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REPUBLIC OF SINGAPORE

AERONAUTICAL INFORMATION SERVICES
CIVIL AVIATION AUTHORITY OF SINGAPORE
SINGAPORE CHANGI AIRPORT
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AIP

AMENDMENT NR 5/15
20 AUGUST 2015

1. SIGNIFICANT INFORMATION AND CHANGES

1.1 Singapore FIR

a)	Implementation of ATS Route L649	ENR 2.1-15 / ENR 3.1-17 / ENR 3.3-3 / ENR 6-1
b)	Amendment to ATS Route M772 restrictions	ENR 3.3-9

1.2 Singapore Changi Airport (WSSS)

a)	Withdrawal of Bedok NDB	GEN 2.5-1 / GEN 2.5-3 / ENR 2.1-9 / ENR 3.4-5 / ENR 3.5-3 / ENR 3.6-3 / ENR 3.6-5 / ENR 4.1-1 / WSSS AD 2-18 / WSSS AD 2-121
b)	Revisions to the existing Standard Instrument Departures (SIDs) and Standard Terminal Arrival Routes (STARs)	WSSS AD 2-51 / chart to WSSS AD 2-99-3 / chart
c)	Revision of MSA based on ARP from 3200ft to 3500ft	WSSS AD 2-117 to WSSS AD 2-120
d)	Removal of STARs BOBAG 1K & 1L, LAVAX 1K & 1L, PASPU 1K & 1L and REMES 1K & 1L	

2. DESTROY PAGES WSSS AD 2-50-1 TO WSSS AD 2-50-4.

3. INSERT THE ATTACHED REPLACEMENT PAGES WHICH ARE MARKED WITH ASTERISKS IN THE CHECKLIST OF PAGES - GEN 0.4-1 TO GEN 0.4-4.

4. NEW OR REVISED INFORMATION IS INDICATED EITHER BY A HORIZONTAL ARROW OR A VERTICAL LINE.

5. RECORD ENTRY OF AMENDMENT ON PAGE GEN 0.2-1.

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 THIS AMENDMENT INCORPORATES INFORMATION CONTAINED IN THE FOLLOWING WHICH ARE HEREBY SUPERSEDED:

AIP SUPPLEMENTS:
94/15 dated 4/5/15, 95/15 dated 14/5/15, 110/15 dated 26/6/15 and 137/15 dated 31/7/15.

NOTAMs:
A1227/15 dated 22/6/15, A1232/15 dated 23/6/15, A1233/15 dated 24/6/15, A1234/15 dated 24/6/15, A1412/15 dated 9/7/15, A1413/15 dated 9/7/15, A1415/15 dated 10/7/15, A1527/15 dated 22/7/15, A1536/15 dated 22/7/15, A1537/15 dated 22/7/15, A1679/15 dated 4/8/15 and A1714/15 dated 6/8/15.

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS

NR/ Year	*Subject*	*AIP section affected*	*Period of validity (from / to)*	*Cancellation record*
1/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
2/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
3/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 16	
4/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
5/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
11/14	Paya Lebar AP - Hammerhead Crane	AD	WIE / 1 DEC 15	
12/14	Paya Lebar AP - Luffer Crane	AD	WIE / 15 DEC 15	
13/14	Paya Lebar AP - Luffer Crane	AD	WIE / 27 DEC 15	
14/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
15/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
51/14	Paya Lebar AP - Cranes	AD	WIE / 31 DEC 15	
52/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
53/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
54/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
55/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
61/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
62/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
63/14	Paya Lebar AP - Cranes	AD	WIE / 31 DEC 15	
64/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
65/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
66/14	Paya Lebar AP - Saddle Cranes	AD	WIE / 30 DEC 15	
67/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
68/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
69/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
70/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 15	
213/14	Paya Lebar AP - Cranes	AD	WIE / 1 MAR 16	
214/14	Paya Lebar AP - Cranes	AD	WIE / 1 MAR 16	
215/14	Paya Lebar AP - Cranes	AD	WIE / 30 MAR 16	
216/14	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 MAR 16	
217/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 MAR 16	
218/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 DEC 17	
219/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 17	
220/14	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 DEC 17	
221/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 17	
222/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 17	
223/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 JUN 16	
224/14	Paya Lebar AP - Mobile Crane	AD	WIE / 1 JUN 16	
225/14	Paya Lebar AP - Crane	AD	WIE / 14 JUN 16	
226/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 16	
227/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 16	
238/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 DEC 16	
239/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
240/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
241/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
242/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
296/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 SEP 15	
297/14	Paya Lebar AP - Luffer Crane	AD	WIE / 30 SEP 15	
298/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 15	
299/14	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 15	
300/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 SEP 15	
330/14	Paya Lebar AP - Crane	AD	WIE / 30 NOV 16	
333/14	Singapore Changi AP - Work activities due to construction of new aircraft stands and new taxiways at West Cargo Area	AD	WIE / 31 AUG 16	

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS				
NR/ Year	*Subject*	*AIP section affected*	*Period of validity (from / to)*	*Cancellation record*
340/14	Paya Lebar AP - Crawler Cranes	AD	WIE / 31 AUG 15	
360/14	Paya Lebar AP - Topless Cranes and Luffer Cranes	AD	WIE / 1 DEC 15	
361/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 20 DEC 15	
362/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
363/14	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
364/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
370/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 JAN 16	
371/14	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 JAN 16	
372/14	Paya Lebar AP - Tower Cranes	AD	WIE / 25 JAN 16	
373/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 JAN 16	
374/14	Paya Lebar AP - Luffer Crane	AD	WIE / 31 JAN 16	
380/14	Paya Lebar AP - Hammerhead and Topless Cranes	AD	WIE / 31 DEC 16	
381/14	Paya Lebar AP - Topless Cranes / A Frames	AD	WIE / 31 DEC 16	
382/14	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
383/14	Paya Lebar AP - Luffer and Hammerhead Canes	AD	WIE / 31 DEC 16	
384/14	Paya Lebar AP - Topless and Hammerhead Cranes	AD	WIE / 31 DEC 16	
11/15	Paya Lebar AP - Tower Cranes	AD	WIE / 30 DEC 15	
12/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 DEC 15	
13/15	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
14/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 15	
15/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 15	
16/15	Paya Lebar AP - Luffer Crane and Saddle Crane	AD	WIE / 31 DEC 15	
17/15	Paya Lebar AP - Tower Crane	AD	WIE / 31 DEC 15	
18/15	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 31 DEC 15	
19/15	Paya Lebar AP - Topless Cranes and Luffer Cranes	AD	WIE / 31 DEC 15	
20/15	Paya Lebar AP - Crawler Crane and Mobile Crane	AD	WIE / 31 JAN 16	
21/15	Paya Lebar AP - Saddle Crane	AD	WIE / 4 DEC 17	
22/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 9 DEC 17	
23/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 17	
24/15	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 17	
25/15	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 31 DEC 17	
27/15	Singapore Changi AP - Work activities due to construction of new aircraft stands and modification of engine run-up bays at East Cargo Area	AD	WIE / 31 MAR 17	
29/15	Paya Lebar AP - Mobile Cranes	AD	WIE / 1 JAN 17	
30/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 2 JAN 17	
31/15	Paya Lebar AP - Topless Cranes	AD	WIE / 3 JAN 17	
32/15	Paya Lebar AP - Luffer Crane	AD	WIE / 31 JAN 17	
33/15	Paya Lebar AP - Luffer Crane and Topless Cranes	AD	WIE / 31 JAN 17	
38/15	Paya Lebar AP - Crawler Cranes	AD	WIE / 31 AUG 15	
39/15	Paya Lebar AP - Luffer Crane	AD	WIE / 22 JUN 16	
40/15	Paya Lebar AP - Mobile Crane	AD	WIE / 29 JUN 16	
41/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 JUN 16	
42/15	Paya Lebar AP - Tower Crane	AD	WIE / 30 JUN 16	
43/15	Paya Lebar AP - Luffer Crane	AD	WIE / 1 JUL 16	
48/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 NOV 15	
49/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 NOV 15	
50/15	Paya Lebar AP - Topless Cranes and Luffer Crane	AD	WIE / 30 NOV 15	
51/15	Paya Lebar AP - Crawler Crane	AD	WIE / 31 DEC 15	
52/15	Paya Lebar AP - Crawler Tower Crane	AD	WIE / 31 DEC 15	
53/15	Paya Lebar AP - Luffer Crane	AD	WIE / 1 FEB 16	

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS				
NR/ Year	*Subject*	*AIP section affected*	*Period of validity (from / to)*	*Cancellation record*
54/15	Sembawang AD - Luffer Cranes	AD	WIE / 28 FEB 16	
55/15	Paya Lebar AD - Crawler Cranes	AD	WIE / 23 MAR 16	
56/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 MAR 16	
57/15	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 APR 16	
58/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 MAY 16	
59/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 10 SEP 16	
60/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 SEP 16	
61/15	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 16	
62/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 16	
63/15	Paya Lebar AP - Luffer Crane	AD	WIE / 1 AUG 16	
64/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 AUG 16	
65/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 AUG 16	
66/15	Paya Lebar AP - Saddle Cranes and Luffer Crane	AD	WIE / 31 AUG 16	
67/15	Paya Lebar AP - Saddle Cranes	AD	WIE / 1 SEP 16	
68/15	Paya Lebar AP - Luffer Crane	AD	WIE / 7 JUL 17	
69/15	Paya Lebar AP - Tower Cranes	AD	WIE / 31 JUL 17	
70/15	Paya Lebar AP - Luffer Cranes and Saddle Cranes	AD	WIE / 19 AUG 17	
71/15	Paya Lebar AP - Tower Cranes	AD	WIE / 10 SEP 17	
72/15	Paya Lebar AP - Tower Cranes	AD	WIE / 10 SEP 17	
73/15	Paya Lebar AP - Saddle Cranes	AD	WIE / 9 OCT 17	
74/15	Paya Lebar AP -Topless Cranes and Luffer Crane	AD	WIE / 31 DEC 17	
75/15	Paya Lebar AP - Hydraulic Crawler Cranes	AD	WIE / 7 JAN 18	
76/15	Paya Lebar AP - Tower Cranes	AD	WIE / 31 MAR 18	
77/15	Paya Lebar AP - Saddle Cranes	AD	WIE / 1 MAY 18	
78/15	Paya Lebar AP - Tower Cranes	AD	WIE / 1 MAR 17	
79/15	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 4 MAR 17	
80/15	Paya Lebar AP - Topless Cranes	AD	WIE / 1 APR 17	
81/15	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 29 APR 17	
82/15	Paya Lebar AP - Topless Cranes	AD	WIE / 10 MAY 17	
83/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 1 FEB 17	
84/15	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 28 FEB 17	
85/15	Paya Lebar AP - Crane	AD	WIE / 28 FEB 17	
86/15	Paya Lebar AP - Luffer Crane	AD	WIE / 28 FEB 17	
87/15	Sembawang AD - Hammerhead Cranes	AD	WIE / 1 FEB 17	
88/15	Paya Lebar AP - Luffer Crane	AD	WIE / 31 OCT 15	
89/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 OCT 15	
90/15	Paya Lebar AP - Luffer Crane	AD	WIE / 1 NOV 15	
91/15	Paya Lebar AP - Hammerhead Crane	AD	WIE / 1 NOV 15	
92/15	Paya Lebar AP - Hammerhead Cranes	AD	WIE / 1 NOV 15	
93/15	Singapore Changi Ap - Works schedule and movement area restrictions pertaining to the diversion of airside services and soil improvement works	AD	WIE / 24 OCT 15	
99/15	Paya Lebar AP - Cranes	AD	WIE / 31 AUG 15	
100/15	Paya Lebar AP - Topless Cranes	AD	WIE / 30 SEP 15	
101/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 SEP 15	
102/15	Paya Lebar AP - Luffer Crane	AD	WIE / 31 DEC 15	
103/15	Paya Lebar AP - Topless Cranes	AD	WIE / 6 MAY 16	
104/15	Paya Lebar AP - Topless Cranes	AD	WIE / 1 JUN 17	
105/15	Paya Lebar AP - Hammerhead and Luffer Cranes	AD	WIE / 30 JUN 17	
108/15	Singapore Changi AP - Revised work activities area due to construction of new aircraft stands and new taxiways at West Cargo Area	AD	WIE / 2 AUG 16	

GEN 0.3 RECORD OF CURRENT AIP SUPPLEMENTS

NR/ Year	*Subject*	*AIP section affected*	*Period of validity (from / to)*	*Cancellation record*
109/15	Singapore Changi AP - Shortening of Runway 20C approach lighting to 720m to facilitate the construction of the northern end-around-taxiway	AD	2 OCT 15 / 31 OCT 18	
110/15	Singapore Changi AP - Revisions to the existing SIDs and STARs	AD	23 JUL 15 / PERM	
111/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 OCT 15	
112/15	Paya Lebar AP - Crawler Crane	AD	WIE / 31 JAN 16	
113/15	Paya Lebar AP - Cranes	AD	WIE / 31 MAY 16	
114/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 MAY 16	
115/15	Paya Lebar AP - Crawler Crane and Mobile Crane	AD	WIE / 13 OCT 16	
116/15	Paya Lebar AP - Luffer Crane	AD	WIE / 14 NOV 16	
117/15	Paya Lebar AP - Crane	AD	WIE / 30 NOV 16	
118/15	Paya Lebar AP - Tower Cranes	AD	WIE / 31 DEC 16	
119/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 31 DEC 16	
120/15	Paya Lebar AP - Topless Tower Cranes	AD	WIE / 1 APR 17	
121/15	Paya Lebar AP - Luffer Crane	AD	WIE / 1 JUN 17	
122/15	Paya Lebar AP - Topless Cranes	AD	WIE / 30 JUN 17	
123/15	Paya Lebar AP - Topless Cranes	AD	WIE / 30 JUN 17	
124/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 17	
125/15	Paya Lebar AP - Luffer Crane	AD	WIE / 1 JUL 17	
126/15	Paya Lebar AP - Luffer Crane	AD	WIE / 30 DEC 17	
127/15	Tengah AD - Topless Cranes and Luffer Crane	AD	1 SEP 15 / 31 AUG 17	
128/15	Tengah AD - Topless Cranes	AD	1 SEP 15 / 31 AUG 17	
129/15	Tengah AD - Luffer Crane	AD	WIE / 31 DEC 17	
130/15	Sembawang AD - Luffer Cranes	AD	WIE / 31 DEC 17	
131/15	Paya Lebar AP - Topless Cranes	AD	WIE / 31 DEC 17	
132/15	Paya Lebar AP - Cranes	AD	WIE / 12 APR 18	
133/15	Paya Lebar AP - Luffer Crane and Topless Crane	AD	WIE / 30 JUN 18	
134/15	Paya Lebar AP - Luffer Cranes	AD	WIE / 30 JUN 18	
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* **WSSS AD 2-21**	**20 AUG 15**
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WSAT AD 2-4	24 JUL 14				
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WSAG AD 2-2	30 APR 15				
WSAG AD 2-3	30 APR 15				
WMKJ AD 2-1	7 MAR 13				
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WIDD AD 2-3	12 MAY 05				
WIDD AD 2-5/chart	12 MAY 05				
WIDD AD 2-6/chart	12 MAY 05				
WIDD AD 2-7/chart	12 MAY 05				
WIDD AD 2-8/chart	12 MAY 05				
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WIDD AD 2-11/chart	12 MAY 05				
WIDD AD 2-12/chart	12 MAY 05				
WIDN AD 2-1	5 MAR 15				
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WIDN AD 2-5/chart	15 DEC 11				
WIDN AD 2-6/chart	15 DEC 11				
WIDN AD 2-7/chart	15 DEC 11				
WIDN AD 2-8/chart	15 DEC 11				
WIDN AD 2-9/chart	15 DEC 11				
WIDN AD 2-10/chart	15 DEC 11				
WIDN AD 2-11/chart	15 DEC 11				
WIDN AD 2-12/chart	15 DEC 11				

GEN 4. CHARGES FOR AERODROMES AND AIR NAVIGATION SERVICES

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GEN 1.3 ENTRY, TRANSIT AND DEPARTURE OF PASSENGERS AND CREW

Visitors holding Hong Kong Document of Identity, Macao Special Administrative Region (MSAR) Travel Permit, Palestinian Authority Passport, Refugee Travel Document issued by the Middle-East countries and Temporary Passport issued by United Arab Emirates will also require a visa to enter Singapore.

Nationals of Commonwealth of Independent States (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) may be allowed entry on a 96-hour transit visa free facilities provided that:

a) the person is in transit to a third country;
b) the person holds a valid passport, confirmed onward air-ticket, entry facilities (including visa) to the third country and have sufficient funds for the period of stay in Singapore;
c) the person continues his journey to the third country within 96 hours visa free period granted; and
d) the person satisfies Singapore's entry requirements.

2.4 Visitors must satisfy the following basic entry requirements before they are allowed to enter Singapore:

a) They are in possession of valid passports with at least 6 months' validity with assurance of their re-entry into their countries of residence or origin;
b) They have sufficient funds to last for the intended period of stay in Singapore; and
c) They hold confirmed onward/return tickets and entry facilities (including visas) to their onward destinations.

The granting of social visit passes to all visitors is determined by the Immigration & Checkpoints Authority (ICA) officers at the point of entry.

2.5 Nationals of Taiwan are required to obtain Visa cards from the Trade Representative of Singapore in Taipei, any Singapore Overseas Mission, or from the various airline operators or shipping companies.

3. PUBLIC HEALTH REQUIREMENTS

3.1 Strict compliance with the provisions of the International Health Regulations, 1969, of the World Health Organisation, The Infectious Diseases Act and the Infectious Diseases (Quarantine) Regulations is required.

3.2 The pilot-in-command of an aircraft landing at Airports in Singapore shall furnish the Airport Health Officer with one copy of the General Declaration form (see ICAO Annex 9 Appendix 1) and one copy of the Passenger Manifest (see ICAO Annex 9 Appendix 2) signed by the pilot-in-command.

3.3 Vaccination Certificate Requirements for entry into Singapore are as follows:

a) Smallpox and cholera vaccination certificates are not required.

b) A yellow fever vaccination certificate is required from travellers above one year of age who, within the preceding six days, have been in or have passed through any country partly or wholly endemic for yellow fever. The certificate is valid for a period of 10 years, beginning ten days after the date of vaccination or in the event of a re-vaccination within such period of ten years, from the date of that re-vaccination.

GEN 1.3 ENTRY, TRANSIT AND DEPARTURE OF PASSENGERS AND CREW

4. FLYING LICENCES AND RATINGS

4.1 VISITING PILOTS - HOLDERS OF NON-SINGAPORE PILOT LICENCES

4.1.1 When a holder of a non-Singapore pilot's licence wishes to fly on a Singapore registered aircraft in a private capacity in Singapore, he will be required to apply for a Certificate of Validation for his foreign licence. The Certificate of Validation, if approved, will be issued for this purpose only and for a limited period. The applicant would also be required to fulfil certain conditions. Pilots who wish to apply for a Certificate of Validation should contact the Personnel Licensing Section of the Civil Aviation Authority of Singapore (see address in paragraph 4.2.2 below)

4.2 CONVERSION OF FOREIGN LICENCE TO SINGAPORE LICENCE

4.2.1 Pilots holding valid licences, including an instrument rating and/or flying instructor's rating issued by ICAO Contracting States, may be considered for the conversion of their licences under the following conditions:

(a) The pilot must demonstrate formal prospective employment by a Singapore air operator, approved training organisation or flying club to operate on Singapore registered aircraft.
(This requirement will not be applicable for the conversion of a foreign licence to a Singapore PPL.)

(b) The pilot's foreign licence and its associated ratings must be valid from the time of application to the time of issue of a Singapore licence and its associated ratings.

(c) The pilot must fulfil all conversion terms as specified by CAAS within a period of 6 months preceding the issue of a Singapore licence and its associated ratings.

4.2.2. Further details on the conversion of a foreign licence can be obtained from:

Safety Policy and Licensing Division
Personnel Licensing Section
Civil Aviation Authority of Singapore
Singapore Changi Airport Terminal 2
South Finger Pier Level 3
Unit No. 038-039
Singapore 819643

TEL: (65) 65412482 / 65412561
FAX: (65) 65434941

4.3 PILOTS WHO HAVE ATTAINED THE AGE OF 65

4.3.1 Any pilot who has attained his 65th birthday shall not be permitted to act as pilot-in-command or co-pilot of an aircraft engaged in scheduled or non-scheduled international commercial air transport operations within Singapore airspace.

GEN 2.5 LIST OF RADIO NAVIGATION AIDS

ID	*Station name*	*Facility*	*Purpose*
AG	Sembawang	NDB	AE
BM	Batam/Hang Nadim (Indonesian facility)	NDB	AE
BP	Batu Pahat (Malaysian facility)	NDB	E
BTM	Batam/Hang Nadim (Indonesian facility)	VOR/DME	AE
ICC	Singapore Changi	ILS/LLZ/DME	A
ICE	Singapore Changi	ILS/LLZ/DME	A
ICH	Singapore Changi	ILS/LLZ/DME	A
ICW	Singapore Changi	ILS/LLZ/DME	A
JB	Jaybee	NDB	AE
JR	Johor Bahru (Malaysian facility)	NDB	AE
KK	Kong Kong	NDB	E
PU	Papa Uniform	DVOR/DME	E
SEL	Seletar	NDB	AE
SJ	Sinjon	DVOR/DME	E
TI	Tanjung Pinang/ Kijang (Indonesian facility)	NDB	AE
TPG	Tanjung Pinang/ Kijang (Indonesian facility)	VOR/DME	AE
VJB	Johor Bahru (Malaysian facility)	VOR/DME	AE
VMR	Mersing (Malaysian facility)	DVOR/DME	E
VTK	Tekong	DVOR/DME	E

Station name	*Facility*	*ID*	*Purpose*
Batam/Hang Nadim (Indonesian facility)	NDB	BM	AE
Batam/Hang Nadim (Indonesian facility)	VOR/DME	BTM	AE
Batu Pahat (Malaysian facility)	NDB	BP	E
Jaybee	NDB	JB	AE
Johor Bahru (Malaysian facility)	NDB	JR	AE
Johor Bahru (Malaysian facility)	VOR/DME	VJB	AE
Kong Kong	NDB	KK	E
Mersing (Malaysian facility)	DVOR/DME	VMR	E
Papa Uniform	DVOR/DME	PU	E
Seletar	NDB	SEL	AE
Sembawang	NDB	AG	AE
Singapore Changi	ILS/LLZ/DME	ICC	A
Singapore Changi	ILS/LLZ/DME	ICE	A
Singapore Changi	ILS/LLZ/DME	ICH	A
Singapore Changi	ILS/LLZ/DME	ICW	A
Sinjon	DVOR/DME	SJ	E
Tanjung Pinang/ Kijang (Indonesian facility)	NDB	TI	AE
Tanjung Pinang/ Kijang (Indonesian facility)	VOR/DME	TPG	AE
Tekong	DVOR/DME	VTK	E

Note : Purpose (A=Aerodrome, E=Enroute)

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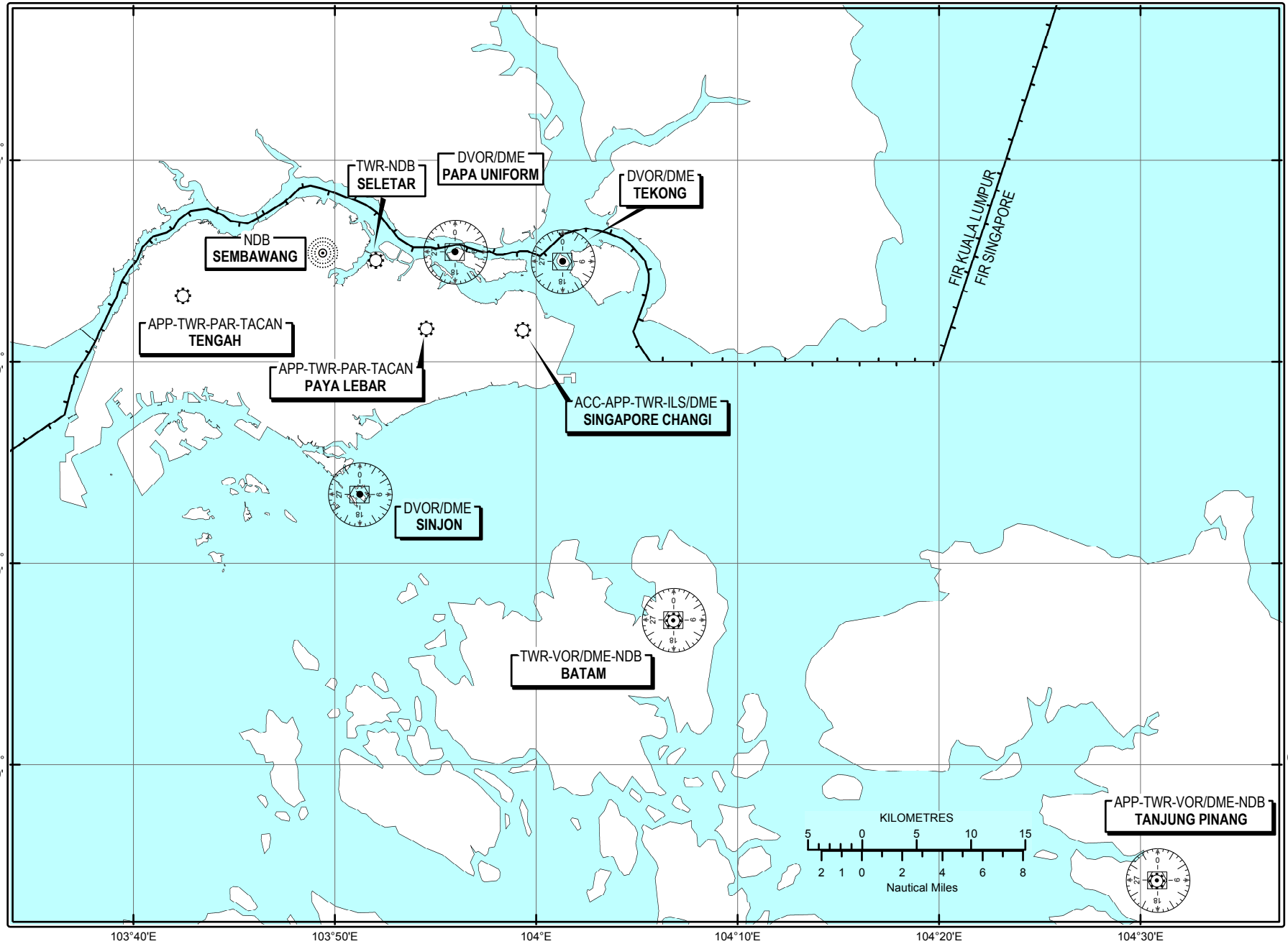
SINGAPORE
RADIO FACILITY INDEX CHART



CHANGES: BED NDB removed.

GEN 2.7 SUNRISE/SUNSET TABLES

1. The sunrise/sunset table is prepared by the Meteorological Services Division of the National Environment Agency and is reproduced here with their permission. The table includes all the airports and aerodromes being served by the Singapore air traffic services.

1.1 The times, in UTC, for sunrise (SR) and sunset (SS) for Year 2015 to Year 2019 are given in the table.

1.2 The table is calculated for the year 2017 which is used as an “average year” for the years from 2015 to 2019. In this period, the times on an arbitrary date and place will deviate less than 2 minutes from the times on the same date and place in the “average year”.

2. SUNRISE - SUNSET TABLE

Latitude : (012200N) Longitude: (1035900E)

MONTH/DAY		SR	SS	MONTH/DAY		SR	SS	MONTH/DAY		SR	SS
JAN	1-4	2307	1109	**MAY**	1-31	2255	1106	**SEP**	1-5	2259	1107
	5-8	2308	1111						6-12	2257	1105
	9-14	2310	1113						13-18	2255	1103
	15-21	2312	1115						19-24	2253	1100
	22-31	2314	1118						25-30	2251	1058
FEB	1-18	2316	1120	**JUN**	1-10	2256	1108	**OCT**	1-5	2250	1056
	19-28	2314	1119		11-20	2258	1110		6-13	2248	1053
					21-30	2300	1112		14-31	2246	1050
MAR	1-5	2313	1118	**JUL**	1-10	2302	1114	**NOV**	1-13	2246	1050
	6-12	2311	1117		11-31	2304	1116		14-22	2248	1051
	13-18	2309	1115						23-30	2250	1053
	19-24	2307	1114								
	25-31	2305	1112								
APR	1-5	2303	1111	**AUG**	1-15	2304	1114	**DEC**	1-5	2252	1055
	6-12	2301	1109		16-25	2302	1111		6-10	2255	1057
	13-19	2259	1108		26-31	2300	1109		11-18	2257	1059
	20-30	2257	1106						19-22	2300	1102
									23-28	2302	1104
									29-31	2305	1107

INTENTIONALLY

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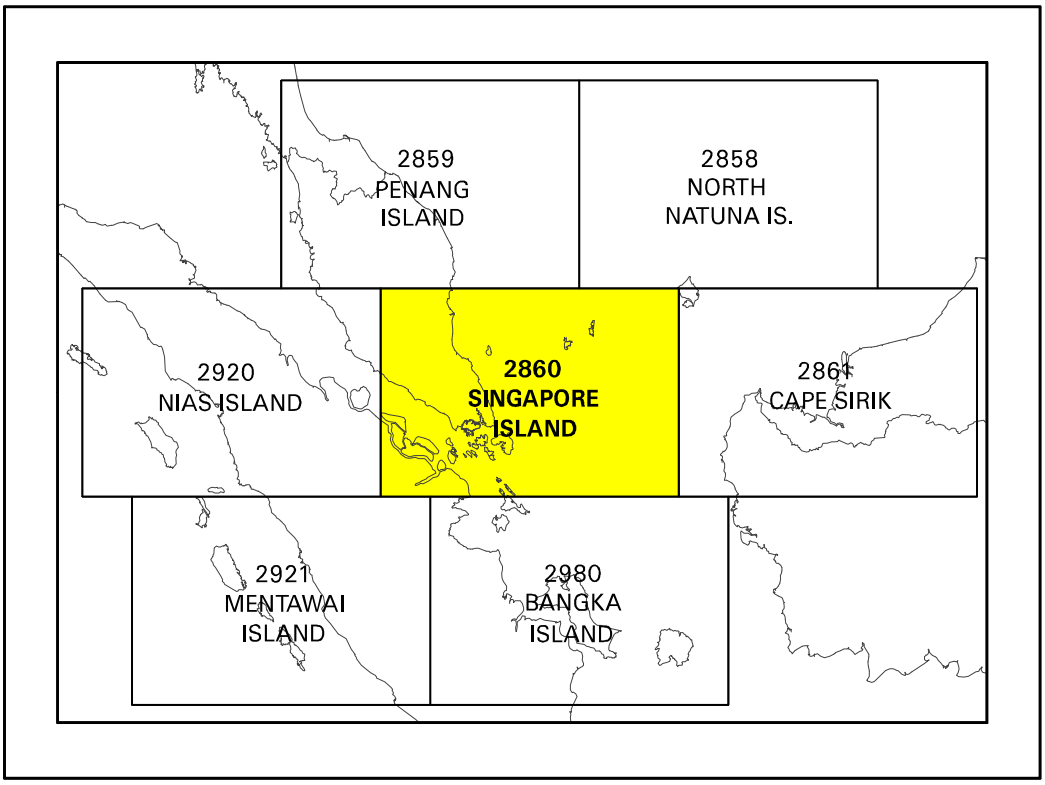
GEN 3.2.5 LIST OF AERONAUTICAL CHARTS AVAILABLE

Title of Chart Series	*Scale*	*Name and/or number*		*Price ($)*	*Date*
World Aeronautical Chart ICAO (WAC)	1:1 000 000	WAC 2860		In AIP	15 JUL 99
Enroute Chart ICAO (ENRC)		ENR 6-1		In AIP	20 AUG 15
Instrument Approach Chart ICAO (IAC)		***Singapore Changi***			
	1:400 000	RWY 02L - ICW ILS/DME	WSSS AD 2-101	In AIP	5 MAR 15
	1:400 000	RWY 02C - ICE ILS/DME	WSSS AD 2-103	In AIP	5 MAR 15
	1:400 000	RWY 02C - VTK DVOR/DME	WSSS AD 2-105	In AIP	5 MAR 15
	1:400 000	RWY 02R - ICX ILS/DME	WSSS AD 2-107	In AIP	5 MAR 15
	1:400 000	RWY 20R - ICH ILS/DME	WSSS AD 2-109	In AIP	5 MAR 15
	1:400 000	RWY 20C - ICC ILS/DME	WSSS AD 2-111	In AIP	5 MAR 15
	1:400 000	RWY 20C - VTK DVOR/DME	WSSS AD 2-113	In AIP	5 MAR 15
	1:400 000	RWY 20L - ICZ ILS/DME	WSSS AD 2-115	In AIP	5 MAR 15
	1:400 000	RWY 02L - RNAV(GNSS)	WSSS AD 2-117	In AIP	20 AUG 15
	1:400 000	RWY 02C - RNAV(GNSS)	WSSS AD 2-118	In AIP	20 AUG 15
	1:400 000	RWY 20R - RNAV(GNSS)	WSSS AD 2-119	In AIP	20 AUG 15
	1:400 000	RWY 20C - RNAV(GNSS)	WSSS AD 2-120	In AIP	20 AUG 15
		Paya Lebar			
	1:400 000	RWY 20 - PU DVOR/DME	WSAP AD 2-17	In AIP	5 MAR 15
	1:400 000	RWY 02 - PU DVOR/DME	WSAP AD 2-19	In AIP	5 MAR 15
	1:400 000	RWY 20 - IPS ILS/DME	WSAP AD 2-21	In AIP	5 MAR 15
	1:400 000	RWY 02 - IPN ILS/DME	WSAP AD 2-23	In AIP	5 MAR 15
Visual Approach Chart ICAO (VAC)	1:400 000	***Singapore Changi***	WSSS AD 2-121	In AIP	20 AUG 15
		Seletar			
	1:100 000	RWY 03	WSSL AD 2-21	In AIP	5 MAR 15
	1:100 000	RWY 21	WSSL AD 2-23	In AIP	5 MAR 15
	1:100 000	RWY 03	WSSL AD 2-25	In AIP	5 MAR 15
	1:100 000	RWY 21	WSSL AD 2-27	In AIP	5 MAR 15
Visual Departure Chart		***Seletar***			
	1:100 000	RWY 03	WSSL AD 2-29	In AIP	5 MAR 15
	1:100 000	RWY 21	WSSL AD 2-31	In AIP	5 MAR 15
Aerodrome Chart ICAO (AC)		***Singapore Changi***	WSSS AD 2-31	In AIP	20 AUG 15
		Seletar	WSSL AD 2-13	In AIP	25 JUN 15
		Paya Lebar	WSAP AD 2-11	In AIP	5 MAR 15
Aerodrome Obstacle Chart ICAO TYPE A (AOC)		***Singapore Changi***			
	1:10 000	RWY 20R/02L	WSSS AD 2-37	In AIP	20 AUG 15
	1:10 000	RWY 20C/02C	WSSS AD 2-39	In AIP	5 MAR 15
		Seletar			
	1:10 000	RWY 03/21	WSSL AD 2 -17	In AIP	5 MAR 15
		Paya Lebar			
	1:20 000	RWY 20/02	WSAP AD 2-15	In AIP	5 MAR 15
Aerodrome Obstacle Chart ICAO TYPE B (AOC)		***Singapore Changi***			
	1:25 000	RWY 02L/20R and 02C/20C	WSSS AD 2-41	In AIP	20 AUG 15
		Seletar			
	1:12 500	RWY 03/21	WSSL AD 2-19	In AIP	30 APR 15
Precision Approach Terrain Chart - ICAO (PATC)		***Singapore Changi***			
	1:2 500	RWY 02L	WSSS AD 2-43	In AIP	25 APR 96
	1:2 500	RWY 02C	WSSS AD 2-45	In AIP	25 APR 96

GEN 3.2.6 INDEX TO THE WORLD AERONAUTICAL CHART (WAC) - ICAO 1:1 000 000



GEN 3.4 COMMUNICATION SERVICES

1. RESPONSIBLE SERVICE

1.1 The Civil Aviation Authority of Singapore (CAAS) is responsible for the provision of telecommunication and navigation facility services in Singapore.

