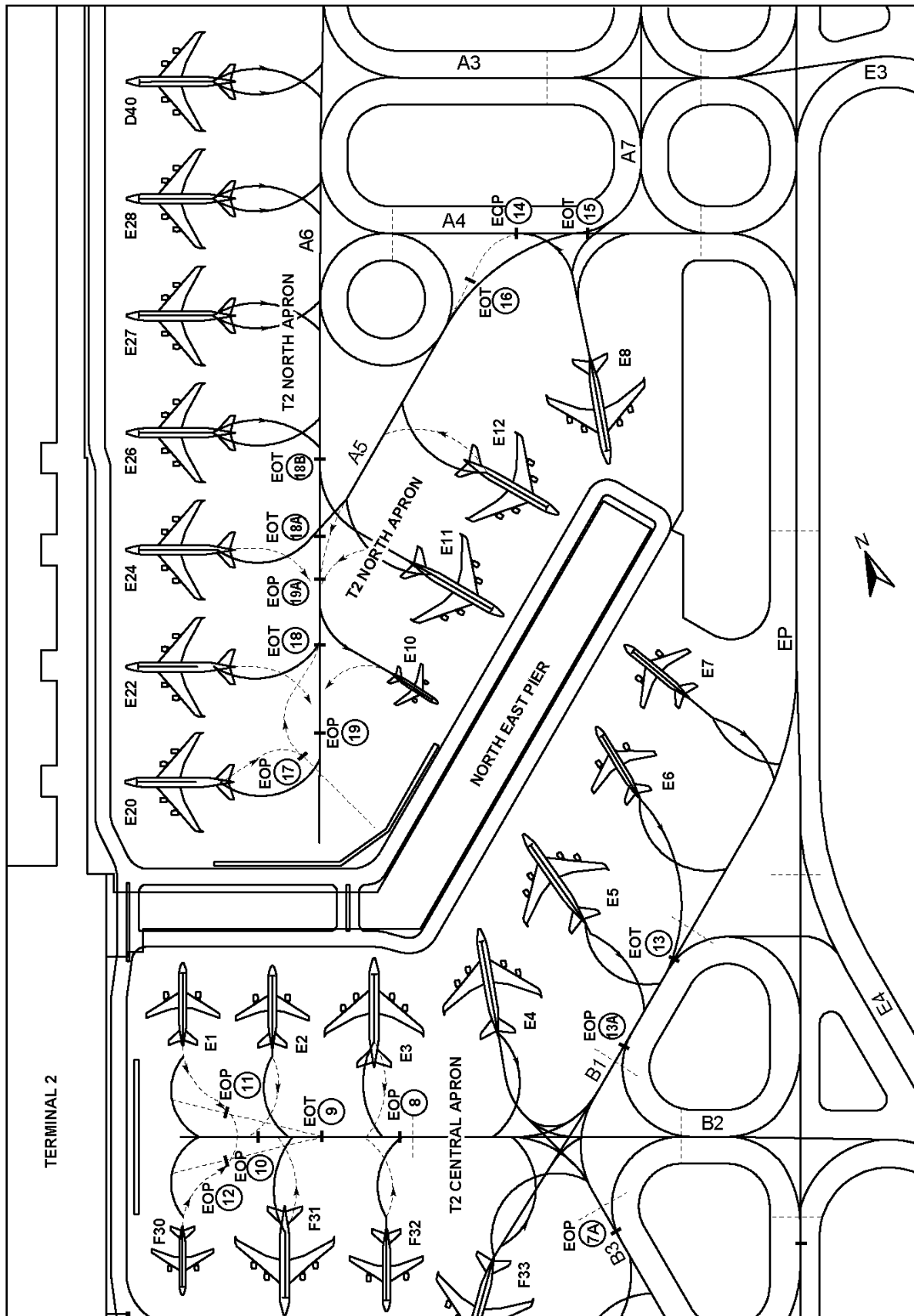
APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
<u>T2 CENTRAL</u>		
E1	The aircraft (on idle thrust) shall be pushed back such that the pushback line is always kept midway between the aircraft main gear until its nosewheel is at Stopbar 12. This is marked as "END OF PUSH" on the ground. The aircraft shall then be towed forward to Stopbar 9. This is marked as "END OF TOW" on the ground.	Standard pushback approved
E2	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at the intersection of the lead-in line and TWY B2 centreline. The aircraft shall then be towed forward to Stopbar 9. This is marked as "END OF TOW" on the ground.	Standard pushback approved
E3	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 9. This is marked as "END OF TOW" on the ground.	Standard pushback approved
E4	The aircraft (on idle thrust) shall be pushed back: • until its nosewheel is at the "END OF PUSH" 8 position <u>OR</u> • onto TWY B1 until its nosewheel is at the "END OF PUSH" 13A position <u>OR</u> • onto TWY B3 until its nosewheel is at the "END OF PUSH" 7A position.	Standard pushback approved Pushback approved, to pushback onto TWY B1 Pushback approved, to pushback onto TWY B3.
E5, E6	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at the intersection of the lead-in line and TWY B1 centreline. The aircraft shall then be towed forward to Stopbar 13. This is marked as "END OF TOW" on the ground.	Standard pushback approved
E7	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 13. This is marked as "END OF TOW" on the ground.	Standard pushback approved
F30	The aircraft (on idle thrust) shall be pushed back such that the pushback line is always kept midway between the aircraft main gear until its nosewheel is at Stopbar 11. This is marked as "END OF PUSH" on the ground. The aircraft shall then be towed forward to Stopbar 9. This is marked as "END OF TOW" on the ground.	Standard pushback approved
F31	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 10. This is marked as "END OF PUSH" on the ground. The aircraft shall then be towed forward to Stopbar 9. This is marked as "END OF TOW" on the ground.	Standard pushback approved
F32	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 9. This is marked as "END OF TOW" on the ground.	Standard pushback approved
F33	The aircraft (on idle thrust) shall be pushed back: • until its nosewheel is at "END OF PUSH" 8 position. <u>OR</u> • onto TWY B1 until its nosewheel is at the "END OF PUSH" 13A position. <u>OR</u> • onto TWY B3 until its nosewheel is at the "END OF PUSH" 7A position.	Standard pushback approved Pushback approved, to pushback onto TWY B1 Pushback approved, to pushback onto TWY B3.
F34, F35	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at the intersection of the lead-in line and TWY B3 centreline. The aircraft shall then be towed forward to Stopbar 7. This is marked as "END OF TOW" on the ground.	Standard pushback approved

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
F36	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 7. This is marked as "END OF TOW" on the ground.	Standard pushback approved
T2 NORTH		
E8	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 14. This is marked as "END OF PUSH" on the ground. The aircraft shall then be towed forward to Stopbar 15. This is marked as "END OF TOW" on the ground.	Standard pushback approved
E10	The aircraft (on idle thrust) shall be pushed back with the main gear mid-point following the pushback line until its nosewheel is at position EOP 19.	Standard pushback approved
E11	<u>Main pushback procedure (for all aircraft wingspan)</u> The aircraft (on idle thrust) shall be pushed back with the main gear mid-point following the main gear pushback line onto TWY A6 centreline. The aircraft shall then be towed forward to Stopbar 16 on TWY A5. This is marked as "END OF TOW" on the ground. <u>Alternate pushback procedure (for aircraft with wingspan of less than 65m)</u> The aircraft (on idle thrust) shall be pushed back with the main gear mid-point following the main gear pushback line until its body is aligned with TWY A6 centreline. <u>Alternate pushback procedure (for aircraft with wingspan of more than 65m)</u> The aircraft (on idle thrust) shall be pushed back with the main gear mid-point following the main gear pushback line until its nosewheel is at the 'EOP 19A' position behind aircraft stand E24. The aircraft shall then be towed forward to 'EOT 18B' behind aircraft stand E26.	Standard pushback approved Pushback approved, to pusback onto TWY A6. Pushback approved, to pushback onto TWY A6.
E12	The aircraft (on idle thrust) shall be pushed back: - until its nosewheel is at the intersection of the lead-in line and TWY A5 centreline. The aircraft shall then be towed forward to Stopbar 16. This is marked as "END OF TOW" on the ground. <u>OR</u> - onto TWY A6 until its nosewheel is at the intersection of TWY A5 and A6 centrelines.	Standard pushback approved Pushback approved, to pusback onto TWY A6.
E20	The aircraft (on idle thrust) shall be pushed back with the main gear mid-point following the main gear pushback line until its nosewheel is at Stopbar 17. The aircraft shall then be towed forward to "END OF TOW" Stopbar 18A. Aircraft may breakaway from there.	Standard pushback approved
E22	The aircraft (on idle thrust) shall be pushed back with the main gear mid-point following the main gear pushback line until its nosewheel is at Stopbar 19. This is marked as "END OF PUSH" on the ground. The aircraft shall then be towed forward to Stopbar 18. This is marked as "END OF TOW" on the ground.	Standard pushback approved
E24	The aircraft (on idle thrust) shall be pushed back facing North until its body is aligned with TWY A6 centreline. Aircraft may breakaway from there.	Standard pushback approved
E24L, E24R	The aircraft (on idle thrust) shall be pushed back facing North until its body is aligned with TWY A6 centreline. Aircraft may breakaway from there.	Standard pushback approved
E26	The aircraft (on idle thrust) shall be pushed back to face North until its body is aligned with TWY A6 centreline.	Standard pushback approved
E27, E28	The aircraft (on idle thrust) shall be pushed back to face North (or South) until its body is aligned with TWY A6 centreline.	Pushback approved, to face North (or South).

APRON/ ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
T2 SOUTH		
F37	The aircraft (on idle thrust) shall be pushed back: - with the main gear following the main gear pushback line, until its nosewheel is behind aircraft stand F42. The aircraft shall then be towed forward to Stopbar 4. This is marked as "EOT 4" on the ground. <u>OR</u> - with the main gear following the main gear pushback line, until its nosewheel is on the "END OF PUSH (EOP)" Stopbar 5 on TWY C1.	Standard pushback approved Pushback approved, to face East on TWY C1.
F40, F52	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at Stopbar 2. This is marked as "END OF PUSH" on the ground. The aircraft shall then be towed forward to Stopbar 3. This is marked as "END OF TOW" on the ground.	Standard pushback approved
F41	The aircraft (on idle thrust) shall be pushed back: - until its nosewheel is at the intersection of the lead-in line and the TWY C2 centreline. The aircraft shall then be towed forward to Stopbar 4. This is marked as "EOT 4" on the ground. <u>OR</u> - onto TWY C6 until its nosewheel is at the intersection of TWY C2 and TWY C6 centreline.	Standard pushback approved Pushback approved, to pushback onto TWY C6.
F42	<u>Main pushback procedure (for all aircraft wingspan)</u> The aircraft (on idle thrust) shall be pushed back until its nosewheel is at the intersection of the lead-in line and the TWY C2 centreline. The aircraft shall then be towed forward to Stopbar 4. This is marked as "EOT 4" on the ground. <u>Alternate pushback procedure (for aircraft with wingspan of less than 65m)</u> The aircraft (on idle thrust) shall be pushed onto TWY C6 until its nosewheel is at the intersection of TWY C2 and TWY C6 centreline. <u>Alternate pushback procedure (for aircraft with wingspan of more than 65m)</u> The aircraft (on idle thrust) shall be pushed back until its nosewheel is at the 'EOP 4A' position. The aircraft shall then be towed forward with its nosewheel following the towed forward line until its nosewheel is on the 'EOT 4B' position, behind aircraft stand F59.	Standard pushback approved Pushback approved, to pushback onto TWY C6. Pushback approved, to pushback onto TWY C6.
F50	The aircraft (on idle thrust) shall be pushed back with the main gear following the main gear pushback line, facing south until its nosewheel is on the "END OF PUSH" Stopbar 1 marking painted on the ground behind aircraft stand F50. The aircraft shall then be towed forward with the nosewheel following the tow-forward line until its nosewheel is on the "END OF TOW" Stopbar 3 marking painted on the ground behind aircraft stand F52.	Standard pushback approved
F52L	The aircraft (on idle thrust) shall be pushed back to face south until its nosewheel is at the intersection of the aircraft pushback line and taxiway C6.	Standard pushback approved
F52R	The aircraft (on idle thrust) shall be pushed back to face south until its nosewheel is at the intersection of the aircraft pushback line and taxiway C6. The aircraft shall then be towed forward until its nosewheel is on the "END OF TOW" position.	Standard pushback approved
F54	The aircraft (on idle thrust) shall be pushed back until its nosewheel is at a point on TWY C6 in line with the mid-point of aircraft stands F52 and F54. It shall breakaway from this position.	Standard pushback approved

PUSHBACK PROCEDURES FOR AIRCRAFT

PUSHBACK PROCEDURES FOR AIRCRAFT



WSSS AD 2.17 ATS AIRSPACE

1	<i>Designation and Lateral Limits</i>	CHANGI CTR 013300N 1040149E 013042N 1040654E 012542N 1040448E thence along Kuala Lumpur/Singapore FIR bdry to 012000N 1041218E 010018N 1035524E 011100N 1035134E 013300N 1040149E
2	<i>Vertical Limits</i>	SFC to 3,000ft ALT
3	<i>Airspace Classification</i>	C
4	<i>ATS Unit Callsign Language(s)</i>	Singapore Tower English
5	<i>Transition Altitude</i>	11000 FT (3,350m)
6	<i>Remarks</i>	A helicopter shall not be operated within the Changi CTR unless prior permission has been obtained from the Director-General of Civil Aviation, CAAS. Email to caas_ats_ansp@caas.gov.sg

WSSS AD 2.18 ATS COMMUNICATION FACILITIES

Service Designation	Call sign	Frequency (P-Pri, S-Sec)	Hours of operation	Remarks
ACC	Singapore Radar	P123.7 MHz S127.3 MHz	H24	for ATS Routes B469, G219, G334, R208, L625, L629, L635, L642, L644, M751, M753, M758, M761, M763, M771, N884, N891 and N892.
		133.8 MHz	0000-1430	
		P133.25 MHz S135.8 MHz	H24	for ATS Routes A457, A464, A576, B466, R325 (all northbound) and R469.
		P134.2 MHz S133.35 MHz		for ATS Routes , G580, L644, M646 and M767
		P134.4 MHz S128.1 MHz 255.4 MHz		for ATS Routes A464, A576, G579 (all southbound), B470, L644, N875 and in area in the immediate vicinity of Singapore.
		124.05 MHz	0000-1530	Flow control service provided for ARR/DEP ACFT
	MAINT Period: Monthly - EV third SAT 1601-2359			
	Singapore Radio	6556 kHz 11297 kHz	H24	SEA 1, Emission: A3AJ. SSB suppressed carrier, SATCOM service available
		5655 kHz 8942 kHz 11396 kHz		SEA 2, Emission: A3AJ. SSB suppressed carrier, SATCOM service available
		6556 kHz		SEA 3, Emission: A3AJ. SSB suppressed carrier, SATCOM service available
APP	Singapore Approach	P120.3 MHz S124.6 MHz	H24	TAR - Intermediate approach to Singapore Changi AP and other airports in Singapore. DEP from all airports in Singapore.
	Singapore Arrival	119.3 MHz		TAR - Intermediate and final approach to Singapore Changi Airport.
	ASR I MAINT Period: Monthly, EV first SAT 1601-2359 ASR II MAINT Period: Monthly, EV fourth SAT 1601-2359			

<i>Service Designation</i>	<i>Call sign</i>	<i>Frequency (P-Pri, S-Sec)</i>	<i>Hours of operation</i>	<i>Remarks</i>
TWR	Singapore Tower	118.6 MHz	H24 0000-1600	for TKOF/LDG.
		118.25 MHz	0000-1600	for ACFT OPR on RWY 02L/20R
	Singapore Ground	124.3 MHz	1600-0000 0000-1600	for ACFT OPR on RWY 02C/20C
		121.725 MHz	0000-1700 2100-0000	for start-up / push-back / taxiing of all aircraft for ground movement of aircraft west of Terminal 3
		121.85 MHz	0000-1800 2300-0000	for ground movement of aircraft east of Terminal 2
		129.95 MHz	H24	for ground movement of aircraft north of Terminal 1
	Singapore Delivery	121.65 MHz	H24	for ground emergency
D-ATIS	Singapore Changi Airport Information	121.9 MHz	H24	for Pre-flight check/ATC clearance
	Changi Tower / Changi Apron	121.9 MHz	H24	for vehicular movements on taxiways and runways. Towing of all aircraft and requests for engine runs on apron and taxiways, excluding runways, will be regulated by Changi Apron.
D-ATIS	Singapore Changi Airport Information	128.6 MHz	H24	Data Link Service available. AP IDENT WSSS Messages comply with ARINC 623 Standards. Updating of data: H+00 to H+10 and H+30 to H+40

WSSS AD 2.19 RADIO NAVIGATION AND LANDING AIDS

<i>Type of aid and Variation</i>	<i>Ident</i>	<i>Frequency</i>	<i>OPR Hr</i>	<i>Position of Transmitting Antenna Coordinates</i>	<i>DME Transmitting Antenna Elevation / Remarks</i>
1	2	3	4	5	6 & 7
SINJON DVOR/DME	SJ	113.5 MHz CH82X	H24	011321.54N 1035115.74E	201° MAG 14.5km from THR RWY 02 (Paya Lebar). Antenna HGT: 194ft AMSL. Coverage 200NM. EM: F1. Maintenance period: Third Thursday of every month between 0200-0600
TEKONG DVOR/DME	VTK	116.5 MHz CH112X	H24	012455.36N 1040120.17E	023° MAG 6.4km from THR RWY 20C (Singapore Changi). Antenna HGT: 150ft AMSL. Coverage 200NM. EM: F1 Maintenance Period: Third Friday of every month between 0200-0600
RWY 20C ILS LLZ	ICC	109.7MHz	H24	011932.48N 1035901.20E	Located 368m (1207ft) from THR RWY 02C, along RWY centreline. Course width 3.38°. EM: A0/A2. Maintenance Period: May - October Second Friday of every month between 1600-2300 November - April Second Friday of every month between 0200-0900
RWY 20C ILS GP	-	333.2MHz	H24	012131.73N 1035955.72E	Located 338m (1109ft) from THR RWY 20C on left side of RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS reference datum: 17m (56ft) EM: A0/A2
RWY 20C ILS DME	ICC	CH34X	H24	012131.73N 1035955.72E	DME co-located with GP. EM: P9
RWY 20C ILS MM	-	75MHz	H24	012211.94N 1040008.52E	Located 957m (3140ft) from THR RWY 20C along extended centreline of RWY. No back beam.

<i>Type of aid and Variation</i>	<i>Ident</i>	<i>Frequency</i>	<i>OPR Hr</i>	<i>Position of Transmitting Antenna Coordinates</i>	<i>DME Transmitting Antenna Elevation / Remarks</i>
1	2	3	4	5	6 & 7
RWY 02C ILS LLZ	ICE	108.3MHz	H24	012150.84N 1035959.58E	Located 250m (820ft) from THR RWY 20C, along RWY centreline. Course width 3°. EM: A0/A2. Maintenance Period: May - October Second Friday of every month between 0200-0900 November - April Second Saturday of every month between 0200-0900
RWY 02C ILS GP	-	334.1MHz	H24	011951.64N 1035914.70E	Located 338m (1109ft) from THR RWY 02C on right side of RWY, 154m (505ft) from RWY centreline. GP angle 3°. HGT of ILS reference datum: 18m (58ft) EM: A0/A2
RWY 02C ILS DME	ICE	CH20X	H24	011951.64N 1035914.70E	DME co-located with GP. EM: P9
RWY 02C ILS MM	-	75MHz	H24	011915.15N 1035853.88E	Located 945m (3100ft) from THR RWY 02C along extended centreline of RWY. No back beam.
RWY 20R ILS LLZ	ICH	108.9MHz	H24	012045.23N 1035834.17E	Located 368m (1207ft) from THR RWY 02L, along centreline of the RWY. Course width 3.38°. EM: A0/A2. Maintenance Period: May - October First Saturday of every month between 0200-0900 November - April First Friday of every month between 0200-0900
RWY 20R ILS GP	-	329.3MHz	H24	012225.54N 1035912.29E	Located 330m (1083ft) from displaced THR RWY 20R on right side of the RWY, 120m (394ft) from RWY centreline. GP angle 3°. HGT of ILS REF datum: 17m (56ft) EM: A0/A2
RWY 20R ILS DME	ICH	CH26X	H24	012225.54N 1035912.29E	DME co-located with GP. Rwy 20R ILS DME not available beyond 15 degrees west of RWY 20R centreline below 2500ft. EM: P9
RWY 20R ILS MM	-	75MHz	H24	012307.50N 1035934.23E	Located 1122m (3681ft) from displaced THR RWY 20R, along centreline of the RWY.
RWY 02L ILS LLZ	ICW	110.9MHz	H24	012307.03N 1035934.03E	Located 1105m (3625ft) from displaced THR RWY 20R, along centreline of RWY. Course width 2.81° EM:A0/A2 Maintenance Period: May - October First Friday of every month between 0200-0900 November - April First Saturday of every month between 0200-0900
RWY 02L ILS GP	-	330.8MHz	H24	012108.34N 1035838.94E	Located 343m (1125ft) from THR RWY 02L on left side of RWY, 143m (469ft) from RWY centreline. GP angle 3° HGT of ILS Reference datum: 18m (58ft) EM:A0/A2
RWY 02L ILS DME	ICW	CH46X	H24	012108.34N 1035838.94E	DME co-located with GP EM:P9
RWY 02L ILS MM	-	75MHz	H24	012027.53N 1035826.70E	Located 957m (3140ft) from THR RWY 02L along extended centreline of RWY. No back beam.