1.2 Enquiries, suggestions or complaints regarding any telecommunication and navigation facility services should be referred to the Director-General of Civil Aviation.

Director-General of Civil Aviation
Civil Aviation Authority of Singapore
Singapore Changi Airport
P. O. Box 1
Singapore 918141

TEL: (65) 65421122
FAX: (65) 65421231
AFS: WSSSYAYX

1.3 The service is provided in accordance with the provisions contained in the following ICAO documents:
Annex 10 - *Aeronautical Telecommunications*
Doc 8400 - *Procedures for Air Navigation Services - ICAO Abbreviations and Codes (PANS-ABC)*
Doc 8585 - *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*
Doc 7030 - *Regional Supplementary Procedures*
Doc 7910 - *Location Indicators*
Doc 9880 - Manual on Detailed Technical Specifications for the Aeronautical Telecommunications Network (ATN) using ISO / OSI standards and protocols

1.4 Differences to these provisions are detailed in subsection GEN 1.7.

2. AREA OF RESPONSIBILITY

2.1 Communication services are provided for the entire SINGAPORE FIR.

3. TYPES OF SERVICE

3.1 Radio Navigation Services

3.1.1 The following types of radio aids to navigation are available:

LF/MF non-directional beacon (NDB)
Instrument landing system (ILS)
Doppler VHF omni-directional radio range (DVOR)
Distance measuring equipment (DME)
Long range primary and secondary surveillance radar
Primary and secondary approach radar
Airport surface detection equipment (ASDE)

3.2 Voice/data link services

3.2.1 *Voice service*

The aeronautical stations maintain a continuous watch on their stated frequencies during the published hours of service unless otherwise notified.

An aircraft should normally communicate with the air-ground control radio station that exercises control in the area in which the aircraft is flying. Aircraft should maintain a continuous watch on the appropriate frequency of the control station and should not abandon watch, except in an emergency, without informing the control radio station.

3.2.2 *Enroute Communications Organisation*

a) The radio frequencies for enroute communications are listed in subsection ENR 2.1

b) The Singapore HF network provides an umbrella communication coverage for the FIR and may be contacted if communication cannot be maintained on the primary channel.

c) Aircraft approaching or departing from an airport is required to communicate with that airport on the appropriate surface movement, tower or approach control frequency.

d) ADS and CPDLC services are available to suitably equipped aircraft operating outside radar cover over the South China Sea. The hours when ADS and CPDLC services are available and the logon requirements are listed in subsection ENR 2.1. Full details of the services are published in pages ENR 1.1-13 to ENR 1.1-15.

3.2.3 *Data link Service*

The messages to be transmitted over the Aeronautical Fixed Service (AFS) are accepted only if:

a) the messages satisfy the requirements of ICAO Annex 10, Volume II, Chapter 3, paragraph 3.3;

b) the messages are prepared in the form specified in ICAO Annex 10;

c) the text of an individual message does not exceed 1800 characters.

3.2.4 *General Aircraft Operating Agency Messages*

General aircraft operating agency messages (with priority indicator “KK”) are only accepted for transmission to countries which have agreed to accept Class B2 traffic. Details of telecommunication charges for Class B2 traffic to countries with which Singapore has agreement for handling of such traffic are given below:

<u>List of States to which Class B2 traffic will be accepted (rate of charge will be S$0.30 per word):</u>

Australia, Brunei, Hong Kong, Indonesia (AFS stations), Kampuchea Democratic, Malaysia (Peninsular Malaysia, Sabah and Sarawak), Myanmar, Netherlands, New Zealand, Philippines (Manila), Singapore, Taiwan, Thailand and Vietnam.

3.3 Broadcasting Service

3.3.1 The following broadcasts are available for the use of aircraft in flight:

a) HF RTF Volmet Broadcasts (page GEN 3.5-7 refers)

b) VHF ATIS Broadcasts (page GEN 3.4-3 refers)

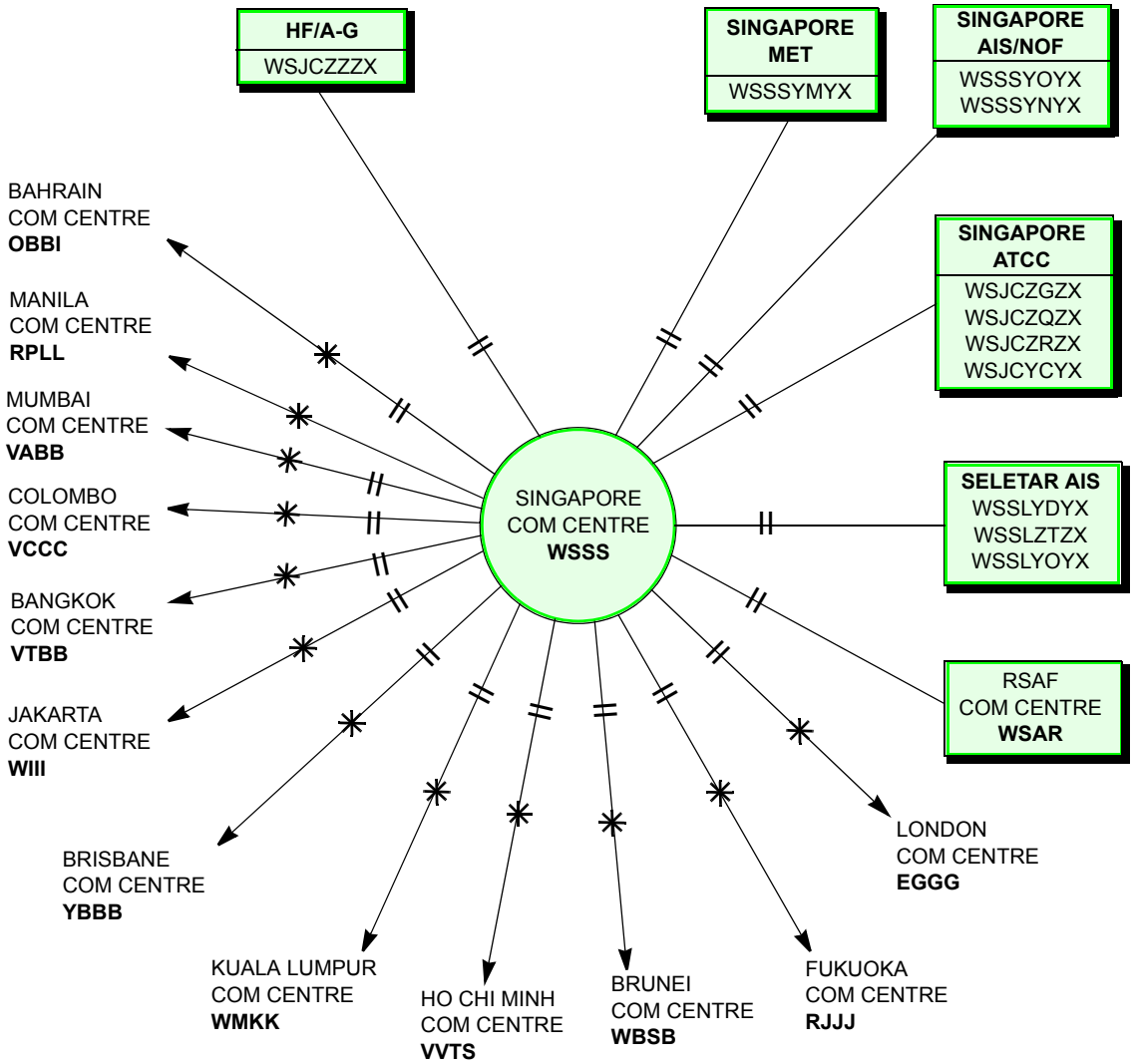
AERONAUTICAL FIXED SERVICES

AERONAUTICAL FIXED SERVICES - INTERNATIONAL AND DOMESTIC CIRCUITS										
STATION			CORRESPONDENT		TYPE OF CHANNEL	RADIO FREQUENCIES		TYPE OF TRAFFIC	HOURS (UTC)	REMARKS
NAME	LOCATION INDICATOR	CALLSIGN FOR RADIO CIRCUITS	NAME	CALLSIGN FOR RADIO CIRCUITS		TRANS KHZ	REC KHZ			
1	2	3	4	5	6	7	8	9	10	11
SINGAPORE	WSSS		BANGKOK		LTTdx			AFS	H24	
	WSSS		BAHRAIN		LTTdx			AFS	H24	
	WSSS		BRUNEI		LTTdx			AFS	H24	
	WSSS		COLOMBO		LTTdx			AFS	H24	
	WSSS		HO CHI MINH		LTTdx			AFS	H24	
	WSSS		JAKARTA		LTTdx			AFS	H24	
	WSSS		KUALA LUMPUR		LTTdx			AFS	H24	
	WSSS		LONDON		LTTdx			AFS	H24	
	WSSS		MANILA		LTTdx			AFS	H24	
	WSSS		BRISBANE		LTTdx			AFS	H24	
	WSSS		FUKUOKA		LTTdx			AFS	H24	
	WSSS		MUMBAI		LTTdx			AFS	H24	
SINGAPORE ACC			JOHOR BAHRU KUALA LUMPUR		LTTdx			ATS	H24	Direct ATS Speech Circuit
			KUCHING		LTTdx			ATS	During aerodrome hours of operation	Direct ATS Speech Circuit
			KOTA KINABALU		LTTdx			ATS	H24	Direct ATS Speech Circuit
			JAKARTA		LTTdx			ATS	H24	4-party Speech Circuit
			PEKAN BARU		LTTdx			ATS	0001-1100	4-party Speech Circuit
			MANILA		LTTdx			ATS	H24	Direct ATS Speech Circuit

AERONAUTICAL FIXED SERVICES

AERONAUTICAL FIXED SERVICES - INTERNATIONAL AND DOMESTIC CIRCUITS										
STATION			CORRESPONDENT		TYPE OF CHANNEL	RADIO FREQUENCIES		TYPE OF TRAFFIC	HOURS (UTC)	REMARKS
NAME	LOCATION INDICATOR	CALLSIGN FOR RADIO CIRCUITS	NAME	CALLSIGN FOR RADIO CIRCUITS		TRANS KHZ	REC KHZ			
1	2	3	4	5	6	7	8	9	10	11
SINGAPORE ACC			MEDAN		LTTdx			ATS	2300-1400	4-party Speech Circuit
			BATAM		LTTdx			ATS	0100-0800	Direct ATS Speech Circuit
Note :For local circuits connecting different offices to a Com Centre, see diagrams GEN 3.4-7 and 3.4-9										

AERONAUTICAL FIXED SERVICES - AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN)/ AIR TRAFFIC SERVICES (ATS) MESSAGE HANDLING SERVICES (AMHS)



LEGEND	
LANDLINE TELETYPEWRITER (LTT)	———
SIMPLEX CIRCUIT	I
DUPLEX CIRCUIT	II
INTERNATIONAL CIRCUIT	✳

CHANGES : Chart title amended and Mumbai COM Centre added.

8.6 DATA LINK FAILURE

8.6.1 Pilots recognising a failure of a CPDLC connection must immediately establish communications on the appropriate voice frequency. When voice communications have been established, voice must continue to be used as the primary medium until a CPDLC connection has been re-established and the controller has authorised the return to data link.

8.6.2 In the event of an expected CPDLC shutdown, the controller will immediately advise all data link connected aircraft of the failure by voice. Instructions will continue to be issued by voice until the return of the data link system. The return of the system to an operational state will require a new AFN LOGON from the affected aircraft.

8.7 FLIGHT PLAN NOTIFICATION

8.7.1 Aircraft using data link communications must annotate their ICAO flight plan as follows:

a) Data link serviceability and capability must be notified by inserting one or more of the following letters in Item 10a (radio communication, navigation and approach aid equipment and capabilities):

J1 CPDLC ATN VDL Mode 2
J2 CPDLC FANS 1/A HFDL
J3 CPDLC FANS 1/A VDL Mode A
J4 CPDLC FANS 1/A VDL Mode 2
J5 CPDLC FANS 1/A SATCOM (INMARSAT)
J6 CPDLC FANS 1/A SATCOM (MTSAT)
J7 CPDLC FANS 1/A SATCOM (Iridium)

b) Aircraft registration must be inserted in Item 18 as the ground system uses the information during the AFN LOGON.

c) Serviceable ADS equipment carried must be annotated on the flight plan by adding one or more of the following descriptors to describe the serviceable surveillance equipment and/or capabilities on board:

ADS-B
B1 ADS-B with dedicated 1090MHz ADS-B “out” capability
B2 ADS-B with dedicated 1090MHz ADS-B “out” and “in” capability
U1 ADS-B “out” capability using UAT
U2 ADS-B “out” and “in” capability using UAT
V1 ADS-B “out” capability using VDL Mode 4
V2 ADS-B “out” and “in” capability using VDL Mode 4

9. WEATHER DEVIATION PROCEDURES FOR USE IN THE SINGAPORE FIR

9.1 GENERAL

9.1.1 Deviations applicable in the South China Sea airspace, particularly outside the coverage of direct controller-pilot VHF communication.

9.1.2 These procedures are intended to enhance ICAO Regional Supplementary Procedures (DOC 7030). However, it must be recognised that all possible circumstances cannot be covered. The pilot’s judgement shall ultimately determine the sequence of actions taken and ATC shall render all possible assistance.

9.1.3 If an aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. In the meantime, the aircraft shall broadcast its position (including the ATS route designator or the track code, as appropriate) and intentions on frequency 121.5MHz at suitable intervals until ATC clearance is received.

9.1.4 The pilot shall advise ATC when weather deviation is no longer required or when a weather deviation has been completed and the aircraft has returned to its cleared track.

9.2 OBTAINING ATC PRIORITY WHEN WEATHER DEVIATION IS REQUIRED

9.2.1 When the pilot initiates communications with ATC, rapid response may be obtained by stating that "WEATHER DEVIATION IS REQUIRED" to indicate that priority is desired on the frequency and for ATC response.

9.2.2 The pilot also retains the option of initiating the communication using the urgency call "PAN-PAN" 3 times to alert all listening parties of a special handling condition which will receive ATC priority for issuance of a clearance or assistance.

9.3 ACTIONS TO BE TAKEN WHEN PILOT-CONTROLLER COMMUNICATIONS ARE ESTABLISHED

9.3.1 When two-way pilot-controller communications are in effect, and a pilot identifies the need to deviate from track to avoid weather, the pilot shall notify ATC and request clearance to deviate from track, advising where possible the extent of the deviation expected.

9.3.2 ATC will then take one of the following actions:

i) if there is no conflicting traffic in the lateral dimension, ATC shall issue clearance to deviate from track;
ii) if there is conflicting traffic in the lateral dimension, ATC shall separate aircraft by establishing vertical separation and issue a clearance to deviate from track;
iii) if there is conflicting traffic in the lateral dimension, and ATC is unable to establish vertical separation, ATC shall advise the pilot and provide information on all other aircraft with which the aircraft could potentially conflict.

9.3.3 The pilot shall comply with the ATC clearance issued for the deviation or, if ATC is unable to issue a revised clearance, and after evaluating the circumstances of the situation, the pilot shall execute the procedures detailed in paragraph 9.4 below. The pilot shall immediately inform ATC of intentions and ATC will issue essential traffic information to all affected aircraft.

9.3.4 The pilot shall, at regular intervals, update ATC of the extent and progress of the deviation to ensure that separation applied is not infringed or to enable ATC to update essential traffic information.

9.4 ACTIONS TO BE TAKEN WHEN PILOT-CONTROLLER COMMUNICATIONS ARE NOT ESTABLISHED OR REVISED ATC CLEARANCE IS NOT AVAILABLE

9.4.1 If contact cannot be established, or a revised ATC clearance is not available and deviation from track is required to avoid weather, the pilot shall take the following actions:

a) deviate away from an organised track or route system, if possible;

b) broadcast aircraft position and intentions on frequency 121.5MHz at suitable intervals stating:
   i) flight identification (operator callsign);
   ii) flight level;
   iii) track code or ATS route designator; and
   iv) extent of deviation expected.

c) watch for conflicting traffic both visually and by reference to TCAS (if equipped);

d) turn on aircraft exterior lights;

e) when the aircraft is approximately 10NM from track, initiate a level change based on the following criteria:

Route Centreline Track	Deviation Greater than 10NM	Above FL290 Level Change	At FL290 & Below Level Change
East	Left	Descend 500ft	Descend 300ft
000-179 Mag	Right	Climb 500ft	Climb 300ft
West	Left	Climb 500ft	Climb 300ft
180-359 Mag	Right	Descend 500ft	Descend 300ft

f) when returning to track, be established at the assigned flight level or altitude when the aircraft is within approximately 10NM of track;

g) if contact cannot be established prior to deviation, continue to attempt to contact ATC to obtain a clearance. If contact is subsequently established, continue to keep ATC advised of intentions and obtain essential traffic information.

1.7 RADIO FAILURE

1.7.1 In the event of failure of two-way communications while operating on the radar frequency, the pilot shall change to any other alternative ATC frequencies and request instructions.

1.7.2 If able to receive but not transmit, the pilot shall remain on the frequency on which he has been communicating and comply with instructions issued by the radar controller designed to establish that the aircraft is receiving. If this is established, further instructions appropriate to the circumstances will be issued.

1.7.3 If unable to make contact on the alternative frequencies, the pilot shall comply with the standard radio failure procedures as specified below.

1.8 TOTAL RADIO COMMUNICATION FAILURE PROCEDURES

1.8.1 If total radio communication failure occurs in VMC during daylight hours, the pilot shall continue to fly in VMC and land at the most suitable aerodrome. If it occurs in VMC during the hours of darkness (between sunset and sunrise) action shall be taken in accordance with para 1.8.2 below.

1.8.2 If total radio communication failure occurs in IMC, ATC action is based on the assumption that the aircraft will continue to its destination and if unable to land, will proceed to its nominated alternate. Separation standards will be increased and airspace reserved accordingly. (see Appendices 'A' and 'B' , pages ENR 1.6-9 and 1.6-11).

1.8.3 In IMC, or if unable to maintain VFR, the pilot shall either leave or avoid controlled airspace and areas of dense traffic and establish VFR operation or, alternatively, shall:

a) Proceed according to the current flight plan, at the last assigned flight level, to the clearance limit and thereafter at the flight plan level.
b) Arrive at the destination as close as possible to ETA.
c) Commence descent as close as possible to EAT (or ETA if no EAT has been acknowledged).
d) If unable to land within 30 minutes of the time descent should have started (i.e. EAT or ETA if no EAT has been acknowledged), proceed to cross SAMKO Holding Area (SHA) at 4,000ft then via A457 at FL200 if Kuala Lumpur is the nominated alternate or via B470 at FL290 if Soekarno-Hatta is the nominated alternate or otherwise proceed at the planned flight level to other nominated alternate.

Note:

1) Aircraft are to follow the established radio failure procedures as laid down by the respective airports.
2) During this 30 minute period ATC will reserve the airspace at the aircraft's flight level and below. At the expiry of this period with the concurrence of other users normal operations will resume.

1.8.4 In all cases, the pilot shall contact ATC as soon as possible after landing.

1.9 RADIO FAILURE - TRANSPONDER - EQUIPPED AIRCRAFT

1.9.1 Aircraft equipped with transponder shall set transponder to Mode A/C Code 7600.

1.9.2 Partial Radio Failure

a) Aircraft Unable to Receive
Pilots shall adopt the complete RTF failure procedures specified in para 1.8.

b) Aircraft Able to Receive
Following verification that aircraft is able to receive ground transmissions, ATC will continue to issue instructions and/or clearance to pilots. Such instructions and clearances will be repeated.

1.10 TOTAL RADIO FAILURE - SPECIAL PROCEDURES - SINGAPORE CHANGI AP - ARRIVALS

1.10.1 In VMC during daylight hours, if total radio communication failure occurs to an aircraft bound for Singapore Changi Airport, the pilot shall maintain VMC to land at the most suitable airfield and report to the appropriate air traffic control unit by the most expeditious means.

1.10.2 For IFR flights to SIngapore Changi Airport, aircraft experiencing radio failure shall:

i) Proceed according to the last acknowledged clearance received from Singapore ATC, or

ii) If no specific instructions or clearance has been received from Singapore ATC:

a) Maintain the last assigned altitude or flight level and proceed via airways thereafter the appropriate STAR for RWY 02L/02C to SAMKO Holding Area (SHA) except for STARS KARTO 1A, BIKTA 1A, MABAL 1A and VEPLI 1A, flight shall proceed to SHA after SANAT.

b) Commence descent from SHA at or as close as possible to the ETA as indicated in the FPL.

c) Carry out the appropriate instrument approach procedure from SHA to land on RWY 02L/02C.

iii) If unable to effect a landing on:

a) RWY 02L
Carry out missed approach procedure to AKOMA (PU R-356/20DME). Leave AKOMA at 4,000ft to NYLON Holding Area (NHA) and execute the appropriate instrument procedure from NHA to land on RWY 20R or RWY 20C, as appropriate.

b) RWY 02C
Carry out missed approach procedure to NYLON Holding Area (NHA) and execute the appropriate instrument procedure from NHA to land on RWY 20R or RWY 20C, as appropriate.

c) RWY 20R
Carry out missed approach procedure to SAMKO Holding Area (SHA) and execute the appropriate instrument procedure from SHA to land on RWY 02L or RWY 02C, as appropriate.

d) RWY 20C
Carry out missed approach procedure to EXOMO (VTK R-158/22DME). Leave EXOMO at 4,000ft to SAMKO Holding Area (SHA) and execute the appropriate instrument procedure from SHA to land on RWY 02L or RWY 02C, as appropriate.

1.11 IDENTIFICATION OF RUNWAY-IN-USE

1.11.1 ATC will switch on the appropriate approach lights and the ILS serving the runway-in-use to assist the pilot in its identification. If the approach lights for the runway-in-use are sighted but the ILS frequency is not received, the pilot shall assume that the ILS is inoperative and shall proceed to land on the runway on which the approach lights have been sighted.

1.11.2 If unable to land within 30 minutes of EAT or ETA, if no EAT has been received and acknowledged, proceed in accordance with AIP page ENR 1.6-3 para 1.8.3 (d).

1.12 TOTAL RADIO FAILURE - SPECIAL PROCEDURES - SINGAPORE CHANGI AP - DEPARTURES

1.12.1 When an aircraft which has been cleared by ATC to an intermediate level experiences total radio communication failure immediately after departure from Singapore Changi Airport and it is deemed unsafe for it to continue to its destination, the pilot will set the aircraft transponder to Mode A/C Code 7600 and adhere to the procedures below.

1.12.2 When radio communication failure occurs immediately after the aircraft has departed on RWY 02L/02C, the pilot shall proceed according to the following procedures:

a) Proceed straight ahead to NYLON Holding Area (NHA) climbing to the last assigned altitude. At NHA, climb/descend to maintain 7,000ft;

b) Hold at NHA for 4 minutes and leave NHA on track 203°. At 10 DME north of VTK, turn left for HOSBA Holding Area (HHA) to jettison fuel, maintaining 7,000ft;

c) After fuel jettison, proceed to SAMKO Holding Area (SHA) via AWY G580 and SINJON DVOR. Maintain 7,000ft. At SHA descend for an instrument approach on RWY 02L/02C. Identify the runway-in-use in accordance with para 1.11 above.

1.4.4 Except in an ADS or radar environment, pilots shall report reaching any altitude assigned within RVSM airspace.

1.4.5 Paragraphs 1.5, 1.6, 1.7 and 1.8 below contain procedures for in-flight contingencies that have been updated for RVSM operations. The contingency procedures in paragraphs 1.5 and 1.6 and the off-set procedures in paragraph 1.8 should be applied in Oceanic operations. The weather deviation procedures in paragraph 1.7 may be applied in all airspace in the region.

1.5 SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES IN OCEANIC AIRSPACE IN THE SINGAPORE FIR

1.5.1 The following general procedures apply to both subsonic and supersonic aircraft and are intended as guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to:

(a) weather;
(b) aircraft performance;
(c) pressurisation failure; and
(d) problems associated with high-level supersonic flight.

1.5.2 The procedures are applicable primarily when rapid descent and/or turn-back or diversion to an alternate airport is required. The pilot's judgement shall determine the sequence of actions to be taken, taking into account specific circumstances.

1.5.3 If an aircraft is unable to continue flight in accordance with its air traffic control clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using a distress or urgency signal as appropriate.

1.5.4 If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time and, until a revised clearance is received, the pilot shall:

(a) if possible, deviate away from an organised track or route system;
(b) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position (including the ATS route designator or the track code) and intentions on the frequency in use, as well as on frequency 121.5MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz);
(c) watch for conflicting traffic both visually and by reference to ACAS (if equipped); and
(d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations).

1.6 IN-FLIGHT CONTINGENCY PROCEDURES FOR SUBSONIC AIRCRAFT REQUIRING RAPID DESCENT, TURN-BACK OR DIVERSION IN OCEANIC AIRSPACE IN THE SINGAPORE FIR

Initial action

1.6.1 If unable to comply with the provisions of 1.5.3 to obtain a revised ATC clearance, the aircraft should leave its assigned route or track by turning 45 degrees right or left whenever this is possible. The direction of the turn should be determined by the position of the aircraft relative to any organised route or track system (for example, whether the aircraft is outside, at the edge of, or within the system). Other factors to consider are terrain clearance and the levels allocated to adjacent routes or tracks.

Subsequent action

1.6.2 An aircraft able to maintain its assigned level should acquire and maintain in either direction a track laterally separated by 15NM from its assigned route or track and once established on the offset track, climb or descend 500ft (150m).

1.6.3 An aircraft NOT able to maintain its assigned level should, whenever possible, minimise its rate of descent while turning to acquire and maintain in either direction a track laterally separated by 15NM from its assigned route or track. For subsequent level flight, a level should be selected which differs by 500ft (150m) from those normally used.

1.6.4 Before commencing a diversion across the flow of adjacent traffic, the aircraft should, while maintaining the 15NM offset, expedite climb above or descend below levels where the majority of aircraft operate (e.g. to a level above FL400 or below FL290) and then maintain a level which differs by 500ft (150m) from those normally used. However, if the pilot is unable or unwilling to carry out a major climb or descent, the aircraft should be flown at a level 500ft above or below levels normally used until a new ATC clearance is obtained.

1.6.5 If these contingency procedures are employed by a twin-engine aircraft as a result of an engine shutdown or a failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation, reminding ATC of the type of aircraft involved and requesting expeditious handling.

1.7 WEATHER DEVIATION PROCEDURES IN THE SINGAPORE FIR

General procedures

1.7.1 The following procedures are intended to provide guidance. All possible circumstances cannot be covered. The pilot's judgement shall ultimately determine the sequence of actions taken and ATC shall render all possible assistance.

1.7.2 If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time. In the meantime, the aircraft shall follow the procedures detailed in paragraph 1.7.9.

1.7.3 The pilot shall advise ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to the centreline of its cleared route.

1.7.4 When the pilot initiates communications with ATC, rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response.

1.7.5 The pilot still retains the option of initiating the communications using the urgency call "PAN PAN" to alert all listening parties to a special handling condition, which may receive ATC priority for issuance of a clearance or assistance.

1.7.6 When controller-pilot communications are established, the pilot shall notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected. ATC will take one of the following actions:

(a) if there is no conflicting traffic in the horizontal dimension, ATC will issue clearance to deviate from track; or

(b) if there is conflicting traffic in the horizontal dimension, ATC will separate aircraft by establishing vertical separation or, if unable to establish vertical separation, ATC shall:
   i) advise the pilot unable to issue clearance for requested deviation
   ii) advise pilot of conflicting traffic
   iii) request pilot's intentions

   SAMPLE PHRASEOLOGY:

   "Unable (requested deviation), traffic is (callsign, position, altitude, direction), advise intentions."

1.7.7 The pilot will take the following actions:

(a) advise ATC of intentions by the most expeditious means available,
(b) comply with air traffic control clearance issued, or
(c) execute the procedures detailed in 1.7.9 below, (ATC will issue essential traffic information to all affected aircraft.)
(d) if necessary, establish voice communications with ATC to expedite dialogue on the situation.

3. RNP 10 NAVIGATION REQUIREMENTS

3.1 INTRODUCTION

3.1.1 ATC will apply 50NM lateral separation minima to aircraft which are approved for RNP 10 operations on RNAV routes:

L625 - BTN TOMAN and MEVIN
L642 - BTN CHEUNG CHAU and MERSING
L649 - BTN DAKIX and LAXOR
M767 - BTN JOMALIG and TOMAN
M771 - BTN MERSING and CHEUNG CHAU
N884 - BTN MERSING and MANILA
N892 - BTN HENGCHUN and MERSING

3.1.2 ATC will apply 60NM lateral separation minima to aircraft which are approved for RNP 10 operations on RNAV routes:

L644 - BTN DUDIS and KIKOR
M772 - BTN ASISU and LAXOR

3.1.3 Pilots shall inform ATC of any deterioration or failure of the navigation systems below the navigation requirements for RNP 10. ATC shall then provide alternative separation and / or alternative routing.