WSSS AD 2.20 LOCAL TRAFFIC REGULATIONS

1 DESIGNATION OF PAYA LEBAR AIRPORT AS AN ALTERNATE AERODROME FOR SINGAPORE CHANGI AIRPORT

Please refer to pages WSAP AD 2-5 to WSAP AD 2-7 for details.

2 WRONG APPROACHES AND LANDINGS OF AIRCRAFT BOUND FOR SINGAPORE CHANGI AND PAYA LEBAR AIRPORTS

2.1 INTRODUCTION

2.1.1 The attention of all pilots is drawn to the existence of Paya Lebar Airport close to Singapore Changi Airport. The runway at Singapore Changi Airport is orientated in the same true bearing as the runway at Paya Lebar Airport i.e. 023°/203°. Due to the close proximity of these two runways, pilots are cautioned against mistaking Paya Lebar Airport for the runway of Singapore Changi Airport and thus making an inadvertent visual landing or approach to land at Paya Lebar.

2.1.2 Erroneous approaches or landings usually occurred during the hours of darkness. In almost every instance, the weather prevailing at the time of the incident was generally good or fair.

2.1.3 There is intensive local flying at Paya Lebar and Seletar during the day and night. Thus, the risk of collision is very great if a wrong approach is made to any of the above two airports. Likewise, wrong approaches into Singapore Changi Airport can also be disastrous.

2.2 POINTS TO BEAR IN MIND WHEN APPROACHING SINGAPORE CHANGI AIRPORT OR PAYA LEBAR

2.2.1 The following points are highlighted to serve as a guide to assist pilots in making a correct approach into Singapore Changi Airport or Paya Lebar Airport and should be remembered and followed:

- The runways at Singapore Changi Airport and Paya Lebar Airport are identically aligned on 02/ 20. Therefore exercise extreme vigilance when leaving NYLON or SAMKO Holding Areas inbound and maintain correct tracks to the respective runways as listed below.
- Adhere strictly to IFR procedures even in VMC which calls for a procedure turn over NYLON Holding Area or SAMKO Holding Area as prescribed.
- Make full use of all available navigational and landing aids available and positively identify every aid used.
- Switch to the correct ILS localizer frequency at Singapore Changi Airport under all conditions.

2.3 AERODROME CHARACTERISTICS OF SINGAPORE CHANGI AND PAYA LEBAR AIRPORTS

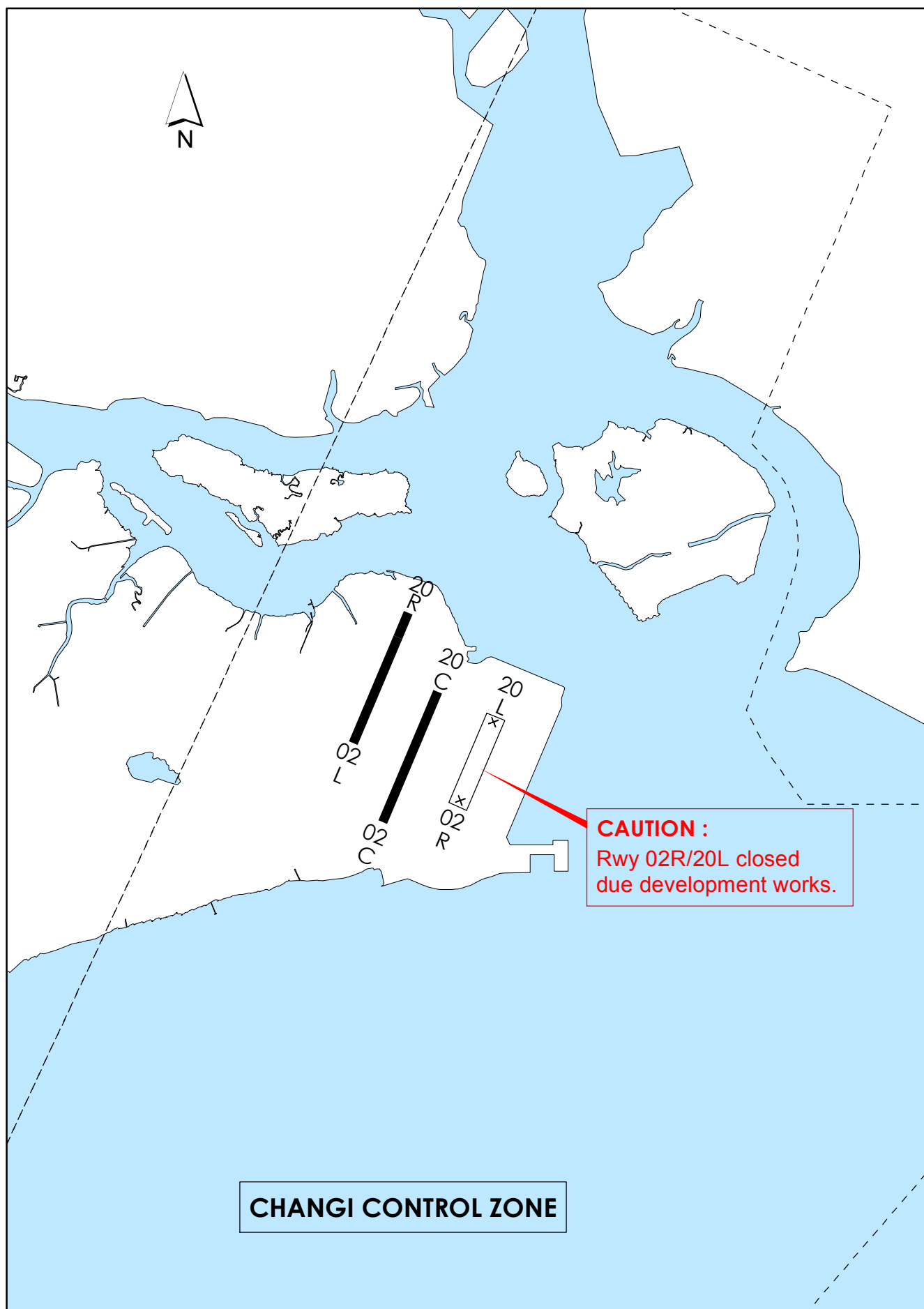
2.3.1 Tabulated below are details of aerodrome characteristics of Singapore Changi Airport and Paya Lebar Airport which indicate the similarities and significant differences for ease of identification by pilots operating into these two airports.

Aeronautical Service	PAYA LEBAR Airport	SINGAPORE CHANGI Airport	Significant Differences and Remarks
Magnetic heading of RWY	02/20	02L/20R 02C/20C	Exercise caution due to similar RWY alignment
Approach Lights	RWY 02 Modified Calvert High INTST with centreline and 3 crossbars. High INTST white LGT with brilliancy control and sequenced flashing lights.	RWY 02L Precision APCH LGT CAT II. Extended centreline with red side row barettes, 2 crossbars, 2 APCH beacons and sequenced flashing lights.	
	RWY 20 Modified Calvert High INTST with centreline and 3 crossbars. High INTST white LGT with brilliancy control and sequenced flashing lights.	RWY 20R Precision APCH LGT CAT I. Centreline barettes flashing white, 2 APCH beacons and sequenced flashing lights. (refer to chart AD-2-WSSS-ADC-2)	

WSSS AD 2.24 CHARTS RELATED TO AN AERODROME

Location of RWY 02R/20L in relation to RWY 02L/20R and RWY 02C/20C	AD-2-WSSS-ADC-1
Aerodrome Chart - ICAO	AD-2-WSSS-ADC-2
Aerodrome Advisory Chart - ICAO	AD-2-WSSS-ADC-3
Aerodrome Obstacle Chart - ICAO - TYPE A - RWY 02L/20R	AD-2-WSSS-AOC-1
Aerodrome Obstacle Chart - ICAO - TYPE A - RWY 02C/20C	AD-2-WSSS-AOC-2
Aerodrome Obstacle Chart - ICAO - TYPE B	AD-2-WSSS-AOC-3
Precision Approach Terrain Chart - ICAO - RWY 02L	AD-2-WSSS-PATC-1
Precision Approach Terrain Chart - ICAO - RWY 20C	AD-2-WSSS-PATC-2
RNAV_(GNSS) SIDs and STARs - Introduction	
RNAV _(GNSS) SID - RWY 02L/20R - ANITO 6E/ANITO 5F	AD-2-WSSS-SID-1 to 1.1
RNAV _(GNSS) SID - RWY 02C/20C - ANITO 6A / ANITO 5B	AD-2-WSSS-SID-2 to 2.1
RNAV _(GNSS) SID - RWY 02L/20R - ADMIM 1E / ADMIM 1F	AD-2-WSSS-SID-3 to 3.1
RNAV _(GNSS) SID - RWY 02C/20C - ADMIM 1A / ADMIM 1B	AD-2-WSSS-SID-4 to 4.1
RNAV _(GNSS) SID - RWY 02L/20R - TOMAN 2E / TOMAN 2F	AD-2-WSSS-SID-5 to 5.1
RNAV _(GNSS) SID - RWY 02C/20C - TOMAN 2A / TOMAN 2B	AD-2-WSSS-SID-6 to 6.1
RNAV _(GNSS) SID - RWY 02L/20R - BAVUS 1E / BAVUS 1F	AD-2-WSSS-SID-7 to 7.1
RNAV _(GNSS) SID - RWY 02C/20C - BAVUS 1A / BAVUS 1B	AD-2-WSSS-SID-8 to 8.1
RNAV _(GNSS) SID - RWY 02L/20R - AROSO 2E / AROSO 2F	AD-2-WSSS-SID-9 to 9.1
RNAV _(GNSS) SID - RWY 02L/20R - MASBO 2E / MASBO 2F	AD-2-WSSS-SID-10 to 10.1
RNAV _(GNSS) SID - RWY 02C/20C - AROSO 2A / AROSO 2B	AD-2-WSSS-SID-11 to 11.1
RNAV _(GNSS) SID - RWY 02C/20C - MASBO 2A / MASBO 2B	AD-2-WSSS-SID-12 to 12.1
RNAV _(GNSS) SID - RWY 02L/20R - MERSING 5E / MERSING 6F	AD-2-WSSS-SID-13 to 13.1
RNAV _(GNSS) SID - RWY 02C/20C - MERSING 5A / MERSING 6B	AD-2-WSSS-SID-14 to 14.1
RNAV _(GNSS) SID - RWY 02C/20C - VENIX 1A / VENIX 1B	AD-2-WSSS-SID-15 to 15.1
RNAV _(GNSS) SID - RWY 02L/20R - VENIX 1E / VENIX 1F	AD-2-WSSS-SID-16 to 16.1
RNAV _(GNSS) SID - RWY 02C/20C - KADAR 1A / KADAR 1B	AD-2-WSSS-SID-17 to 17.1
RNAV _(GNSS) SID - RWY 02L/20R - KADAR 1E / KADAR 1F	AD-2-WSSS-SID-18 to 18.1
RNAV _(GNSS) STAR - RWY 02L/02C - ARAMA 1A	AD-2-WSSS-STAR-1 to 1.1
RNAV _(GNSS) STAR - RWY 02L/02C - ASUNA 1A	AD-2-WSSS-STAR-2 to 2.1
RNAV _(GNSS) STAR - RWY 20R/20C - ARAMA 1B	AD-2-WSSS-STAR-3 to 3.1
RNAV _(GNSS) STAR - RWY 20R/20C - ASUNA 1B	AD-2-WSSS-STAR-4 to 4.1
RNAV _(GNSS) STAR - RWY 02L/02C - KARTO 1A	AD-2-WSSS-STAR-5 to 5.1
RNAV _(GNSS) STAR - RWY 02L/02C - OBDOS 1A	AD-2-WSSS-STAR-6 to 6.1
RNAV _(GNSS) STAR - RWY 20R/20C - KARTO 1B	AD-2-WSSS-STAR-7 to 7.1
RNAV _(GNSS) STAR - RWY 20R/20C - OBDOS 1B	AD-2-WSSS-STAR-8 to 8.1
RNAV _(GNSS) STAR - RWY 20R/20C - LELIB 3B	AD-2-WSSS-STAR-9 to 9.1
RNAV _(GNSS) STAR - RWY 02L/02C - BIKTA 1A	AD-2-WSSS-STAR-10 to 10.1
RNAV _(GNSS) STAR - RWY 02L/02C - MABAL 1A	AD-2-WSSS-STAR-11 to 11.1
RNAV _(GNSS) STAR - RWY 20R/20C - BIKTA 1B	AD-2-WSSS-STAR-12 to 12.1
RNAV _(GNSS) STAR - RWY 20R/20C - MABAL 1B	AD-2-WSSS-STAR-13 to 13.1
RNAV _(GNSS) STAR - RWY 02L - LEBAR 2A	AD-2-WSSS-STAR-14 to 14.1
RNAV _(GNSS) STAR - RWY 02L - LEBAR 2B	AD-2-WSSS-STAR-15 to 15.1
RNAV _(GNSS) STAR - RWY 02L/02C - REPOV 1A	AD-2-WSSS-STAR-16 to 16.1
RNAV _(GNSS) STAR - RWY 02L/02C - SURGA 1A	AD-2-WSSS-STAR-17 to 17.1
RNAV _(GNSS) STAR - RWY 20R/20C - REPOV 1B	AD-2-WSSS-STAR-18 to 18.1
RNAV _(GNSS) STAR - RWY 20R/20C - SURGA 1B	AD-2-WSSS-STAR-19 to 19.1
RNAV _(GNSS) STAR - RWY 02L/02C - VEPLI 1A	AD-2-WSSS-STAR-20 to 20.1
RNAV _(GNSS) STAR - RWY 20R/20C - VEPLI 1B	AD-2-WSSS-STAR-21 to 21.1
Instrument Approach Chart - ICAO - RWY 02L - ICW ILS/DME	AD-2-WSSS-IAC-1
Instrument Approach Chart - ICAO - RWY 02C - ICE ILS/DME	AD-2-WSSS-IAC-2
Instrument Approach Chart - ICAO - RWY 20R - ICH ILS/DME	AD-2-WSSS-IAC-5
Instrument Approach Chart - ICAO - RWY 20C - ICC ILS/DME	AD-2-WSSS-IAC-6
Instrument Approach Chart - ICAO - RWY 20C - VTK DVOR/DME	AD-2-WSSS-IAC-7
Instrument Approach Chart - ICAO - RWY 02L - RNAV _(GNSS)	AD-2-WSSS-IAC-9
Instrument Approach Chart - ICAO - RWY 02C - RNAV _(GNSS)	AD-2-WSSS-IAC-10
Instrument Approach Chart - ICAO - RWY 20R - RNAV _(GNSS)	AD-2-WSSS-IAC-11
Instrument Approach Chart - ICAO - RWY 20C - RNAV _(GNSS)	AD-2-WSSS-IAC-12
Visual Approach Chart - ICAO	AD-2-WSSS-VAC-1

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**LOCATION OF RUNWAY 02R/20L IN RELATION TO
RUNWAY 02L/20R AND RUNWAY 02C/20C**

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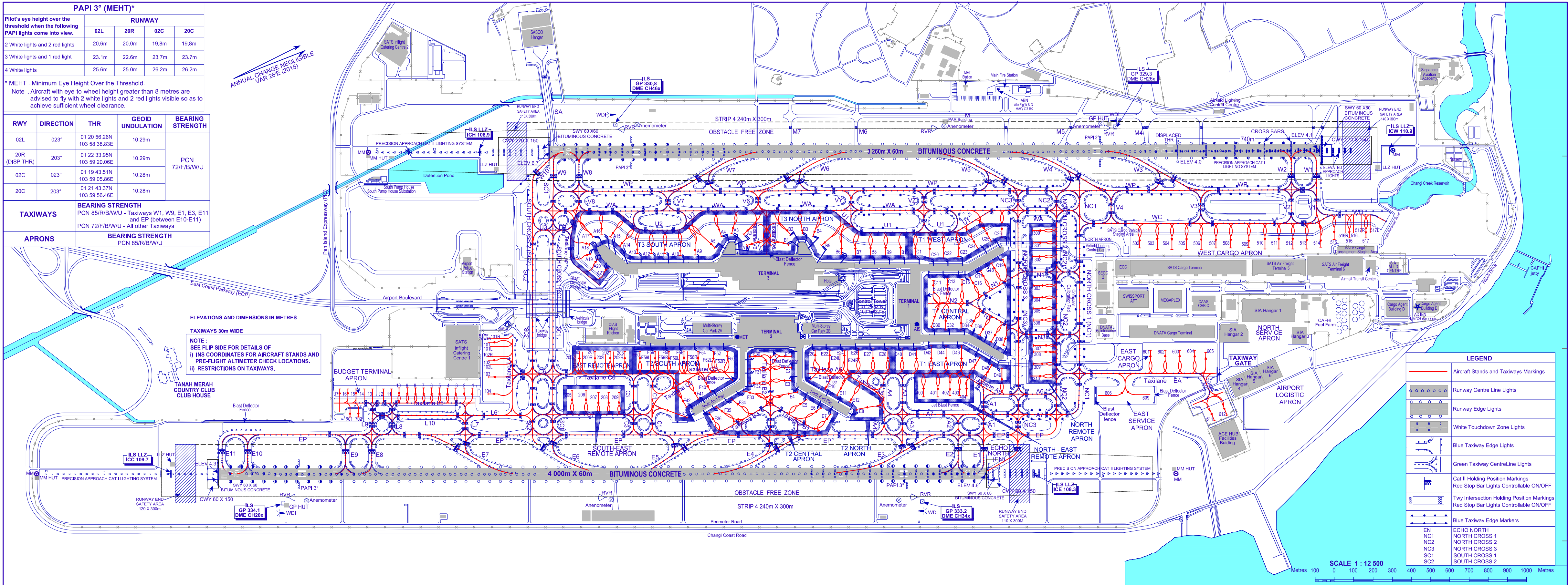
AERODROME CHART - ICAO

01° 21' 33"N
103°59' 22"E

AERODROME ELEVATION 6.66m

TWR 118.6 / 118.25
GND 124.3 / 121.85 / 121.725
DELIVERY 121.65

SINGAPORE/SINGAPORE CHANGI



STANDARD DEPARTURE CHART RNAV (GNSS) - INSTRUMENT (SID)

TWR 118.6 / 118.25
APP 120.3
ACC 134.4

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/20R**

**ANITO DEPARTURES
ANITO 6E (R02L)
ANITO 6E (R20R)**

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB 3000FT OR AS DIRECTED BY ATC

ON INITIAL CONTACT WHEN REQUESTING ATC,
INFORM ATC OF THE FLIGHT LEVEL AIRCRAFT
CAN CROSS ANITO

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

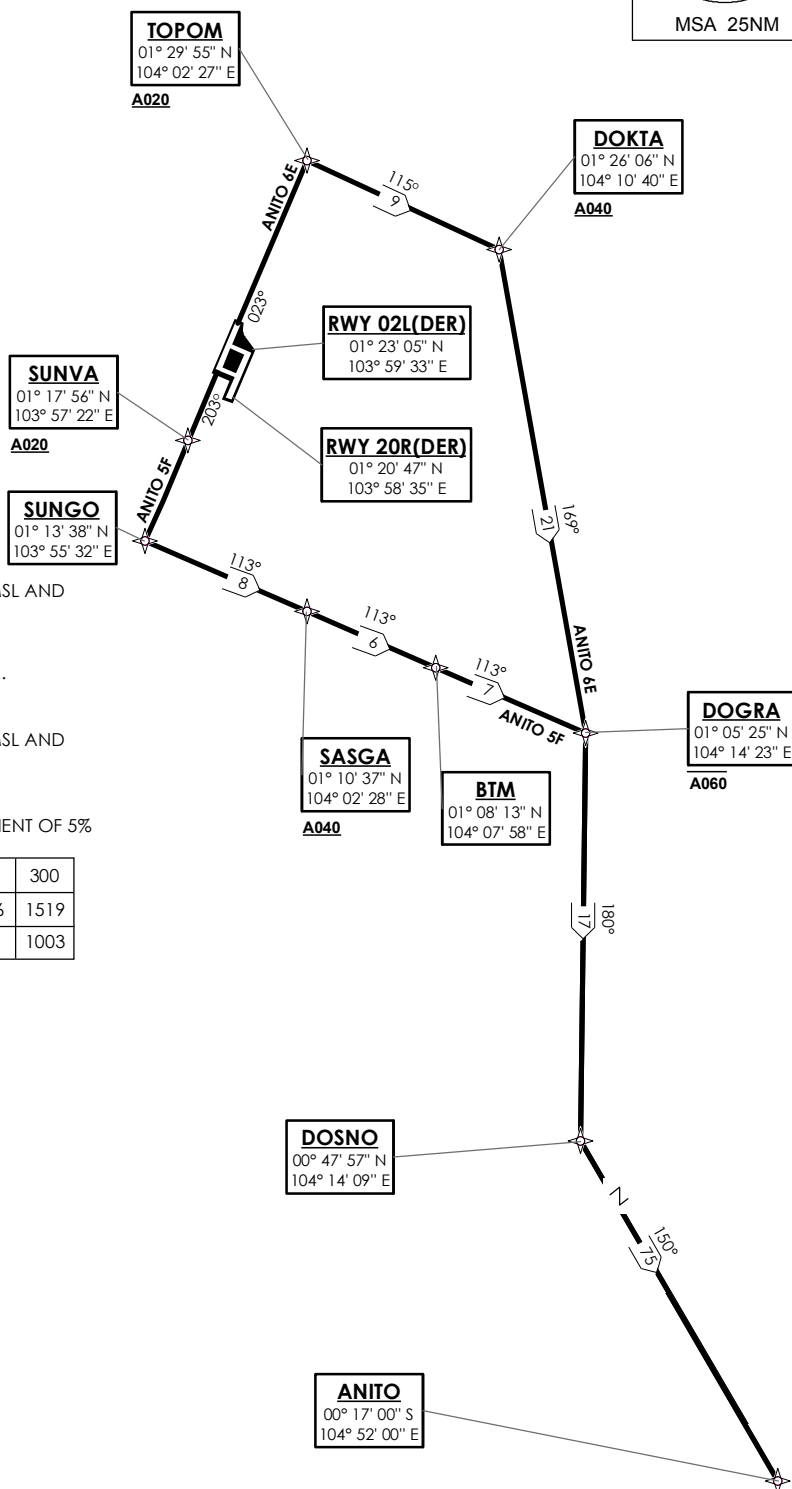
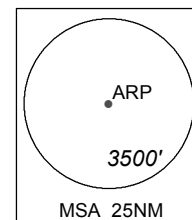
RWY 02L

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20R

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



ANITO 6E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To ANITO.	TOPOM [M023; A020+; R] - DOKTA [A040+; R] - DOGRA [A060-; R] - DOSNO [L] - ANITO	CF TF TF TF TF	N N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	ANITO	-	150(149.5)	-0.5	-	-	-	RNAV1

ANITO 5F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To ANITO.	SUNVA [M203; A020+] - SUNGO [L] - SASGA [A040+] - BTM - DOGRA [A060-; R] - DOSNO [L] - ANITO	CF TF TF TF TF TF TF	N N N N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	ANITO	-	150(149.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

STANDARD DEPARTURE CHART RNAV (GNSS) - INSTRUMENT (SID)

TWR 118.6 / 118.25
APP 120.3
ACC 134.4

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02C/20C
ANITO DEPARTURES
ANITO 6A (R02C)
ANITO 5B (R20C)

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB 3000FT OR AS DIRECTED BY ATC

ON INITIAL CONTACT WHEN REQUESTING ATC,
INFORM ATC OF THE FLIGHT LEVEL AIRCRAFT
CAN CROSS ANITO

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

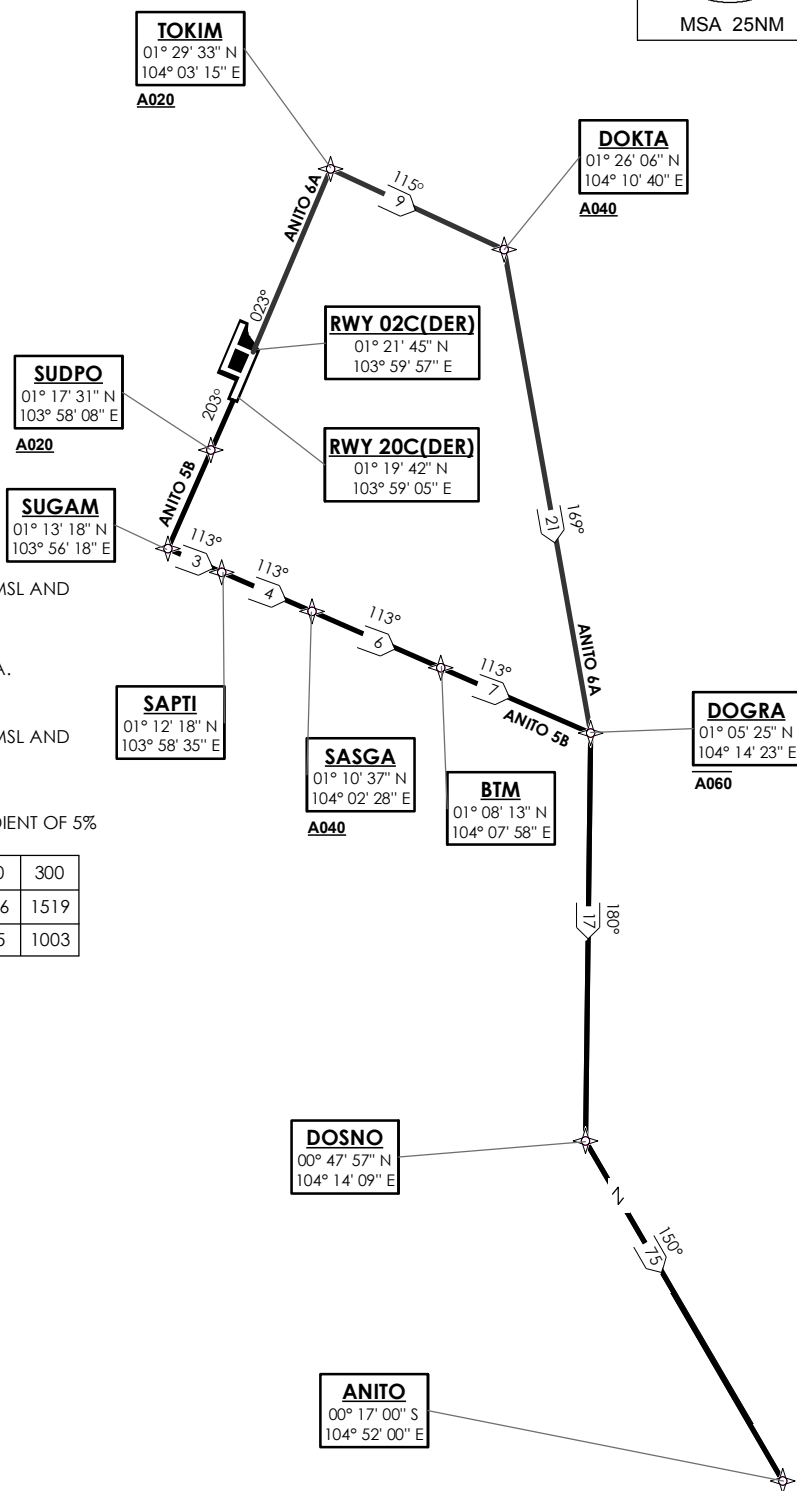
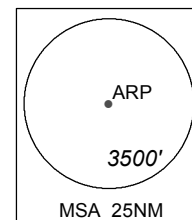
RWY 02C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

ANITO 6A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To ANITO.	TOKIM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	ANITO	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	ANITO	-	150(149.5)	-0.5	-	-	-	RNAV1

ANITO 5B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To ANITO.	SUDPO [M203; A020+] -	CF	N
	SUGAM [L] -	TF	N
	SAPTI -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	ANITO	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	ANITO	-	150(149.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)

TWR 118.6 / 118.25
APP 120.3
ACC 134.2

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/20R
TOMAN DEPARTURES
TOMAN 2E (R02L)
TOMAN 2F (R20R)

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM
NOTE: RADAR REQUIRED

- NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY
- NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED
- NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

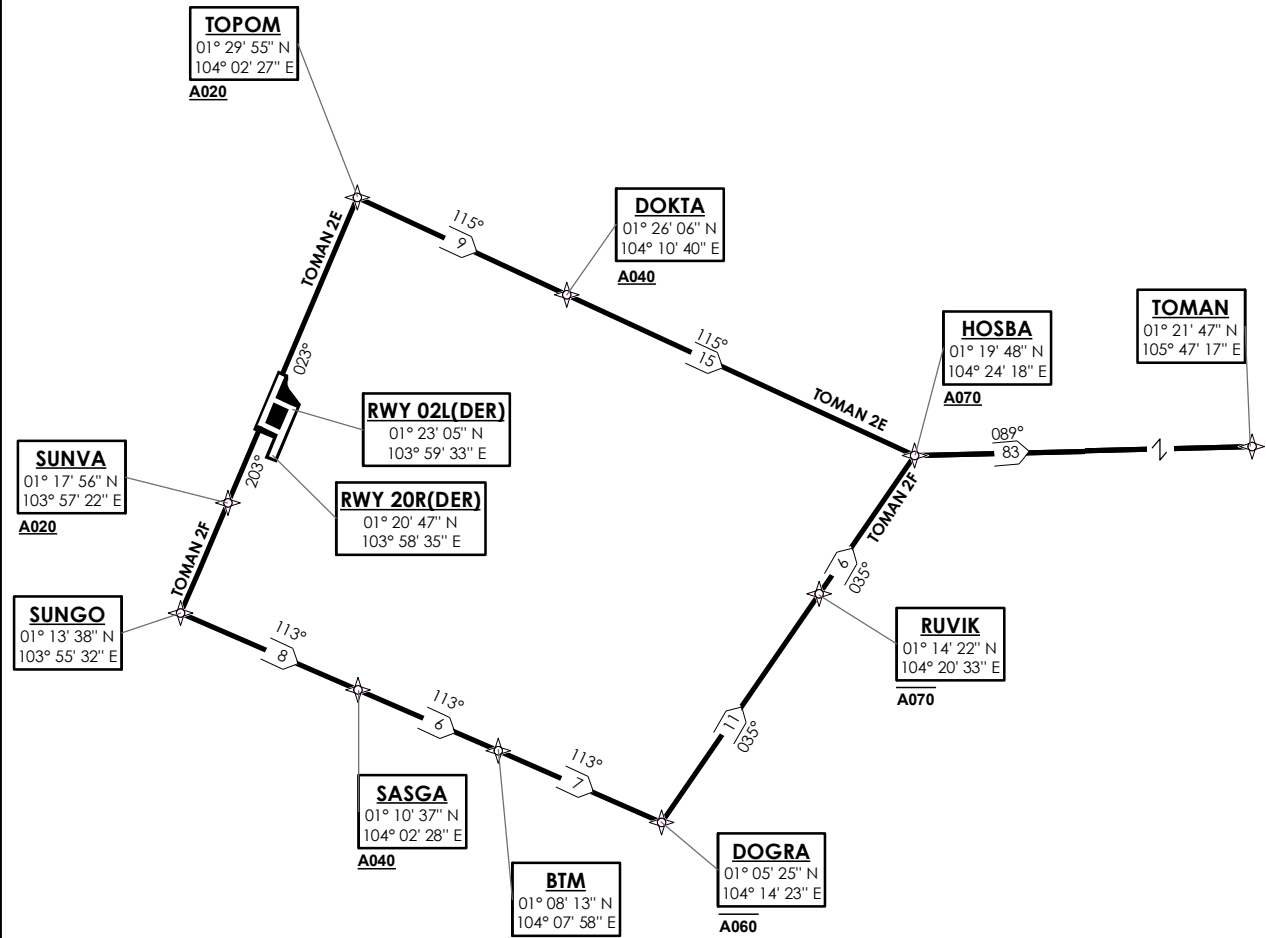
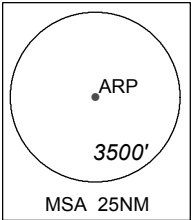
INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02L
SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20R
SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

15 SEP 16

TOMAN 2E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft. To HOSBA at or above 7000ft, turn left. To TOMAN.	TOPOM [M023; A020+; R] - DOKTA [A040+] - HOSBA [A070+; L] - TOMAN	CF TF TF TF	N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	-	A040+	-	RNAV1
TF	HOSBA	-	115(114.5)	-0.5	L	A070+	-	RNAV1
TF	TOMAN	-	089(088.5)	-0.5	-	-	-	RNAV1

TOMAN 2F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn left. To RUVIK at or below 7000ft. To HOSBA at or above 7000ft, turn right. To TOMAN.	SUNVA [M203; A020+] - SUNGO [L] - SASGA [A040+] - BTM - DOGRA [A060-; L] - RUVIK [A070-] - HOSBA [A070+; R] - TOMAN	CF TF TF TF TF TF TF TF	N N N N N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	L	A060-	-	RNAV1
TF	RUVIK	-	035(034.5)	-0.5	-	A070-	-	RNAV1
TF	HOSBA	-	035(034.5)	-0.5	R	A070+	-	RNAV1
TF	TOMAN	-	089(088.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**

TWR 118.6 / 118.25
APP 120.3
ACC 134.2

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02C/20C
TOMAN DEPARTURES
TOMAN 2A (R02C)
TOMAN 2B (R20C)**

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION**INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.

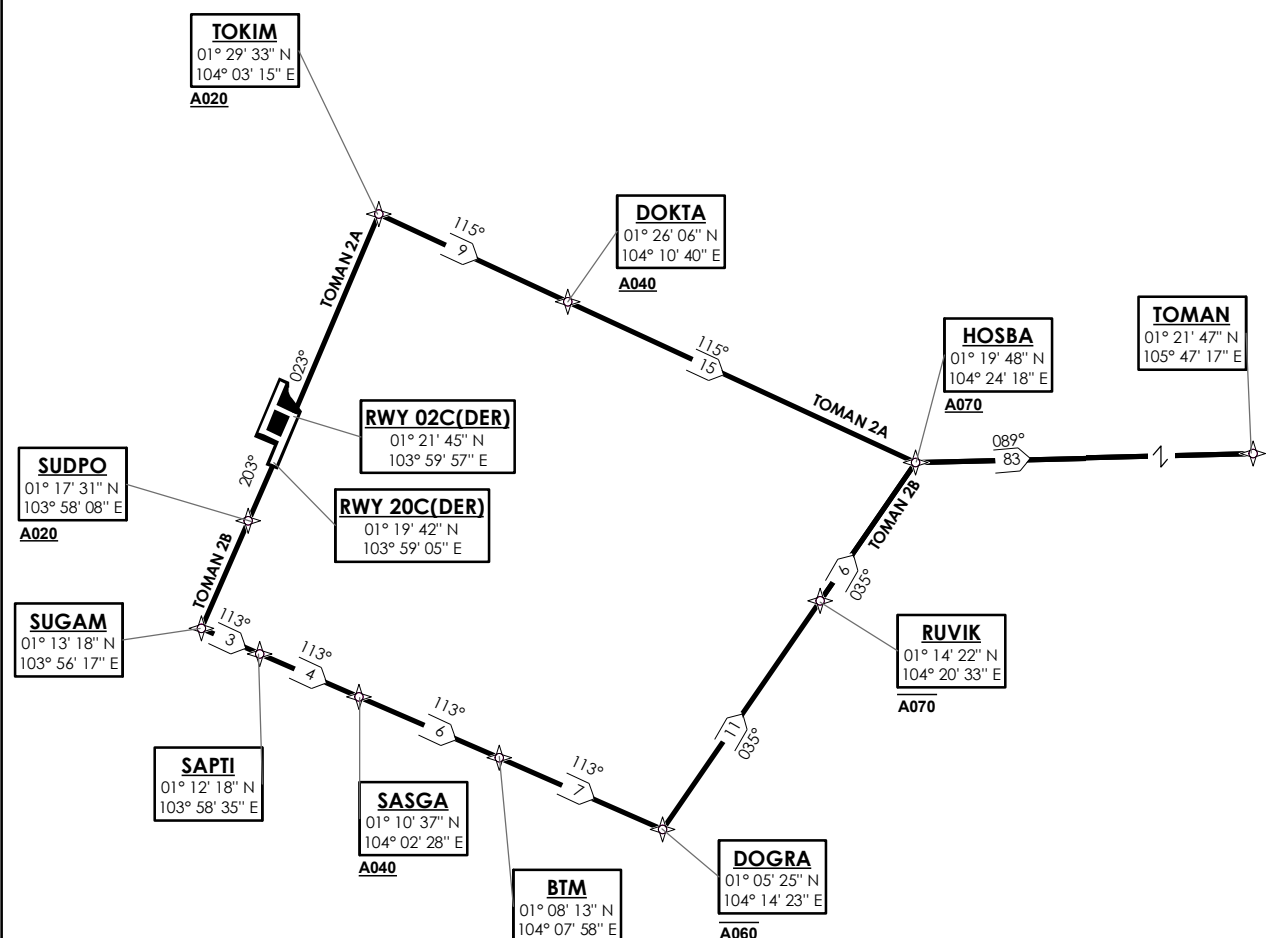
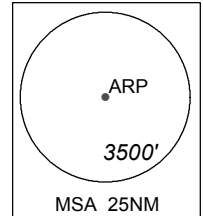
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.

CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

TOMAN 2A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft. To HOSBA at or above 7000ft, turn left. To TOMAN.	TOKIM [M023; A020+; R] -	CF	N
	DOKTA [A040+] -	TF	N
	HOSBA [A070+; L] -	TF	N
	TOMAN	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	-	A040+	-	RNAV1
TF	HOSBA	-	115(114.5)	-0.5	L	A070+	-	RNAV1
TF	TOMAN	-	089(088.5)	-0.5	-	-	-	RNAV1

TOMAN 2B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn left. To RUVIK at or below 7000ft. To HOSBA at or above 7000ft, turn right. To TOMAN.	SUDPO [M203; A020+] -	CF	N
	SUGAM [L] -	TF	N
	SAPTI -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; L] -	TF	N
	RUVIK [A070-] -	TF	N
	HOSBA [A070+; R] -	TF	N
	TOMAN	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	L	A060-	-	RNAV1
TF	RUVIK	-	035(034.5)	-0.5	-	A070-	-	RNAV1
TF	HOSBA	-	035(034.5)	-0.5	R	A070+	-	RNAV1
TF	TOMAN	-	089(088.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 134.4TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02L/20R
BAVUS DEPARTURES
BAVUS 1E (R02L)
BAVUS 1F (R20R)**ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

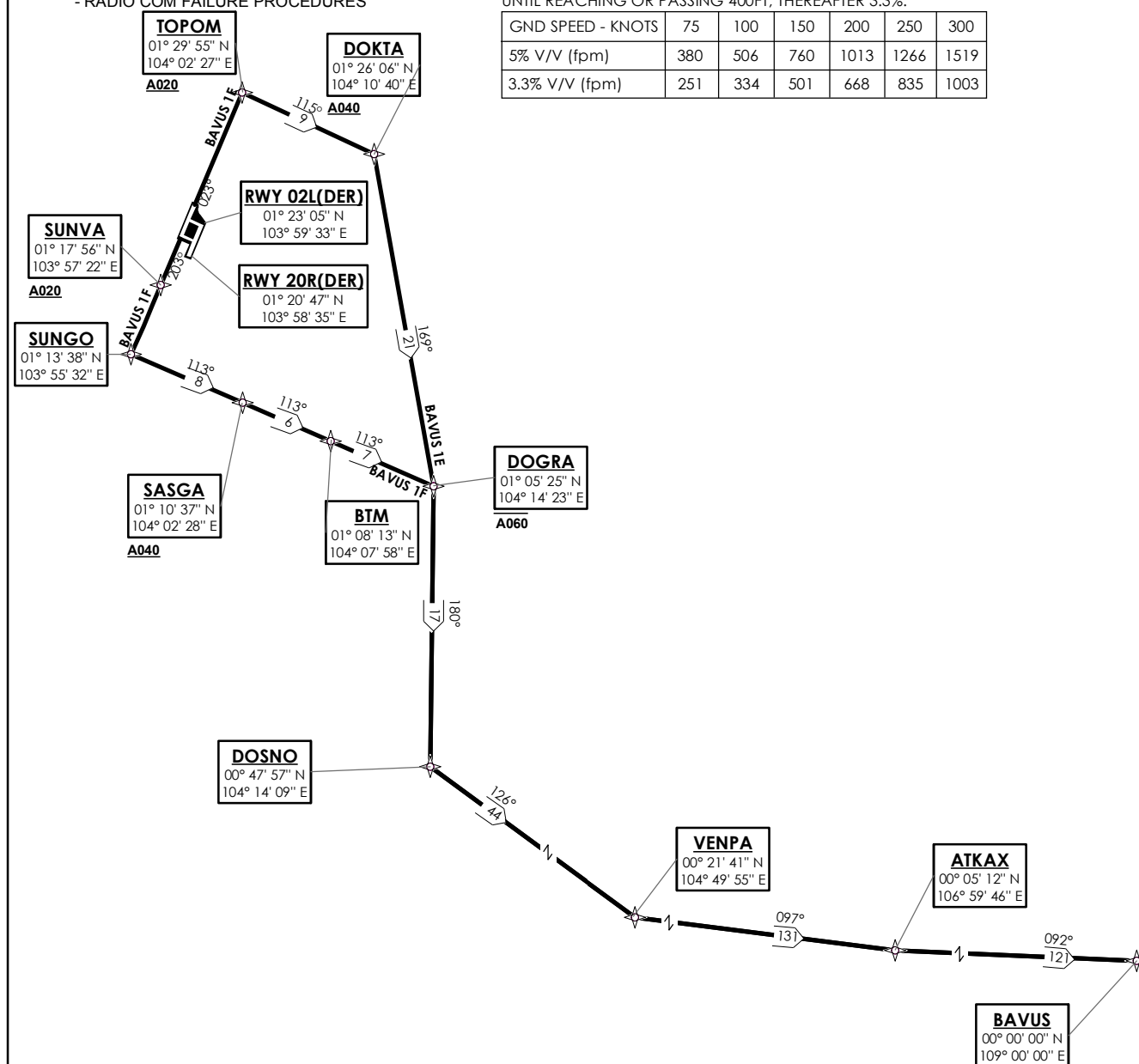
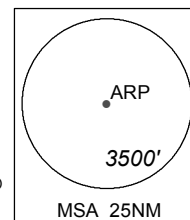
DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**GENERAL INFORMATION****INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02LSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20R**SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