3.1.4 Pilots of aircraft meeting RNP 10 navigation requirements must indicate /R at Item 10 of the ICAO Flight Plan.

3.2 OPERATIONS BY AIRCRAFT NOT MEETING RNP 10 REQUIREMENTS

3.2.1 An aircraft that is unable to meet the minimum navigational requirements for RNP 10 must file flight plan at FL280 or below. Operations above FL280 for these aircraft will be subject to ATC approval, in accordance with the provisions of paragraph 3.2.3.

3.2.2 Pilots of such aircraft wishing to operate on ATS routes specified in paragraph 3.1.1, at or above FL290, must indicate their level requirements at Item 18 of the ICAO Flight Plan as RMK/REQ FL (insert level). Approval to operate at the preferred level will be subject to ATC co-ordination and clearance. Flights that are not approved will be required to operate at FL280 or below or via alternative routes.

3.2.3 ATC units receiving a request for a non-RNP 10 approved aircraft to operate on ATS routes specified in paragraph 3.1.1, at or above FL290, will co-ordinate with adjacent ATC units affected by the flight. In deciding whether or not to approve the flight, each ATC unit will take into consideration:

(a) traffic density;
(b) communications, including the non-availability of normal communications facilities;
(c) weather conditions en-route; and
(d) any other factors pertinent at the time.

3.3 SAFETY ASSESSMENT CRITERIA

3.3.1 The safety criteria associated with the introduction of the reduced lateral separation minima of 60NM will be in accordance with the requirements for RNP 10 navigation performance, i.e. aircraft navigation performance shall be such that the standard deviation of lateral track errors shall be less than 8.7km (4.7NM).

3.4 MONITORING OF AIRCRAFT NAVIGATION PERFORMANCE

3.4.1 Monitoring of aircraft navigation performance is a joint responsibility between operators, States of Registry or States of Operators (as applicable), regulatory authorities and the ATS providers. The detection and reporting of non-conformance with the navigation requirements against the following parameters will rely primarily on radar monitoring by ATC units:

Lateral Deviations

(i) a deviation of 15NM or more from track centreline based on radar observations;

Longitudinal Deviations

(i) where time separation is applied by ATC - when the reported separation based on ATC verified pilot estimates varies by 3 minutes or more from the expected separation at the reporting point; or
(ii) where a distance based standard is applied by ATC based on ADS, radar observation or RNAV distance reports - when the distance varies by 10NM or more from the expected distance.

3.4.2 ATC will advise the pilot-in-command when such deviations are observed and implement the required investigation procedures.

3.4.3 The ATC authority will investigate the causes of such deviations in conjunction with the aircraft operator and the State of Registry, or the State of the Operator, as applicable.

3.5 SEPARATION MINIMA

3.5.1 Lateral Separation Minima

(a) A lateral separation minima of 60NM will be applied between aircraft equipped in accordance with RNP 10 navigation requirements, operating at FL290 or above, on ATS routes L644 and M772 (see paragraph 3.1.2). 50NM lateral separation minima will be applied between aircraft which are approved for RNP10 operations on ATS routes L625, L642, L649, M767, M771, N884 and N892 (see paragraph 3.1.1).

(b) When an aircraft not meeting the RNP 10 navigation requirements is approved to operate at or above FL290, on the ATS routes shown in paragraphs 3.1.1 and 3.1.2, vertical separation shall be applied with aircraft operating on adjacent routes.

3.5.2 Longitudinal Separation

3.5.2.1 80NM RNAV or 10 minutes (or less) Mach Number Technique (MNT) separation minima may be applied between aircraft.

3.5.2.2 50NM longitudinal separation may be applied between RNP10 approved aircraft on ATS routes L642, M767, M771 and N884 which either LOGON to CPDLC or are within VHF radio range.

3.5.3 Vertical Separation

3.5.3.1 A vertical separation minima of 2,000ft, including the use of non-standard levels, will be applied between aircraft operating at FL290 or above, on the ATS routes shown in paragraph 3.1.1.

3.6 OPERATORS' PROCEDURES

3.6.1 The operator shall ensure in-flight procedures, crew manuals and training programmes are established in accordance with RNP 10 navigation requirements.

3.7 CONTINGENCY PROCEDURES (including WEATHER DEVIATION)

3.7.1 Contingency procedures, including weather deviation, shall be in accordance with the provisions contained in AIP Singapore pages ENR 1.8-3 to ENR 1.8-5.

6.4.4 DETAILS OF APPROACH AIRSPACE HOLDING AREAS

Holding Fix / ID / Co-ordinates	Inbound Track °M	Direction of Turn	MAX HLDG Speed (IAS)	Time (MIN)	MNM-MAX HLDG Level	Controlling Unit and Frequency
1	2	3	4	5	6	7
NYLON 013657N 1040624E	203°	Left	220 knots	1	FL140 3,000ft	Singapore Approach 124.05MHz (PRI) 132.15MHz (SRY)
LAVAX 010950N 1042714E	269°	Left	220 knots	1	FL140 7,000ft	Singapore Approach 124.05MHz (PRI) 132.15MHz (SRY)
REMES 004342N 1035735E	348°	Right	220 knots	1	FL140 6,000ft	Singapore Approach 124.6MHz (PRI) 132.15MHz (SRY)
BOBAG 010230N 1032954E	083°	Right	220 knots	1	FL140 6,000ft	Singapore Approach 124.6MHz (PRI) 132.15MHz (SRY)

6.4.5 ALTERNATE HOLDING AREAS

In the event of inclement weather or capacity constraints rendering a specific holding area unusable, arrivals may be cleared to an alternate holding area for re-sequencing. To ensure smooth transition to alternate holding area, all arrivals bound for Singapore Changi Airport shall have their FMS programmed with all the four promulgated holding areas (paragraph 6.4.4)

6.5 EXPECTED TIME TO LEAVE HOLDING AREA

6.5.1 If arrival delay is processed by means of holding, pilots will be informed of the expected time to leave the respective holding area.

6.5.2 The expected time to leave is issued to serve as an early notification of the probable holding duration as well as for unforeseen circumstance such as radio failure (see page ENR 1.6-4). Subsequently, a specified time to leave the holding area will be issued to pilots to resume the flight according to the assigned RNAV STARs.

6.6 DEPARTING AIRCRAFT FROM SINGAPORE CHANGI AIRPORT

6.6.1 DEPARTURE SPEED CONTROL

Departing aircraft shall not exceed IAS 230 knots below 4,000 feet AMSL or at the waypoints specified in the SID and not exceed IAS 250 knots below 10,000 feet AMSL. Pilots shall also comply with speed control restrictions according to published SIDs.

7. AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST (ADS-B) OUT EXCLUSIVE AIRSPACE WITHIN PARTS OF THE SINGAPORE FIR

7.1 ADS-B BASED SURVEILLANCE AIRSPACE AND AIRCRAFT OPERATOR APPROVAL

7.1.1 Aircraft that operates on ATS routes L642, M771, N891 M753, L644, N892 and M904 within airspace bounded by 073605N 1090045E, 040713N 1063543E, 041717N 1061247E (MABLI), 044841N 1052247E (DOLOX), 045223N 1041442E (ENREP), 045000N 1034400E, thence north along the Singapore FIR boundary to 070000N 1080000E at or above FL290 must carry serviceable ADS-B transmitting equipment that has been certified as meeting EASA AMC 20-24, or FAA AC No. 20-165A - Airworthiness Approval of ADS-B, or meets the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia.

7.1.2 Aircraft that does not comply with the requirements stipulated in paragraph 7.1.1 will not be accorded priority in the delineated airspace and flight level assignments would be subjected to air traffic conditions.

7.1.3 If an aircraft carries ADS-B transmitting equipment but does not comply with the requirements stipulated in paragraph 7.1.1, the aircraft must not fly in the delineated airspace unless the equipment is deactivated or set to transmit only a value of zero for the Navigation Uncertainty Category (NUCp) or Navigation Integrity Category (NIC).

7.1.4 Flights operating in the delineated airspace are to contact Singapore Radar on 134.35MHz (primary frequency) and 133.6MHz (secondary frequency).

7.2 FLIGHT PLANNING REQUIREMENTS

7.2.1 Aircraft operators complying with the requirements stipulated in paragraph 7.1.1 are to indicate the appropriate ADS-B designator in Item 10 of the ICAO flight plan:

B1 ADS-B with dedicated 1090 MHz ADS-B “out” capability
B2 ADS-B with dedicated 1090 MHz ADS-B “out” and “in” capability

7.2.2 Aircraft operators are to include the aircraft address (24 Bit Code) in hexadecimal format in Item 18 of the ICAO flight plan as per the following example:

CODE/7C432B

7.2.3 Aircraft Identification (ACID) not exceeding 7 characters must be accurately indicated in Item 7 of the ICAO flight plan and replicated exactly when set in the aircraft avionics (for transmission as Flight ID) as follows:

either

a) The three-letter ICAO designator of the aircraft operator followed by the flight number (e.g. SIA123, MAS123, GIA123), when radiotelephony callsign consists of the associated ICAO telephony designator for the aircraft operator followed by the flight number (e.g. SINGAPORE 123, MALAYSIAN 123, INDONESIA 123).

or

b) The aircraft registration (e.g. N555AB, 9VABC) when the radiotelephony callsign consists of the aircraft registration.

Important: ACID entered should not have any leading zeros unless it is part of the flight number as indicated in Item 7 of the ICAO flight plan. Hyphens, dashes or spaces are NOT to be used.

ENR 1.10 FLIGHT PLANNING

1. PROCEDURES FOR SUBMISSION OF A FLIGHT PLAN

1.1 Requirement for submission of a Flight Plan

1.1.1 The pilot-in-command or the operator shall submit a flight plan to ATC in respect of the following flights via the AFS and / or Internet:

a) Flights on airways, associated holding areas and all other controlled airspaces whether IFR or VFR;
b) Any flight or portion thereof to be provided with air traffic control service;
c) Any flight within or into designated areas, or along designated routes to facilitate co-ordination with appropriate military units or with air traffic service units in adjacent States in order to avoid the possible need for interception for the purpose of identification;
d) Any flight across international borders.

1.1.2 The pilot-in-command or the operator shall use the ICAO flight plan form except for where a flight is planned to be conducted in the Seletar aerodrome circuit or departing Seletar Aerodrome for Light Aircraft Training Areas A, B and C. Details of the flight shall be submitted by electronic mail using a standard format and submission procedure can be found in the following webpage: http://www.caas.gov.sg/caasWeb2010/export/sites/caas/en/eServices_Forms/Aeronautical_Information_Services.html?_locale=en

1.1.3 For a flight that will be operating within Singapore only (except for flights mentioned in paragraph 1.1.2, the pilot-in-command or the operator shall submit the ICAO flight plan using the automated AIM-SG system and to include Military ATC addressee WSARYWYX. If for any reason a flight plan is not approved, the pilot-in-command shall contact RSAF AOC at 67683702 for clarification.

1.1.4 The pilot-in-command or the operator of IFR flight operating out of Seletar is required to file via KK.

1.1.5 VFR flight operating between Seletar and Johor Bahru shall route via Point X (012830N1034954E), Tebrau City Mall (013259N1034748E), Felda Ulu Tebrau (013751N1034510E) and vice versa.

1.2 Requirement for submission of a Flight Plan for Test Flights

1.2.1 Test flights shall be conducted on Airway G580 between HOSBA and NIMIX to minimise disruption to civil scheduled flight movements and to facilitate the test flight operations.

1.2.2 A flight plan shall be submitted for a test flight at least one hour before departure. The pilot-in-command or the operator shall include in Item 18 of the flight plan ‘RMK/TEST FLT APPROVED BY ATC’.

1.2.3 The pilot-in-command shall maintain a 2-way VHF communication with Singapore ATC on the assigned VHF frequency at all times.

1.2.4 The pilot-in-command of the test flight shall adhere to ATC instructions at all times. Test flight manoeuvres are subject to ATC clearance, real-time coordination and traffic.

1.2.5 Procedures for application to conduct test flights are provided on page GEN 1.2-6 paragraph 4.

1.3 Lead time for filing flight plans and flight plan associated messages

1.3.1 Flight plan shall be filed 120 hours, or five days, at the earliest but no later than 60 minutes prior to departure (estimated off-block time).

1.3.2 In the event of a delay of 30 minutes in excess of the estimated off-block time, the flight plan should be amended or a new flight plan submitted and the old flight plan cancelled, whichever is applicable. To indicate a delay to a flight, a DLA or a CHG message may be used depending on the circumstances.

1.3.3 The old flight plan shall be cancelled and a new flight plan shall be submitted when changes are made to any one of the following fields:
7/Aircraft Identification, 15/Route and/or 16/Destination Aerodrome

1.3.4 A flight plan submitted in flight on HF RTF shall be submitted at least 20 minutes (or if on VHF RTF at least 10 minutes) prior to the intended point of entry into a control zone, control area, advisory area or advisory route.

1.3.5 A pilot-in-command may change from an IFR flight plan to a VFR flight plan by reporting “CANCELLING MY IFR FLIGHT” when weather conditions indicate that the remainder of the flight can be conducted under VFR. [However, within Singapore, all flights whether IFR or VFR shall be regulated in accordance with instrument flight rules.] (see note 2 below).

1.3.6 ATC will acknowledge:

"IFR flight cancelled at.....(time)" or

if information is available which indicates the likelihood of IMC prevailing along the route, will notify these conditions as follows:

"Instrument MET conditions reported (or forecast) in the vicinity of....."

Note 1: The fact that pilot flying in VMC does not by itself constitute cancellation of an IFR flight plan.
Note 2: Within the Singapore/Johor Airspace Complex and Control Zones all flights are regulated in accordance with IFR separation standards.

1.4 Persons on board (POB)

1.4.1 The pilot-in-command or his representative is required to state the total number of persons on board (POB - i.e. passengers and crew) in the flight plan.

1.5 DATA LINK Communication

1.5.1 Aircraft using data link communications (page ENR 1.1-15) must insert one or more of the following letters in Item 10a of their flight plan to indicate serviceable COM aid equipment and capabilities available:

J1 CPDLC ATN VDL Mode 2
J2 CPDLC FANS 1/A HFDL
J3 CPDLC FANS 1/A VDL Mode A
J4 CPDLC FANS 1/A VDL Mode 2
J5 CPDLC FANS 1/A SATCOM (INMARSAT)
J6 CPDLC FANS 1/A SATCOM (MTSAT)
J7 CPDLC FANS 1/A SATCOM (Iridium)

1.6 RNAV Approved Aircraft

1.6.1 Aircraft flying on RNAV routes A464, A576, B470, G334, L625, L642, L644, M646, M751, M753, M758, M761, M767, M768, M771, M772, M774, N875, N884, N891 and N892 (see page ENR 1.8-13) must be RNAV equipped and should annotate their flight plan as follows:

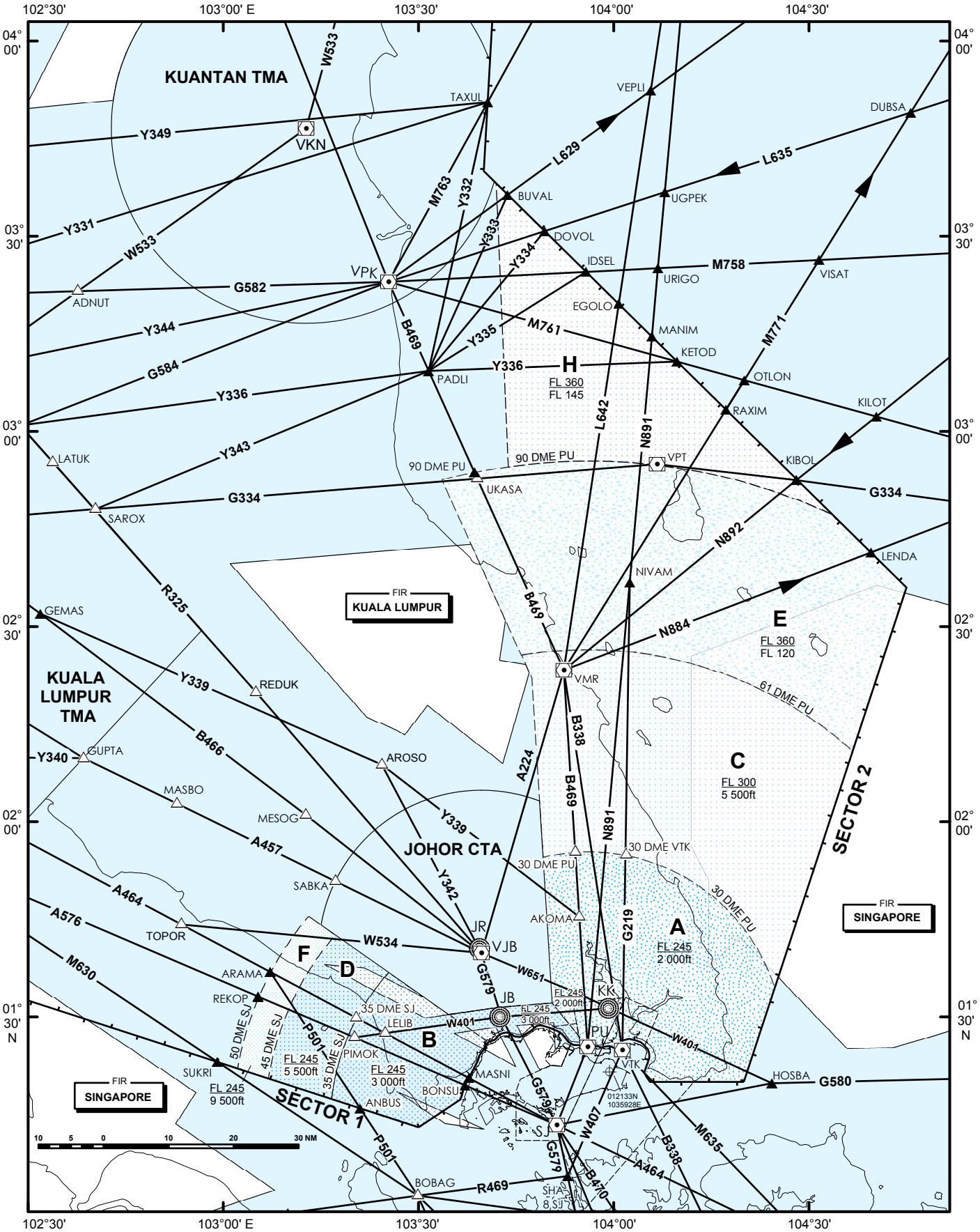
	Item 10	Item 15	Item 18
RNAV equipment is carried	**G** (GNSS) **I** (Inertial Navigation) **R** (PBN approved) Guidance material in the application of performance based navigation to a specific route segment, route or area is contained in the Performance Based Navigation Manual (Doc 9613).	True Mach NR and FL at entry and exit points	The types of external GNSS augmentation, if any, are specified following the indicator NAV/ and separated by a space. The performance based navigation levels that can be met shall be specified following the indicator PBN/.

1.6.2 Aircraft flying on RNAV routes L642 (CHEUNG CHAU - MERSING), L644 (DUDIS - KIKOR), M771 (MERSING - CHEUNG CHAU), M772 (ASISU - LAXOR), N892 (HENGCHUN - MERSING), L625 (TOMAN - MEVIN), N884 (MERSING - MANILA) and M767 (JOMALIG - TOMAN) (see page ENR 1.8-17) must be RNP 10 approved and shall indicate in their flight plan:
Item 10 - "R" where R = PBN approved
Item 18 - PBN/A1 where A1 = RNAV 10 (RNP 10)

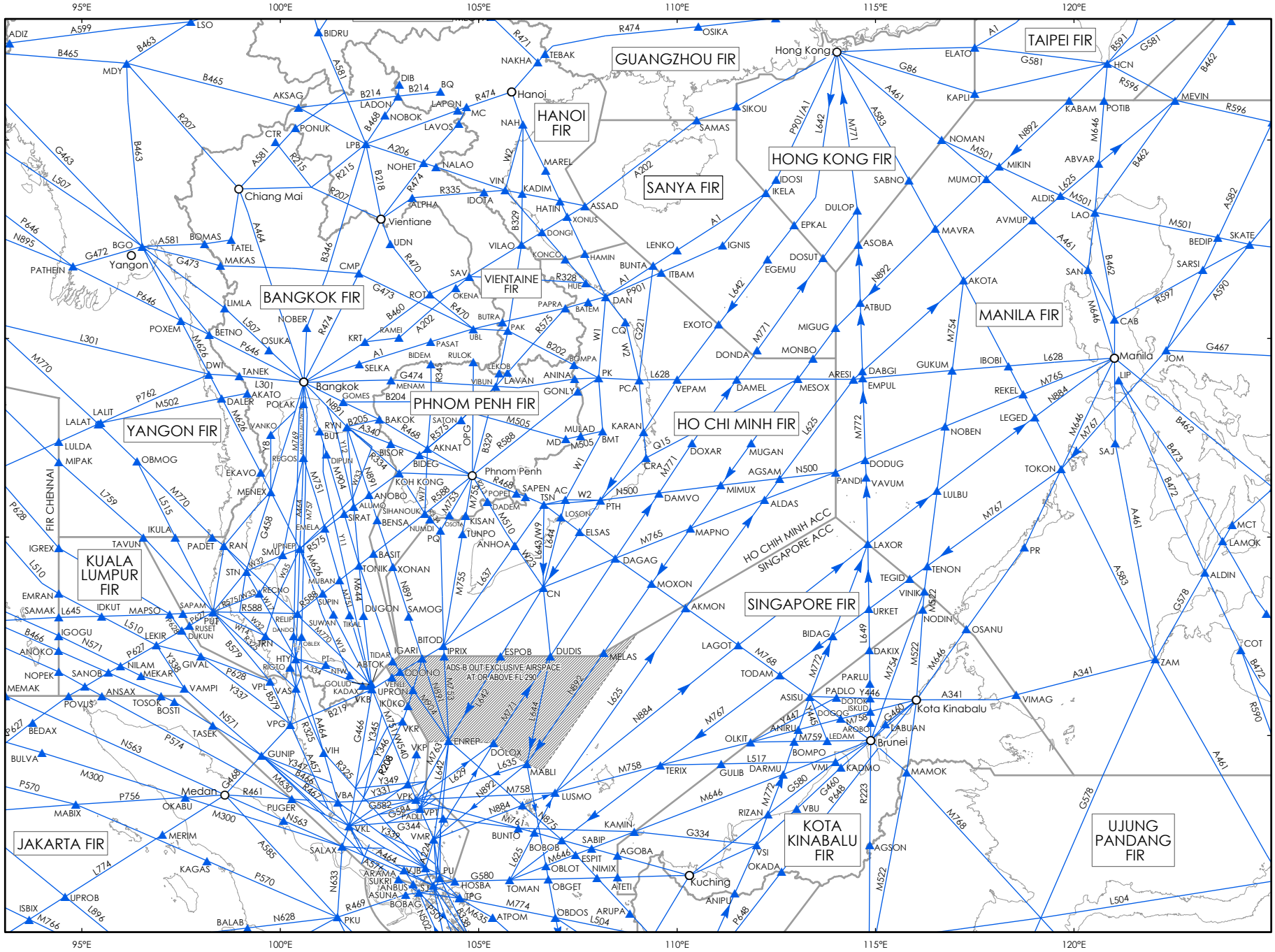
1.6.3 Operators of aircraft unable to meet the RNP 10 requirements (see page ENR 1.8-17) and wishing to operate at or above FL290 on RNAV routes specified in paragraph 1.6.2 shall annotate their flight plan as follows:

Item 18 - insert "RMK/REQ FL (insert level)" where FL = the preferred flight level (subject to ATC co-ordination)

AIRSPACE DIVISION KUALA LUMPUR/SINGAPORE AREAS CONTROL CENTRES



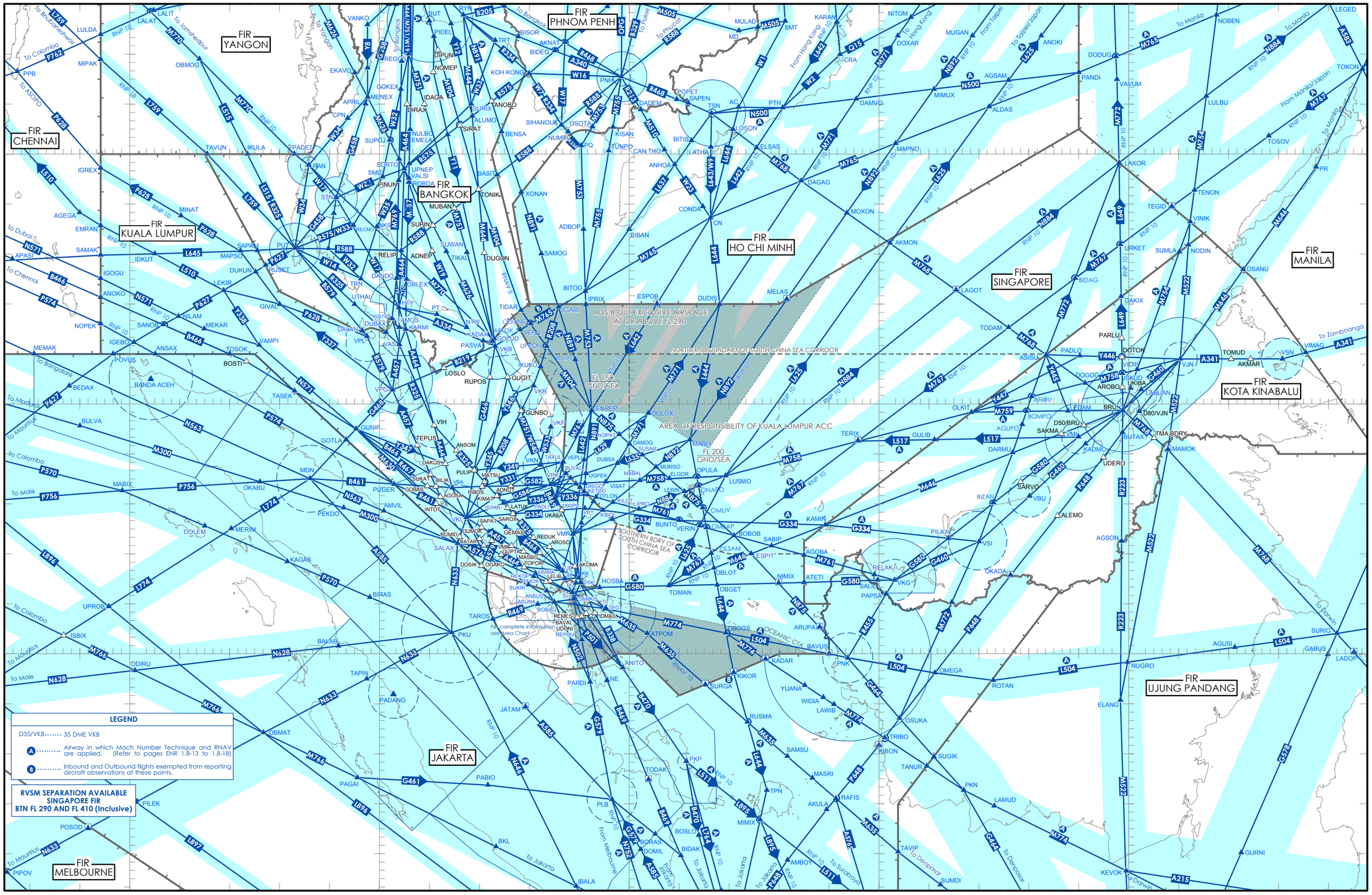
ATS ROUTE STRUCTURE WITHIN SINGAPORE & ADJACENT FIRs



CIVIL AVIATION AUTHORITY
SINGAPORE

CHANGES : ATS route L649 added.

AIR TRAFFIC SYSTEM CHART



CHANGES : ATS route L649 added.

ENR 3. ATS ROUTES
ENR 3.1 ATS ROUTES

Route Designator *Name of Significant Points* *Coordinates*	*Track MAG* *(GEO)* *VOR RDL* *DIST* *(COP)*	*Upper Limits* *Lower Limits* *Minimum Flt Alt* *Airspace* *Classification*	*Lateral Limits (NM)*	*Direction of Cruising Levels*		*Remarks* *Controlling Unit* *Frequency*
				Odd	*Even*	
1	2	3	4	5		6
A224						
▲ JOHORE BAHRU DVOR/DME (VJB) 013950N 1033939E ▲ MERSING DVOR/DME (VMR) (58 DME PU) 022318N 1035218E	196° 016° 45.3NM	FL 460 5 500ft ALT 6 000ft Class A –ABV FL150 Class B –BLW FL150	10	↓	↑	
A457						
▲ JOHORE BAHRU DVOR/DME (VJB) 013950N 1033939E Δ SABKA 015051N 1031713E Δ MASBO 020248N 1025251E	296° 116° 25NM 296° 116° 27.1NM	FL 460 4 500ft ALT 5 000ft Class A –ABV FL150 Class B –BLW FL150	20	↓		Flight Planning: Northbound flights landing at WMKK and WMSA are to flight plan via A457. Tolerances of airway infringe WMD222 ASAHAN (activated by NOTAM) – Military activities
A464						
▲ ARAMA (50 DME SJ) 013654N 1030712E (Delegated airspace BDRY) Δ 35 DME SJ 012954N 1032024E Δ LELIB 012729N 1032450E ▲ MASNI (FIR BDRY) 012037N 1033746E ▲ SINJON DVOR/DME (SJ) 011321N 1035115E ▲ TANJUNG PINANG DVOR/DME (TPG) 005413N 1043052E	117° 297° 14.9NM 118° 298° 5.0NM 117° 297° 14.6NM 118° 298° 15.3NM 114° 294° 44.0NM	FL 460 3 500ft ALT 5 500ft Class A –ABV FL150 Class B –BLW FL150 FL 460 3 000ft ALT 5 500ft Class A –ABV FL150 Class B –BLW FL150 FL 460 2 000ft ALT 6 000ft ∗ Class A –ABV FL150 Class B –BLW FL150	10 ♦ ♣	↓	↑	Flight Planning: Default STAR for FLT landing at WSSS shall be ARAMA 1A or ARAMA 1B. When traffic permits, ATC will offer LELIB 3B for WSSS RWY 20. For FLT landing at WSSS, pilots are to request for the STAR from Singapore ATC when the FLT is within 120 DME SJ and RWY 20 is in use. FLT shall still remain under the control of WMKK ATC. ♦5NM either side of track to SJ Singapore ACC FREQ: P133.25MHz S135.8MHz ♣ within the lateral limits of the OCA. 15min longitudinal separation minima will apply in OCA A464/A576. ∗ Eastbound aircraft to reach 6,000ft ALT when 25NM SE of SJ. Singapore ACC FREQ: P134.4MHz S128.1MHz

ENR 3. ATS ROUTES
ENR 3.1 ATS ROUTES

Route Designator *Name of Significant Points* *Coordinates*	*Track MAG (GEO)* *VOR RDL* *DIST (COP)*	*Upper Limits* *Lower Limits* *Minimum Flt Alt* *Airspace Classification*	*Lateral Limits (NM)*	*Direction of Cruising Levels*		*Route Designator* *Name of Significant Points* *Coordinates*
				Odd	*Even*	
1	2	3	4	5		6
A576						
▲ REKOP (50 DME SJ) 013306N 1030521E (delegated airspace BDRY) ∆ PIMOK 012648N 1032008E ▲ BONSU (FIR BDRY) 011928N 1033710E ▲ SINJON DVOR/DME (SJ) 011321N 1035115E	112° 292° 16.1NM 113° 293° 18.6NM 113° 293° 15.4NM	FL 460 6 500ft ALT 7 000ft Class A –ABV FL150 Class B –BLW FL150	♣	↓ ↓	↑	15 min longitudinal separation. RMK: AVBL for southbound FLT only BTN PIMOK and SJ DVOR/DME. ♣ 5NM either side of a rhumb line joining MDN and SJ, funnelling out at 7.5° to a width of 15NM either side of track. Southbound FLT landing at WSSS are to flight plan via ATS Route A464. Singapore ACC FREQ: P133.25MHz S135.8MHz (westbound) P134.4MHz S128.1MHz (southbound)
B338						
▲ MERSING DVOR/DME (VMR) 022318N 1035218E ∆ 20 DME PU 014530N 1035812E ▲ TEKONG DVOR/DME (VTK) ∗ 012455N 1040120E ∆ IDMAS (40 DME VTK) 004900N 1041848E ♣ FIR BDRY 000124S 1044405E ▲ ANITO 001700S 1045200E	171° 351° 38.1NM 171° 351° 20.7NM 153° 333° 39.8NM 153° 333° 56.1NM 152° 332° 17.4NM	FL 460 3 500ft ALT 4 000ft Class A –ABV FL150 Class B –BLW FL150		↓	↑	∗ Kuala Lumpur/Singapore FIR boundary approximately 1.2NM north of VTK. ♣ Not a REP
B466						
▲ JOHORE BAHRU DVOR/DME (VJB) 013950N 1033939E ∆ MESOG 020103N 1031240E	308° 128° 34.3NM	FL 460 4 500ft ALT 5 000ft Class A – ABV FL150 Class B – BLW FL150	20		↓	Flight Planning Flight planning not permitted between VJB and GEMAS.

ENR 3 ATS ROUTES
ENR 3.3 AREA NAVIGATION (RNAV) ROUTES

Route Designator (RNP type) Name of Significant point Coordinates	*Way-point IDENT of VOR/DME BRG & DIST ELEV DME Antenna*	*Geodesic DIST (NM)*	*Upper Limit / Lower Limit Minimum Flt Alt Airspace Classification*	*Direction of Cruising Levels* Odd	Even	*Remarks Controlling Unit Frequency*
1	2	3	4	5		6
L644 (RNP 10)						
▲ DUDIS (WSJC/VVTS FIR BDRY) 070000N 1064834E	NIL					
		192° 165.8	FL460 / FL240 FL250 Class A	↓		**Lateral Limits:** 25NM either side of line joining DUDIS to KIKOR. Singapore ACC FREQ: P123.7 MHz S127.3 MHz Available only for flights departing from Hong Kong or north of Hong Kong to Jakarta.
▲ MABLI 041717N 1061247E	NIL					
		169° 45.9				
▲ OPULA 033155N 1062118E	NIL					
		169° 10.8				
▲ ONAPO 032116N 1062318E	NIL					
		169° 26.4				
▲ OMLIV 025512N 1062812E	NIL					
		169° 24.2				
▲ OMBAP 023116N 1063242E	NIL					
		169° 30.7				Singapore ACC FREQ: P134.2 MHz S133.35 MHz
▲ OLSAM 020059N 1063824E	NIL					
		169° 18.3				
▲ OBLOT 014256N 1064147E	NIL					
		169° 20.1				
▲ OBGET 012307N 1064531E	NIL					
		169° 107.2				Singapore ACC FREQ: P134.4 MHz S128.1 MHz
▲ KIKOR	NIL					
(WSJC/WIIZ FIR BDRY) 002244S 1070524E						
L649 (RNP 10)						
▲ LAXOR (WSJC/RPHI FIR BDRY) 094937N 1144829E	NIL					
		98	FL 460 / FL 240 FL 250 Class A		↑	Lateral Limits: 25NM either side of line joining DAKIX to LAXOR. Available only for flights departing from Brunei (WBSB), Labuan (WBKL) and Miri (WBGR) to Hong Kong (VHHH) only. No-PDC Flight Levels FL300 and FL380 applicable.
▲ URKET 081130N 1145000E	NIL					
▲ DAKIX (WBFC/WSJC FIR BDRY) 070854N 1145054E	BRU 359° 136NM	62				
M522						
▲ VINIK (WSJC/RPHI FIR BDRY) 083830N 1161348E	NIL	27.5	FL 460 / FL 135 FL 140 Class A–ABV FL150 Class B-BLW FL150	↑	↓	Portion of M522 within the Singapore FIR has been delegated to Kota Kinabalu ACC for provision of ATS Kinabalu ACC FREQ: 126.1 MHz
▲ NODIN (WSJC/WBFC FIR BDRY) 081100N 1161142E	NIL					

ENR 3 ATS ROUTES
ENR 3.3 AREA NAVIGATION (RNAV) ROUTES

Route Designator (RNP Type) Name of Significant Points Coordinates	*Way-point IDENT of VOR/DME BRG & DIST ELEV DME Antenna*	*Geodesic* DIST (NM)	*Upper Limit / Lower Limit Minimum Flt Alt Airspace Classification*	*Direction of Cruising Levels* Odd	Even	*Remarks Controlling Unit Frequency*
1	2	3	4	5		6
M630 (RNAV 5)						
▲ SUKRI 012306N 1025904E Δ BOBAG 010230N 1032954E ▲ TANJUNG PINANG DVOR/DME (TPG) 005413N 1043052E	NIL	37.3 61.3	FL 460 / 5 500ft ALT 6 000ft Class A–ABV FL150 Class B-BLW FL150	↓		**Lateral Limits:** 11.5NM either side of line joining SUKRI to TPG. Flight Planning: Southbound flight planning permitted for flights from Kuala Lumpur and airports beyond which are overflying beyond Singapore. Flights landing at Singapore Changi Airport to flight plan on A464. Singapore ACC FREQ: P133.25 MHz S135.8 MHz
M635						
▲ TEKONG DVOR/DME (VTK)* 012455N 1040120E ▲ TANJUNG PINANG DVOR/DME (TPG) 005413N 1043052E ▲ ATPOM 002425N 1052114E ▲ SURGA (WSJC/WIIZ FIR BDRY) 003657S 1063119E	NIL TPG 120.5° 58.5 NIL	42.5 58.5 93.1	FL 460 / 5 500ft ALT 6 000ft Class A–ABV FL150 Class B-BLW FL150	↓	↑	* Kuala Lumpur / Singapore FIR boundary approximately 1.2NM north of VTK. **Lateral Limits:** 25NM either side of line joining VTK to SURGA. Singapore ACC FREQ: P134.4 MHz S128.1 MHz
M646						
▲ KAMIN (WBFC/WSJC FIR BDRY) 023442N 1085536E ▲ SABIP 020940N 1075044E ▲ ESPIT 020011N 1072624E ▲ OBLOT 014256N 1064147E ▲ TOMAN 012147N 1054717E	NIL NIL NIL NIL	69.6 26.1 47.9 58.5	FL 460 / FL 240 FL 250 **Class A**	↓	↑	**Lateral Limits:** 25NM either side of line joining TOMAN to KAMIN. Singapore ACC FREQ: P134.2 MHz S133.35MHz
M753						
▲ IPRIX (VVTS/WSJC FIR BDRY) 070000N 1040755E ▲ ENREP 045223N 1041442E	NIL	127.2	FL 460 / FL 155 FL 160 Class A	↓	↑	**Lateral Limits:** 25NM either side of line joining ENREP to IPRIX. Singapore ACC FREQ: P123.7 MHz S127.3 MHz

ENR 3. ATS ROUTES
ENR 3.3 AREA NAVIGATION (RNAV) ROUTES

Route Designator (RNP Type) Name of Significant Points Coordinates	*Way-point IDENT of VOR/DME BRG/ DIST ELEV DME Antenna*	Great Circle DIST (NM)	*Upper Limits Lower Limits Minimum Flt Alt Airspace Classification*	*Direction of Cruising Levels* Odd	Even	*Remarks Controlling Unit Frequency*
1	2	3	4	5		6
M772 (RNP 10)						
▲ LAXOR (WSJC /RPHI FIR BDRY) 094937N 1144829E	NIL					**Lateral Limits:** 25NM either side of line joining ASISU to LAXOR. Available only for flights departing from : -WIII and WIHH to VHHH and airports in People's Republic of China. -WBGB, WBSB, WBGG, WBKL, WBGR and WBGS to VHHH only.
		020° 147.5	FL 460 FL 240 FL 250 Class A	↑		
▲ BIDAG 073101N 1135544E	NIL					
▲ ASISU (WBFC /WSJC FIR BDRY) 055906N 1132046E	BRU 305° 113.3NM	020° 97.9				
M774 (RNAV)						
▲ TANJUNG PINANG DVOR/DME (TPG) 005413N 1043052E	NIL					**Lateral Limits:** 25NM either side of line joining TPG to KADAR. Route from OBDOS to KADAR is RNAV10. Singapore ACC FREQ: P134.4MHz S128.1MHz
		148.1	FL 460 5 500ft ALT 6 000ft ALT Class A-ABV FL150 Class B-BLW FL150	↓		
▲ OBDOS 002503N 1065551E	TPG 101.3° 148.1NM					
▲ KADAR (WSJC/WIIZ FIR BDRY) 000647S 1074342E	NIL	57.5		↑		
M904						
▲ TIDAR (WSJC/VTBB FIR BDRY) 065230.15N 1024959.82E						**Lateral Limits:** 25NM Singapore ACC FREQ: P123.7MHz S127.3MHz
	NIL	20	FL 460 FL 65 FL 70 Class A (FL290 and ABV)	↓		
▲ ODONO 063613.82N 1030129.41E						
	NIL	33	FL 460 FL 145 FL 150 Class A (FL290 and ABV)			
▲ UPRON 060903.41N 1032039.98E						
	NIL	93	FL 460 FL 245 FL 250 Class A (FL290 and ABV)	↑		
▲ ENREP 045223N 1041442E						

ENR 3 ATS ROUTES
ENR 3.3 AREA NAVIGATION (RNAV) ROUTES

Route Designator (RNP Type) Name of Significant Points Coordinates	*Way-point IDENT of VOR/DME BRG & DIST ELEV DME Antenna*	Great Circle DIST (NM)	*Upper Limits / Lower Limits Minimum Flt Alt Airspace Classification*	*Direction of Cruising Levels* Odd	Even	*Remarks Controlling Unit Frequency*
1	2	3	4	5		6
N502						**Lateral Limits:** 10NM on the western side and 5NM on the eastern side of line joining BOBAG to PARDI. Singapore ACC FREQ: P134.4MHz S128.1MHz
▲ BOBAG (R243/24 DME SJ) 010230N 1032954E	NIL	335° 105.3	FL 460 / FL 275	↑		
▲ PARDI 003400S 1041300E	NIL		FL 280			
N875						**Lateral Limits:** 25NM either side of line joining ENREP to ARUPA. Singapore ACC FREQ: FREQ: P134.4MHz S128.1MHz
▲ ENREP 045223N 1041442E	NIL	44.1	FL 460 / FL 245	↓		
▲ NOPAT 042313N 1044756E	NIL	16.3	FL 250			
▲ DAMOG 041225N 1050014E	NIL	20.6	Class B			
▲ SUSAR 035848N 1051547E	NIL	21.8				
▲ MUMSO 034420N 1053213E	NIL	21.3				
▲ ELGOR 033014N 1054818E	NIL	23.6				
▲ LEBIN 031438N 1060604E	NIL	79.5				
▲ BOBOB 022206N 1070558E	NIL	29.9				
▲ ESPIT 020011N 1072624E	NIL	48.3				
▲ NIMIX 012452N 1075926E	NIL	72.4				
▲ ARUPA 003140N 1084846E	PNK 316° 49.6NM			↑		

ENR 3.4 HELICOPTER ROUTES

1. HELICOPTER OPERATIONS OVER SINGAPORE ISLAND

1.1 INTRODUCTION

1.1.1 The rapid building development in many parts of Singapore has made it necessary for helicopter operations to be more stringently regulated in order to enhance safety. All helicopter operators are required to adhere strictly to the following procedures.

1.2 RESTRICTED AREA -SINGLE-ENGINE HELICOPTER OPERATIONS RESTRICTED

1.2.1 Single-engine helicopters are restricted from operating over and within the city area enclosed in the triangle bounded by the following locations:

a) South of Rochor River/Kallang River (011817N 1035205E);
b) Shenton Way/Keppel Road (011623N 1035045E); and
c) Scotts Road/Orchard Road (011818N 1034954E).

Part of this triangle lies within the existing Restricted Area WSR38 (see charts ENR 3.4-5 and ENR 3.4-7).

1.3 ROUTEINGS

1.3.1 All helicopters must fly over water or use routes approved by the CAAS. There are two over-water and one over-land helicopter routes.

1.3.2 These helicopter routes are to be flown in VMC and in daylight hours. They could either be flown separately or in combination (see chart ENR 3.4-5).

1.4 OVER-WATER ROUTES

1.4.1 One of the two over-water routes is to the north of Singapore Island for helicopter flights into and out of Seletar Aerodrome. The other route is along the southern shore of Singapore. They are as described below.

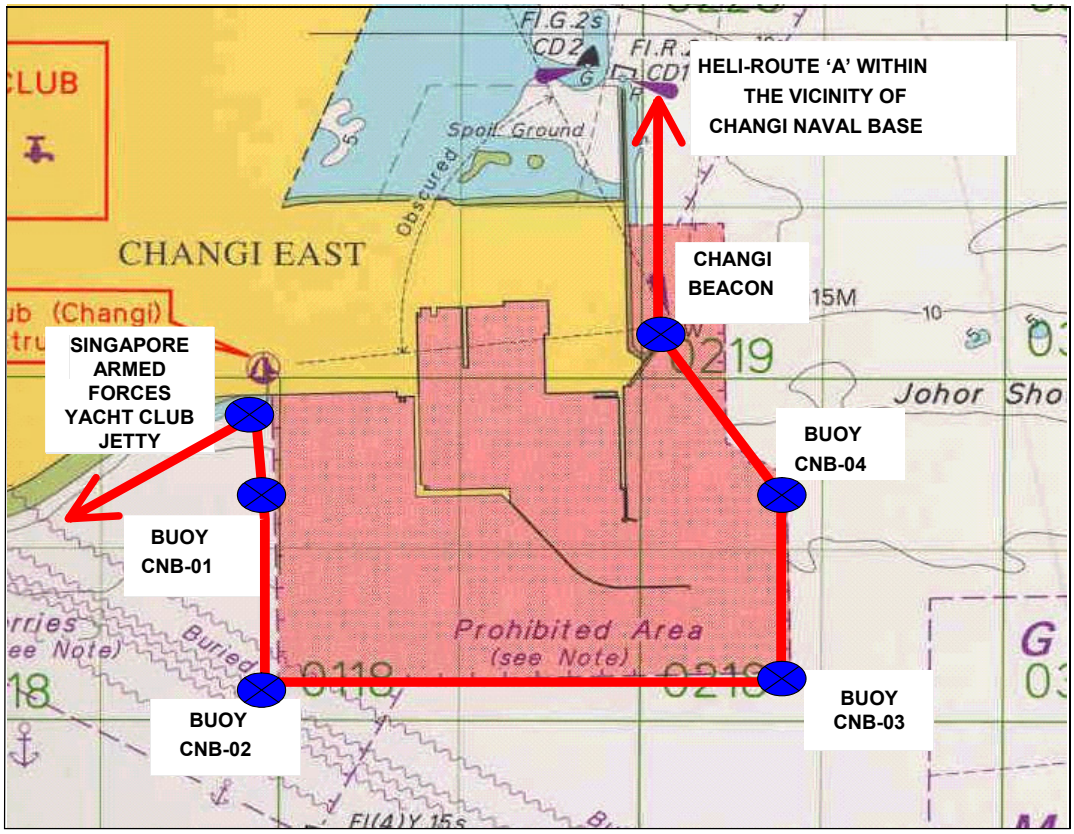
1.4.1.1 **Heli-Route Alpha**

This route covers the area from Johor Causeway eastbound over water along Selat Johor, following the coastline of Singapore Island via the northern contour of Pulau Ubin and along the eastern coastline, down to Bedok Jetty (011819N 1035632E) and vice versa. Within the vicinity of Changi Naval Base (CNB), transiting helicopters are to keep laterally clear by tracking along the following markers located about 1km from the Naval Base (see table below and diagram on page ENR 3.4-2).

	Markers Description	*Coordinates*	*Remarks*
a)	Changi Beacon	011909N 1040206E	white lights, 3 flashes every 15 sec
b)	Buoy CNB-04	011844N 1040224E	yellow buoy, 3m above waterline yellow lights, 1 flash every 2 sec
c)	Buoy CNB-03	011809N 1040224E	yellow buoy, 3m about waterline yellow lights, 1 flash every 2 sec
d)	Buoy CNB-02	011806N 1040100E	yellow buoy, 3m about waterline yellow lights, 1 flash every 2 sec
e)	Buoy CNB-01	011829N 1040059E	yellow buoy, 3m about waterline yellow lights, 1 flash every 2 sec
f)	Singapore Armed Forces Yacht Club Jetty	011851N 1040058E	yellow lights, 3 lamp posts along jetty
Note: Pilots are to adhere strictly to the above transit routes.			

Height: Minimum 200ft AMSL or as specified by the appropriate air traffic control authority.

HELI-ROUTE 'ALPHA' WITHIN THE VICINITY OF CHANGI NAVAL BASE



1.4.1.2 **Heli-Route Bravo**

Originates from Bedok Jetty (011819N 1035632E), following the coastline of Singapore Island via the southern tip and contour of Sentosa towards Tuas and vice versa.
Height: Minimum 200ft AMSL or as specified by the appropriate air traffic control authority.

1.5 OVER-LAND ROUTE

1.5.1 The over-land transit route established to facilitate helicopter movements across the Singapore Island is as follows:

1.5.1.1 **Heli-Route Charlie**

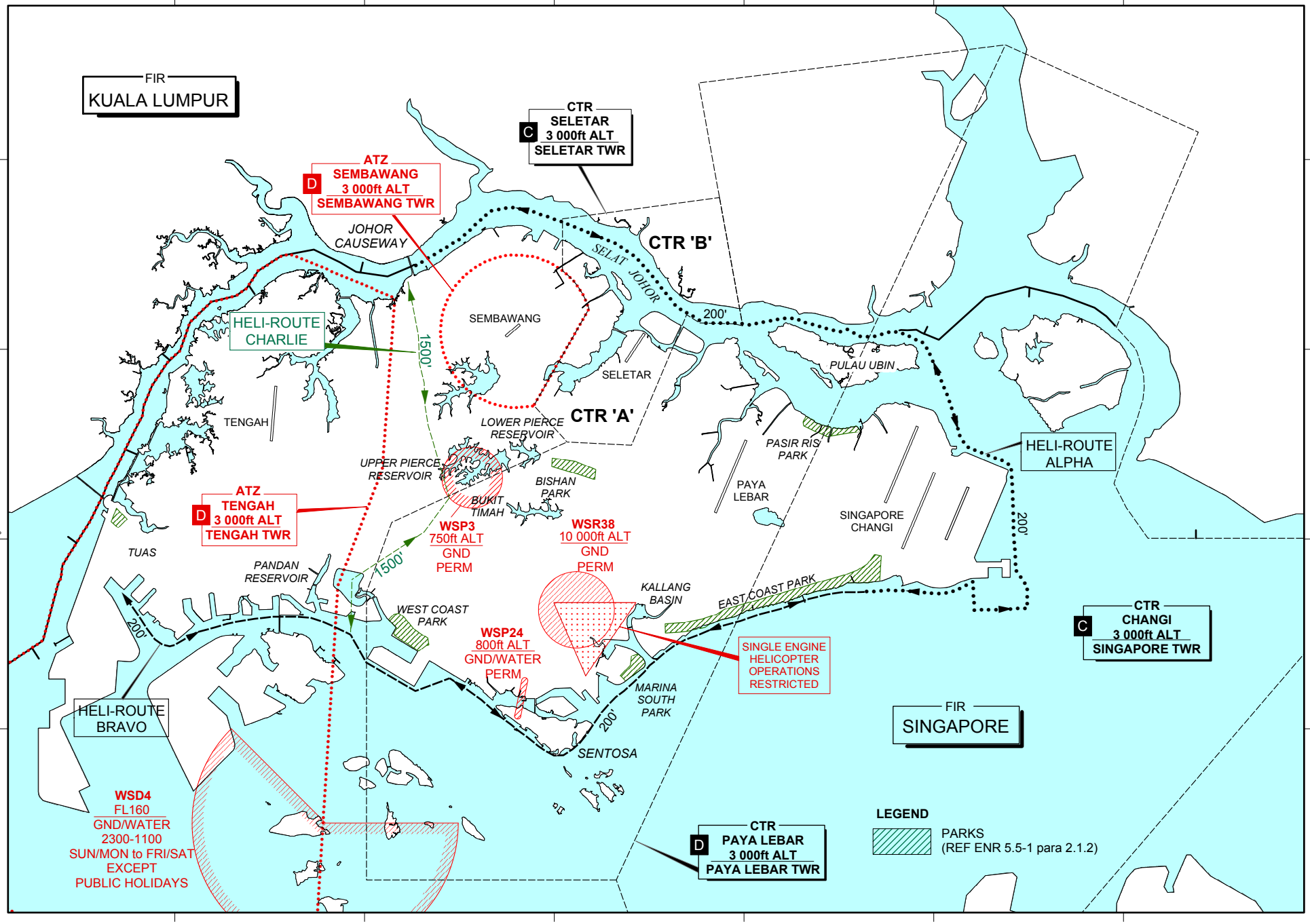
Originates from Johor Causeway, southbound to Murnane Reservoir (012104N1034710E) along the eastern side of Bukit Timah Expressway. From Murnane Reservoir to Pandan Reservoir (011855N1034436E) and vice versa. To avoid overflying built-up areas en-route by routing over open areas / nature reserve areas. Height: Minimum 1,500ft AMSL or as specified by the appropriate traffic control authority.

1.6 CONDITIONS GOVERNING THE USE OF HELI-ROUTE Charlie

1.6.1 The over-land route is established based on evidence of ground features and is therefore subject to CAAS's review. Approval to use the route is given with the following conditions:

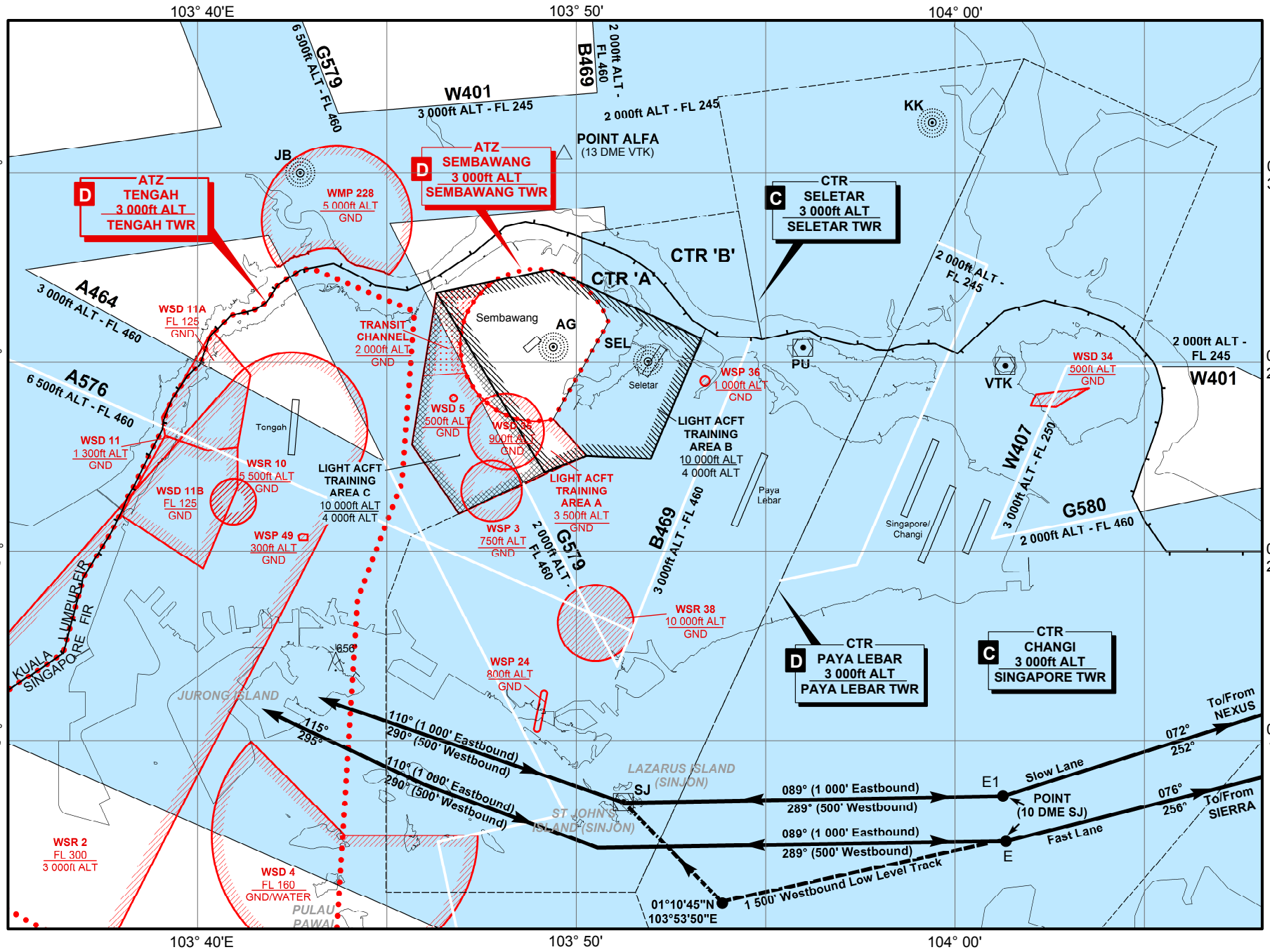
a) The operator is fully satisfied that the route can be flown within the flight capability of the helicopter and that there are adequate suitable emergency landing sites along the route when in use. It remains the responsibility of the operator to ensure that his pilots are familiar with the route and the conditions governing them.
b) The route is to be flown in VMC and in daylight hours.
c) Prior ATC clearance from the appropriate controlling authority must be obtained.

HELICOPTER ROUTES IN VMC



CHANGES : BED NDB removed.

VMC CROSSING BY MILITARY AIRCRAFT



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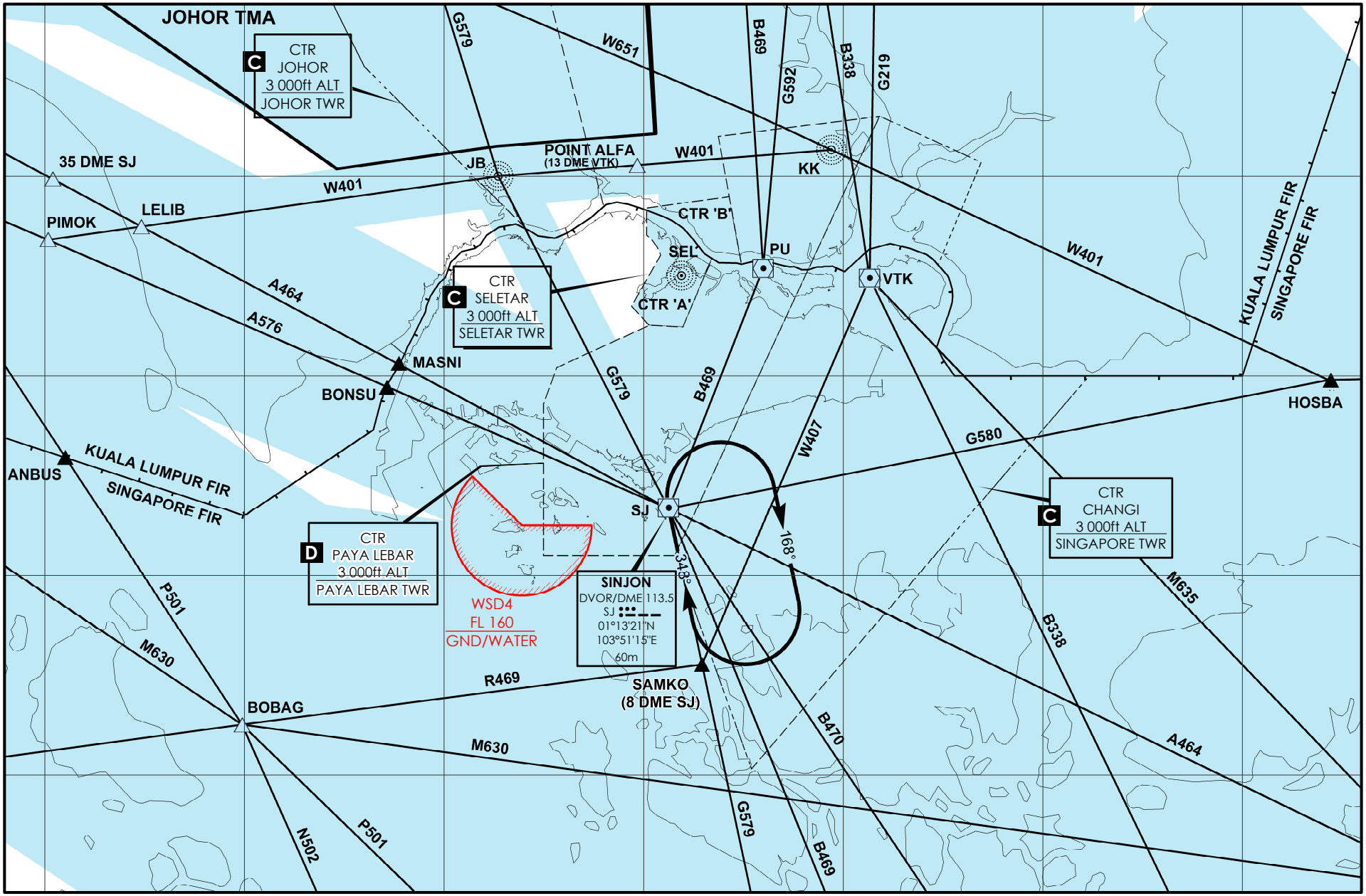
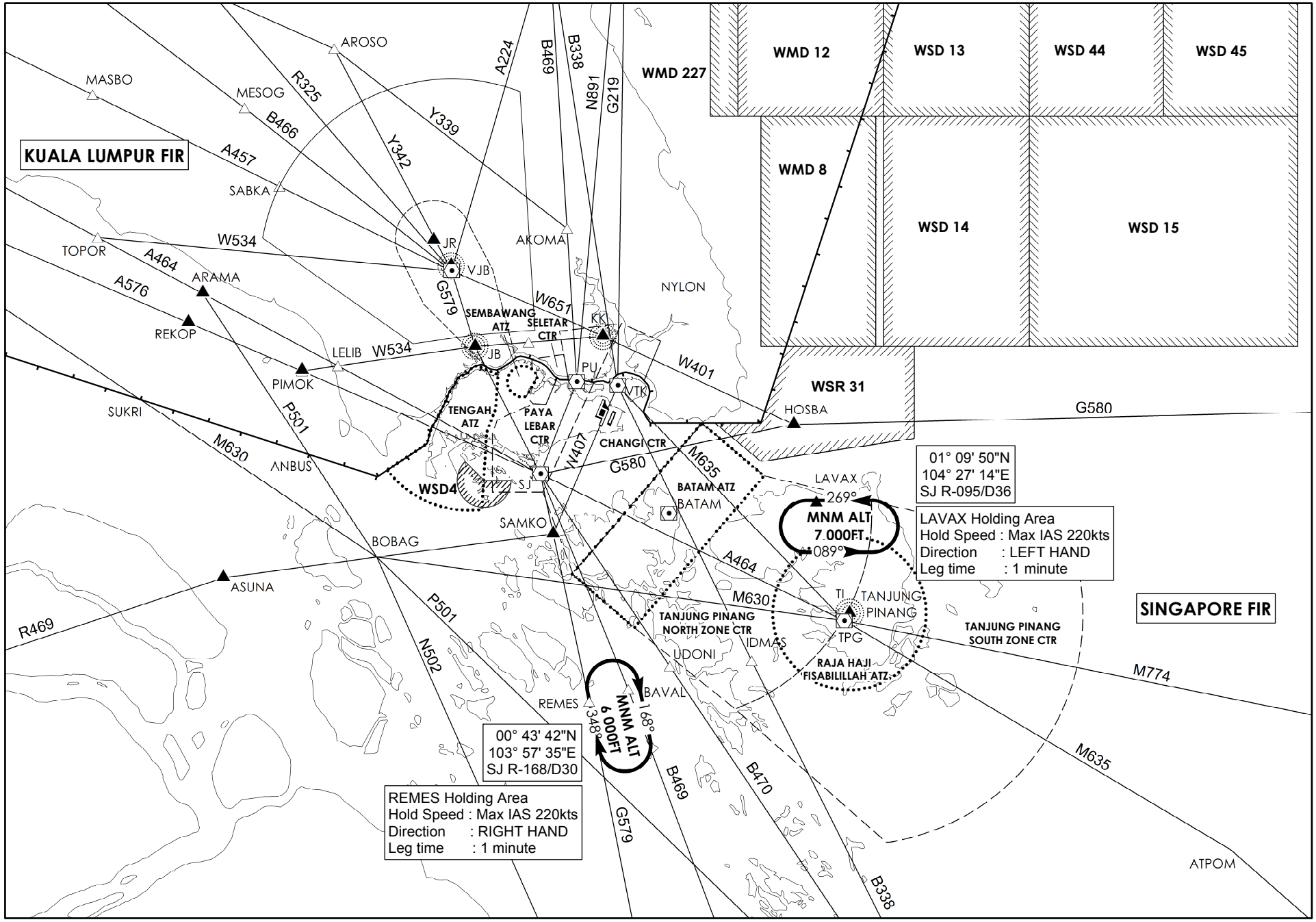
SINJON DVOR/DME LOW LEVEL HOLDING AREA



CIVIL AVIATION AUTHORITY
SINGAPORE

CHANGES: BED NDB removed.