BAVUS 1E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn left. To BAVUS.	TOPOM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [L] -	TF	N
	BAVUS	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	L	-	-	RNAV1
TF	BAVUS	-	092(091.5)	-0.5	-	-	-	RNAV1

BAVUS 1F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn left. To BAVUS.	SUNVA [M203; A020+] -	CF	N
	SUNGO [L] -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [L] -	TF	N
	BAVUS	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	L	-	-	RNAV1
TF	BAVUS	-	092(091.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

STANDARD DEPARTURE CHART RNAV (GNSS) - INSTRUMENT (SID)

TWR 118.6 / 118.25
APP 120.3
ACC 134.4

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi RWY 02C/20C

BAVUS DEPARTURES
BAVUS 1A (R02C)
BAVUS 1B (R20C)

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB 3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

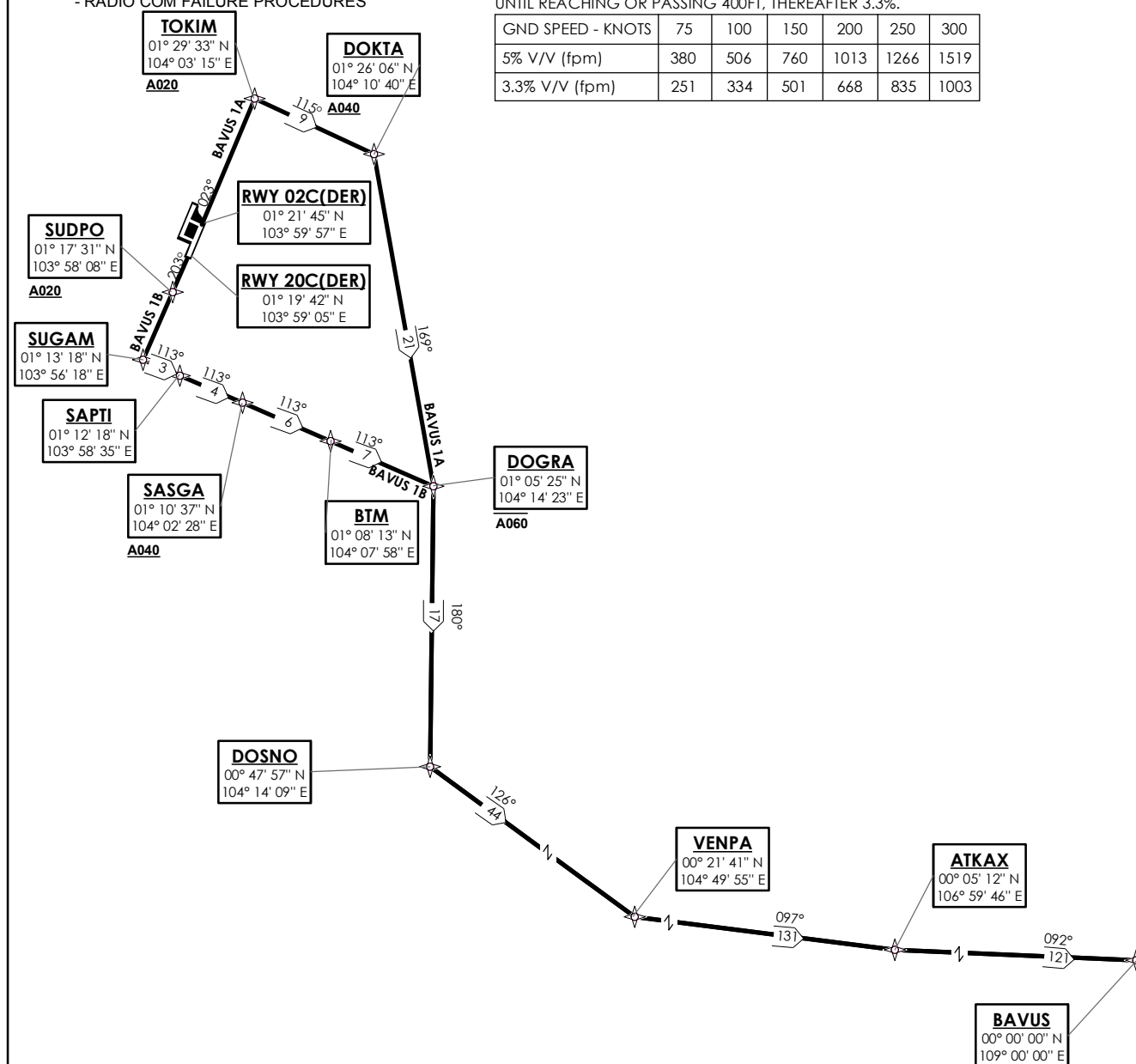
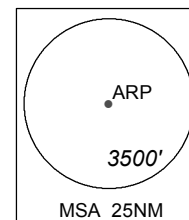
RWY 02C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

15 SEP 16

BAVUS 1A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn left. To BAVUS.	TOKIM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [L] -	TF	N
	BAVUS	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	L	-	-	RNAV1
TF	BAVUS	-	092(091.5)	-0.5	-	-	-	RNAV1

BAVUS 1B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, speed turn left. To SAPTI. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn left. To BAVUS.	SUDPO [M203; A020+] -	CF	N
	SUGAM [L] -	TF	N
	SAPTI -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [L] -	TF	N
	BAVUS	TF	N

Tabular Descriptions

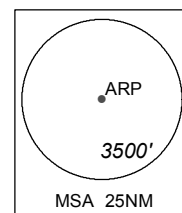
Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	L	-	-	RNAV1
TF	BAVUS	-	092(091.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 133.25TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02L/20R
AROSO DEPARTURES
AROSO 2E (R02L)
AROSO 2F (R20R)****ELEV, ALT IN FEET**BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

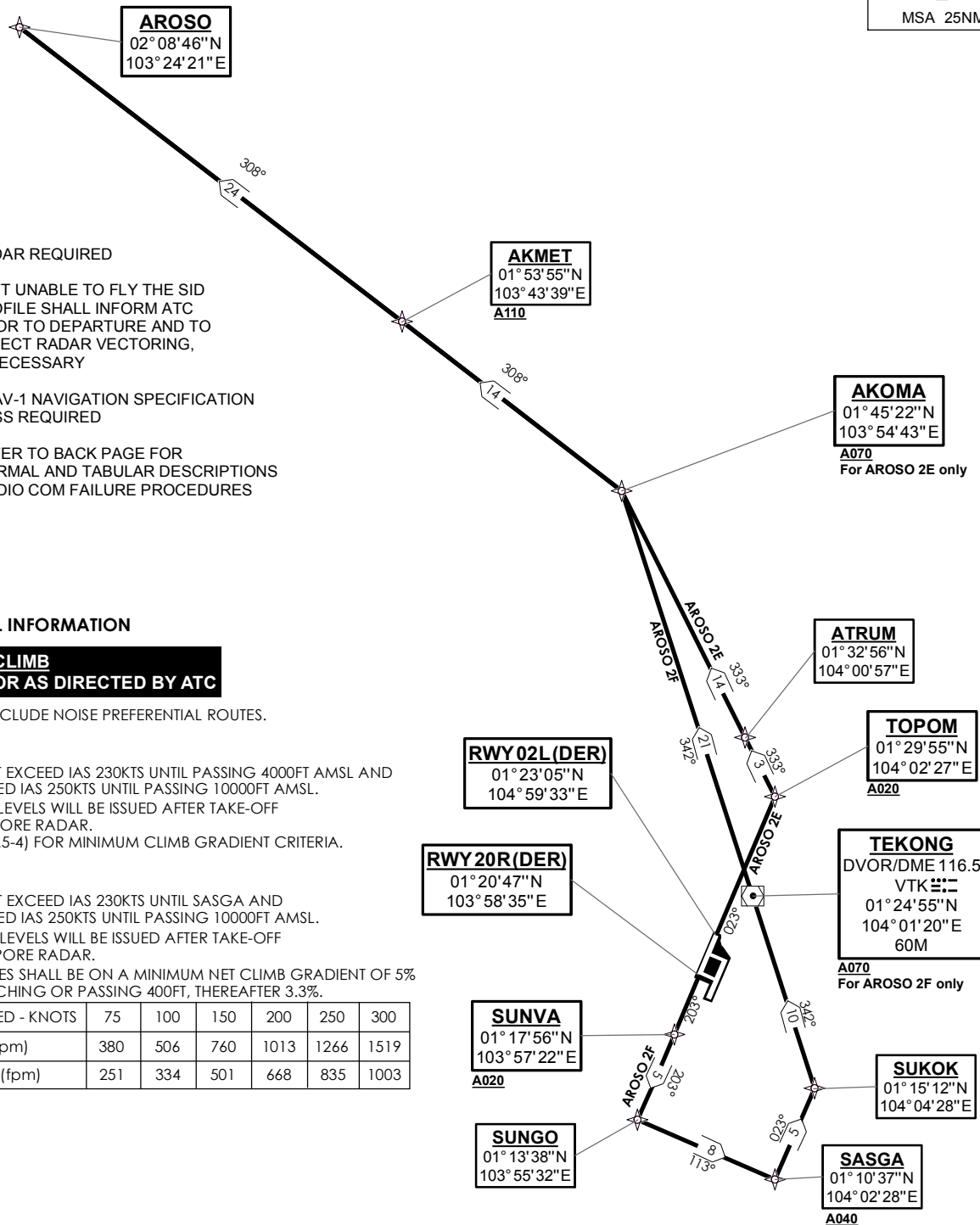
DISTANCES IN NM

**NOTE:** RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORED,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**GENERAL INFORMATION****INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02LSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20R**SHALL NOT EXCEED IAS 230KTS UNTIL SASGA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

15 SEP 16

AROSO 2E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn left. To ATRUM. To AKOMA at or above 7000ft, turn left. To AKMET at or above 11000ft. To AROSO.	TOPOM [M023; A020+; L] -	CF	N
	ATRUM -	TF	N
	AKOMA [A070+; L] -	TF	N
	AKMET [A110+] -	TF	N
	AROSO	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	L	A020+	-	RNAV1
TF	ATRUM	-	333(332.5)	-0.5	-	-	-	RNAV1
TF	AKOMA	-	333(332.5)	-0.5	L	A070+	-	RNAV1
TF	AKMET	-	308(307.5)	-0.5	-	A110+	-	RNAV1
TF	AROSO	-	308(307.5)	-0.5	-	-	-	RNAV1

AROSO 2F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft, speed 230kts, turn left. To SUKOK, turn left. To VTK at or above 7000ft. To AKOMA, turn left. To AKMET at or above 11000ft. To AROSO.	SUNVA [M203; A020+] -	CF	N
	SUNGO [L] -	TF	N
	SASGA [A040+; K230; L] -	TF	N
	SUKOK [L] -	TF	N
	VTK [A070+] -	TF	N
	AKOMA [L] -	TF	N
	AKMET [A110+] -	TF	N
	AROSO	TF	N

Tabular Descriptions

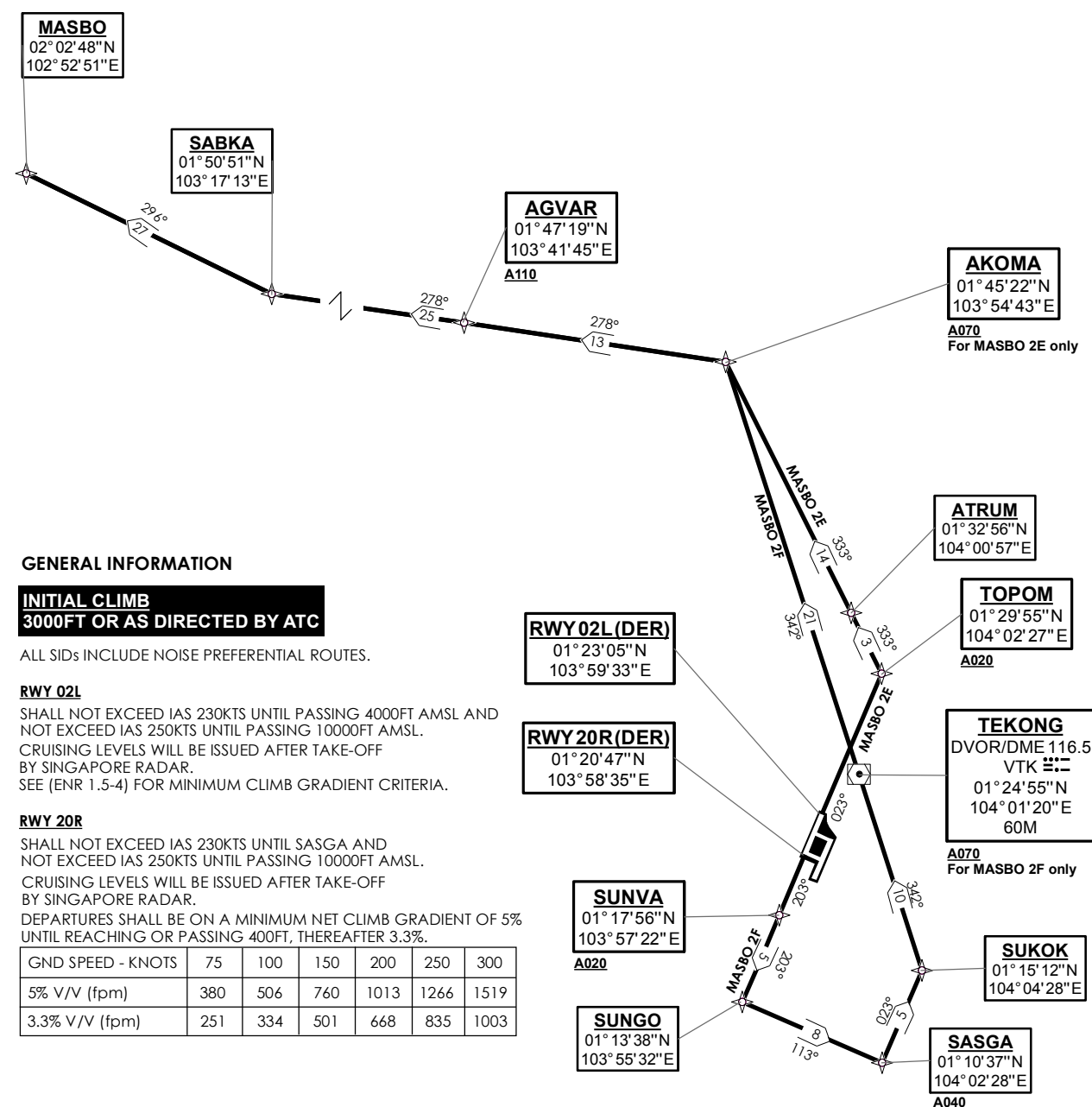
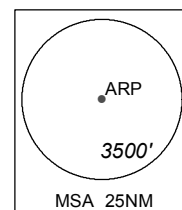
Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	L	A040+	K230	RNAV1
TF	SUKOK	-	023(023.6)	-0.5	L	-	-	RNAV1
TF	VTK	-	342(341.5)	-0.5	-	A070+	-	RNAV1
TF	AKOMA	-	342(341.5)	-0.5	L	-	-	RNAV1
TF	AKMET	-	308(307.5)	-0.5	-	A110+	-	RNAV1
TF	AROSO	-	308(307.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 133.25TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02L/20R
MASBO DEPARTURES
MASBO 2E (R02L)
MASBO 2F (R20R)****ELEV, ALT IN FEET**BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

NOT TO SCALE

15 SEP 16

MASBO 2E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn left. To ATRUM. To AKOMA at or above 7000ft, turn left. To AGVAR at or above 11000ft. To SABKA, turn right. To MASBO.	TOPOM [M023; A020+; L] -	CF	N
	ATRUM -	TF	N
	AKOMA [A070+; L] -	TF	N
	AGVAR [A110+] -	TF	N
	SABKA [R] -	TF	N
	MASBO	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	L	A020+	-	RNAV1
TF	ATRUM	-	333(332.5)	-0.5	-	-	-	RNAV1
TF	AKOMA	-	333(332.5)	-0.5	L	A070+	-	RNAV1
TF	AGVAR	-	278(277.5)	-0.5	-	A110+	-	RNAV1
TF	SABKA	-	278(277.5)	-0.5	R	-	-	RNAV1
TF	MASBO	-	296(295.5)	-0.5	-	-	-	RNAV1

MASBO 2F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft, speed 230kts, turn left. To SUKOK, turn left. To VTK at or above 7000ft. To AKOMA, turn left. To AGVAR at or above 11000ft. To SABKA, turn right. To MASBO.	SUNVA [M203; A020+] -	CF	N
	SUNGO [L] -	TF	N
	SASGA [A040+; K230; L] -	TF	N
	SUKOK [L] -	TF	N
	VTK [A070+] -	TF	N
	AKOMA [L] -	TF	N
	AGVAR [A110+] -	TF	N
	SABKA [R] -	TF	N
	MASBO	TF	N

Tabular Descriptions

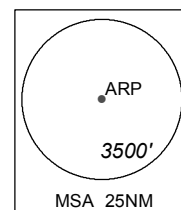
Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	L	A040+	K230	RNAV1
TF	SUKOK	-	023(023.6)	-0.5	L	-	-	RNAV1
TF	VTK	-	342(341.5)	-0.5	-	A070+	-	RNAV1
TF	AKOMA	-	342(341.5)	-0.5	L	-	-	RNAV1
TF	AGVAR	-	278(277.5)	-0.5	-	A110+	-	RNAV1
TF	SABKA	-	278(277.5)	-0.5	R	-	-	RNAV1
TF	MASBO	-	296(295.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 133.25TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02C/20C
AROSO DEPARTURES
AROSO 2A (R02C)
AROSO 2B (R20C)**ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

AROSO
02° 08' 46" N
103° 24' 21" E**NOTE:** RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORED,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**AKMET**
01° 53' 55" N
103° 43' 39" E
A110**AKOMA**
01° 45' 22" N
103° 54' 43" E
A070
For AROSO 2A only**GENERAL INFORMATION****INITIAL CLIMB**
3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02CSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20C**SHALL NOT EXCEED IAS 230KTS UNTIL SASGA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003

RWY 02C (DER)
01° 21' 45" N
103° 59' 57" E**RWY 20C (DER)**
01° 19' 42" N
103° 59' 05" E**TOKIM**
01° 29' 33" N
104° 03' 15" E
A020**TEKONG**
DVOR/DME 116.5
VTK
01° 24' 55" N
104° 01' 20" E
60M
A070
For AROSO 2B only**SUKOK**
01° 15' 12" N
104° 04' 28" E**SASGA**
01° 10' 37" N
104° 02' 28" E
A040**SUDPO**
01° 17' 31" N
103° 58' 08" E
A020**SUGAM**
01° 13' 18" N
103° 56' 17" E**SAPTI**
01° 12' 18" N
103° 58' 35" E

NOT TO SCALE

AROSO 2A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn left. To AKOMA at or above 7000ft, turn left. To AKMET at or above 11000ft. To AROSO.	TOKIM [M023; A020+; L] - AKOMA [A070+; L] - AKMET [A110+] - AROSO	CF TF TF TF	N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	L	A020+	-	RNAV1
TF	AKOMA	-	332(331.5)	-0.5	L	A070+	-	RNAV1
TF	AKMET	-	308(307.5)	-0.5	-	A110+	-	RNAV1
TF	AROSO	-	308(307.5)	-0.5	-	-	-	RNAV1

AROSO 2B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft, speed 230kts, turn left. To SUKOK, turn left. To VTK at or above 7000ft. To AKOMA, turn left. To AKMET at or above 11000ft. To AROSO.	SUDPO [M203; A020+] - SUGAM [L] - SAPTI - SASGA [A040+; K230; L] - SUKOK [L] - VTK [A070+] - AKOMA [L] - AKMET [A110+] - AROSO	CF TF TF TF TF TF TF TF TF	N N N N N N N N N

Tabular Descriptions

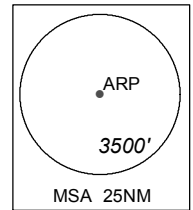
Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	L	A040+	K230	RNAV1
TF	SUKOK	-	023(023.6)	-0.5	L	-	-	RNAV1
TF	VTK	-	342(341.5)	-0.5	-	A070+	-	RNAV1
TF	AKOMA	-	342(341.5)	-0.5	L	-	-	RNAV1
TF	AKMET	-	308(307.5)	-0.5	-	A110+	-	RNAV1
TF	AROSO	-	308(307.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 133.25TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02C/20C
MASBO DEPARTURES
MASBO 2A (R02C)
MASBO 2B (R20C)****ELEV, ALT IN FEET**BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**MASBO**
02° 02' 48" N
102° 52' 51" E**SABKA**
01° 50' 51" N
103° 17' 13" E**AGVAR**
01° 47' 19" N
103° 41' 45" E
A110**AKOMA**
01° 45' 22" N
103° 54' 43" E
A070
For MASBO 2A only**TOKIM**
01° 29' 33" N
104° 03' 15" E
A020**TEKONG**
DVOR/DME 116.5
VTK
01° 24' 55" N
104° 01' 20" E
60M
A070
For MASBO 2B only**SUKOK**
01° 15' 12" N
104° 04' 28" E**SASGA**
01° 10' 37" N
104° 02' 28" E
A040**SAPTI**
01° 12' 18" N
103° 58' 35" E**SUDPO**
01° 17' 31" N
103° 58' 08" E
A020**SUGAM**
01° 13' 18" N
103° 56' 17" E**RWY02C(DER)**
01° 21' 45" N
103° 59' 57" E**RWY20C(DER)**
01° 19' 42" N
103° 59' 05" E**GENERAL INFORMATION****INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02CSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20C**SHALL NOT EXCEED IAS 230KTS UNTIL SASGA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003

NOT TO SCALE

MASBO 2A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn left. To AKOMA at or above 7000ft, turn left. To AGVAR at or above 11000ft. To SABKA, turn right. To MASBO.	TOKIM [M023; A020+; L] -	CF	N
	AKOMA [A070+; L] -	TF	N
	AGVAR [A110+] -	TF	N
	SABKA [R] -	TF	N
	MASBO	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	L	A020+	-	RNAV1
TF	AKOMA	-	332(331.5)	-0.5	L	A070+	-	RNAV1
TF	AGVAR	-	278(277.5)	-0.5	-	A110+	-	RNAV1
TF	SABKA	-	278(277.5)	-0.5	R	-	-	RNAV1
TF	MASBO	-	296(295.5)	-0.5	-	-	-	RNAV1

MASBO 2B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft, speed 230kts, turn left. To SUKOK, turn left. To VTK at or above 7000ft. To AKOMA, turn left. To AGVAR at or above 11000ft. To SABKA, turn right. To MASBO.	SUDPO [M203; A020+] -	CF	N
	SUGAM [L] -	TF	N
	SAPTI -	TF	N
	SASGA [A040+; K230; L] -	TF	N
	SUKOK [L] -	TF	N
	VTK [A070+] -	TF	N
	AKOMA [L] -	TF	N
	AGVAR [A110+] -	TF	N
	SABKA [R] -	TF	N
	MASBO	TF	N

Tabular Descriptions

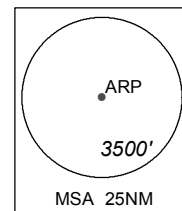
Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	L	A040+	K230	RNAV1
TF	SUKOK	-	023(023.6)	-0.5	L	-	-	RNAV1
TF	VTK	-	342(341.5)	-0.5	-	A070+	-	RNAV1
TF	AKOMA	-	342(341.5)	-0.5	L	-	-	RNAV1
TF	AGVAR	-	278(277.5)	-0.5	-	A110+	-	RNAV1
TF	SABKA	-	278(277.5)	-0.5	R	-	-	RNAV1
TF	MASBO	-	296(295.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 133.8TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02L/20R
MERSING DEPARTURES
VMR 5E (R02L)
VMR 6F (R20R)****ELEV, ALT IN FEET**BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**VMR**
02°23'18"N
103°52'18"E**GENERAL INFORMATION****INITIAL CLIMB**
3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02LSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20R**SHALL NOT EXCEED IAS 230KTS UNTIL SASGA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003

RWY02L (DER)
01°23'05"N
103°59'33"E**RWY20R (DER)**
01°20'47"N
103°58'35"E**SUNVA**
01°17'56"N
103°57'22"E
A020**SUNGO**
01°13'38"N
103°55'32"E**AKOMA**
01°45'22"N
103°54'43"E
A070
For VMR 5E only**ATRUM**
01°32'56"N
104°00'57"E**TOPOM**
01°29'55"N
104°02'27"E
A020**TEKONG**
DVOR/DME 116.5
VTK
01°24'55"N
104°01'20"E
60M
A070
For VMR 6F only**SUKOK**
01°15'12"N
104°04'28"E**SASGA**
01°10'37"N
104°02'28"E
A040

NOT TO SCALE

VMR 5E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn left. To ATRUM. To AKOMA at or above 7000ft, turn right. To VMR.	TOPOM [M023; A020+; L] -	CF	N
	ATRUM -	TF	N
	AKOMA [A070+; R] -	TF	N
	VMR	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	L	A020+	-	RNAV1
TF	ATRUM	-	333(332.5)	-0.5	-	-	-	RNAV1
TF	AKOMA	-	333(332.5)	-0.5	R	A070+	-	RNAV1
TF	VMR	-	356(355.5)	-0.5	-	-	-	RNAV1

VMR 6F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft, speed 230kts, turn left. To SUKOK, turn left. To VTK at or above 7000ft. To AKOMA, turn right. To VMR.	SUNVA [M203; A020+] -	CF	N
	SUNGO [L] -	TF	N
	SASGA [A040+; K230; L] -	TF	N
	SUKOK [L] -	TF	N
	VTK [A070+] -	TF	N
	AKOMA [R] -	TF	N
	VMR	TF	N

Tabular Descriptions

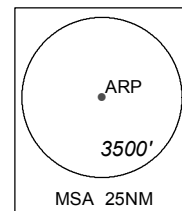
Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	L	A040+	K230	RNAV1
TF	SUKOK	-	023(023.6)	-0.5	L	-	-	RNAV1
TF	VTK	-	342(341.5)	-0.5	-	A070+	-	RNAV1
TF	AKOMA	-	342(341.5)	-0.5	R	-	-	RNAV1
TF	VMR	-	356(355.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 133.8TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02C/20C
MERSING DEPARTURES
VMR 5A (R02C)
VMR 6B (R20C)****ELEV, ALT IN FEET**BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**VMR**
02°23'18"N
103°52'18"E**GENERAL INFORMATION****INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02CSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20C**SHALL NOT EXCEED IAS 230KTS UNTIL SASGA AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003

RWY02C(DER)
01°21'45"N
103°59'57"E**RWY20C(DER)**
01°19'42"N
103°59'05"E**SUDPO**
01°17'31"N
103°58'08"E
A020**SUGAM**
01°13'18"N
103°56'17"E**SAPTI**
01°12'18"N
103°58'35"E**AKOMA**
01°45'22"N
103°54'43"E
A070
For VMR 5A only**TOKIM**
01°29'33"N
104°03'15"E
A020**TEKONG**
DVOR/DME 116.5
VTK
01°24'55"N
104°01'20"E
60M
A070
For VMR 6B only**SUKOK**
01°15'12"N
104°04'28"E**SASGA**
01°10'37"N
104°02'28"E
A040

NOT TO SCALE

VMR 5A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn left. To AKOMA at or above 7000ft, turn right. To VMR.	TOKIM [M023; A020+; L] - AKOMA [A070+; R] - VMR	CF TF TF	N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	L	A020+	-	RNAV1
TF	AKOMA	-	332(331.5)	-0.5	R	A070+	-	RNAV1
TF	VMR	-	356(355.5)	-0.5	-	-	-	RNAV1

VMR 6B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft, speed 230kts, turn left. To SUKOK, turn left. To VTK at or above 7000ft. To AKOMA, turn right. To VMR.	SUDPO [M203; A020+] - SUGAM [L] - SAPTI - SASGA [A040+; K230; L] - SUKOK [L] - VTK [A070+] - AKOMA [R] - VMR	CF TF TF TF TF TF TF TF	N N N N N N N N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	L	A040+	K230	RNAV1
TF	SUKOK	-	023(023.6)	-0.5	L	-	-	RNAV1
TF	VTK	-	342(341.5)	-0.5	-	A070+	-	RNAV1
TF	AKOMA	-	342(341.5)	-0.5	R	-	-	RNAV1
TF	VMR	-	356(355.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 134.4TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02C/20C****VENIX DEPARTURES
VENIX 1A (R02C)
VENIX 1B (R20C)**ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

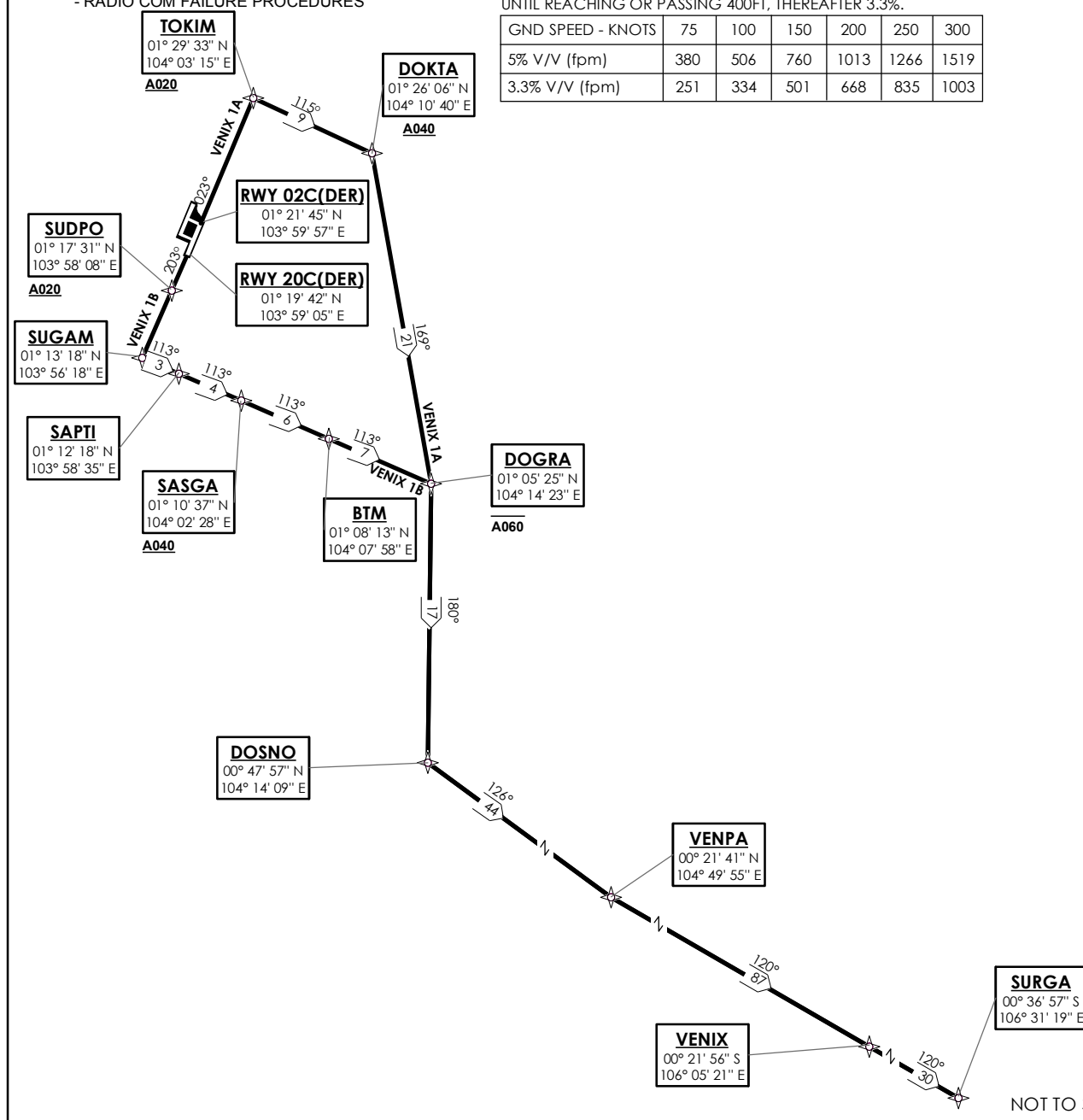
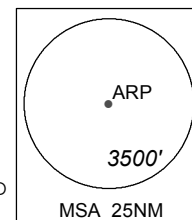
DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**GENERAL INFORMATION****INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02CSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20C**SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



15 SEP 16

VENIX 1A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft., turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To VENIX. To SURGA.	TOKIM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	VENIX -	TF	N
	SURGA	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	VENIX	-	120(199.5)	-0.5	-	-	-	RNAV1
TF	SURGA	-	120(199.5)	-0.5	-	-	-	RNAV1

VENIX 1B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To VENIX. To SURGA.	SUDPO [M203; A020+] -	CF	N
	SUGAM [L] -	TF	N
	SAPTI -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	VENIX -	TF	N
	SURGA	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	VENIX	-	120(199.5)	-0.5	-	-	-	RNAV1
TF	SURGA	-	120(199.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

**STANDARD DEPARTURE CHART
RNAV (GNSS) -
INSTRUMENT (SID)**TWR 118.6 / 118.25
APP 120.3
ACC 134.4TRANSITION ALTITUDE
11 000ftD-ATIS AP ID-WSSS
128.6**SINGAPORE/Singapore Changi
RWY 02L/20R
VENIX DEPARTURES
VENIX 1E (R02L)
VENIX 1F (R20R)**ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

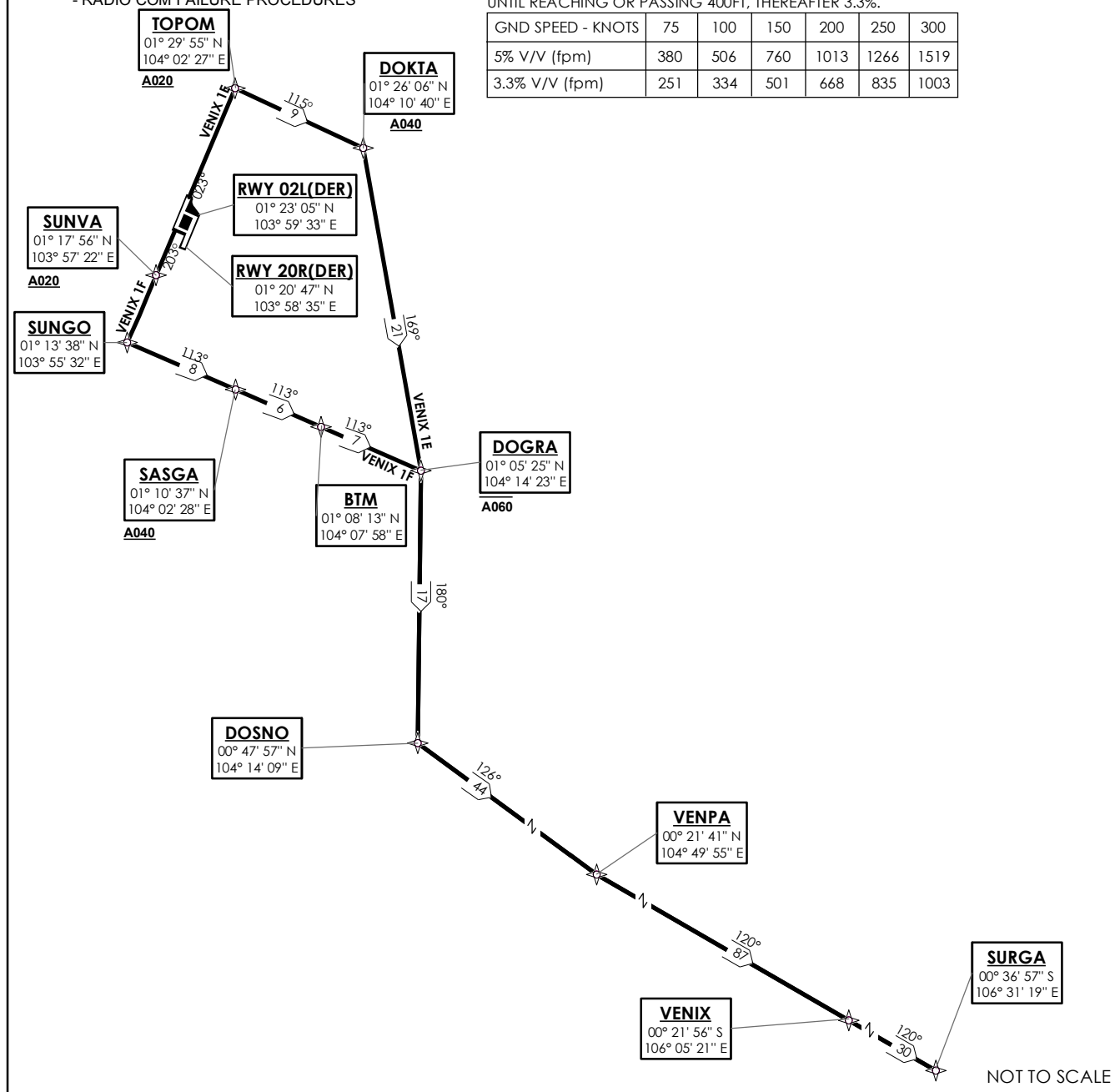
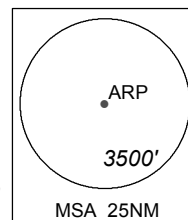
DISTANCES IN NM

NOTE: RADAR REQUIRED**NOTE:** ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORING,
IF NECESSARY**NOTE:** RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED**NOTE:** REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES**GENERAL INFORMATION****INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC**

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 02LSHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.**RWY 20R**SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



VENIX 1E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To VENIX. To SURGA.	TOPOM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	VENIX -	TF	N
	SURGA	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	VENIX	-	120(199.5)	-0.5	-	-	-	RNAV1
TF	SURGA	-	120(199.5)	-0.5	-	-	-	RNAV1

VENIX 1F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To VENIX. To SURGA.	SUNVA [M203; A020+] -	CF	N
	SUNGO [L] -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	VENIX -	TF	N
	SURGA	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	VENIX	-	120(199.5)	-0.5	-	-	-	RNAV1
TF	SURGA	-	120(199.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

STANDARD DEPARTURE CHART RNAV (GNSS) - INSTRUMENT (SID)

TWR 118.6 / 118.25
APP 120.3
ACC 134.4

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02C/20C**

**KADAR DEPARTURES
KADAR 1A (R02C)
KADAR 1B (R20C)**

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTURING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB 3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

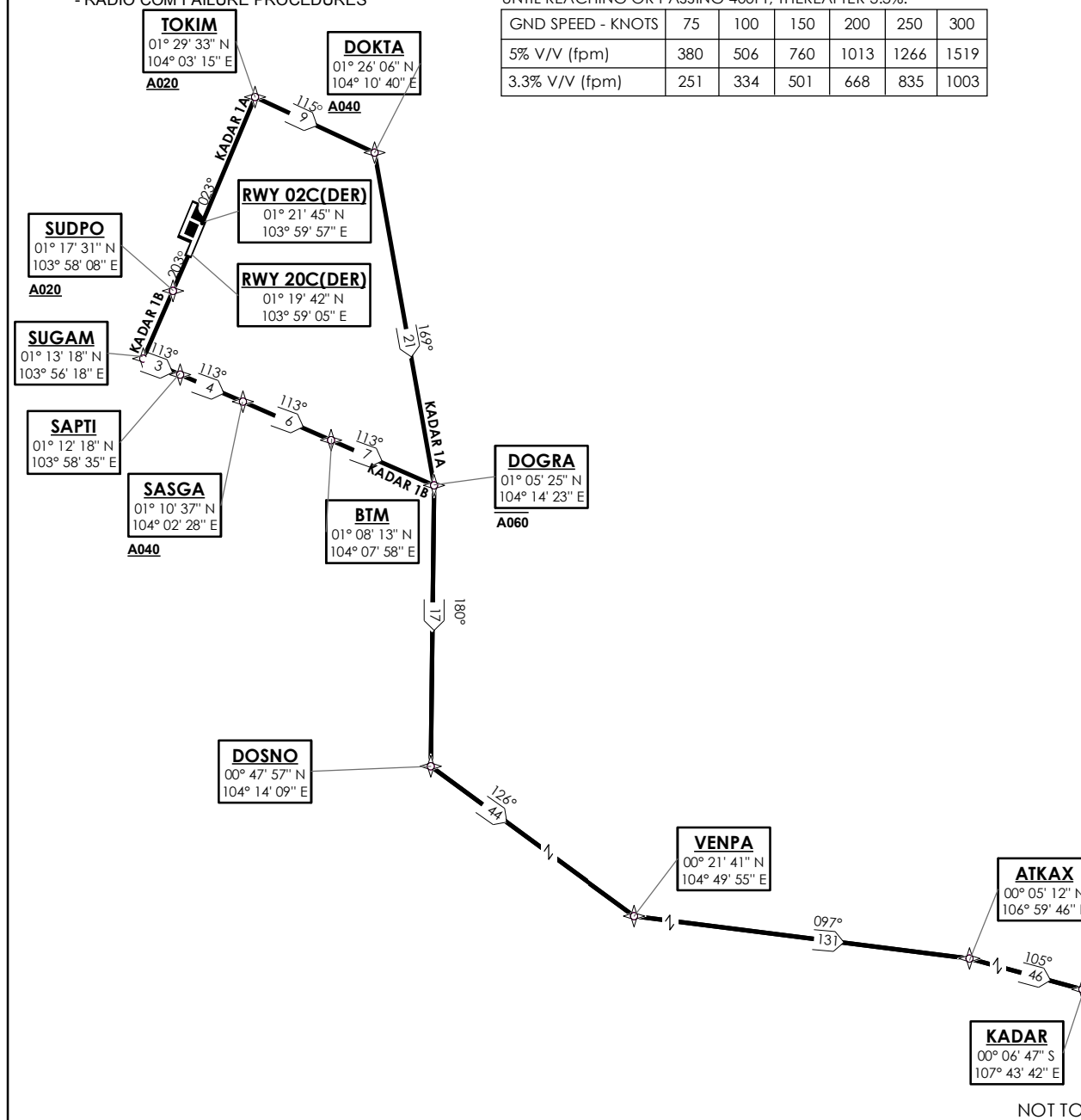
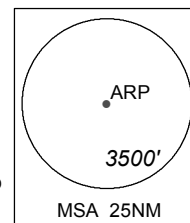
RWY 02C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20C