REMES AND LAVAX LOW LEVEL HOLDING AREAS



CHANGES : BED NDB removed.

ENR 4 RADIO NAVIGATION AIDS/SYSTEMS
ENR 4.1 RADIO NAVIGATION AIDS - ENROUTE

Name of Station (VOR/VAR)	*ID*	*FREQ*	*OPR HR*	*Coordinates*	*ELEV DME Antenna*	*Remarks*
1	2	3	4	5	6	7
BATAM/ HANG NADIM DVOR/DME	BTM	116.0MHz (CH107X)	0000-1200 Daily	010812.77N 1040757.32E	-	Operating Authority: Directorate-General of Civil Aviation, Indonesia. PPR outside OPR HR. EM: A2A (DVOR/DME) Non/A2A (NDB)
BATAM/ HANG NADIM NDB	BM	370KHz		010716.54N 1040638.07E	-	
			H24			
JAYBEE NDB	JB	400KHz		012959.77N 1034241.82E (Johor Bahru)	-	BRG 298° DIST 19.6km from ARP Seletar. Coverage 50NM. Unusable 270°-060° beyond 20NM. EM:A0/A2
JOHOR BAHRU DVOR/DME	VJB	112.5MHz (CH72X)		013950.4N 1033939.2E	43.07m	Operating Authority: Department of Civil Aviation Malaysia. EM: A0/A2 (NDB)
JOHOR BAHRU NDB	JR	245KHz		014030N 1033936E	-	
KONG KONG NDB	KK	286KHz		013117.76N 1035923.69E	-	BRG 049° DIST 17.7km from ARP Seletar. Coverage 50NM. Unusable 270°-010° beyond 30NM. EM:A0/A2
MERSING DVOR/DME	VMR	116.8MHz (CH115X)		022318N 1035218E	-	Operating Authority: Department of Civil Aviation Malaysia. 50w
PAPA UNIFORM DVOR/DME	PU	115.1MHz (CH98X)		012523.99N 1035559.74E	Antenna HGT: 190ft AMSL	BRG 020° DIST 9km from THR RWY 02 (Paya Lebar). MAINT Period: Third WED of EV month BTN 0200-0600 Coverage 200NM. EM: F1

ENR 4 RADIO NAVIGATION AIDS/SYSTEMS
ENR 4.1 RADIO NAVIGATION AIDS - ENROUTE

Name of Station (VOR/VAR)	*ID*	*FREQ*	*OPR HR*	*Coordinates*	*ELEV DME Antenna*	*Remarks*
1	2	3	4	5	6	7
PAYA LEBAR TACAN	PLA	CH110X	BTN 2300-1100 SUN/MON to THU/FRI; BTN 2300-0500 FRI/SAT; PPR from RSAF HQ via Paya Lebar OPS at other times.	012224.00N 1035451.00E	-	BRG 015° DIST 1.5km from ARP. MAINT Period: Second THU of EV month BTN 0001-1100
SELETAR NDB	SEL	220KHz	H24	012448.50N 1035210.16E	-	BRG 152° DIST 0.44km from ARP. Coverage 50NM. EM: A0/A2
SEMBAWANG NDB	AG	325KHz		012524.00N 1034924.00E	-	BRG 198° DIST 0.54km from ARP. MAINT Period: Second FRI of EV month BTN 0200-0400. Coverage 30NM. EM: A3
SINJON DVOR/DME	SJ	113.5MHz (CH82X)		011321.54N 1035115.74E	Antenna HGT: 150ft AMSL	BRG 201° DIST 14.5km from THR RWY 02 (Paya Lebar Airport). MAINT Period: Third THU of EV month BTN 0200-0600. Coverage 200NM. EM: F1
TANJUNG PINANG NDB	TI	385KHz	0000-1400	005511.02N 1043134.21E	-	Operating Authority: Directorate-General of Civil Aviation, Indonesia. EM: Non/A2A (NDB) Coverage: 40NM (VOR/DME)
TANJUNG PINANG/ KIJANG VOR/DME	TPG	114.8MHz (CH95X)	0000-1400	005412.76N 1043052.42E	-	
TEKONG DVOR/DME	VTK	116.5MHz (CH112X)	H24	012455.36N 1040120.17E	Antenna HGT: 150ft AMSL	BRG 023° DIST 6.4km from THR RWY 20C (Singapore Changi Airport). MAINT Period: Third FRI of EV month BTN 0200-0600. Coverage 200NM. EM:F1
TENGAH TACAN	TNG	CH86X	BTN 2300-1100 SUN/MON to THU/FRI; BTN 2300-0500 FRI/SAT; PPR from RSAF HQ via Tengah OPS at other times.	012336.00N 1034242.00E	-	BRG 043° DIST 0.55km from ARP. MAINT Period: Second SAT of EV month BTN 0001-0900.

ENR 5.6 BIRD MIGRATION

1. BIRD MIGRATION

1.1 Bird migrations generally occur between September and April. Migratory birds come from as far away as North and Central Asia. Most birds fly in groups and flocks of migrating shorebirds can be seen along the coast of Singapore at altitudes of 500 feet to 5,000 feet.

2. REPORTING OF WILDLIFE STRIKES

2.1 To facilitate efforts to reduce wildlife hazards at and around Singapore airports, pilots and aircraft engineers are requested to report all wildlife strikes to Air Traffic Control.

2.2 To facilitate the reporting of wildlife strikes, pilots may report them at the earliest opportunity via RTF to Air Traffic Control.

The RTF phraseology should include the following:

- Aircraft Callsign
- The phrase “WILDLIFE STRIKE REPORT”
- Altitude
- Approximate geographical location
- Time of incident
- Effect on flight (e.g. state damage to fuselage, etc.)
- Number of wildlife (an estimate)
- Size/Type of wildlife (if possible)

2.3 To obtain better perspective of the extent of wildlife hazards, the Authority is also collecting data on “near misses” with wildlife. A “near miss” is defined as a situation in which a wildlife or flock of birds is within close proximity of an aircraft to cause alarm to the extent whereby pilots would have to take evasive action had such an action been possible. Pilots should report all “near misses” via RTF to Air Traffic Control.

The RTF phraseology should include the following:

- Aircraft Callsign
- The phrase “WILDLIFE SIGHTING REPORT”
- Altitude
- Approximate geographical location
- Time of incident
- Number of wildlife (an estimate)
- Size/Type of wildlife (if possible)

2.4 A copy of the Wildlife Strike Reporting Form is shown on page ENR 5.6-3. Airline operators may send the completed Wildlife Strike Reporting Form to email address: changi.airside@changiairport.com

INTENTIONALLY

LEFT

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ENROUTE CHART - ICAO

LEGEND

Aerodrome

Flight Information Region (FIR)
Name of FIR — FIR SINGAPORE
Upper Limit — UNL
Lower Limit — GND/WATER
Unit providing service — ACC SINGAPORE

Terminal Control Area (TMA)
Name of TMA — TMA KUCHING
Airspace Classification — A B C
Upper Limit — FL 250
Lower Limit — 3 000ft
Radio Frequency (ies) — 134.5.120.2

Control Zone (CTR)
Name of CTR — CTR KUCHING
Airspace Classification — D
Upper Limit — 3 000ft
Radio Frequency (ies) — 120.2

ATS route
Route designator — L642
Magnetic track — 032° (122)
Distance in nautical miles
Minimum flight altitude (ft)/flight level — 7 000/FL 140
Required navigation performance — RNP 10

ATS route reporting point by-pass
(No report is required on this route)

Reporting Point (REP)
Compulsory
On Request

ATS/MET reporting point (MRP)
Compulsory
On Request

Restricted Airspace
(P-Prohibited, R-Restricted, D-Danger)
Identification of area — W5D8
Nationality letter
Vertical limits — FL 400 / WATER

Note : Restricted airspace outside Singapore FIR are not shown

Collocated VOR and DME navigation aids (VOR/DME)
Compass rose oriented on the chart to Magnetic North

Identification for radio navigation aids (NAVAID)
Name — SINJON
NAVAID, frequency, identification or call sign — DVOR/DME 113.5
Geographical coordinates in WGS-84 — 01°13'21"N 103°51'13"E
Elevation of DME site (to the nearest 30m) — 60m

COP at mid-point between VOR are not shown

Area Minimum Altitude (AMA)
Each 2° quadrilateral contains an area minimum altitude (AMA) which represents the lowest altitude which may be used under instrument meteorological conditions (IMC). The AMA provides a minimum clearance of 1 000 feet (300m) above all terrain and obstacles in the quadrilateral. It is represented in thousands and hundreds of feet above mean sea level.
Example : 3 500 feet **35**

Ⓐ Airway in which Mach Number Technique and RNAV are applied (Refer to pages ENR 1.8-13 to 1.8-18)
Ⓑ Inbound and Outbound flights exempted from reporting aircraft observations at these points.

WSJC/WMFC FIR BDRY REPORTING POINTS	
TAXUL 03 50.35N 103 40.37E	**MANIM** 03 14.31N 104 05.53E
BUVAL 03 36.22N 103 43.41E	**KETOD** 03 10.44N 104 09.43E
DOVOL 03 30.47N 103 49.23E	**RAXIM** 03 03.18N 104 17.13E
IDSEL 03 24.32N 103 55.44E	**KIBOL** 02 52.29N 104 28.05E
EGOLIO 03 19.34N 104 00.47E	**LENDA** 02 41.24N 104 39.32E

RVSM SEPARATION AVAILABLE SINGAPORE FIR BTN FL 290 AND FL 410 (Inclusive)

AIRSPACE CLASSIFICATION IN THE SINGAPORE FIR

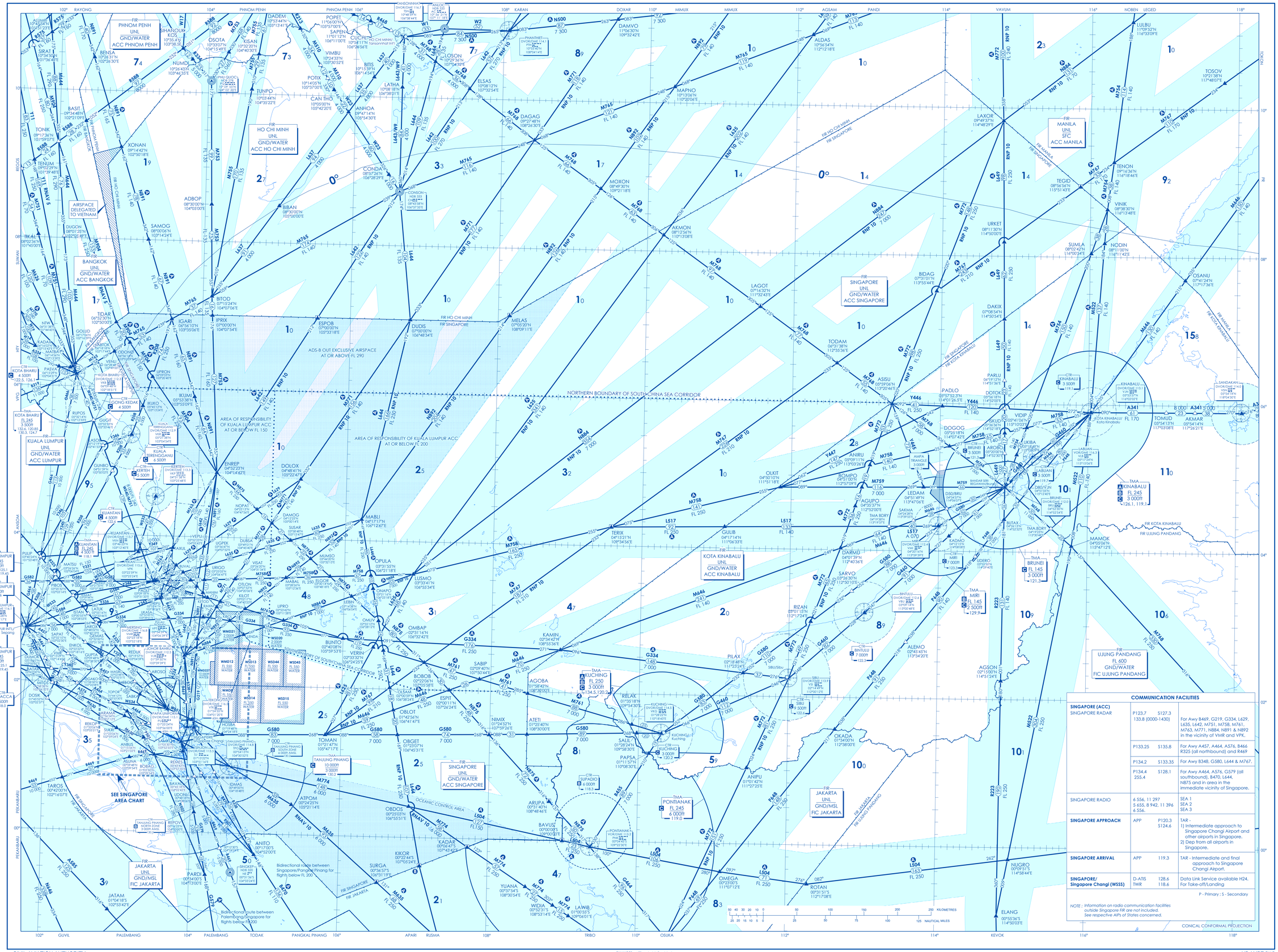
Airspace		Levels	Classification
Controlled airspace		FL 150 to FL 460	A
		Surface to FL 150	B
Controlled airspace more than 100 nm seaward from the shoreline		Lower limit to FL 460	A
Control Zones (CTRs)	Changi CTR	Surface to upper limit	C
	Paya Lebar CTR		D
	Seletar CTR		C
ATZs		Surface to upper limit	D
Uncontrolled airspace			G*

* Aircraft operating in Light Aircraft Training Areas A, B and C (please refer to AIP Singapore page ENR 5.2-1) are required to have continuous two-way communications with the appropriate ATS authority.

CAUTION

Consult respective NOTAMs and AIPs of States concerned for the latest information
and
the Civil Aviation Authority of Singapore does not accept responsibility for any errors or omissions in the information shown outside of Singapore FIR

MAGNETIC INFORMATION FOR THE YEAR 2015



COMMUNICATION FACILITIES			
SINGAPORE (ACC) SINGAPORE RADAR	P123.7 133.8 (0000-1430)	S127.3	For Awy B469, G219, G334, L629, L635, L642, M751, M758, M761, M763, M771, N884, N891 & N892 in the vicinity of VMR and VPK.
	P133.25	S135.8	For Awy A457, A464, A576, B466 R325 (all northbound) and R469
	P134.2	S133.35	For Awy B348, G580, L644 & M767.
	P134.4 255.4	S128.1	For Awy A464, A576, G579 (all southbound), B470, L644, N875 and in area in the immediate vicinity of Singapore.
SINGAPORE RADIO	6 556, 11 297 5 655, 8 942, 11 396 6 556.		SEA 1 SEA 2 SEA 3
SINGAPORE APPROACH	APP	P120.3 S124.6	TAR - 1) Intermediate approach to Singapore Changi Airport and other airports in Singapore. 2) Dep from all airports in Singapore.
SINGAPORE ARRIVAL	APP	119.3	TAR - Intermediate and final approach to Singapore Changi Airport.
SINGAPORE/ Singapore Changi (WSSS)	D-ATIS TWR	128.6 118.6	Data Link Service available H24. For Take-off/Landing

P - Primary ; S - Secondary

NOTE : Information on radio communication facilities outside Singapore FIR are not included. See respective AIPs of States concerned.

CHANGES : ATS route L649 added.

3. TERMINAL 2 AIRCRAFT STANDS - Aircraft types that can be parked at stands (✈) are as follows:

Stands	E1	E2	E3	E4	E5	E6	E7	E8	E10	E11	E12	E20	E22	E24	E26	E27	E28
A300		✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈	✈	✈	✈
A310	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈
A319	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈
A320	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈		✈	✈	✈
A321			✈		✈								✈		✈	✈	✈
A332			✈	✈	✈			✈		✈	✈	✈	✈	✈	✈	✈	✈
A333			✈	✈	✈			✈		✈	✈	✈	✈	✈	✈	✈	✈
A342			✈	✈	✈			✈		✈	✈		✈	✈	✈	✈	✈
A343			✈	✈	✈			✈		✈	✈		✈	✈	✈	✈	✈
A345			✈	✈	✈			✈		✈	✈		✈	✈	✈	✈	✈
A346				✈	✈			✈									
A380					✈			✈		✈							
B707															✈	✈	✈
B727	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈	✈	✈	✈
B737	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈		✈	✈	✈
B747			✈	✈	✈			✈		✈	✈	✈	✈	✈	✈	✈	✈
B74S			✈	✈	✈			✈		✈	✈		✈	✈	✈	✈	✈
B757	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈	✈	✈	✈
B762	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈	✈	✈	✈
B763	✈	✈	✈	✈	✈	✈		✈		✈	✈	✈	✈	✈	✈	✈	✈
B772			✈	✈	✈			✈		✈	✈	✈	✈	✈	✈	✈	✈
B773				✈	✈	✈		✈		✈	✈		✈	✈	✈	✈	✈
B773ER				✈	✈			✈		✈	✈		✈	✈	✈	✈	✈
B788												✈	✈		✈	✈	✈
B789												✈	✈		✈	✈	✈
DC10				✈	✈	✈		✈		✈	✈				✈	✈	✈
DC9												✈					
F70	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈			
F100															✈	✈	✈
IL62															✈	✈	✈
IL86															✈	✈	✈
IL96															✈	✈	✈
L101				✈	✈	✈		✈		✈	✈				✈	✈	✈
MD11				✈	✈	✈		✈		✈	✈				✈	✈	✈
MD80															✈	✈	✈
MD82															✈	✈	✈
MD83																✈	
MD87												✈					
MD88															✈	✈	✈

Stands	E24L	E24R
A319, A320, A321, B737	✈	✈

4. TERMINAL 2 AIRCRAFT STANDS - Aircraft types that can be parked at stands (✈) are as follows:

Stands	F30	F31	F32	F33	F34	F35	F36	F37	F40	F41	F42	F50	F52	F54	F56	F58	F59	F60
A300		✈	✈		✈	✈			✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A310		✈	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A319	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈		✈		✈
A320	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈		✈		✈
A321																		
A332		✈			✈				✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A333		✈			✈				✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A342		✈			✈				✈	✈	✈		✈	✈	✈	✈	✈	✈
A343		✈			✈				✈	✈	✈		✈	✈	✈	✈	✈	✈
A345		✈			✈				✈	✈	✈		✈	✈	✈	✈	✈	✈
A346											✈							✈
A359																✈	✈	✈
A380		✈									✈							✈
B707												✈		✈			✈	✈
B727	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈		✈	✈	✈	✈	✈
B737	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈		✈		✈
B747		✈			✈	✈			✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B74S		✈			✈				✈	✈	✈			✈	✈	✈	✈	✈
B757		✈	✈	✈	✈	✈			✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B762		✈	✈		✈	✈			✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B763		✈	✈		✈	✈			✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B772		✈		✈	✈				✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B773										✈	✈			✈	✈	✈	✈	✈
B773ER										✈	✈			✈	✈	✈	✈	✈
B788		✈										✈	✈	✈	✈	✈	✈	✈
B789		✈										✈	✈	✈	✈	✈	✈	✈
DC10					✈	✈				✈	✈			✈	✈	✈	✈	✈
DC8																		
DC9												✈		✈	✈	✈		
F70	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈
L101					✈	✈				✈	✈			✈	✈	✈	✈	✈
MD11					✈	✈				✈	✈			✈	✈	✈	✈	✈
MD87												✈		✈				

Stands	F52L	F52R	F56L	F56R	F59L	F59R
A319	✈	✈	✈	✈	✈	✈
A320	✈	✈	✈	✈	✈	✈
A321	✈	✈	✈	✈	✈	✈
B737(100-500)	✈	✈	✈	✈	✈	✈
B737(600-900)	✈	✈	✈	✈		✈

5. TERMINAL 3 AIRCRAFT STANDS - Aircraft types that can be parked at stands (✈) are as follows:

Stands	A1	A2	A3	A4	A5	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21
A300		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
A310		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
A319		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
A320		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
A321		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
A332	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		✈
A333	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A343	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A345	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈				
A346		✈		✈	✈		✈	✈	✈	✈	✈							
A359		✈	✈	✈	✈		✈				✈	✈		✈				
A380		✈		✈	✈		✈											
→ **B737**			✈			✈		✈	✈	✈	✈		✈	✈	✈	✈		
B744	✈	✈	✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈				
B788		✈		✈			✈									✈	✈	✈
B757		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
B767		✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈		
B772	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B773		✈		✈	✈		✈	✈	✈	✈	✈							
B773ER		✈		✈	✈		✈	✈	✈	✈	✈							

Stands	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
A300		✈	✈	✈	✈	✈	✈	✈	✈	✈
A310		✈	✈	✈	✈	✈	✈	✈	✈	✈
A319		✈	✈	✈	✈	✈	✈	✈	✈	✈
A320		✈	✈	✈	✈	✈	✈	✈	✈	✈
A321		✈	✈	✈	✈	✈	✈	✈	✈	✈
A332	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A333	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A343	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A345	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A359	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
A346		✈		✈	✈		✈			
A380		✈		✈	✈		✈			
B707									✈	✈
B737			✈			✈				
B744	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B788								✈	✈	✈
B757		✈	✈	✈	✈	✈	✈	✈	✈	✈
B767		✈	✈	✈	✈	✈	✈	✈	✈	✈
B772	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B773		✈		✈	✈	✈	✈	✈	✈	✈
B773ER		✈		✈	✈	✈	✈	✈	✈	✈

6. REMOTE STANDS - Aircraft types that can be parked at stands (✈) are as follows:

Stands	103	104	200	200L	200R	201	202	202L	202R	203	205	206	207	208	209
A300, A310	✈	✈	✈			✈	✈			✈	✈	✈	✈	✈	✈
A319, A320	✈	✈		✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈
A321				✈	✈			✈	✈						
A330, A342	✈	✈	✈			✈	✈			✈	✈	✈			
A343, A345	✈	✈	✈			✈	✈			✈	✈	✈			
A359			✈			✈	✈			✈	✈	✈			
A380	✈	✈													
AT72			✈			✈	✈			✈	✈	✈	✈	✈	✈
B707, B727	✈	✈	✈			✈	✈			✈	✈	✈	✈	✈	✈
B737	✈	✈		✈	✈	✈		✈	✈	✈	✈	✈	✈	✈	✈
B747, B74S, B788	✈	✈	✈			✈	✈			✈	✈	✈			
B748	✈	✈													
B757	✈	✈	✈			✈	✈			✈	✈	✈	✈	✈	✈
B767, B772, B773	✈	✈	✈			✈	✈			✈	✈	✈			
B773ER	✈	✈	✈			✈	✈			✈	✈	✈			
B789	✈	✈	✈			✈	✈			✈	✈	✈			
DC8	✈	✈													
DC10	✈	✈	✈			✈	✈			✈	✈	✈			
DHC7													✈	✈	✈
F70	✈	✈	✈			✈	✈			✈	✈	✈	✈	✈	✈
IL62			✈			✈	✈			✈	✈	✈			
L101	✈	✈	✈			✈	✈			✈	✈	✈			
MD11	✈	✈	✈			✈	✈			✈	✈	✈			

Stands	300	301	302	303	304	305	306	307	308	309	310	400	401	402	403	404
A300, A310	✈	✈	✈	✈	✈	✈	✈			✈	✈	✈	✈	✈		
A319, A320	✈	✈	✈	✈	✈	✈	✈			✈	✈	✈	✈	✈	✈	
A330, A342	✈		✈								✈	✈	✈			
A343, A345	✈		✈								✈	✈	✈			
A359	✈		✈								✈					
AT72				✈	✈	✈	✈									
B707	✈	✈	✈	✈	✈	✈	✈			✈	✈	✈	✈	✈		
B727	✈	✈	✈	✈	✈	✈	✈			✈	✈	✈	✈	✈	✈	
B737 (100-500)	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈
B737 (600-900)	✈	✈	✈	✈	✈	✈	✈			✈	✈	✈	✈	✈	✈	
B747	✈		✈								✈	✈	✈			
B74S, B788	✈		✈								✈	✈	✈			
B757, B767	✈	✈	✈	✈	✈	✈	✈			✈	✈	✈	✈	✈		
B772, B773	✈		✈								✈	✈	✈			
B773ER	✈		✈								✈	✈	✈			
B789	✈		✈								✈	✈	✈			
DC10	✈		✈				✈				✈	✈	✈			
DC8	✈	✈	✈	✈	✈	✈	✈			✈	✈					
F70	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	✈	
L101	✈		✈				✈				✈	✈	✈			
MD11	✈		✈				✈				✈	✈	✈			

APRON / ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
B8	The aircraft (on idle thrust) shall be pushed back: ● onto TWY U1 to face South until its nosewheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there. OR ● onto TWY U1 to face North until its nosewheel is at the intersection of the lead-in line and TWY U1 centreline. The aircraft shall then be towed forward until its nosewheel is at the intersection of the aircraft stand B9 lead-in line and TWY U1 centreline. The aircraft may breakaway from there.	Pushback approved, to face South. Pushback approved, to face North.
B9, B10	The aircraft (on idle thrust) shall be pushed back onto TWY U1 until its nosewheel is at the intersection of the aircraft stand lead-in line and TWY U1 centreline. The aircraft may breakaway from there.	Pushback approved, to face North (or South).
MARS REMOTE		
101, 101R	The aircraft (on idle thrust) shall be pushed back to face East until its nosewheel is at the "END OF PUSH" position. The aircraft shall then be towed forward until its nosewheel is at the "END OF TOW (EOT)" position on TWY L4 centreline. The aircraft may breakaway from there.	Standard pushback approved.
101L	The aircraft (on idle thrust) shall be pushed back onto TWY L4 centreline to face East. The aircraft shall then be towed forward along the centreline of TWY L4 until its nosewheel is at the "END OF TOW (EOT)" position. The aircraft may breakaway from there.	Standard pushback approved.
102, 102R, 102L	The aircraft (on idle thrust) shall be pushed back onto TWY L4 centreline to face East. The aircraft shall then be towed forward along the centreline of TWY L4 until the nose of the aircraft is behind the stopbar behind aircraft stand 102. The aircraft may breakaway from there.	Standard pushback approved.
EAST REMOTE		
200, 201 202, 203	The aircraft (on idle thrust) shall be pushed back onto TWY C6 to face North (or South).	Pushback approved, to face North (or South).
200L	The aircraft (on idle thrust) shall be pushed back: ● onto Taxilane C6 centreline to face North until its nosewheel is on the end of push behind aircraft stand 200L. The aircraft may breakaway from there. OR ● onto Taxilane C6 centreline to face South.	Pushback approved, to face North. Pushback approved, to face South.
200R, 202L 202R	The aircraft (on idle thrust) shall be pushed back onto Taxilane C6 centreline to face North (or South).	Pushback approved, to face North (or South).
SOUTH-EAST REMOTE		
103, 104	The aircraft (on idle thrust) shall be pushed back onto Taxilane L4 centreline to face East until the nose of the aircraft is behind the stopbar behind aircraft stand 102. The aircraft may breakaway from there.	Standard pushback approved.
205, 206 207, 208	The aircraft (on idle thrust) shall be pushed back onto TWY C7 to face North (or South).	Pushback approved, to face North (or South).
209	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 C7 centreline.	Pushback approved, to face North (or South).

APRON/ACFT STANDS	PUSHBACK PROCEDURES	PHRASEOLOGY USED BY SINGAPORE GROUND
NORTH REMOTE		
300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310	The aircraft (on idle thrust) shall be pushed back: ● facing West until its nosewheel is at the intersection of the lead-in line and taxiway NC2 centreline. OR ● facing East until its nosewheel is at the intersection of the lead-in line and taxiway NC2 centreline.	Pushback approved, to face West. Pushback approved, to face East.
NORTH-EAST REMOTE		
400, 401, 402 403, 404	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).
WEST CARGO		
502	The aircraft (on idle thrust) shall be pushed back to face North (or South). The aircraft may breakaway from here. There shall be no simultaneous pushback of aircraft unless with two aircraft stands separation.	Pushback approved, to face North (or South).
503, 504 505, 506	The aircraft (on idle thrust) shall be pushed back to face North (or South).	Pushback approved, to face North (or South).
507, 508, 509	The aircraft (on idle thrust) shall be pushed back to face North (or South). The aircraft may breakaway from there. There shall be no simultaneous pushback of aircraft unless with two aircraft stands separation.	Pushback approved, to face North (or South)
EAST CARGO		
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
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. Alternate Pushback Procedure 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.	Standard pushback approved Alternate pushback approved

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	6 556 KHz 11 297 KHz	H24	SEA 1, Emission: A3AJ. SSB suppressed carrier, SAT-COM service available
		5 655 KHz 8 942 KHz 11 396 KHz		SEA 2, Emission: A3AJ. SSB suppressed carrier, SAT-COM service available
		6 556 KHz		SEA 3, Emission: A3AJ. SSB suppressed carrier, SAT-COM service available
APP	Singapore Approach	P120.3 MHz S124.6 MHz	H24	TAR - Intermediate approach to Singapore Changi Airport and other airports in Singapore. Departures 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			
TWR	Singapore Tower	118.6 MHz	H24 0000-1600	for takeoff / landing for aircraft operating on RWY 02L/20R
		118.25 MHz	0000-1600	for aircraft operating on RWY 02C/20C
	Singapore Ground	124.3 MHz	1600-0000 0000-1600	for start-up / push-back / taxiing of all aircraft for ground movement of aircraft west of Terminal 3
		121.725 MHz	0000-1700 2100-0000	for ground movement of aircraft east of Terminal 2
		121.85 MHz	0000-1800 2300-0000	for ground movement of aircraft north of Terminal 1
		129.95 MHz	H24	for ground emergency
	Singapore Delivery	121.65 MHz		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 AP 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					
Type of aid and MAG Variation	*IDENT*	*Frequency*	*OPR HR*	*Position of Transmitting Antenna Coordinates*	*DME Transmitting Antenna Elevation / Remarks*
1	2	3	4	5	6 & 7
SINJON DVOR/DME	SJ	113.5MHz 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	116.5MHz 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	011935.97N 1035902.64E	LOC 250m (820ft) from THR RWY 02C, along RWY centreline. Course width 3°. 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	012131.32N 1035956.57E	LOC 338m (1109ft) from THR RWY 20C on left side of RWY, 148m (486ft) from RWY centreline. GP angle 3°. HGT of ILS reference datum: 18m (58ft) EM: A0/A2
RWY 20C ILS DME	ICC	CH34X	H24	012131.32N 1035956.57E	DME co-located with GP. EM: P9
RWY 20C ILS MM	-	75MHz	H24	012211.94N 1040008.52E	LOC 955m (3133ft) from THR RWY 20C along extended centreline of RWY. No back beam.
RWY 02C ILS LLZ	ICE	108.3MHz	H24	012150.84N 1035959.58E	LOC 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	LOC 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	LOC 945m (3100ft) from THR RWY 02C along extended centreline of RWY. No back beam.

WSSS AD 2.19 RADIO NAVIGATION AND LANDING AIDS					
Type of aid and MAG Variation	*IDENT*	*Frequency*	*OPR HR*	*Position of transmitting antenna Coordinates*	*DME transmitting antenna Elevation / Remarks*
1	2	3	4	5	6 & 7
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. MAINT Period: MAY-OCT - First SAT of EV month BTN 0200-0900 NOV-APR - First FRI of EV month BTN 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. 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 MAINT Period: MAY-OCT - First FRI of EV month BTN 0200-0900 NOV-APR - First SAT of EV month BTN 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 REF 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 2-7 and WSAP AD 2-8 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:

a) 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.

b) Adhere strictly to IFR procedures even in VMC which calls for a procedure turn over NYLON Holding Area or SAMKO Holding Area as prescribed.

c) Make full use of all available navigational and landing aids available and positively identify every aid used.

d) 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 02R/20L	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. (ref chart WSSS AD 2-31)	
ILS	RWY 20 - Nil	RWY 20R IDENT ICH No back beam LLZ 108.9 MHz GP 329.3 MHz	
	RWY 02 - Nil	RWY 02L IDENT ICW No back beam LLZ 110.9 MHz GP 330.8 MHz	
IBN	Flashing R ‘PL’ HN and IMC	Flashing G ‘CH’ HN and IMC	
ABN	Nil	ALTN Flashing W G every 2.3 SEC	

WSSS AD 2.21 NOISE ABATEMENT PROCEDURES

1.1 To alleviate the problem of noise, all aircraft on AWY G579 between SINJON (SJ) and JAYBEE (JB) shall operate at/above 5,000ft.

1.2 The Standard Instrument Departure routes for aircraft departing on RWY 20R/20C are for the purpose of noise abatement in addition to being used for air traffic control.

1.3 Departures on RWY 20R are restricted between 1600-2200UTC. This restriction is not applicable when RWY 20C/02C is unavailable because of maintenance works or for other reasons.

1.4 Unless it is necessary for operational or safety reasons, when using engine reverse, arrivals on RWY 02L/20R between 1600-2200UTC may not exceed idle reverse thrust.

WSSS AD 2.22 FLIGHT AND GROUND PROCEDURES

1. LOW VISIBILITY PROCEDURES (LVP) FOR CATEGORY II ILS OPERATIONS

1.1 Introduction

1.1.1 Category II ILS approaches will be made available at Singapore Changi Airport to authorised flights during prolonged periods of low visibility, except during thunderstorms. RVR minima for CAT II ILS operations is limited to 350m due to runway and taxiway light spacing requirements on the airfield.

1.2 Authorisation for Category II ILS Approaches

1.2.1 Operators who wish to conduct Category II ILS operations at Singapore Changi Airport must have obtained operational approval from the relevant State of Operator and be authorised by the Civil Aviation Authority of Singapore.

1.3 Category II ILS Runways

1.3.1 At Singapore Changi Airport, Category II ILS approaches are available only on RWY 02L and RWY 20C, which are also equipped with precision approach Category II lighting system. When required, pilots making Category II ILS approaches to Singapore Changi Airport should refer to the procedures in the Instrument Approach Charts WSSS AD 2-101 to WSSS AD 2-119 and the Precision Approach Terrain Charts for RWY 02L and RWY 20C at WSSS AD 2-43 and WSSS AD 2-45 respectively.

1.4 Initiation of Category II ILS Operations

1.4.1 Preparations will be made to implement LVP for Category II ILS operations at Singapore Changi Airport during prolonged period of low visibility, except during thunderstorms, when the RVR drops below 800 metres.

1.4.2 Availability of the Category II ILS approaches will be made known through NOTAM and ATIS broadcasts as well as air traffic control radio communications.

1.4.3 During LVP operations, aircraft will not be cleared for Category II ILS approach if any of the ILS or approach/runway lights fall below Category II requirements. Aircraft will not be cleared for landing if the Touchdown Zone RVR is unserviceable.

1.5 ILS Sensitive Areas

1.5.1 Upon landing, pilots shall report to Changi Tower once the aircraft has cleared the runway and has passed the ILS sensitive areas demarcated by alternate yellow and green lights along the centrelines of Rapid Exit Taxiways and Cross Taxiways.

1.6 Termination of LVP for Category II ILS Operations

1.6.1 LVP for Category II ILS operations will be terminated when RVR has improved above 800 metres. Termination of LVP for Category II ILS operations will be made known through NOTAM and ATIS broadcasts as well as air traffic control radio communications.

1.7 Operations of Flights Not Authorised for Category II ILS Operations

1.7.1 During Category II ILS operations, if the RVR is 550 metres or above, flights not authorised for Category II ILS operations may continue to make approaches and land. Airlines planning to operate flights not authorised for Category II ILS operations into Changi shall monitor the METAR to ascertain the RVR values when launching their flights and be prepared to divert if the RVR is below 550 metres.

12.4 Pilots are reminded to always use minimum power when starting engines, when manoeuvring within the apron area or when manoeuvring from apron taxiways to other parts of the aerodrome. It is especially critical when commencing to taxi that break-away thrusts are kept to an absolute minimum and then be reduced to idle thrusts as soon as possible.

13. TAKE-OFF AND LANDING

13.1 Departing aircraft will normally be directed by ATC to use the full length of the runway for take-off. On obtaining an ATC clearance the aircraft shall enter the runway via designated taxiways:

RWY 02C - TWY E10 or E11
RWY 02L - TWY W8, W9 or W10
RWY 20C - TWY E1, E2
RWY 20R - TWY W1, W2

13.2 The pilot-in-command shall not take-off or land without a clearance from Aerodrome Control.

13.3 The pilot-in-command shall not run-up on the runway in use unless authorised by Aerodrome Control. Engine run-ups in the holding pan or taxiway holding point clear of the runway in use may be carried out subject to approval by Aerodrome Control.

13.4 After landing, the pilot-in-command shall vacate the runway by the shortest suitable route and to contact Ground Control who will issue specific taxi route instructions to its assigned aircraft stand.

13.5 Aircraft with radio communication failure shall vacate the runway and stop on the taxiway and watch for light signals from Aerodrome Control.

14. ARRIVING AIRCRAFT

14.1 The pilot-in-command of an arriving aircraft shall contact the appropriate Approach Control Unit 10 minutes before entering the CTR or ATZ.

15. LIGHT AIRCRAFT OPERATIONS

15.1 Light aircraft operations into and out of Singapore Changi Airport may be approved subject to the following conditions:

a) Prior permission has been granted;
b) Aircraft is suitably equipped;
c) Pilot is appropriately rated;
d) Subject to ATC.

15.2 Flight notification shall be given by filing a flight plan.

15.3 All such operations will be regulated in accordance with IFR procedures.

WSSS AD 2.23 ADDITIONAL INFORMATION

1. BIRD CONCENTRATION IN THE VICINITY OF THE AIRPORT

1.1 A number of varieties of birds are found in Singapore throughout the year. The larger birds commonly found in Singapore Changi Airport include the following:

- cattle egrets (weighing approximately 300g each)
- grey herons (weighing approximately 500g each)
- brahminy kites (weighing approximately 600g each)

1.2 There could be an increase in bird activities during the migratory months of September to April. During this period, migratory birds may use the airport as their feeding ground.

WSSS AD 2.24 CHARTS RELATED TO SINGAPORE CHANGI AIRPORT

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

PAPI 3° (MEHT)*

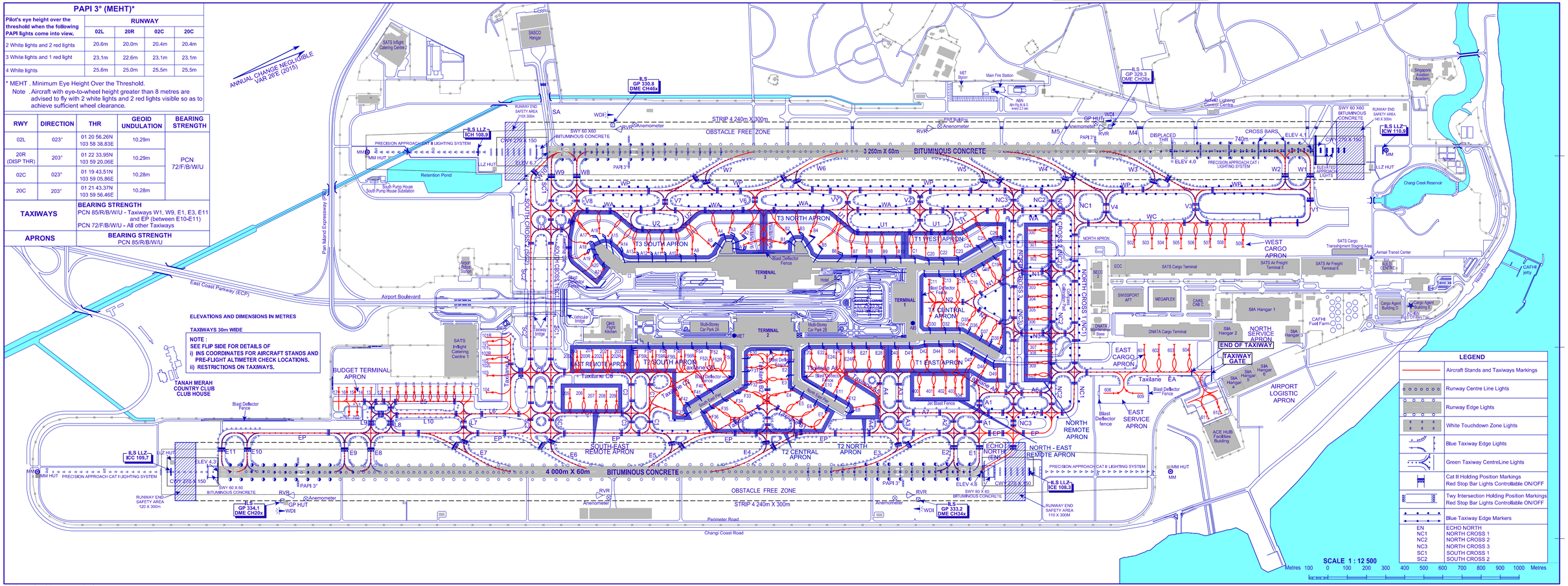
Pilot's eye height over the threshold when the following PAPI lights come into view.	RUNWAY			
	02L	20R	02C	20C
2 White lights and 2 red lights	20.6m	20.0m	20.4m	20.4m
3 White lights and 1 red light	23.1m	22.6m	23.1m	23.1m
4 White lights	25.8m	25.0m	25.5m	25.5m

* MEHT . Minimum Eye Height Over the Threshold.

Note . Aircraft with eye-to-wheel height greater than 8 metres are advised to fly with 2 white lights and 2 red lights visible so as to achieve sufficient wheel clearance.

RWY	DIRECTION	THR	GEOID UNDULATION	BEARING STRENGTH
02L	023°	01 20 56.26N 103 58 38.83E	10.29m	PCN 72/F/B/W/U
20R (DISP THR)	203°	01 22 33.95N 103 59 20.06E	10.29m	
02C	023°	01 19 43.51N 103 59 05.86E	10.28m	
20C	203°	01 21 43.37N 103 59 56.46E	10.28m	

TAXIWAYS	BEARING STRENGTH PCN 85/R/B/W/U - Taxiways W1, W9, E1, E3, E11 and EP (between E10-E11) PCN 72/F/B/W/U - All other Taxiways
APRONS	BEARING STRENGTH PCN 85/R/B/W/U



Changes : Runway 20R ILS LLZ and MM relocated.

INS COORDINATES FOR AIRCRAFT STANDS AND PRE-FLIGHT ALTIMETER CHECK LOCATIONS

LOCATION	STAND NR	NORTH LAT	EAST LONG	ELEVATION
T3 SOUTH APRON	A1	01 21 21.52	103 59 06.25	4.75m (15.58ft)
	A2	01 21 21.75	103 59 04.00	4.65m (15.26ft)
	A3	01 21 19.86	103 59 02.79	4.66m (15.29ft)
	A4	01 21 17.61	103 59 02.54	4.79m (15.72ft)
	A5	01 21 15.50	103 59 03.62	4.86m (15.94ft)
	A9	01 21 12.56	103 59 03.65	5.02m (16.47ft)
	A10	01 21 10.34	103 59 02.40	5.04m (16.54ft)
	A11	01 21 07.93	103 59 01.41	5.25m (17.22ft)
	A12	01 21 05.76	103 59 00.49	5.38m (17.65ft)
	A13	01 21 03.59	103 58 59.58	5.48m (17.98ft)
	A14	01 21 01.66	103 58 57.59	5.57m (18.27ft)
	A15	01 21 00.77	103 58 55.41	5.46m (17.91ft)
	A16	01 20 59.27	103 58 54.20	5.51m (18.08ft)
	A17	01 20 57.25	103 58 54.06	5.23m (17.16ft)
	A18	01 20 55.87	103 58 55.25	5.37m (17.62ft)
	A19	01 20 55.26	103 58 57.13	5.40m (17.72ft)
	A20	01 20 56.09	103 58 58.83	5.45m (17.88ft)
	A21	01 20 57.10	103 59 00.80	5.49m (18.01ft)
T3 NORTH APRON	B1	01 21 26.86	103 59 08.37	4.82m (15.81ft)
	B2	01 21 28.18	103 59 06.82	4.68m (15.35ft)
	B3	01 21 30.33	103 59 07.30	4.65m (15.26ft)
	B4	01 21 32.03	103 59 08.60	4.75m (15.58ft)
	B5	01 21 32.98	103 59 10.89	4.80m (15.75ft)
	B6	01 21 35.15	103 59 13.16	4.96m (16.27ft)
	B7	01 21 37.65	103 59 13.93	4.97m (16.31ft)
	B8	01 21 39.94	103 59 15.20	5.09m (16.70ft)
	B9	01 21 42.19	103 59 16.16	5.13m (16.83ft)
	B10	01 21 44.47	103 59 17.12	5.10m (16.73ft)
T1 WEST APRON	C1	01 21 46.75	103 59 18.08	5.09m (16.70ft)
	C20	01 21 48.83	103 59 19.23	5.08m (16.67ft)
	C22	01 21 51.00	103 59 20.13	5.15m (16.90ft)
	C23	01 21 53.56	103 59 20.77	5.08m (16.67ft)
	C24	01 21 56.54	103 59 20.97	4.89m (16.04ft)
	C25	01 21 59.12	103 59 20.59	4.99m (16.37ft)
	C26	01 22 01.48	103 59 20.76	5.01m (16.44ft)
T1 CENTRAL APRON	C11	01 21 47.42	103 59 23.82	5.07m (16.63ft)
	C13	01 21 49.64	103 59 24.75	5.05m (16.57ft)
	C15	01 21 51.90	103 59 25.71	5.05m (16.57ft)
	C16	01 21 53.63	103 59 26.42	4.91m (16.11ft)
	C17	01 21 55.63	103 59 26.07	5.03m (16.50ft)
	C18	01 21 57.86	103 59 25.75	4.99m (16.37ft)
	C19	01 21 59.79	103 59 25.63	4.95m (16.24ft)
	D30	01 21 44.54	103 59 30.14	5.09m (16.70ft)
	D32	01 21 46.73	103 59 31.07	5.08m (16.67ft)
	D34	01 21 49.03	103 59 32.04	5.07m (16.63ft)
	D35	01 21 50.87	103 59 32.82	5.02m (16.47ft)
	D36	01 21 51.98	103 59 34.52	5.06m (16.60ft)
	D37	01 21 53.37	103 59 36.28	4.97m (16.31ft)
	D38	01 21 54.58	103 59 37.77	4.99m (16.37ft)
T1 EAST APRON	D40	01 21 38.02	103 59 32.85	5.07m (16.63ft)
	D41	01 21 40.30	103 59 33.81	5.07m (16.63ft)
	D42	01 21 42.70	103 59 34.48	5.11m (16.77ft)
	D44	01 21 44.97	103 59 35.44	5.14m (16.86ft)
	D46	01 21 47.40	103 59 36.72	5.08m (16.67ft)
	D47	01 21 49.19	103 59 38.89	4.93m (16.17ft)
	D48	01 21 50.60	103 59 40.77	4.97m (16.31ft)
	D49	01 21 52.23	103 59 42.35	4.98m (16.34ft)
T2 NORTH APRON	E8	01 21 27.99	103 59 38.45	4.68m (15.35ft)
	E10	01 21 24.15	103 59 32.67	4.71m (15.45ft)
	E11	01 21 25.57	103 59 34.37	4.78m (15.68ft)
	E12	01 21 27.20	103 59 36.42	4.75m (15.58ft)
	E20	01 21 24.36	103 59 27.08	5.04m (16.54ft)
	E22	01 21 26.64	103 59 28.04	5.07m (16.63ft)
	E24	01 21 29.01	103 59 29.06	5.09m (16.70ft)
	E24L	01 21 28.32	103 59 28.77	5.10m (16.73ft)
	E24R	01 21 29.53	103 59 29.28	5.08m (16.67ft)
	E26	01 21 31.19	103 59 29.96	5.08m (16.67ft)
	E27	01 21 33.46	103 59 30.93	5.03m (16.50ft)
	E28	01 21 35.74	103 59 31.89	5.08m (16.67ft)
T2 CENTRAL APRON	E1	01 21 20.02	103 59 25.58	4.91m (16.11ft)
	E2	01 21 19.28	103 59 27.30	4.90m (16.08ft)
	E3	01 21 18.44	103 59 29.27	4.82m (15.81ft)
	E4	01 21 18.10	103 59 31.70	4.80m (15.75ft)
	E5	01 21 19.56	103 59 33.72	4.90m (16.08ft)
	E6	01 21 21.22	103 59 35.93	4.84m (15.88ft)
	E7	01 21 22.48	103 59 37.46	4.73m (15.52ft)
	F30	01 21 14.71	103 59 23.33	4.92m (16.14ft)
	F31	01 21 13.87	103 59 25.30	4.91m(16.11ft)
	F32	01 21 13.03	103 59 27.26	4.85m (15.91ft)
	F33	01 21 11.30	103 59 28.54	4.91m (16.11ft)
	F34	01 21 08.98	103 59 28.96	4.92m (16.14ft)
	F35	01 21 06.28	103 59 29.29	4.90m (16.08ft)
	F36	01 21 04.34	103 59 29.67	4.82m (15.81ft)

INS COORDINATES FOR AIRCRAFT STANDS AND PRE-FLIGHT ALTIMETER CHECK LOCATIONS

LOCATION	STAND NR	NORTH LAT	EAST LONG	ELEVATION
T2 SOUTH APRON	F37	01 20 59.83	103 59 27.87	4.75m (15.58ft)
	F40	01 21 05.62	103 59 25.34	4.85m (15.91ft)
	F41	01 21 03.19	103 59 25.58	4.82m (15.81ft)
	F42	01 21 00.61	103 59 25.96	4.72m (15.49ft)
	F50	01 21 10.69	103 59 21.32	5.03m (16.50ft)
	F52	01 21 08.51	103 59 20.40	5.11m (16.77ft)
	F52L	01 21 07.82	103 59 20.11	5.16m (16.93ft)
	F52R	01 21 09.04	103 59 20.62	5.08m (16.67ft)
	F54	01 21 06.14	103 59 19.40	5.22m (17.13ft)
	F56	01 21 03.96	103 59 18.48	5.30m (17.39ft)
	F56L	01 21 03.27	103 59 18.18	5.42m (17.78ft)
	F56R	01 21 04.49	103 59 18.70	5.34m (17.52ft)
	F58	01 21 01.58	103 59 17.47	5.49m (18.01ft)
	F59	01 20 59.41	103 59 16.55	5.64m (18.50ft)
	F59L	01 20 58.72	103 59 16.26	5.67m (18.60ft)
	F59R	01 20 59.93	103 59 16.78	5.60m (18.37ft)
	F60	01 20 56.91	103 59 15.50	5.77m (18.93ft)
EAST REMOTE APRON	200	01 20 47.83	103 59 11.67	6.23m (20.44ft)
	200L	01 20 46.91	103 59 11.92	6.29m (20.64ft)
	200R	01 20 48.35	103 59 11.89	6.18m (20.28ft)
	201	01 20 49.99	103 59 12.62	5.96m (19.55ft)
	202	01 20 52.34	103 59 13.57	5.94m (19.49ft)
	202L	01 20 51.65	103 59 13.28	5.76m (18.90ft)
	202R	01 20 52.87	103 59 13.79	5.73m (18.80ft)
	203	01 20 54.52	103 59 14.47	5.92m (19.42ft)
SOUTH-EAST REMOTE APRON	101	01 20 34.88	103 59 04.05	4.49m (14.73ft)
	101L	01 20 34.60	103 59 04.70	4.60m (15.09ft)
	101R	01 20 35.11	103 59 03.50	4.53m (14.86ft)
	102	01 20 33.76	103 59 06.65	4.49m (14.73ft)
	102L	01 20 33.53	103 59 07.33	4.62m (15.16ft)
	102R	01 20 34.00	103 59 06.10	4.60m (15.09ft)
	103	01 20 32.88	103 59 09.35	4.67m (15.32ft)
	104	01 20 31.77	103 59 11.96	4.39m (14.40ft)
	205	01 20 43.91	103 59 17.06	4.77m (15.65ft)
	206	01 20 46.08	103 59 17.98	4.76m (15.62ft)
	207	01 20 47.91	103 59 18.88	4.74m (15.55ft)
	208	01 20 49.48	103 59 19.54	4.74m (15.55ft)
	209	01 20 51.06	103 59 20.21	4.75m (15.58ft)
NORTH REMOTE APRON	300	01 22 06.95	103 59 22.67	4.53m (14.86ft)
	301	01 22 06.41	103 59 24.69	4.93m (16.17ft)
	302	01 22 05.21	103 59 26.75	4.97m (16.31ft)
	303	01 22 03.55	103 59 31.40	5.32m (17.45ft)
	304	01 22 02.84	103 59 33.06	5.35m (17.55ft)
	305	01 22 02.14	103 59 34.71	5.30m (17.39ft)
	306	01 22 01.41	103 59 36.42	5.16m (16.93ft)
	307	01 21 59.39	103 59 40.36	5.16m (16.93ft)
	308	01 21 58.96	103 59 41.35	5.10m (16.73ft)
	309	01 21 58.52	103 59 43.17	5.06m (16.60ft)
	310	01 21 57.42	103 59 44.96	4.74m (15.55ft)
NORTH-EAST REMOTE APRON	400	01 21 38.71	103 59 40.14	4.31m (14.14ft)
	401	01 21 40.98	103 59 41.10	4.31m (14.14ft)
	402	01 21 42.85	103 59 41.89	4.30m (14.11ft)
	403	01 21 44.37	103 59 42.53	4.29m (14.07ft)
	404	01 21 45.45	103 59 42.98	4.20m (13.78ft)
WEST CARGO APRON	502	01 22 22.23	103 59 31.62	4.35m (14.27ft)
	503	01 22 24.98	103 59 32.78	4.29m (14.07ft)
	504	01 22 27.26	103 59 33.74	4.29m (14.07ft)
	505	01 22 29.54	103 59 34.70	4.32m (14.17ft)
	506	01 22 31.81	103 59 35.66	4.38m (14.37ft)
	507	01 22 34.11	103 59 36.64	4.36m (14.30ft)
	508	01 22 36.41	103 59 37.61	4.29m (14.07ft)
	509	01 22 39.12	103 59 38.76	4.09m (13.42ft)
EAST CARGO APRON	601	01 22 16.52	103 59 49.27	4.27m (14.01ft)
	602	01 22 18.80	103 59 50.23	4.30m (14.11ft)
	603	01 22 21.15	103 59 51.02	4.29m (14.07ft)
	604	01 22 23.46	103 59 51.99	4.31m (14.14ft)
EAST SERVICE APRON	606	01 22 09.09	103 59 53.22	2.70m (8.86ft)
	609	01 22 12.19	103 59 54.57	3.01m (9.88ft)
ACEHUB	611	01 22 22.14	104 00 02.87	4.01m (13.16ft)
	612	01 22 24.50	104 00 02.87	3.91m (12.83ft)
BUDGET TERMINAL APRON	1	01 20 28.69	103 59 10.05	3.97m (13.02ft)
	2	01 20 27.39	103 59 09.51	4.04m (13.25ft)
	3	01 20 26.09	103 59 08.96	3.90m (12.80ft)
	4	01 20 24.80	103 59 08.41	3.86m (12.66ft)
	5	01 20 23.50	103 59 07.86	3.85m (12.63ft)
	6	01 20 22.20	103 59 07.32	3.86m (12.66ft)
	7	01 20 20.90	103 59 06.77	3.83m (12.57ft)
	8	01 20 19.60	103 59 06.22	3.84m (12.60ft)
	9	01 20 18.31	103 59 05.67	3.83m (12.57ft)
	10	01 20 17.03	103 59 05.07	3.85m (12.63ft)
	11	01 20 15.77	103 59 04.43	3.90m (12.80ft)
	12	01 20 14.50	103 59 03.89	3.94m (12.93ft)
	13	01 20 12.78	103 59 03.16	3.99m (13.09ft)
	14	01 20 11.48	103 59 02.62	4.01m (13.16ft)
	15	01 20 10.33	103 59 01.72	4.60m (15.09ft)
	16	01 20 09.03	103 59 01.17	4.60m (15.09ft)
	17	01 20 07.74	103 59 00.62	4.60m (15.09ft)
	701	01 20 08.81	103 59 06.24	5.03m (16.50ft)
	702	01 20 07.51	103 59 05.69	5.03m (16.50ft)

RESTRICTIONS ON TAXIWAYS

1) Pilots are advised to apply minimum thrust when
   i) turning into TWY A1, A3, A4 and Taxilane A5 while taxiing either northwards or southwards on Taxilane A6, and
   ii) thereafter when taxiing along TWY A1 up to and including the TWY A7/A1 junction.
   This is in view of apron activities at aircraft stands D40, D41, D47, D48, D49, E22, E24, E27 and E28.

2) TWY SA can only be used by aircraft with maximum wingspan 65m. TWY SA is a one-way live TWY for aircraft taxiing into SASCO hangar via RWY 02L. Only tow-out operation is allowed from SASCO hangar into TWY SA and RWY 02L.

3) Pilots operating aircraft with wheelbase longer than B747 or 26m shall take note that judgemental oversteering may be required when manoeuvring round taxiway turns.

4) TWY NC3 (between TWY WA and TWY A6) is a TWY with reduced minimum separation distances between the TWY centreline and object. Due to the reduced minimum separation distances, pilots are advised to adhere strictly to the TWY centreline and to slow down the taxi speed accordingly. TWY NC3 (between TWY WA and TWY A6) can only be used by aircraft with maximum wingspan 65m.

5) Taxiway centreline along TWY EP between TWY B1 and B3 offset eastward by 2.5m away from aircraft stands E7 and F36.

6) Pilots are advised to apply minimum thrust when turning into taxiway WA from taxilane V6.

7) Taxilane U4 (behind aircraft stands A18 to A21) can only be used by aircraft with maximum wingspan 61m.

8) TWY N1 (behind aircraft stands C16 to C19 and between TWY NC2 and TWY NC3), TWY N2 and TWY N3 (behind aircraft stands D35 to D38 and between TWY NC2 and TWY NC3) can only be used by aircraft with maximum wingspan 65m.

9) Taxilane A6 (behind aircraft stands E20 to E24) and Taxilane C6 (behind aircraft stands F50 to F54) can only be used by aircraft with maximum wingspan 65m (towing and pushback exempted).

10) TWY L5 can only be used by aircraft with maximum wingspan 36m.

11) TWY L8, L9 and L10 can only be used by aircraft with maximum wingspan 65m.

12) Pilots are advised to exercise caution when taxiing near TWY L5, L8, L9 and L10.

13) Pilots are advised to apply speed limit of 20 knots when taxiing along TWY SOUTH CROSS 1 and SOUTH CROSS 2.

14) Pilots turning aircraft into aircraft stand A2 or aircraft stand B2 are advised to wait for any aircraft holding at Taxilane V6, at the inner cul-de-sac portion of the terminal building to vacate this portion before turning into aircraft stand A2 or aircraft stand B2.

15) TWY M4 and M5 are solely for use by Republic of Singapore Air Force (RSAF) aircraft.

RADIO ALTIMETER OPERATIONS AREA

A radio altimeter operating area is established in the pre-threshold area of Runway 02L/20R and Runway 02C/20C. The size of the radio altimeter operating area is 300m length and 120m width.

AIRCRAFT STANDS WITH SAFEGATE AIRCRAFT DOCKING GUIDANCE SYSTEM.

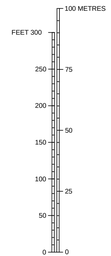
TOTAL AIRCRAFT PARKING POSITIONS : 167

DIMENSIONS AND ELEVATIONS IN METRES

AERODROME OBSTACLE CHART - ICAO
TYPE A (OPERATING LIMITATIONS)

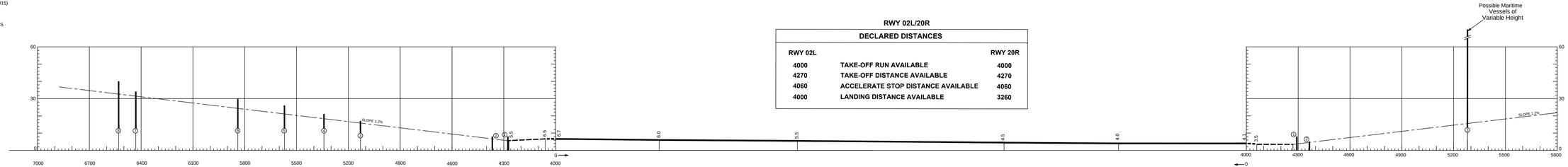
SINGAPORE/Singapore Changi

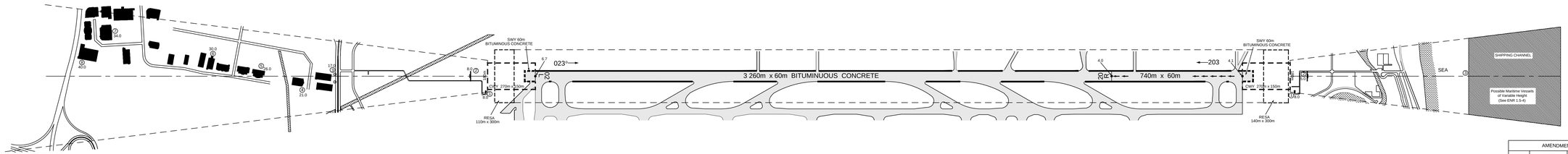
MAGNETIC VARIATION 26°E (2015)



RWY 02L/20R

DECLARED DISTANCES		
RWY 02L		**RWY 20R**
4000	**TAKE-OFF RUN AVAILABLE**	**4000**
4270	**TAKE-OFF DISTANCE AVAILABLE**	**4270**
4060	**ACCELERATE STOP DISTANCE AVAILABLE**	**4060**
4000	**LANDING DISTANCE AVAILABLE**	**3260**





LEGEND	
LOCALISER ANTENNA	
BUILDING	
IDENTIFICATION NUMBER	1
LAMP POST	
ROAD	

HORIZONTAL SCALE 1:10,000

METRES 400 200 0 500 1000 1500 2000 METRES

FEET 1000 500 0 1000 2000 3000 4000 5000 6000 FEET

ORDER OF ACCURACY

HORIZONTAL : ±1m
VERTICAL : ±1m

AMENDMENT RECORD		
NO.	DATE	ENTERED BY

CHANGES : Runway ILS LLZ relocated.

AERODROME OBSTACLE CHART - ICAO
TYPE B

SINGAPORE / Singapore Changi

CHANGES: Runway 20R ILS LLZ relocated.

GRID : Grid lines and co-ordinates shown are based on WGS-84 datum.

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 5F (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.

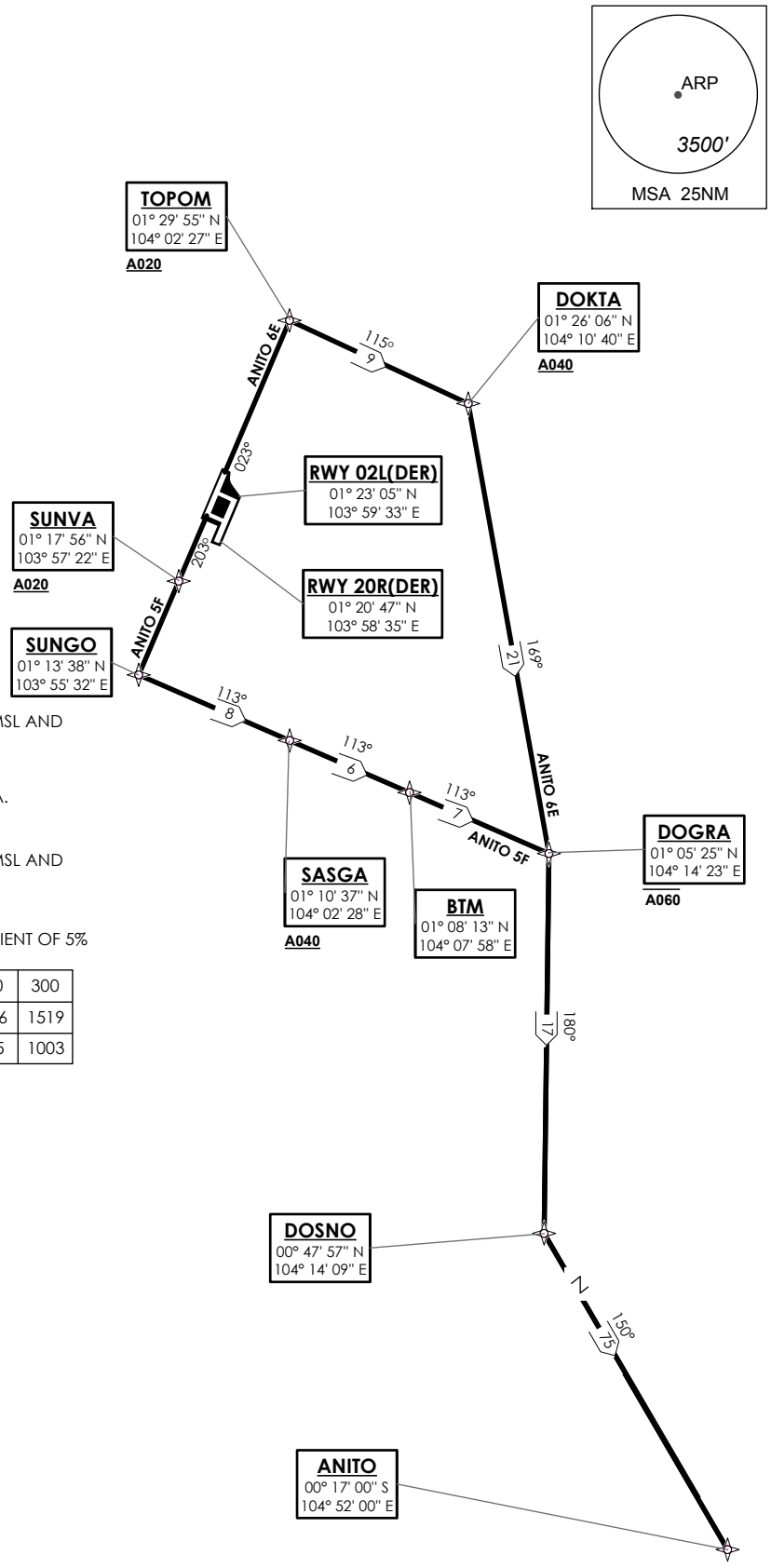
RWY 02L

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.