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

15 SEP 16

KADAR 1A (SID) RNAV GNSS RWY 02C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOKIM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn right. To KADAR.	TOKIM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [R] -	TF	N
	KADAR	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOKIM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	R	-	-	RNAV1
TF	KADAR	-	105(104.5)	-0.5	-	-	-	RNAV1

KADAR 1B (SID) RNAV GNSS RWY 20C - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUDPO on course 203° at or above 2000ft. To SUGAM, turn left. To SAPTI. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn right. To KADAR.	SUDPO [M203; A020+] -	CF	N
	SUGAM [L] -	TF	N
	SAPTI -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [R] -	TF	N
	KADAR	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUDPO	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUGAM	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SAPTI	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	R	-	-	RNAV1
TF	KADAR	-	105(104.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02C - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20C - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

STANDARD DEPARTURE CHART RNAV (GNSS) - INSTRUMENT (SID)

TWR 118.6 / 118.25
APP 120.3
ACC 134.4

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

**SINGAPORE/Singapore Changi
RWY 02L/20R**

**KADAR DEPARTURES
KADAR 1E (R02L)
KADAR 1F (R20R)**

ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26°E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID
PROFILE SHALL INFORM ATC
PRIOR TO DEPARTURE AND TO
EXPECT RADAR VECTORING,
IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION
GNSS REQUIRED

NOTE: REFER TO BACK PAGE FOR
- FORMAL AND TABULAR DESCRIPTIONS
- RADIO COM FAILURE PROCEDURES

GENERAL INFORMATION

INITIAL CLIMB 3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

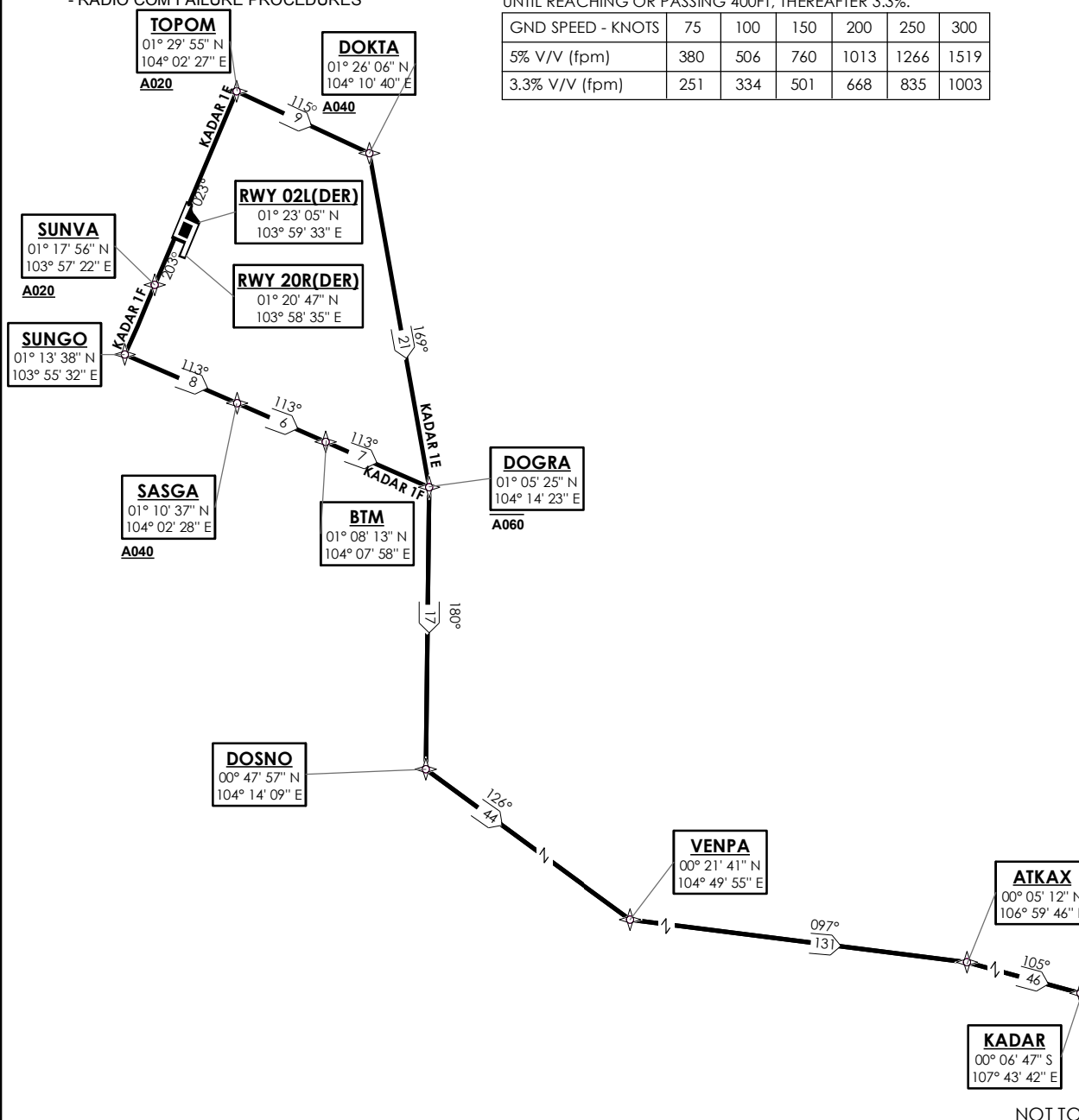
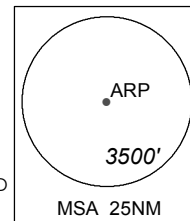
RWY 02L

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

RWY 20R

SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND
NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF
BY SINGAPORE RADAR.
DEPARTURES SHALL BE ON A MINIMUM NET CLIMB GRADIENT OF 5%
UNTIL REACHING OR PASSING 400FT, THEREAFTER 3.3%.

GND SPEED - KNOTS	75	100	150	200	250	300
5% V/V (fpm)	380	506	760	1013	1266	1519
3.3% V/V (fpm)	251	334	501	668	835	1003



NOT TO SCALE

15 SEP 16

KADAR 1E (SID) RNAV GNSS RWY 02L - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To TOPOM on course 023° at or above 2000ft, turn right. To DOKTA at or above 4000ft, turn right. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn right. To KADAR.	TOPOM [M023; A020+; R] -	CF	N
	DOKTA [A040+; R] -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [R] -	TF	N
	KADAR	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	TOPOM	-	023(022.5)	-0.5	R	A020+	-	RNAV1
TF	DOKTA	-	115(114.5)	-0.5	R	A040+	-	RNAV1
TF	DOGRA	-	169(168.5)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	R	-	-	RNAV1
TF	KADAR	-	105(104.5)	-0.5	-	-	-	RNAV1

KADAR 1F (SID) RNAV GNSS RWY 20R - DESCRIPTIONS**Formal & Abbreviated Descriptions**

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
To SUNVA on course 203° at or above 2000ft. To SUNGO, turn left. To SASGA at or above 4000ft. To BTM. To DOGRA at or below 6000ft, turn right. To DOSNO, turn left. To VENPA, turn left. To ATKAX, turn right. To KADAR.	SUNVA [M203; A020+] -	CF	N
	SUNGO [L] -	TF	N
	SASGA [A040+] -	TF	N
	BTM -	TF	N
	DOGRA [A060-; R] -	TF	N
	DOSNO [L] -	TF	N
	VENPA [L] -	TF	N
	ATKAX [R] -	TF	N
	KADAR	TF	N

Tabular Descriptions

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
CF	SUNVA	-	203(202.5)	-0.5	-	A020+	-	RNAV1
TF	SUNGO	-	203(202.5)	-0.5	L	-	-	RNAV1
TF	SASGA	-	113(113.3)	-0.5	-	A040+	-	RNAV1
TF	BTM	-	113(113.3)	-0.5	-	-	-	RNAV1
TF	DOGRA	-	113(113.3)	-0.5	R	A060-	-	RNAV1
TF	DOSNO	-	180(179.5)	-0.5	L	-	-	RNAV1
TF	VENPA	-	126(125.5)	-0.5	L	-	-	RNAV1
TF	ATKAX	-	097(096.5)	-0.5	R	-	-	RNAV1
TF	KADAR	-	105(104.5)	-0.5	-	-	-	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	SET TRANSPONDER TO MODE A/C CODE 7600
2	COMMUNICATIONS FAILURE OCCURS IMMEDIATELY AFTER DEPARTURE ON: RWY 02L - PROCEED STRAIGHT AHEAD TO NYLON HOLDING AREA (NHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE. RWY 20R - PROCEED STRAIGHT AHEAD TO SAMKO HOLDING AREA (SHA) CLIMBING TO THE LAST ASSIGNED ALTITUDE, THEREAFTER REFER TO SINGAPORE AIP ON RADIO COMMUNICATIONS FAILURE PROCEDURE.

WSSL AD 2.8 APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA

1	<i>Apron surface and strength</i>	Surface: Bituminous concrete (aircraft stand C7) Strength: PCN44/F/C/X/T Surface: Concrete (all other aircraft stands) Strength: PCN41/R/C/W/T
2	<i>Taxiway width, surface and strength</i>	Width: 23 M (75.5ft), 18 M (59.1ft) TWY EC4, EC5 AND EC6 8 M (26.2ft) TWY WS1 and WS2 Surface: Bituminous concrete Strength: PCN44/F/C/X/T
3	<i>Remarks : Nil</i>	

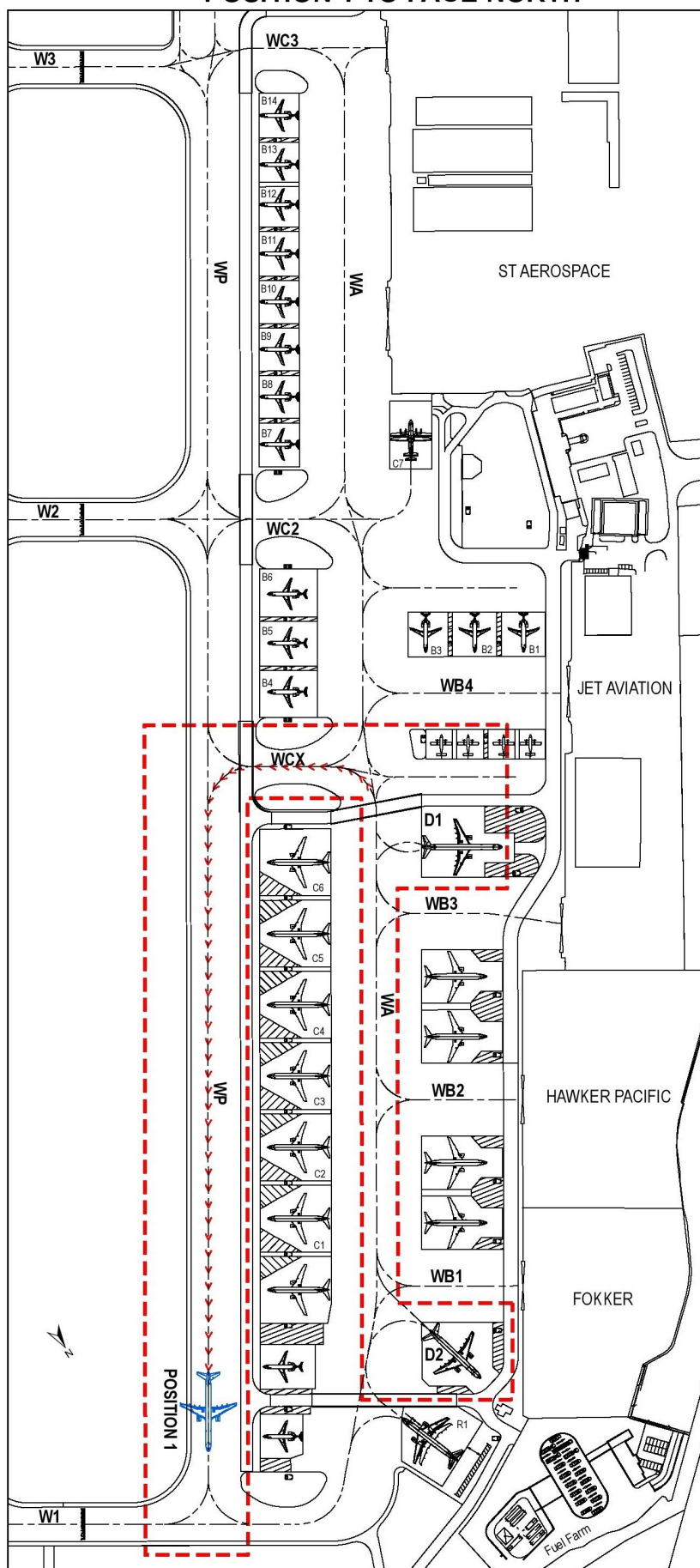
WSSL AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS		
1	<i>Use of aircraft stand ID signs, TWY guidelines and visual docking/parking guidance system of aircraft stands</i>	Taxiing guidance signs at all intersections with TWY and RWY at all holding positions. Guidelines at apron. Nose-in guidance at aircraft stands.
2	<i>RWY and TWY markings and LGT</i>	<u>RWY LGT:</u> refer to page WSSL AD 2-5 for details. RWY Turn Pad LGT / Markings: Only AVBL at THR RWY 03. Yellow turnpad centreline. <u>TWY LGT:</u> TWY Edge LGT: Blue LGT, inset, elevated and omni-directional. TWY markings: Yellow TWY centreline. <u>MARKING AIDS:</u> Threshold, touchdown zone, centreline stripes and RWY designation. RWY width outline from bituminous concrete surface by white lines. <u>AIMING POINT MARKINGS:</u> RWY 03: coincident with PAPI origin located 311.6m from THR respectively. RWY 21: coincident with PAPI origin located 232.8m from THR respectively.
3	<i>Stop Bars</i>	Stop Bars: Red LGT across taxiways W1, W2, W3, E2, E3 and E4, flushed with TWY surface. By default, red stop bar lights remain on unless deselected by the runway controller. When deselected, these stop bar lights will re-activate automatically after 45 seconds. Pilots shall not cross any lighted red stop bar lights. Pilots and drivers shall enter / cross the runway only when both the following conditions are met: The crew have a) received positive ATC clearance to enter / cross the runway or taxiway, and b) observed that the red stop bar lights are turned off. Crash Alarm Stop Bars: Red LGT across junctions of EP, EC4 and EH2 TWY, flushed with TWY surface. (Note to pilots and tow-crew: Slow down when taxiing / towing on TWY EP between TWY EC4 and abeam the Control Tower. Keep a lookout for emergency vehicles that may cross the taxiway to respond to emergency on the RWY.)

SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS		
4	Remarks	a. Aircraft operators/ground handlers shall be responsible for the safe and smooth operations of aircraft at the aircraft stands. b. To enhance airside safety, all aircraft larger than Code A (i.e. up to but not including 15m wingspan) shall be marshalled into the aircraft stands. c. Arriving aircraft will be assigned an aircraft stand. A ground handler shall marshal the aircraft into the aircraft stand. d. A ground handler shall be at the aircraft stand when the aircraft is ready to depart. When the pilot signals that he is ready to taxi, the ground handler shall ensure that the area around the aircraft is clear before marshalling the aircraft out of the aircraft stand. e. Only Code A aircraft, Code B aircraft, aircraft type Global Express, Global 5000, Global Express XRS, Fokker 50, Fokker 100, Gulfstream 500, Gulfstream 550, ATR 72-500, DASH 7 and Falcon 7X are allowed to self-power out from aircraft stands C1, C2, C3, C4, C5 and C6. f. Aircraft at stand C1 shall self-power out towards the north only. g. Aircraft at stand C6 shall self-power towards the south only. h. Aircraft at stands C2, C3, C4 and C5 are allowed to self-power out towards the south or the north. i. Aircraft can self-power in from the north as well as the south via TWY WA. j. All personnel, tow tugs and equipment shall be cleared from the aircraft stand and red chevron markings on the adjacent aircraft stands before self-power out can commence. k. Aircraft with wingspan larger than 28.35m are not allowed to park at aircraft stand C7. Refuelling will not be allowed at aircraft stand C7. l. Aircraft stands D50, D51, D52, D53 and D54 will be used for tow operations only.

SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS		
Aircraft Stands	Pushback / Tow Forward Procedures	Phraseology Used By SELETAR GROUND
C1/C2/C3/C4/C5/C6	PUSHBACK The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North (or South) until its nosewheel is at the intersection of the aircraft stand lead-in line and the centreline of TWY WA. The aircraft may breakaway from there. TOW FORWARD The aircraft (on idle thrust) shall be towed forward onto the centreline of TWY WP to face North (or South) until its nosewheel is at the intersection of the aircraft tow-out line and TWY WP centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South) Tow forward approved, to face North (or South)
C7	PUSHBACK The aircraft (on idle thrust) shall be pushed back onto TWY WA to face North (or South) until its nosewheel is at the intersection of the aircraft stand lead-in line and the centreline of TWY WA. The aircraft may breakaway from there.	Pushback approved, to face North (or South)
C50/C51/C52	PUSHBACK The aircraft (on idle thrust) shall be pushed back onto TWY ES to face North (or South) until its nosewheel is at the intersection of the aircraft stand lead-in line (or pushback line) and the centreline of TWY ES. The aircraft may breakaway from there.	Pushback approved, to face North (or South)
D1/D2 (for B757-200 and C130)	PUSHBACK AND TOW FORWARD TO TWY WP The tow-crew shall request from Seletar Ground (vehicular) on 122.9MHz for departure pushback approval. Upon receiving the approval, the aircraft shall be pushed back onto TWY WA to face South until its nosewheel is at the intersection of the aircraft stand lead-in line and TWY WA centreline. The aircraft shall then be towed forward to TWY WP until the tow tug towing the aircraft is at the intermediate holding position short of TWY W1 (see chart WSSL AD 2-4-2) or TWY W3 (see chart WSSL AD 2-4-3). Once the tow tug is disengaged, the aircraft will request start up approval from Seletar Ground (aircraft) on 121.6MHz. The aircraft shall breakaway from there.	1) Tow approved to intermediate holding position on TWY WP short of TWY W1 to face North; or 2) Tow approved to intermediate holding position on TWY WP short of TWY W3 to face South
	FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W1 After landing, B757-200/C130 aircraft exiting TWY W1 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W1. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.	Not applicable
	FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W2 After landing, B757-200/C130 aircraft exiting TWY W2 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W2. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.	Not applicable
	FOR LANDED B757-200/C130 AIRCRAFT EXITING VIA TWY W3 After landing, B757-200/C130 aircraft exiting TWY W3 shall stop when its nose is at the information marking "B757/C130 HOLD FOR TOW" on TWY W3. The aircraft shall be on tow starting from this point onwards until they park inside the aircraft stands.	Not applicable
D50 /D51/D52/D53/D54	The tow crew shall request from Seletar Ground (vehicular) on 122.9MHz for pushback approval. Upon receiving the approval, the aircraft shall be pushed back onto TWY EN to face South until its nosewheel is at the intersection of the aircraft stand pushback line and TWY EN centreline. The aircraft shall then be towed from there.	Pushback approved to face South

PROCEDURES FOR PUSHBACK OF AIRCRAFT FROM AIRCRAFT STANDS D1/D2 AND TOW FORWARD TO TWY WP POSITION 1 TO FACE NORTH



WSSL AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

Designations RWY NR	TRUE BRG	Dimensions of RWY (m)	Strength (PCN) and Surface of RWY and SWY	THR coordinates (THR GEOID Undulation)	THR Elevation
1	2	3	4	5	6
03	033.33°	1836 x 46	44/F/C/X/T Bituminous Concrete	012430.846N 1035143.791E (9.78M)	14 M
21	213.33°	1836 x 46	44/F/C/X/T Bituminous Concrete	012520.791N 1035216.425E (9.78M)	5 M

RWY End Elevation	Highest Elevation of Touchdown Zone	CWY Dimensions	STRIP Dimensions (m)	OFZ	Remarks (continued below)
7	8	9	10	11	12
5 M	13 M	60 M x 150 M	1956 M x 150 M	Not applicable	RESA RWY 03 - 240m X 92m
14 M	10 M				RESA RWY 21 - 240m X 150m

12 *Remarks:***Scheduled closure period for RWY 03/21**

- a) BTN 1600-2300 first FRI of EV month or second FRI if the first FRI is a public holiday. RWY CLSD to all TFC except medevac and EMERG flights. Advance notice of 30 minutes is required for EMERG opening of RWY.
- b) BTN 0500-0515, 1030-1045, 1600-1615 and 2300-2315 daily for RWY inspection. Aircraft to expect delay.
- c) BTN 1600-1800 EV TUE and FRI of EV month. RWY CLSD to all TFC except medevac and EMERG flights. Advance notice of 30 minutes is required for EMERG opening of RWY.