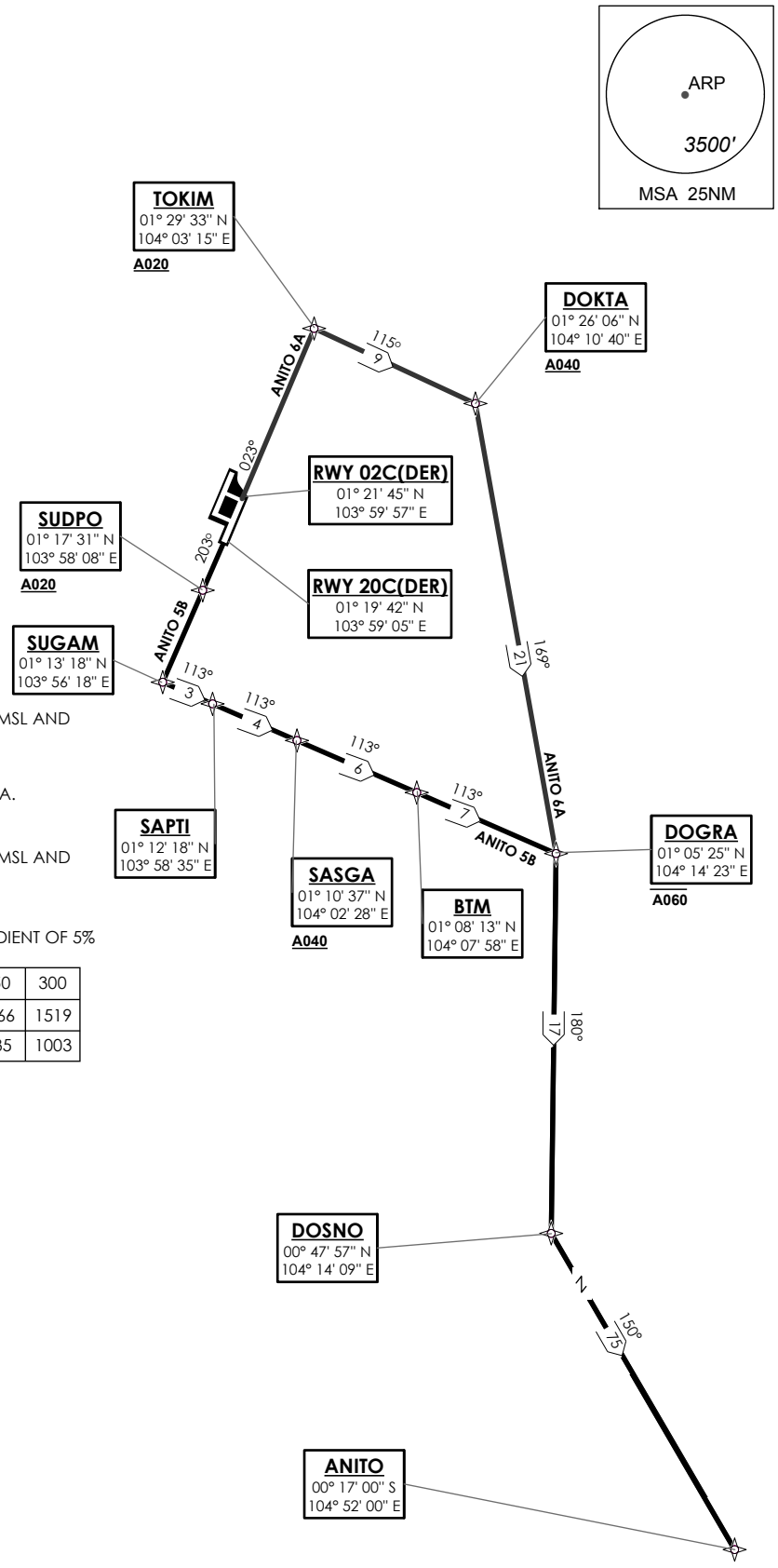
RWY 02C

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

CHANGES : New Chart.

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] - 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	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+] - SUGAM [L] - SAPTI - SASGA [A040+] - BTM - DOGRA [A060-; R] - DOSNO [L] - ANITO	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	-	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 133.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/20R
ADMIM DEPARTURES
ADMIM 1E (R02L)
ADMIM 1F (R20R)

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

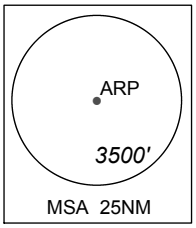
DISTANCES IN NM

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.

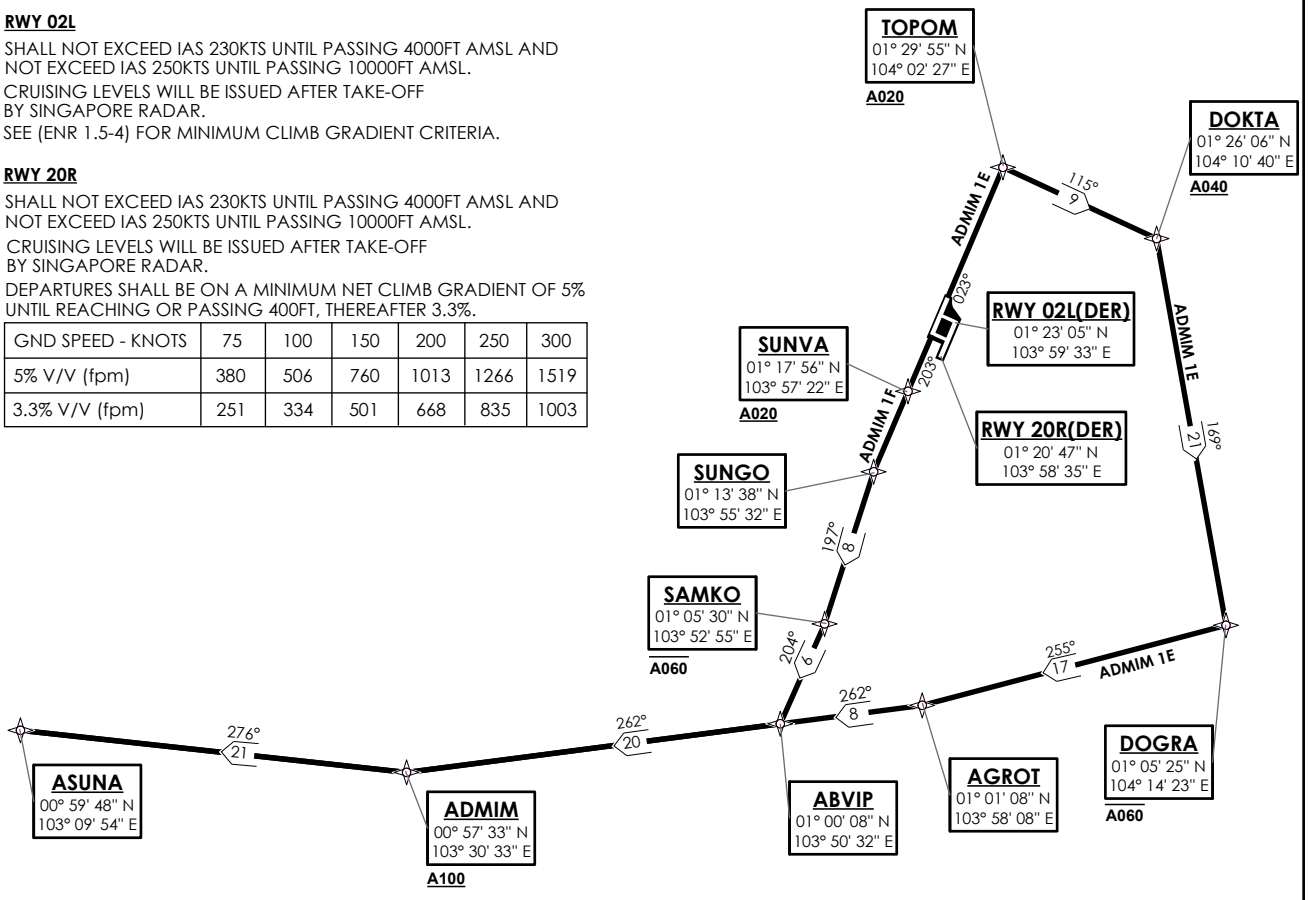
RWY 02L

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

CHANGES : New Chart.

ADMIM 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 AGROT, turn right. To ABVIP. To ADMIM at or above 10000ft, turn right. To ASUNA.	TOPOM [M023; A020+; R] - DOKTA [A040+; R] - DOGRA [A060-; R] - AGROT [R] - ABVIP - ADMIM [A100+; R] - ASUNA	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	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	AGROT	-	255(254.5)	-0.5	R	-	-	RNAV1
TF	ABVIP	-	262(261.5)	-0.5	-	-	-	RNAV1
TF	ADMIM	-	262(261.5)	-0.5	R	A100+	-	RNAV1
TF	ASUNA	-	276(275.5)	-0.5	-	-	-	RNAV1

ADMIM 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 SAMKO at or below 6000ft, turn right. To ABVIP, turn right. To ADMIM at or above 10000ft, turn right. To ASUNA.	SUNVA [M203; A020+] - SUNGO [L] - SAMKO [A060-; R] - ABVIP [R] - ADMIM [A100+; R] - ASUNA	CF TF TF TF TF TF	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	SAMKO	-	197(197.5)	-0.5	R	A060-	-	RNAV1
TF	ABVIP	-	204(203.5)	-0.5	R	-	-	RNAV1
TF	ADMIM	-	262(261.5)	-0.5	R	A100+	-	RNAV1
TF	ASUNA	-	276(275.5)	-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 133.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02C/20C
ADMIM DEPARTURES
ADMIM 1A (R02C)
ADMIM 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 VECTORING, IF NECESSARY

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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

ARP
3500'
MSA 25NM

GENERAL INFORMATION

INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

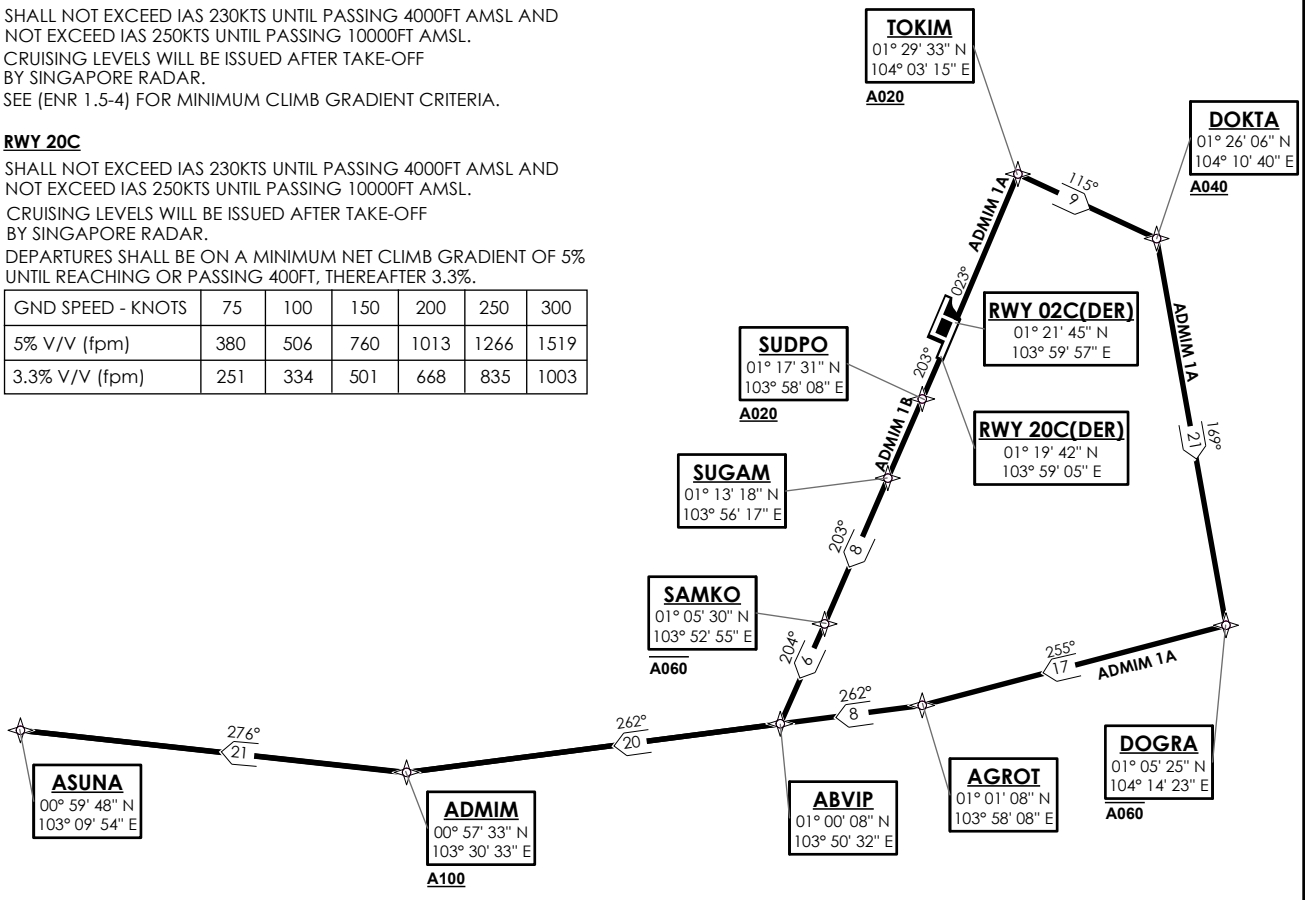
RWY 02C

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

CHANGES : New Chart.

ADMIM 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 AGROT, turn right. To ABVIP. To ADMIM at or above 10000ft, turn right. To ASUNA.	TOKIM [M023; A020+; R] - DOKTA [A040+; R] - DOGRA [A060-; R] - AGROT [R] - ABVIP - ADMIM [A100+; R] - ASUNA	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	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	AGROT	-	255(254.5)	-0.5	R	-	-	RNAV1
TF	ABVIP	-	262(261.5)	-0.5	-	-	-	RNAV1
TF	ADMIM	-	262(261.5)	-0.5	R	A100+	-	RNAV1
TF	ASUNA	-	276(275.5)	-0.5	-	-	-	RNAV1

ADMIM 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. To SAMKO at or below 6000ft, turn right. To ABVIP, turn right. To ADMIM at or above 10000ft, turn right. To ASUNA.	SUDPO [M203; A020+] - SUGAM - SAMKO [A060-; R] - ABVIP [R] - ADMIM [A100+; R] - ASUNA	CF TF TF TF TF TF	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	-	-	-	RNAV1
TF	SAMKO	-	203(202.5)	-0.5	R	A060-	-	RNAV1
TF	ABVIP	-	204(203.5)	-0.5	R	-	-	RNAV1
TF	ADMIM	-	262(261.5)	-0.5	R	A100+	-	RNAV1
TF	ASUNA	-	276(275.5)	-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 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.

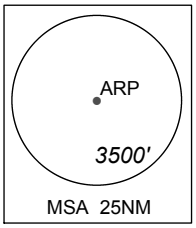
RWY 02L

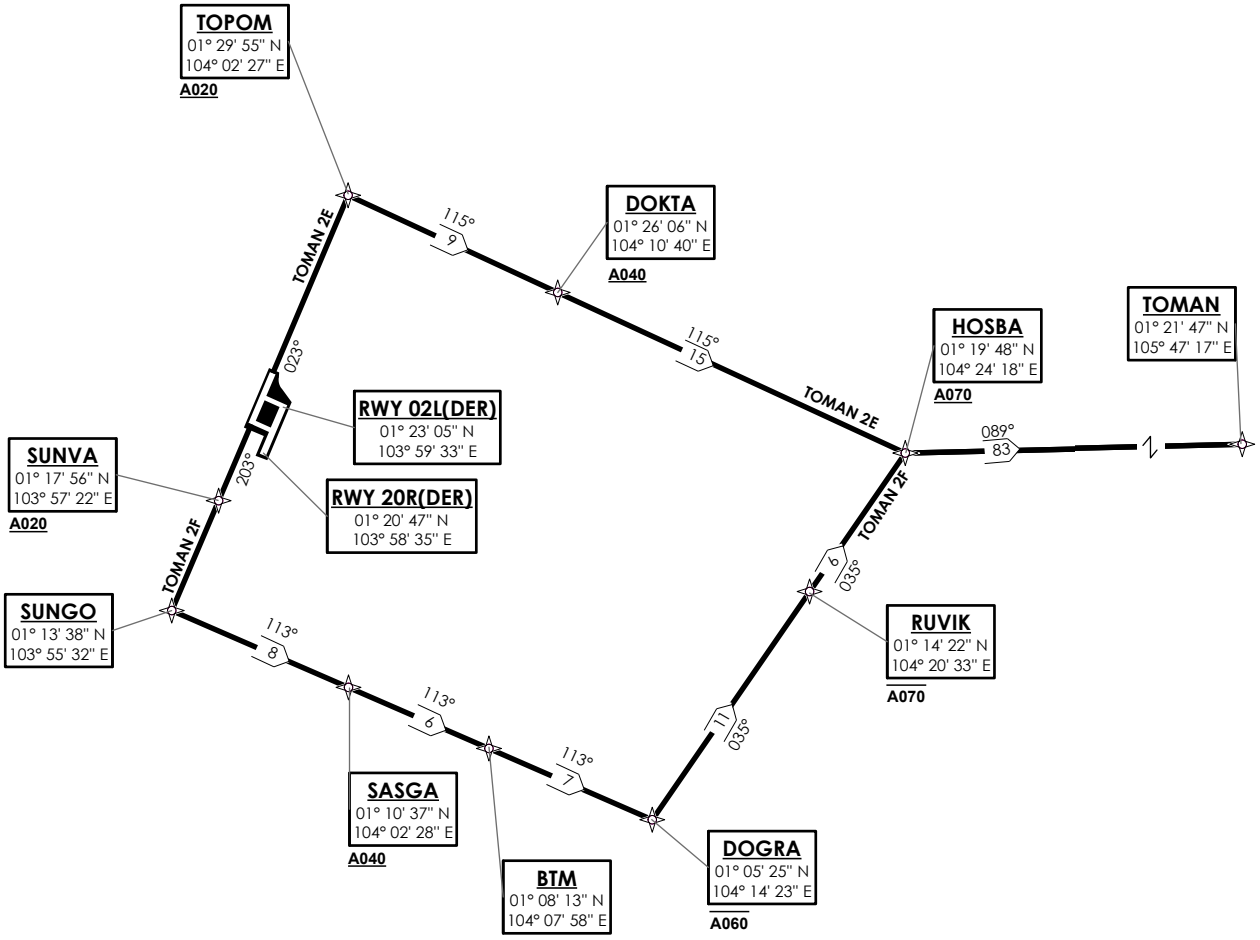
SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

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

CHANGES : New Chart.

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 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.

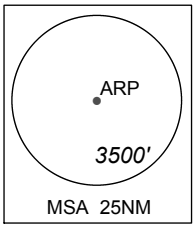
RWY 02C

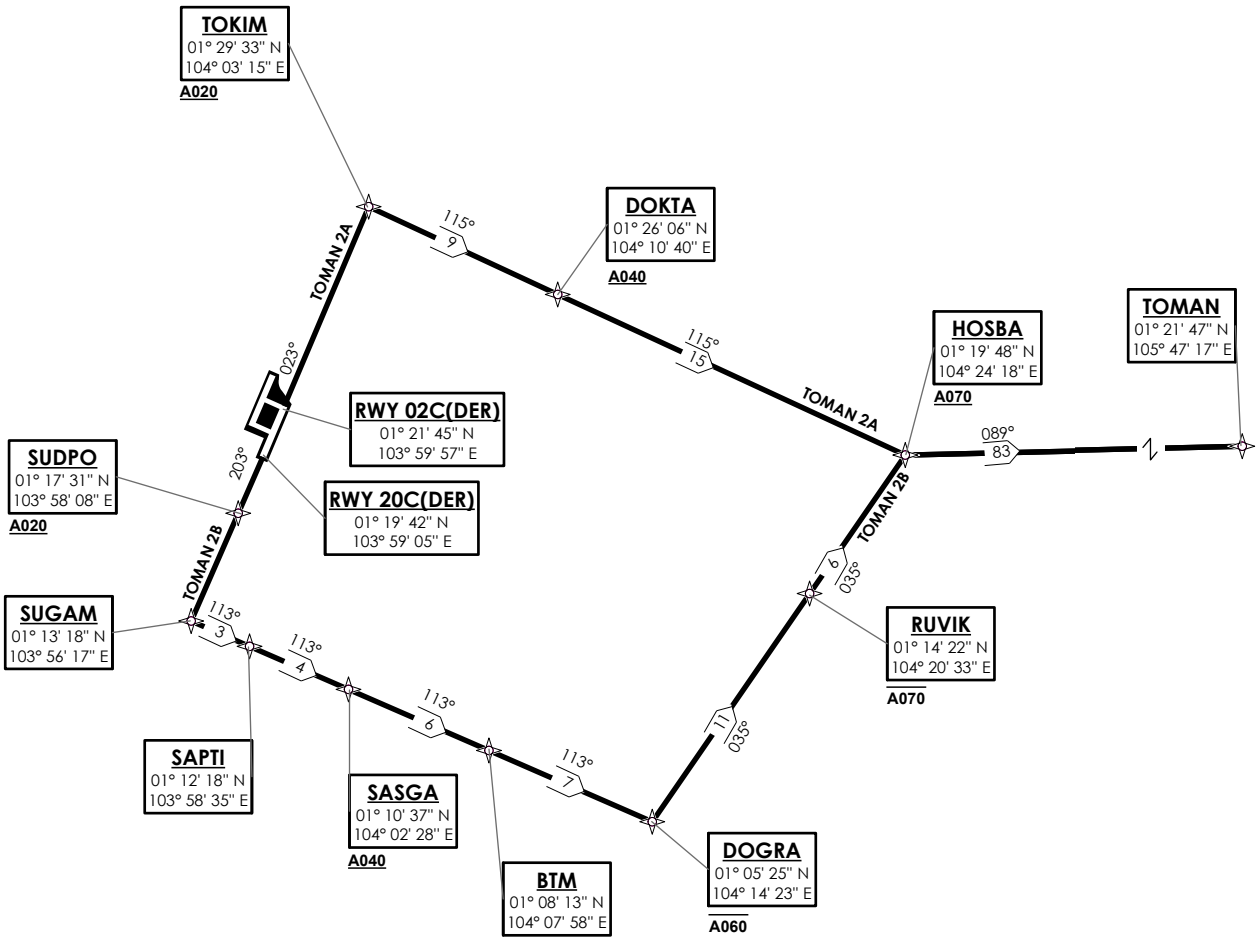
SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

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

CHANGES : New Chart.

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] - 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	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+] - SUGAM [L] - SAPTI - SASGA [A040+] - BTM - DOGRA [A060-; L] - RUVIK [A070-] - HOSBA [A070+; R] - TOMAN	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	-	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 134.4

TRANSITION ALTITUDE
11 000ft

D-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 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.

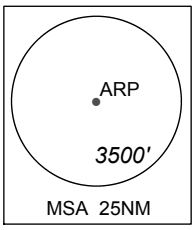
RWY 02L

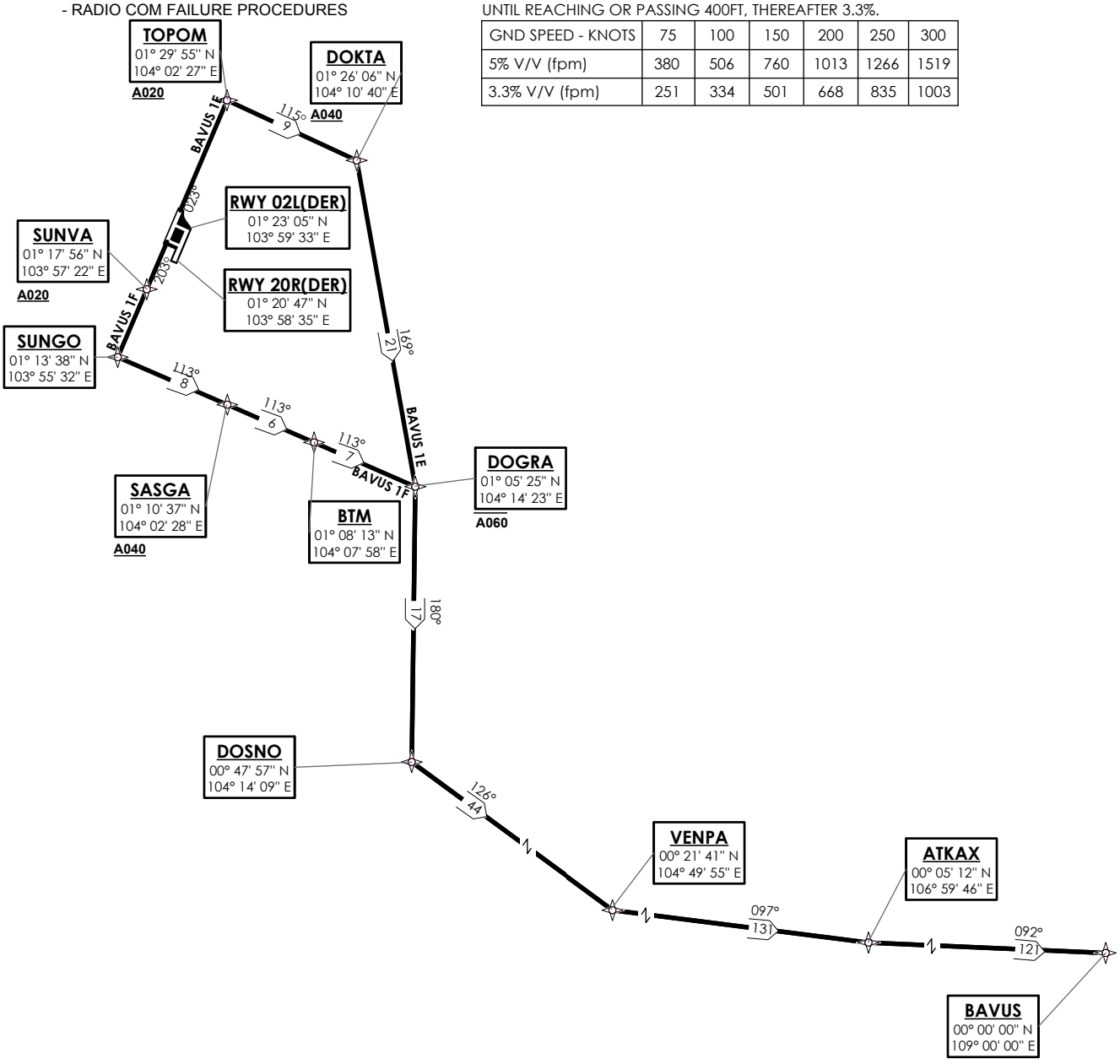
SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

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

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 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

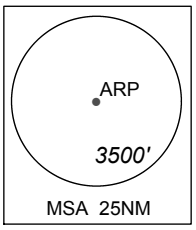
INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

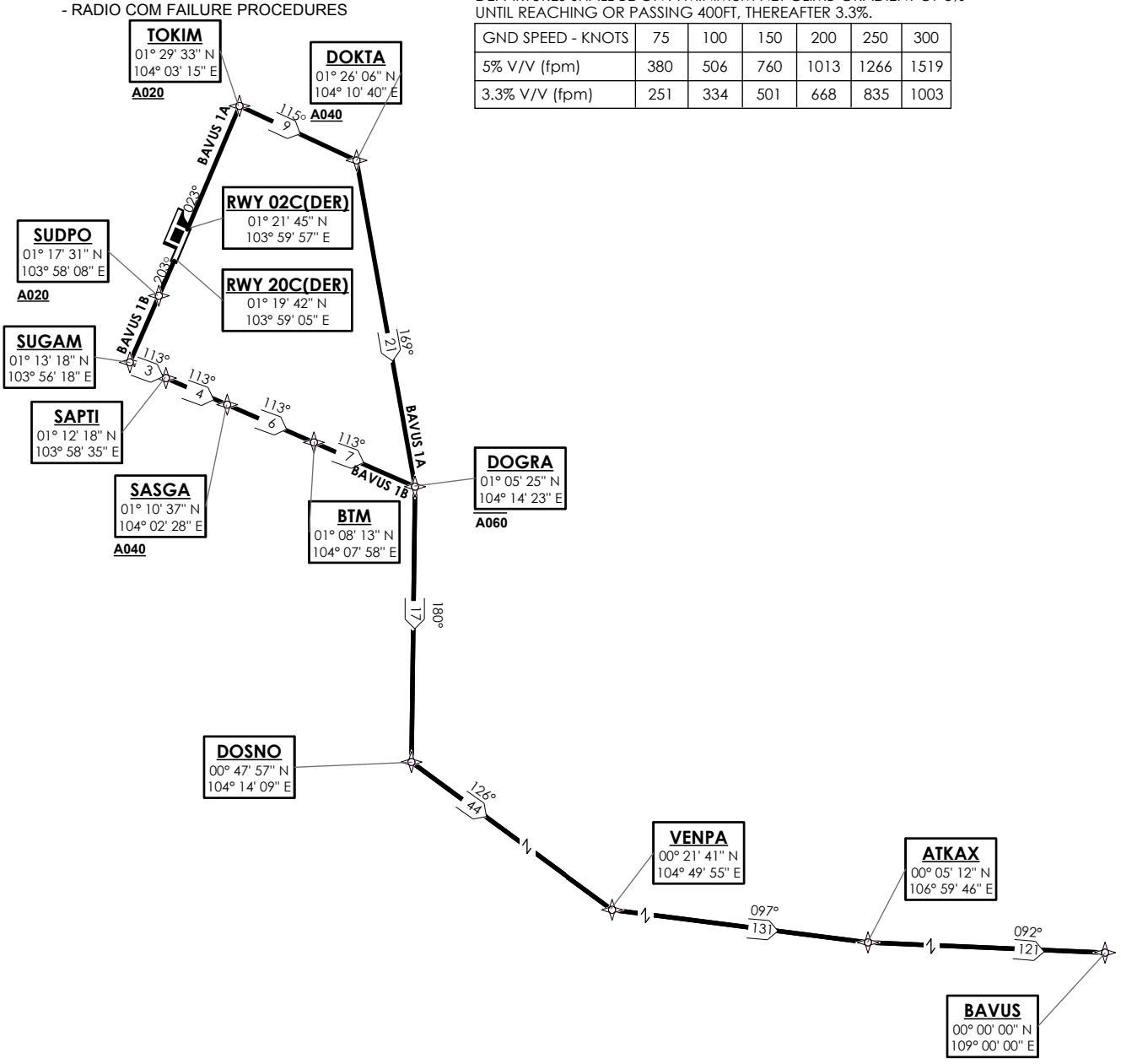
ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 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