Runway turn pad

- a) A lighted turn pad with centreline marking is provided at the threshold of RWY 03 which is able to serve aircraft up to B757-200.

WSSL AD 2.13 DECLARED DISTANCES

RWY Designator	TORA(m)	TODA(m)	ASDA(m)	LDA(m)	Remarks
1	2	3	4	5	6
03	1836	1896	1836	1836	Nil
21	1836	1896	1836	1836	Nil

WSSL AD 2.14 APPROACH AND RUNWAY LIGHTING

RWY Designator	APCH LGT type LEN INTST	THR LGT Colour WBAR	VASIS (MEHT) PAPI	TDZ LGT LEN	RWY CL LGT, LEN, spacing, colour, INTST	RWY edge LGT LEN, spacing colour, INTST	RWY End LGT Colour WBAR	SWY LGT LEN Colour
1	2	3	4	5	6	7	8	9
03	Simple APCH LGT: 4 rows of barettes of 3 LGT each and 1 crossbar of 13 LGT. White, elevated, uni-directional APCH LGT and white, omni-directional CGL on top of elevated APCH LGT. Simple TDZ LGT: 2 pairs white, inset, uni-directional LGT.	Green with THR IDENT LGT	PAPI 3° (both sides of RWY) 2 white 2 red LGT (17.720m) 3 white 1 red LGT (20.323m) 4 white LGT (22.927m). ACFT with eye-to-wheel HGT greater than 6.3m are ADZ to fly with 2 white 2 red LGT visible so as to achieve sufficient wheel CLR.	Nil	Nil	White with yellow on last 600m of either end. Elevated, omni-directional and brilliancy controlled.	Red	Nil

<i>RWY Designator</i>	<i>APCH LGT type LEN INTST</i>	<i>THR LGT Colour WBAR</i>	<i>VASIS (MEHT) PAPI</i>	<i>TDZ LGT LEN</i>	<i>RWY CL LGT, LEN, spacing, colour, INTST</i>	<i>RWY edge LGT LEN, spacing colour, INTST</i>	<i>RWY End LGT Colour WBAR</i>	<i>SWY LGT LEN Colour</i>
1	2	3	4	5	6	7	8	9
21	APCH LGT: 1 row of inset APCH LGT of 4 LGT and 4 rows of barettes of 4 LGT each. White inset uni-directional APCH LGT and white omni-directional CGL on top of white, elevated uni-directional APCH LGT. Simple TDZ LGT: 2 pairs white, inset, uni-directional LGT.	Green with THR IDENT LGT	PAPI 3.5° (both sides of RWY) 2 white 2 red LGT (17.720m) 3 white 1 red LGT (19.286m) 4 white LGT (20.871m). ACFT with eye-to-wheel HGT greater than 6.3m are ADZ to fly with 2 white 2 red LGT visible so as to achieve sufficient wheel CLR.	Nil	Nil	White with yellow on last 600m of either end. Elevated, omni-directional and brilliancy controlled.	Red	Nil
RWY 21 THR and RWY END LGT symmetrically disposed in 2 groups with a gap between the groups. RWY 21 THR and RWY END LGT reinstated to inset fitting.								

WSSL AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY

1	<i>ABN/IBN location, characteristics and hours of operation</i>	ABN: 012448.000N 1035207.960E (on top of Control Tower) ALTN FLG W G EV 2.5 SEC. HN and IMC IBN: 012509.939N 1035152.143E (on top of West Substation) Flashing G 'SL' repeatedly. HN and IMC
2	<i>LD and LGTI location Anemometer location and LGT</i>	Cup anemometers and wind vanes and windsocks at ends of RWY.
3	<i>TWY edge and centreline lighting</i>	TWY Edge LGT: Blue, elevated and omni-directional TWY Centreline Marking: Yellow
4	<i>Secondary power supply/switch-over time</i>	Automatic standby generator power supply available for airfield lighting.
5	<i>Remarks</i>	Vehicles painted yellow or displaying checkered red/white or orange/white flag at highest point of vehicle. WDI lighted.

WSSL AD 2.16 HELICOPTER LANDING AREA

1	Coordinates of THR of FATO Geoid undulation	H03 012437.963N 1035152.072E H21 012446.046N 1035157.344E
2	FATO elevation M/FT	H03- 10.45m/34.3ft; H21 - 9.36m/30.7ft
3	FATO area dimensions, surface, strength, marking	Rectangle 297m x 21.5m, compacted turf, helicopter landing area designations, outline by concrete kerbs painted white.
4	True BRG of FATO	033.33/213.33° Direction of TKOF zones: 034° GEO / 214° GEO
5	Declared distance available	TODAH RTODAH LDAH H03 297m 297m 297m H21 297m 297m 297m
6	Approach and FATO lighting	Nil
7	Remarks	Slope of helicopter landing area (transverse/longitudinal) H03 - 1.19%/0.44% ; H21 - 0.96%/0.44%

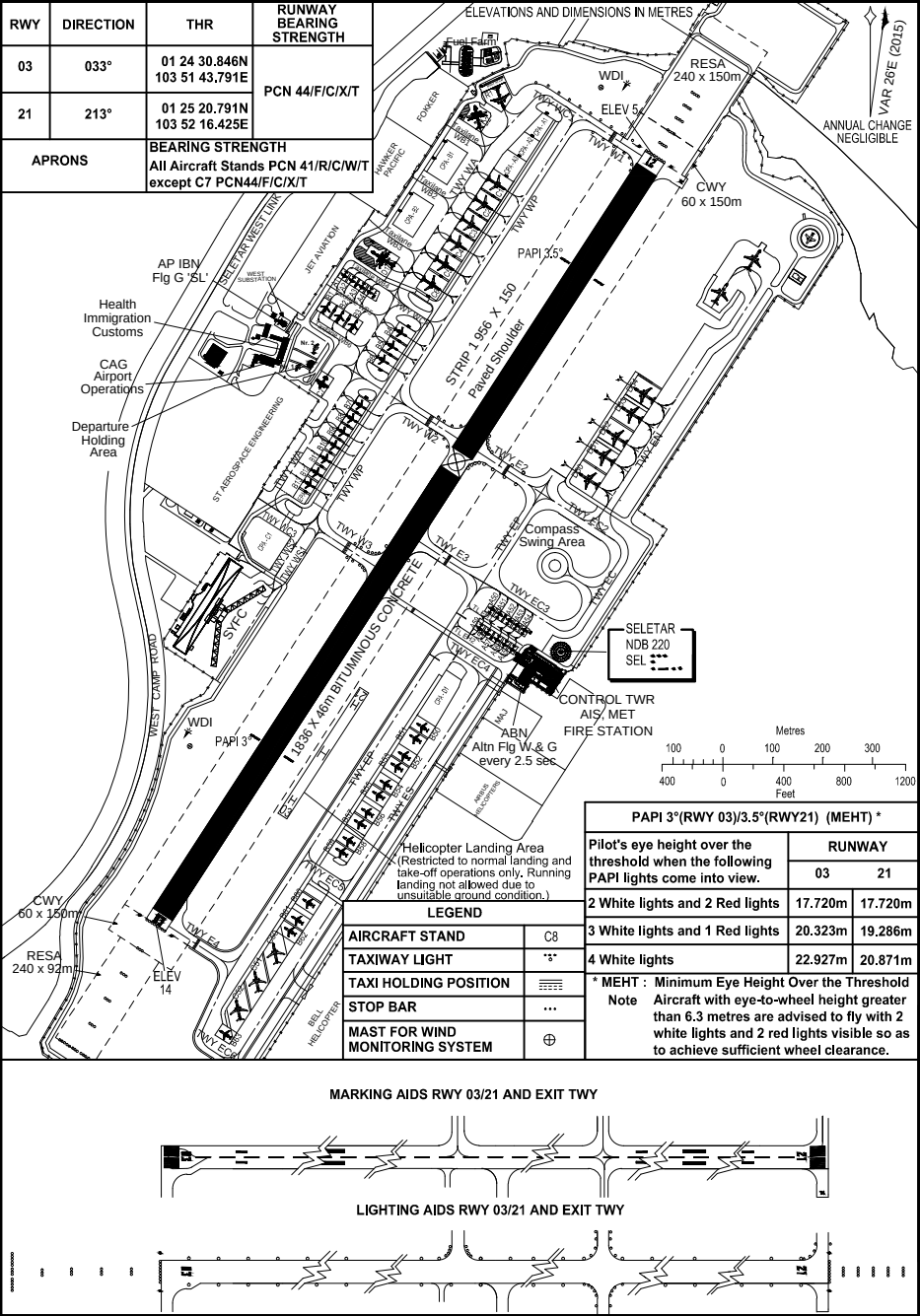
AERODROME CHART - ICAO

01° 25' 01.04"N
103° 52' 03.52"E

ELEV 14m

TWR 118.45
121.6

SINGAPORE/SELETAR



INS COORDINATES FOR AIRCRAFT STANDS

STAND NR	NORTH LATITUDE	EAST LONGITUDE	ELEVATION
A1	01 25 13.102	103 51 56.167	6.181m (20.280ft)
A2	01 25 12.779	103 51 56.653	6.338m (20.795ft)
A3	01 25 12.350	103 51 57.301	6.586m (21.609ft)
A4	01 25 12.029	103 51 57.787	6.761m (22.183ft)
A50	01 24 51.431	103 52 05.765	7.807m (25.615ft)
A51	01 24 51.110	103 52 06.251	7.948m (26.077ft)
A52	01 24 50.681	103 52 06.900	8.105m (26.593ft)
A53	01 24 50.358	103 52 07.387	8.211m (26.940ft)
A54	01 24 50.036	103 52 07.874	8.337m (27.354ft)
A55	01 24 48.591	103 52 06.930	8.750m (28.709ft)
A56	01 24 48.913	103 52 06.443	8.587m (28.174ft)
A57	01 24 49.236	103 52 05.957	8.402m (27.567ft)
A58	01 24 49.665	103 52 05.309	8.179m (26.835ft)
A59	01 24 49.987	103 52 04.822	8.014m (26.294ft)
B1	01 25 11.401	103 51 55.231	6.301m (20.674ft)
B2	01 25 10.817	103 51 56.116	6.639m (21.783ft)
B3	01 25 10.221	103 51 57.014	6.967m (22.859ft)
B4	01 25 09.180	103 52 00.361	7.703m (25.274ft)
B5	01 25 08.258	103 51 59.758	7.933m (26.028ft)
B6	01 25 07.348	103 51 59.163	8.163m (26.783ft)
B7	01 25 04.505	103 51 57.519	8.442m (27.698ft)
B8	01 25 03.635	103 51 56.951	8.406m (27.580ft)
B9	01 25 02.765	103 51 56.382	8.396m (27.547ft)
B10	01 25 01.893	103 51 55.814	8.383m (27.505ft)
B11	01 25 01.006	103 51 55.237	8.330m (27.331ft)
B12	01 25 00.109	103 51 54.650	8.449m (27.721ft)
B13	01 24 59.374	103 51 54.170	8.571m (28.121ft)
B50	01 24 43.887	103 52 00.875	8.753m (28.719ft)
B51	01 24 43.153	103 52 00.394	8.847m (29.027ft)
B52	01 24 42.063	103 51 59.681	8.988m (29.490ft)
B53	01 24 41.328	103 51 59.202	9.183m (30.129ft)
B54	01 24 40.154	103 51 58.435	9.358m (30.704ft)
B55	01 24 39.420	103 51 57.954	9.434m (30.953ft)
B56	01 24 38.347	103 51 57.253	9.592m (31.471ft)
B57	01 24 37.614	103 51 56.774	9.679m (31.757ft)
B58	01 24 36.462	103 51 56.021	9.806m (32.172ft)
B59	01 24 35.728	103 51 55.541	9.930m (32.580ft)
B60	01 24 32.416	103 51 53.376	10.094m (33.117ft)
B61	01 24 31.265	103 51 52.624	10.177m (33.389ft)
B62	01 24 30.529	103 51 52.144	10.246m (33.617ft)
B63	01 24 23.858	103 51 47.937	10.639m (34.907ft)
C1	01 25 18.803	103 52 06.627	5.105m (16.750ft)
C2	01 25 17.498	103 52 05.773	5.423m (17.793ft)
C3	01 25 16.192	103 52 04.921	5.759m (18.895ft)
C4	01 25 14.887	103 52 04.067	6.256m (20.526ft)
C5	01 25 13.581	103 52 03.214	6.824m (22.390ft)
C6	01 25 12.275	103 52 02.360	7.304m (23.964ft)
C7	01 25 05.738	103 51 54.466	7.192m (23.596ft)
C50	01 24 29.476	103 51 51.396	10.381m (34.060ft)
C51	01 24 27.626	103 51 50.188	10.589m (34.743ft)
C52	01 24 25.781	103 51 48.979	10.770m (35.335ft)
D1	01 25 14.663	103 51 58.151	6.408m (21.025ft)
D2	01 25 24.033	103 52 04.804	3.471m (11.388ft)
D50	01 25 00.056	103 52 11.563	6.680m (21.916ft)
D51	01 25 01.585	103 52 12.561	6.440m (21.129ft)
D52	01 25 02.828	103 52 13.373	6.280m (20.604ft)
D53	01 25 04.357	103 52 14.372	6.040m (19.816ft)
D54	01 25 05.600	103 52 15.184	5.820m (19.094ft)

LEGEND

	FLOOD LIGHTS 20m AGL ATOP PYLONS
	MAST FOR WIND MONITORING SYSTEM AT BOTH ENDS OF THE RUNWAY. HEIGHT 9m
	THRESHOLD IDENTIFICATION LIGHTS 15m FROM RUNWAY EDGES
	CLOSED FROM OPERATION

Metres
50 0 50 100 150 200

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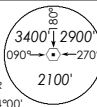
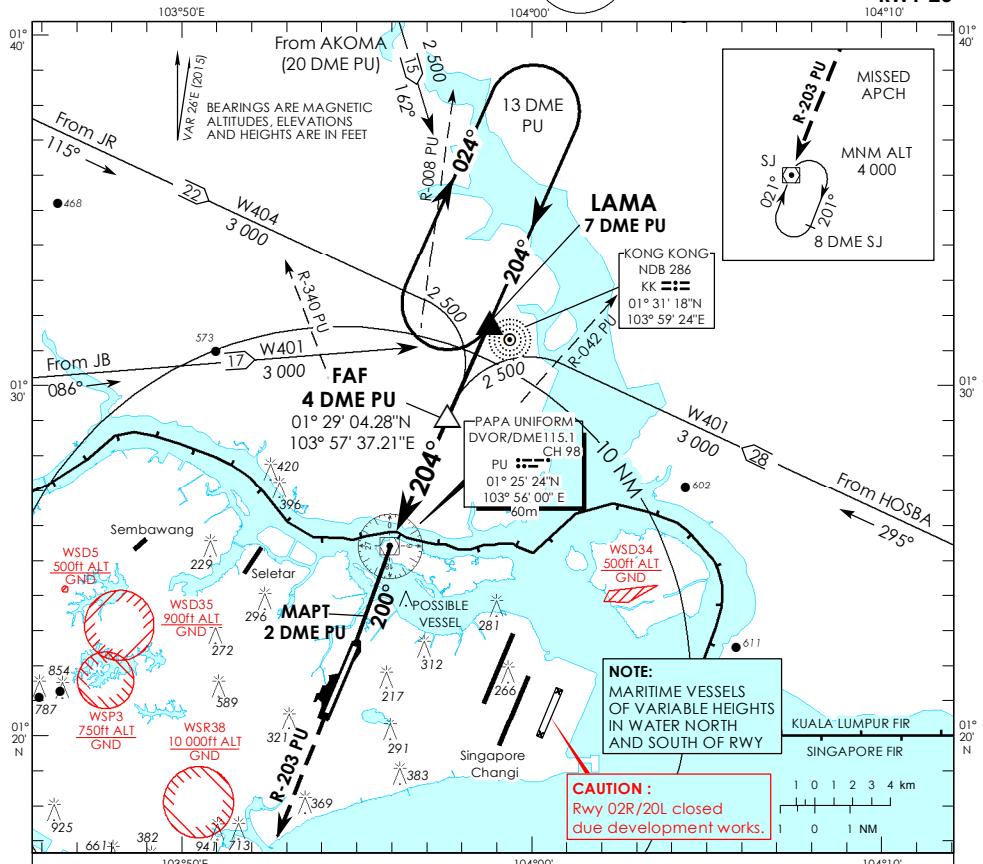
WSAP AD 2.24 CHARTS RELATED TO PAYA LEBAR AIRPORT

Aerodrome Chart	AD-2-WSAP-ADC-1
Location of Aircraft Stands for Civil Aircraft	AD-2-WSAP-ADC-2
Aerodrome Obstacle Chart - ICAO - TYPE A	AD-2-WSAP-AOC-1
Instrument Approach Chart - ICAO - RWY 20 - PU DVOR/DME	AD-2-WSAP-IAC-1
Instrument Approach Chart - ICAO - RWY 02 - PU DVOR/DME	AD-2-WSAP-IAC-2
Instrument Approach Chart - ICAO - RWY 20 - IPS ILS/DME	AD-2-WSAP-IAC-3
Instrument Approach Chart - ICAO - RWY 02 - IPN ILS DME	AD-2-WSAP-IAC-4
Instrument Approach Chart - ICAO - RWY 02 - RNAV (GNSS)	AD-2-WSAP-IAC-5
Instrument Approach Chart - ICAO - RWY 20 - RNAV (GNSS)	AD-2-WSAP-IAC-6

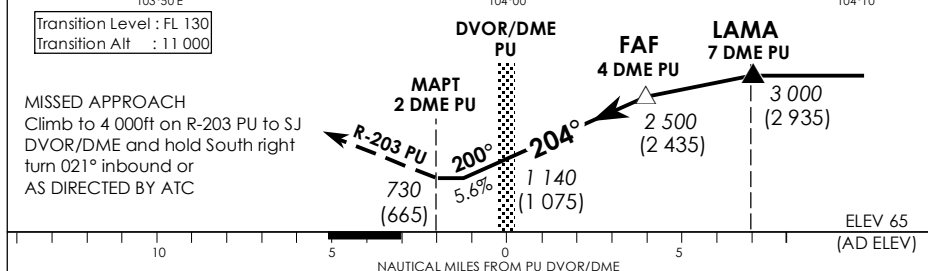
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**INSTRUMENT
APPROACH
CHART**

AERODROME ELEV 65ft

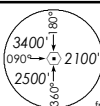
HEIGHT RELATED TO
AD ELEV - 65ftMSA 25 NM
from PAPA UNIFORM DVORAPP 120.3
119.9
TWR 118.05**SINGAPORE/
PAYA LEBAR
PU DVOR/DME
RWY 20**Transition Level : FL 130
Transition Alt : 11 000**MISSED APPROACH**

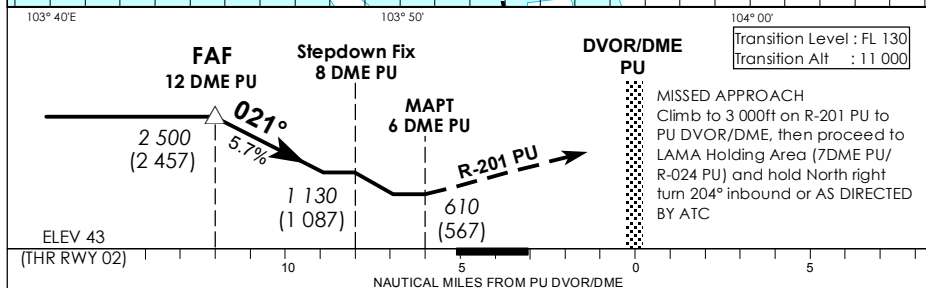
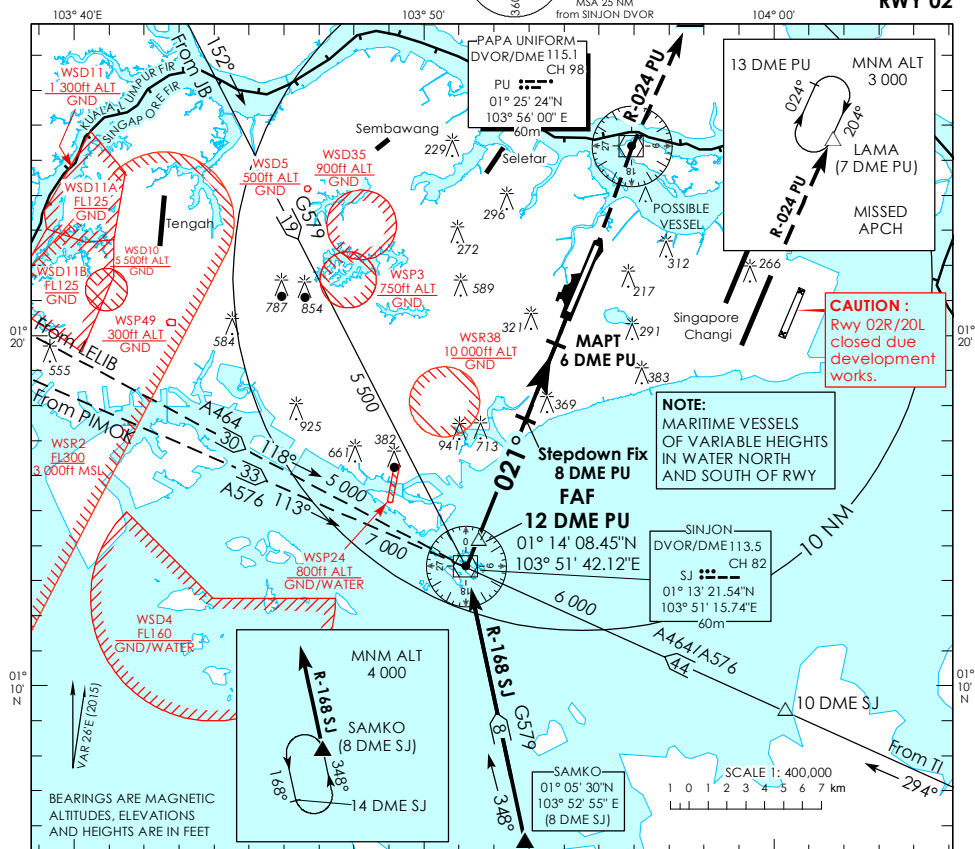
Climb to 4 000ft on R-203 PU to SJ DVOR/DME and hold South right turn 021° inbound or AS DIRECTED BY ATC



0CA (OCH)				
Category of Aircraft	A	B	C	D
Straight-in	730 (665)			
Distance	3 DME	2 DME	1 DME	PU DVOR/DME
Altitude (Height)	2160 (2095)	1820 (1755)	1480 (1415)	1140 (1075)
Speed	knots	70	120	150
FAF - MAPT 6nm	min : s	5 : 09	3 : 00	2 : 24
Rate of descent/GS	ft/min	370	635	795

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**INSTRUMENT
APPROACH
CHART**
AERODROME ELEV 65ft
 HEIGHT RELATED TO
 THR RWY 02 - ELEV 43ft

 APP 120.3
 119.9
 TWR 118.05

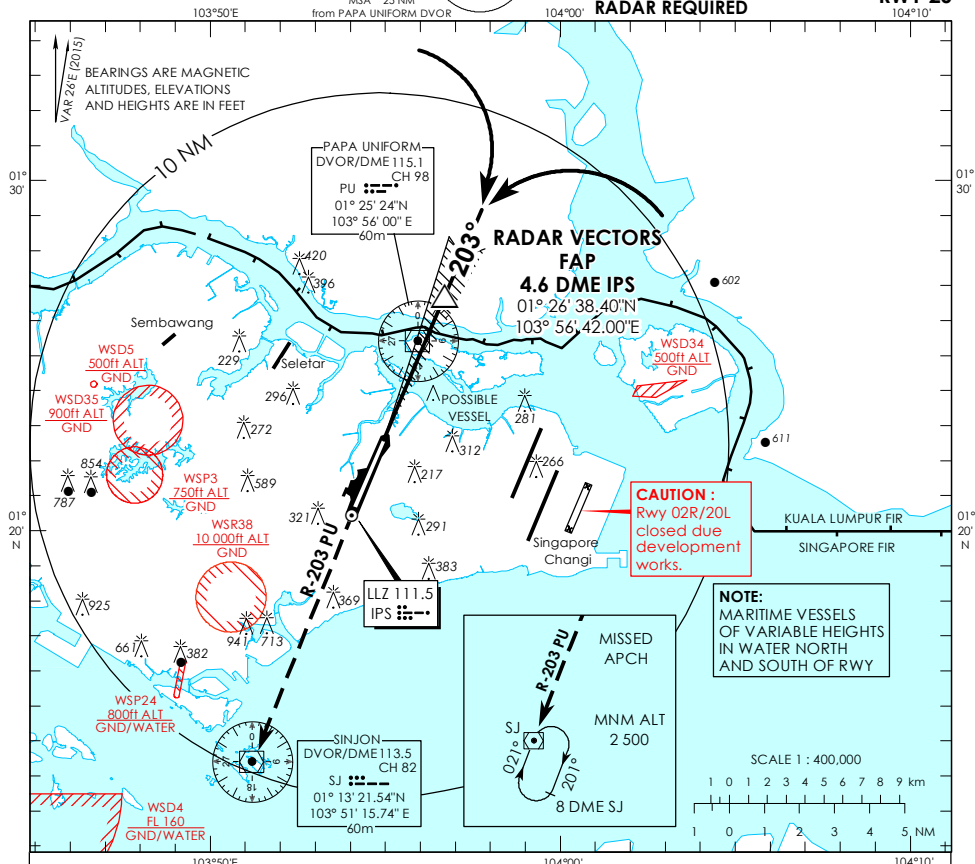
**SINGAPORE/
PAYA LEBAR
PU DVOR/DME
RWY 02**


OCA (OCH)					
Category of Aircraft	A	B	C	D	
Straight-in (with stepdown fix)	610 (567)				
Straight-in (without stepdown fix)	1 130 (1 087)				
Distance	11 DME	10 DME	9 DME	8 DME	7 DME
Altitude (Height)	2170 (2127)	1820 (1777)	1470 (1427)	1130 (1087)	780 (737)
Speed	knots	70	120	150	185
FAF - MAPT 6nm	min : s	5 : 09	3 : 00	2 : 24	1 : 57
Rate of descent/GS	ft/min	370	635	795	980

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**INSTRUMENT
APPROACH
CHART**
AERODROME ELEV **65ft**HEIGHT RELATED TO
THR RWY 20 - 65ft

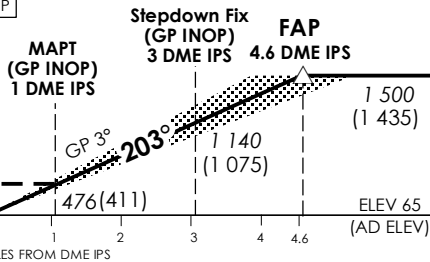
ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
GND CON	121.7 296.0

**SINGAPORE/
PAYA LEBAR
IPS ILS/DME
RWY 20**
RADAR REQUIRED
 Transition Level : FL 130
 Transition Alt : 11 000

ILS/DME co-located with GP

ILS RDH 55

MISSED APPROACH
 Climb to 3 000ft on R-203 PU to SJ
 DVOR/DME and hold South right
 turn 021° inbound or
 AS DIRECTED BY ATC



OCA (OCH)					
Category of Aircraft		A	B	C	D
Straight-in	CAT I ILS	194 (129)	204 (139)	214 (149)	224 (159)
	GP INOP	476 (411)			
Distance		4 DME	3 DME	2 DME	
Altitude (Height)		1300 (1235)	1140 (1075)	820 (755)	
Speed	knots	70	120	150	185
FAF - MAPT 3.6nm	min : s	3 : 06	1 : 48	1 : 27	1 : 11
Rate of descent/GS	ft/min	370	635	795	980

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INSTRUMENT APPROACH CHART

AERODROME ELEV **65ft**

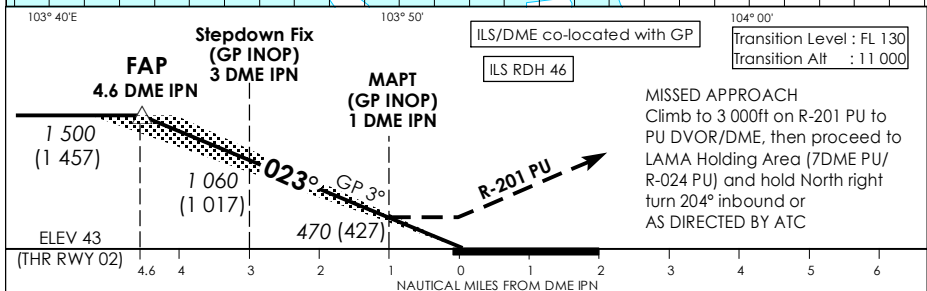
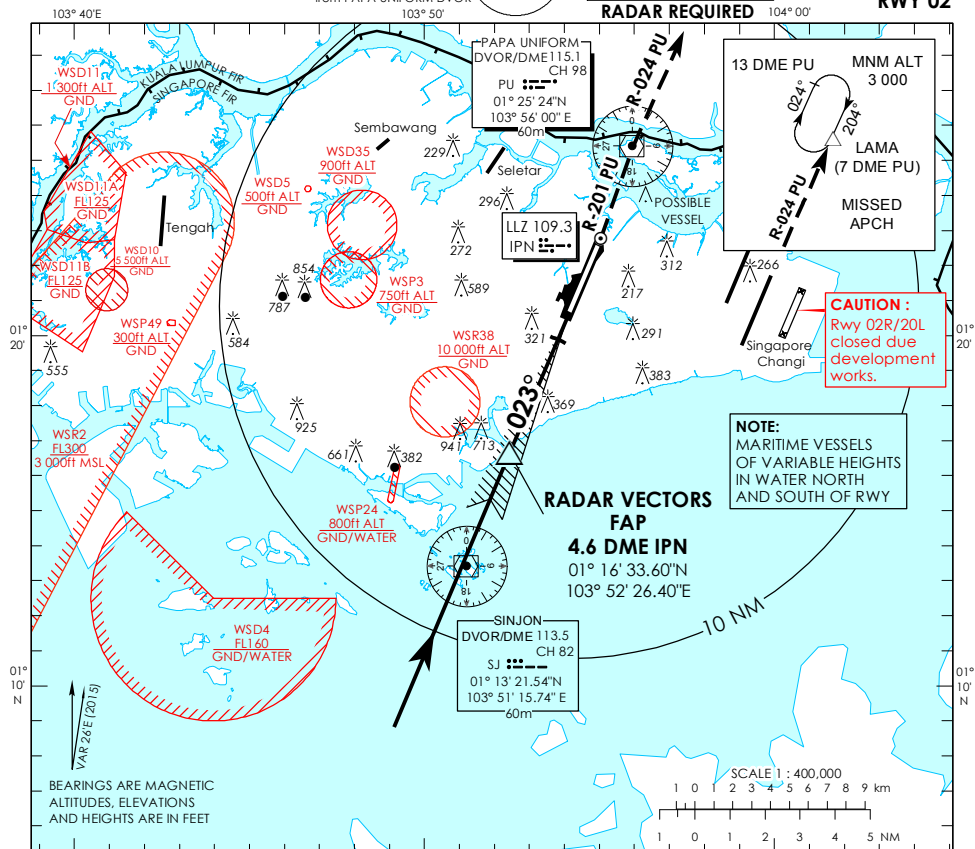
HEIGHT RELATED TO

THR RWY 02 - ELEV **43ft**MSA 25 NM
from PAPA UNIFORM DVOR

ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
GND CON	121.7 296.0

SINGAPORE/
PAYA LEBARIPN ILS/DME
RWY 02

RADAR REQUIRED

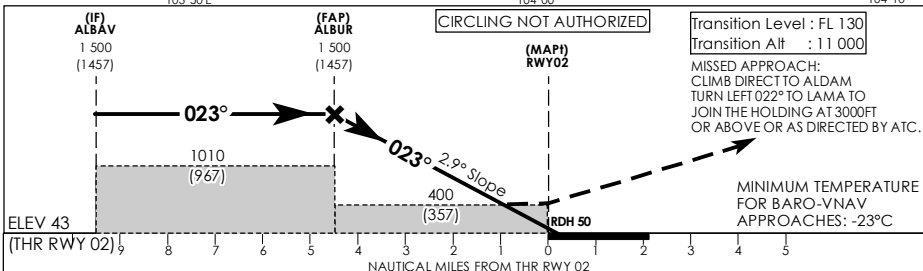
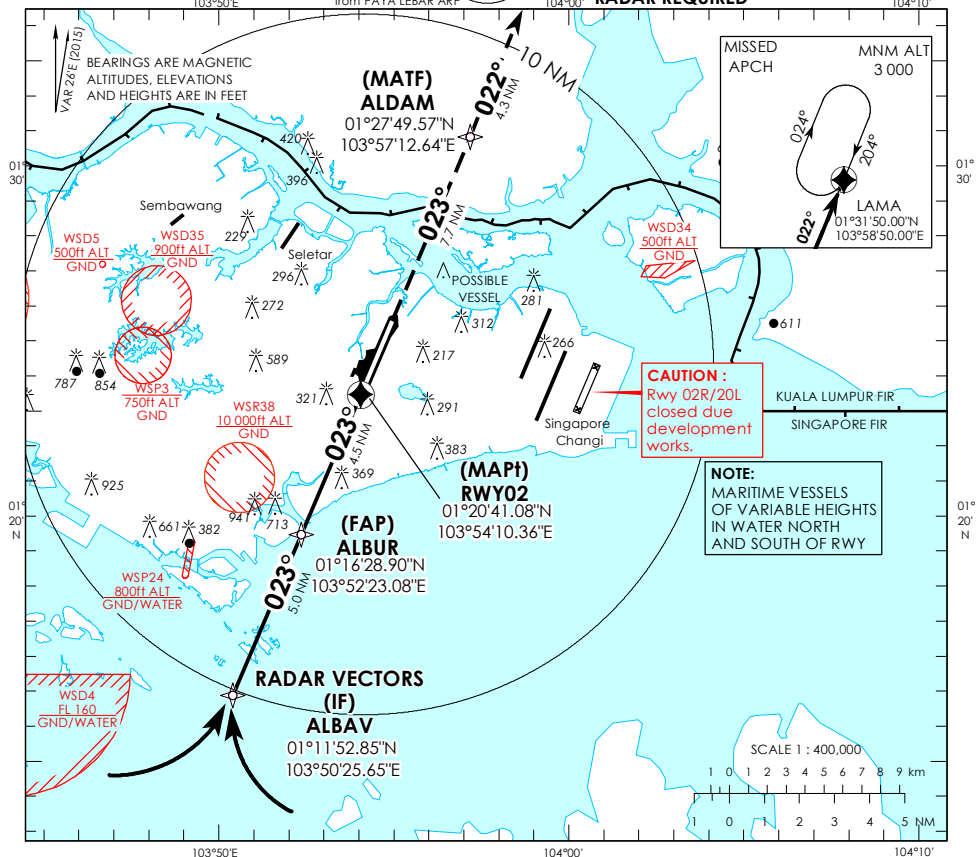


OCA (OCH)				
Category of Aircraft	A	B	C	D
Straight-in	CAT I ILS	178 (135)	188 (145)	198 (155)
	GP INOP			208 (165)
470 (427)				
Distance	4 DME	3 DME	2 DME	
Altitude (Height)	1300 (1257)	1060 (1017)	740 (697)	
Speed	knots	70	120	150
FAF - MAPT 3.6nm	min : s	3 : 06	1 : 48	1 : 27
Rate of descent/GS	ft/min	370	635	795
				980

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**INSTRUMENT
APPROACH
CHART**AERODROME ELEV **65ft**HEIGHT RELATED TO
THR RWY 02 - **43ft**MSA 25 NM
from PAYA LEBAR ARP

ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9 298.0
Paya Lebar TWR	118.05 263.1
GND CON	121.7 296.0

**SINGAPORE/
PAYA LEBAR
RNAV (GNSS)
RWY 02**
RADAR REQUIRED

OCA (OCH)															
Category of Aircraft		A		B		C		D							
LNAV/VNAV		2.5%		400 (357)											
LNAV		2.5%		400 (357)											
Fix		ALBAV		ALBUR		RWY02		ALDAM		LAMA					
Altitude (Height)		1500 (1457)		1500 (1457)		400 (357)		1250 (1207)		1910 (1867)					
Speed		knots		80		100		120		140		160		180	
FAP - MAPt 4.5 nm		min : s		3 : 23		2 : 42		2 : 15		1 : 56		1 : 41		1 : 30	
Rate of descent/GS		ft/min		410		513		615		718		821		923	

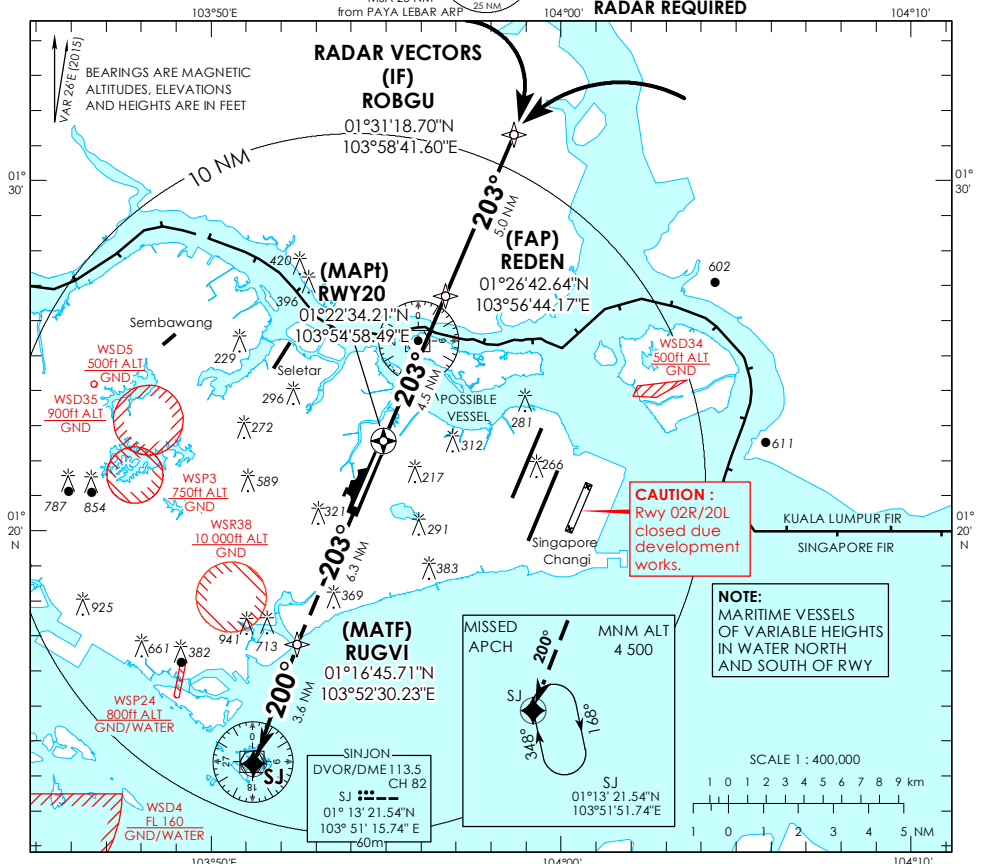
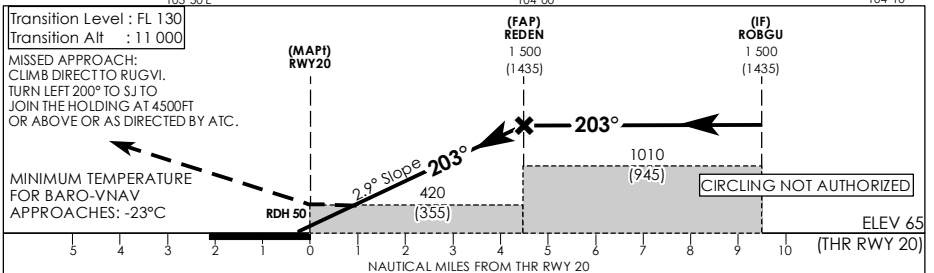
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**INSTRUMENT
APPROACH
CHART**

AERODROME ELEV 65ft

HEIGHT RELATED TO
THR RWY 20 - 65ft

ATIS Paya Lebar	148.9
Singapore APP	120.3
Paya Lebar APP	119.9
Paya Lebar TWR	118.05
GND CON	121.7
	296.0

**SINGAPORE/
PAYA LEBAR
RNAV (GNSS)
RWY 20****RADAR REQUIRED**Transition Level: FL 130
Transition Alt : 11 000MISSED APPROACH:
CLIMB DIRECT TO RUGVI.
TURN LEFT 200° TO SJ TO
JOIN THE HOLDING AT 4500FT
OR ABOVE OR AS DIRECTED BY ATC.MINIMUM TEMPERATURE
FOR BARO-VNAV
APPROACHES: -23°C

OCA (OCH)															
Category of Aircraft		A		B		C		D							
LNAV/VNAV		2.5%		420 (355)											
LNAV		2.5%		420 (355)											
Fix		ROBGU		REDEN		RWY20		RUGVI		SINJON					
Altitude (Height)		1500 (1435)		1500 (1435)		420 (355)		1030 (965)		1580 (1515)					
Speed		knots		80		100		120		140		160		180	
FAP - MAP 4.5 nm		min : s		3 : 23		2 : 42		2 : 15		1 : 56		1 : 41		1 : 30	
Rate of descent/GS		ft/min		410		513		615		718		821		923	

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