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 133.25

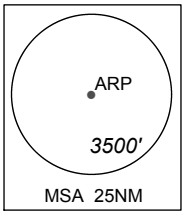
TRANSITION ALTITUDE
11 000ft

D-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

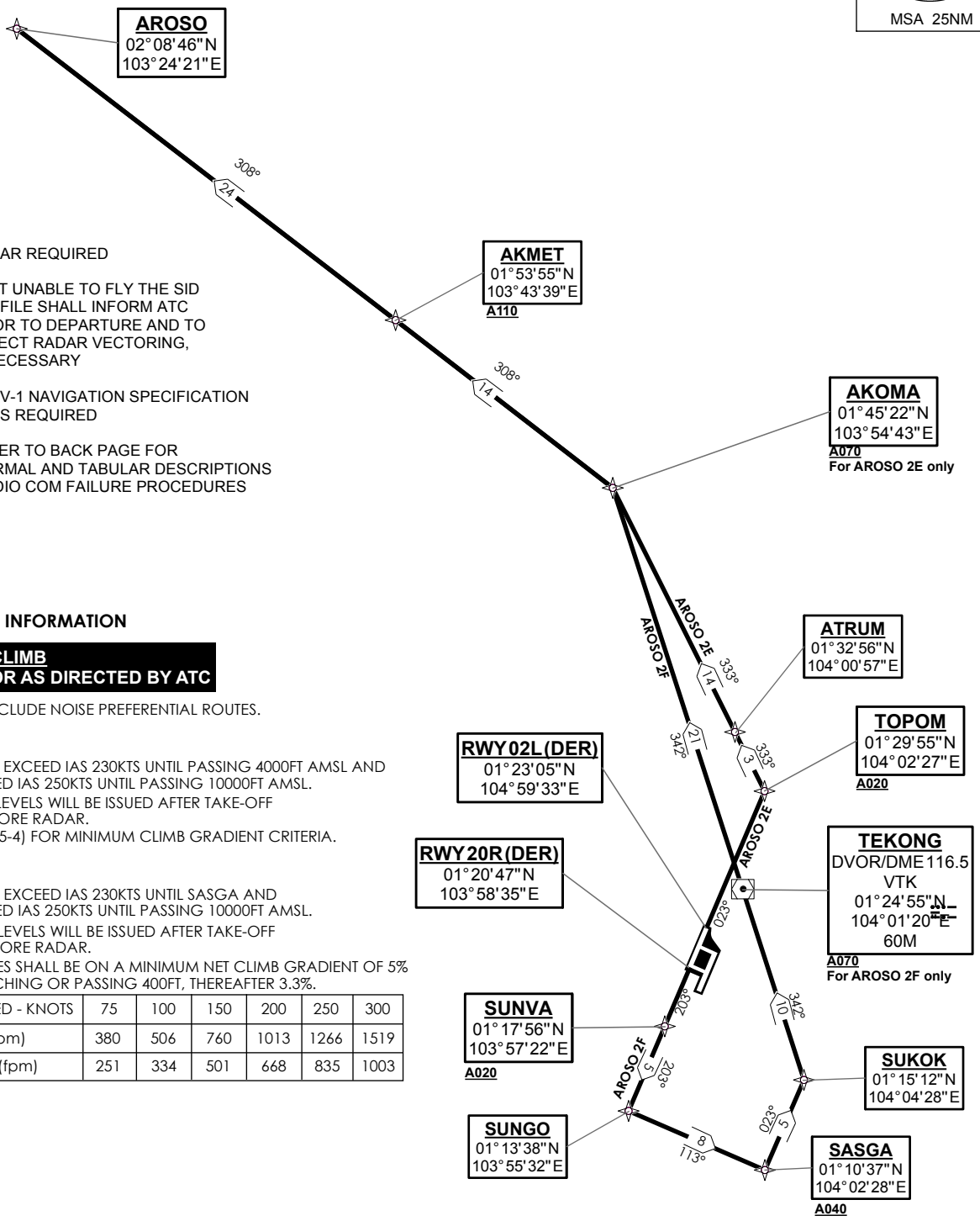


NOTE: RADAR REQUIRED

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

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] - ATRUM - AKOMA [A070+; L] - AKMET [A110+] - AROSO	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	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+] - SUNGO [L] - SASGA [A040+; K230; L] - SUKOK [L] - VTK [A070+] - AKOMA [L] - AKMET [A110+] - AROSO	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	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 133.25

TRANSITION ALTITUDE
11 000ft

D-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)

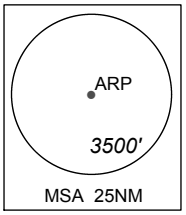
DISTANCES IN NM

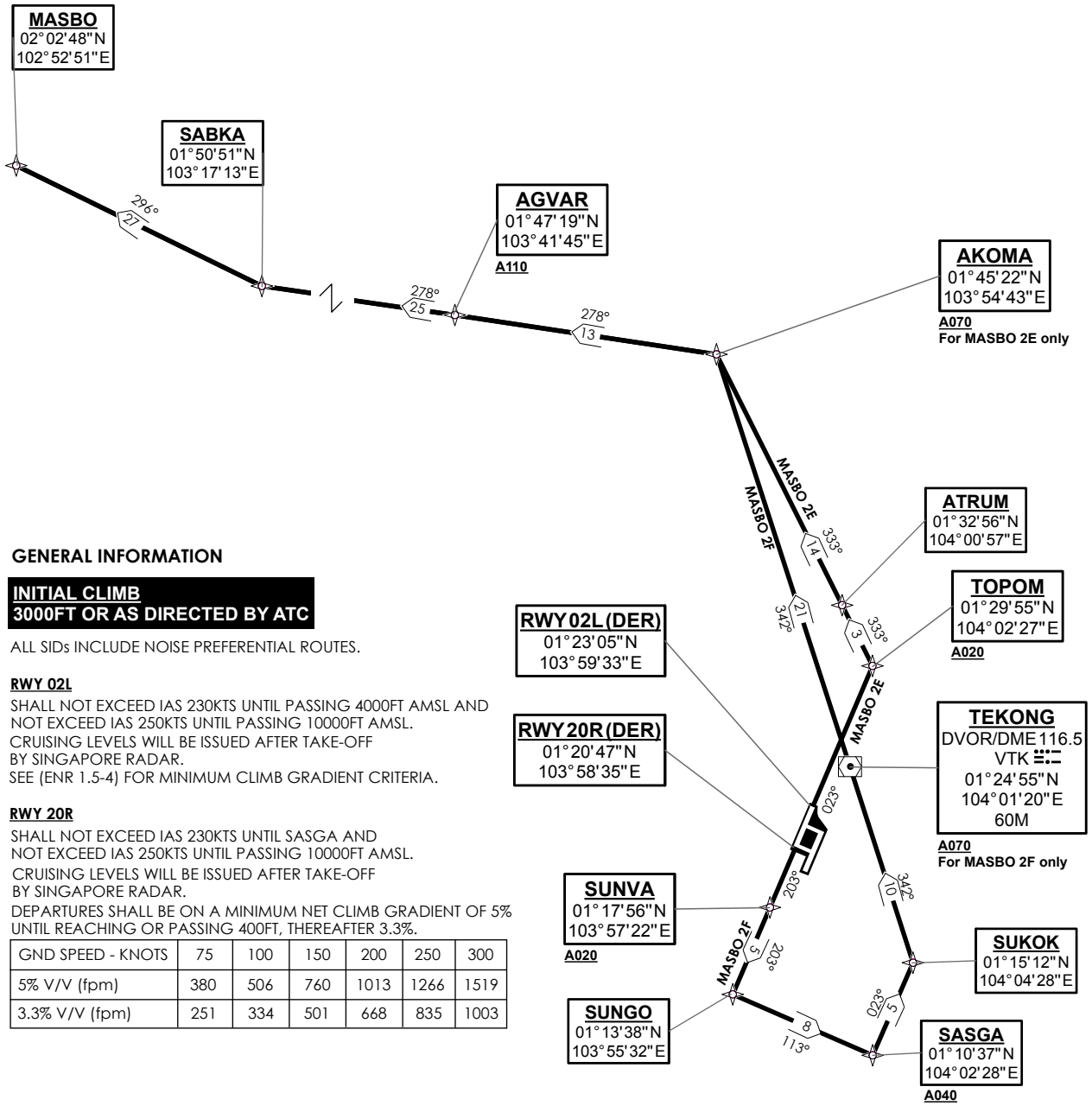
NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID PROFILE SHALL INFORM ATC PRIOR TO DEPARTURE AND TO EXPECT RADAR 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 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 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 133.25

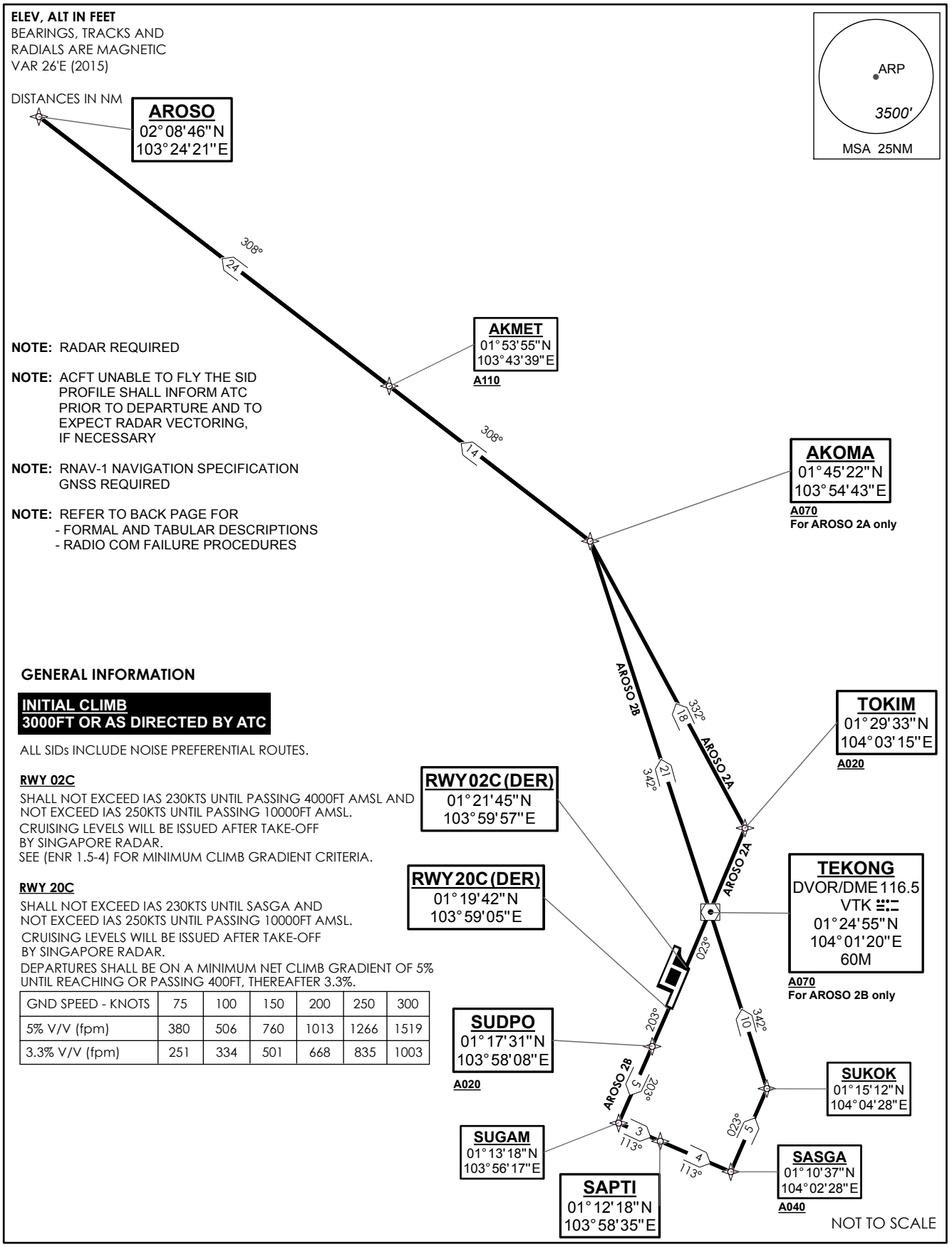
TRANSITION ALTITUDE
11 000ft

D-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



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 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 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

CHANGES : New Chart.

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 133.25

TRANSITION ALTITUDE
11 000ft

D-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)

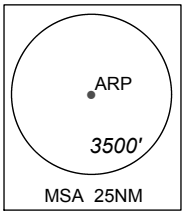
DISTANCES IN NM

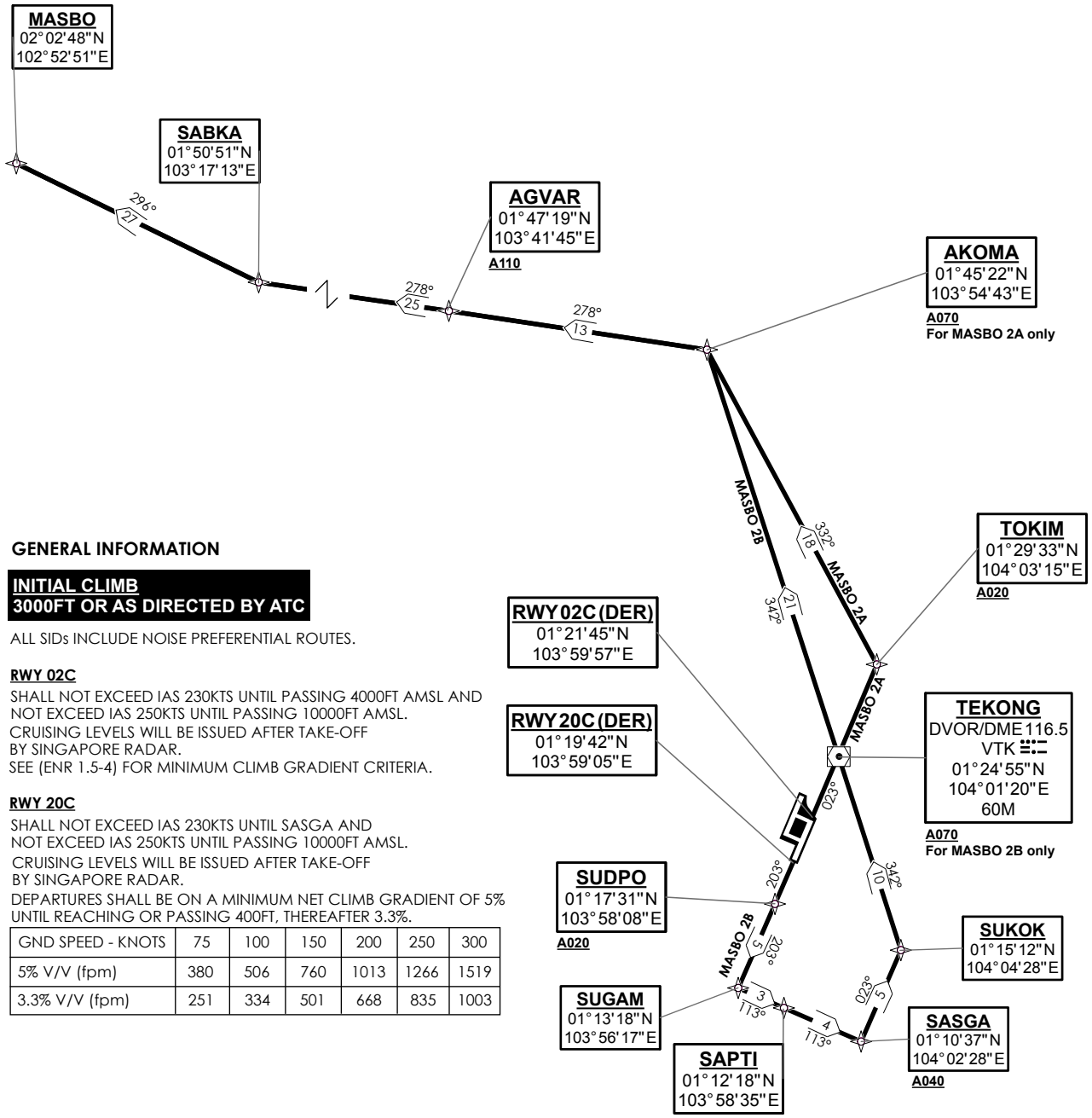
NOTE: RADAR REQUIRED

NOTE: ACFT UNABLE TO FLY THE SID PROFILE SHALL INFORM ATC PRIOR TO DEPARTURE AND TO EXPECT RADAR 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 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 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] - AKOMA [A070+; L] - AGVAR [A110+] - SABKA [R] - MASBO	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	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+] - SUGAM [L] - SAPTI - SASGA [A040+; K230; L] - SUKOK [L] - VTK [A070+] - AKOMA [L] - AGVAR [A110+] - SABKA [R] - MASBO	CF TF TF TF TF TF TF TF TF TF	N 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	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 133.8

TRANSITION ALTITUDE
11 000ft

D-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)

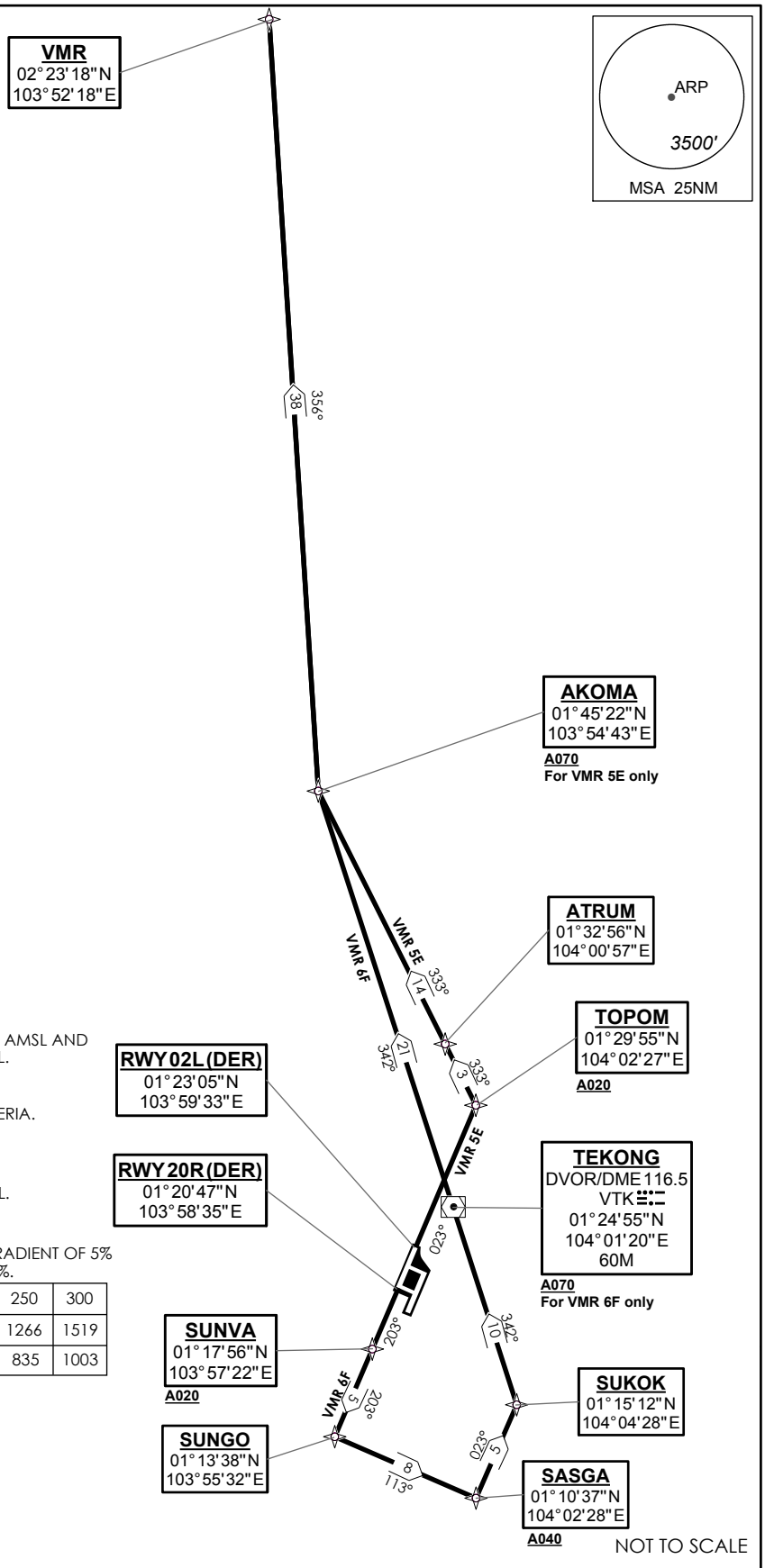
DISTANCES IN NM

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



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 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

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] - ATRUM - AKOMA [A070+; R] - VMR	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	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+] - SUNGO [L] - SASGA [A040+; K230; L] - SUKOK [L] - VTK [A070+] - AKOMA [R] - VMR	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	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 133.8

TRANSITION ALTITUDE
11 000ft

D-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)

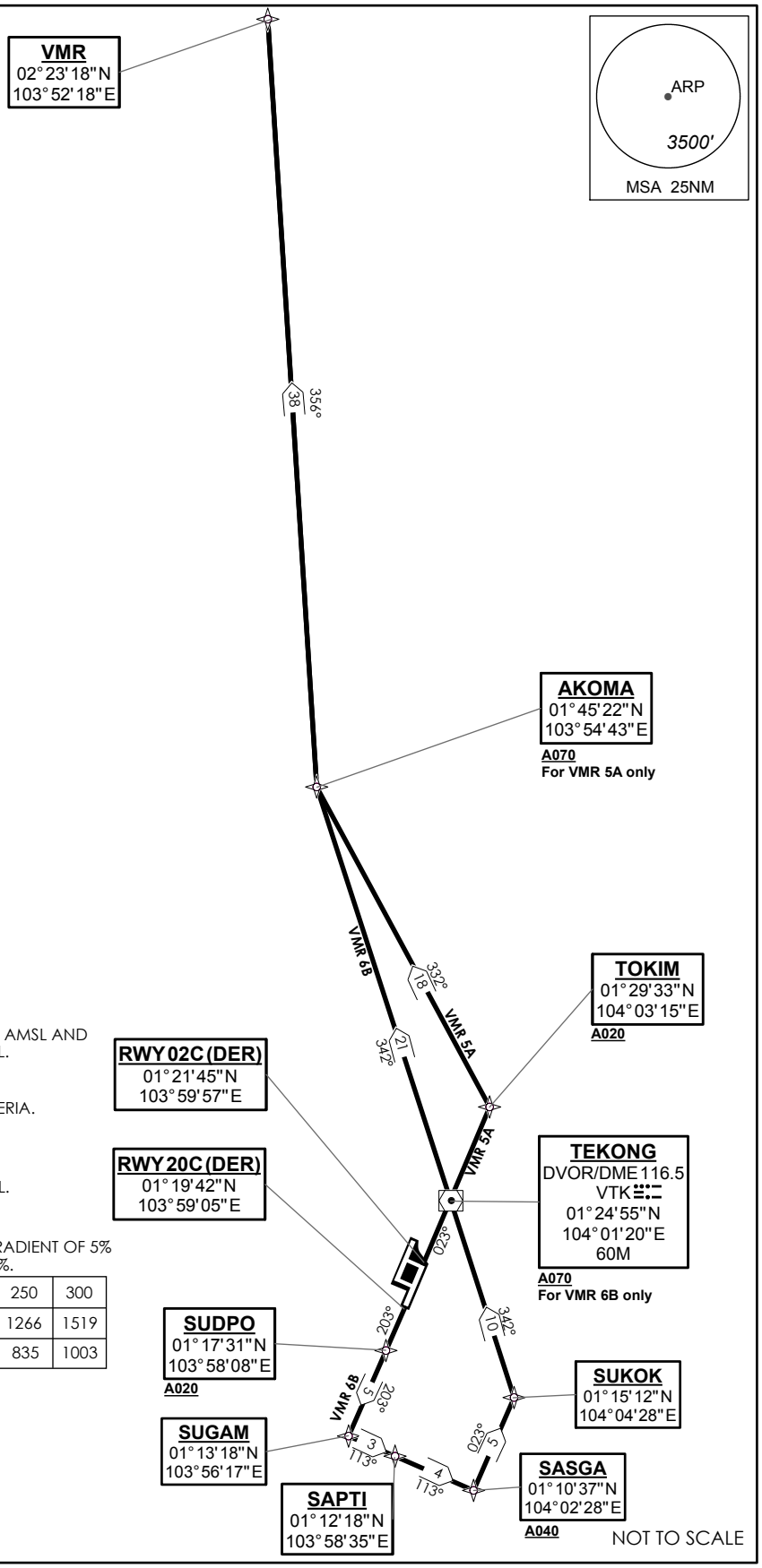
DISTANCES IN NM

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



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 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

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 134.4

TRANSITION ALTITUDE
11 000ft

D-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 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

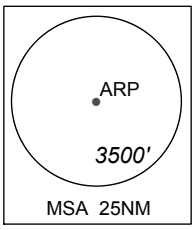
INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

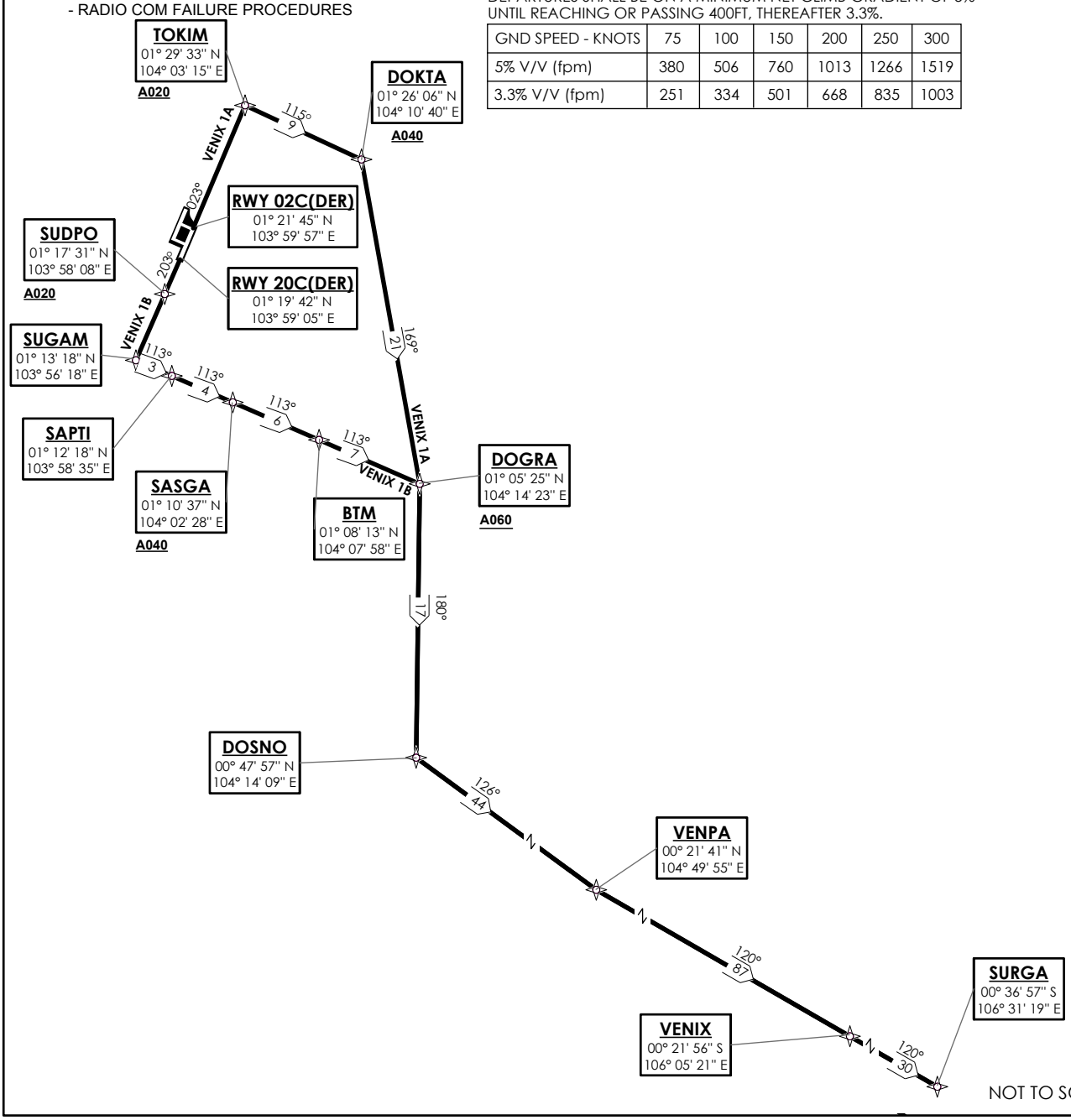
ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 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





CHANGES : New Chart.

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 134.4

TRANSITION ALTITUDE
11 000ft

D-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

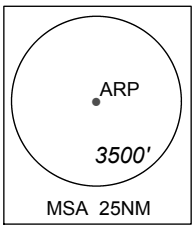
INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

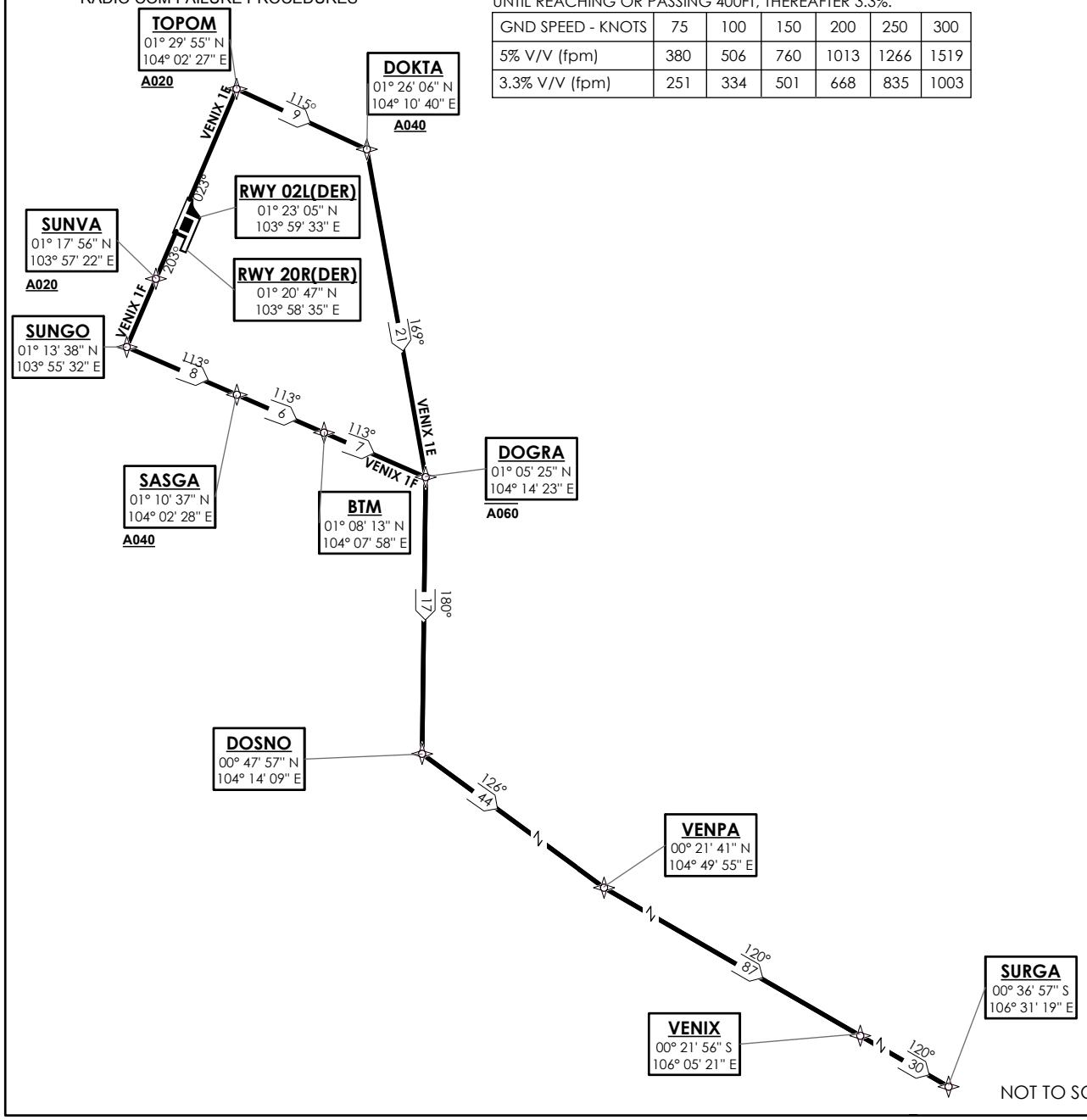
ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

RWY 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





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 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.

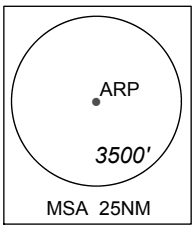
RWY 02C

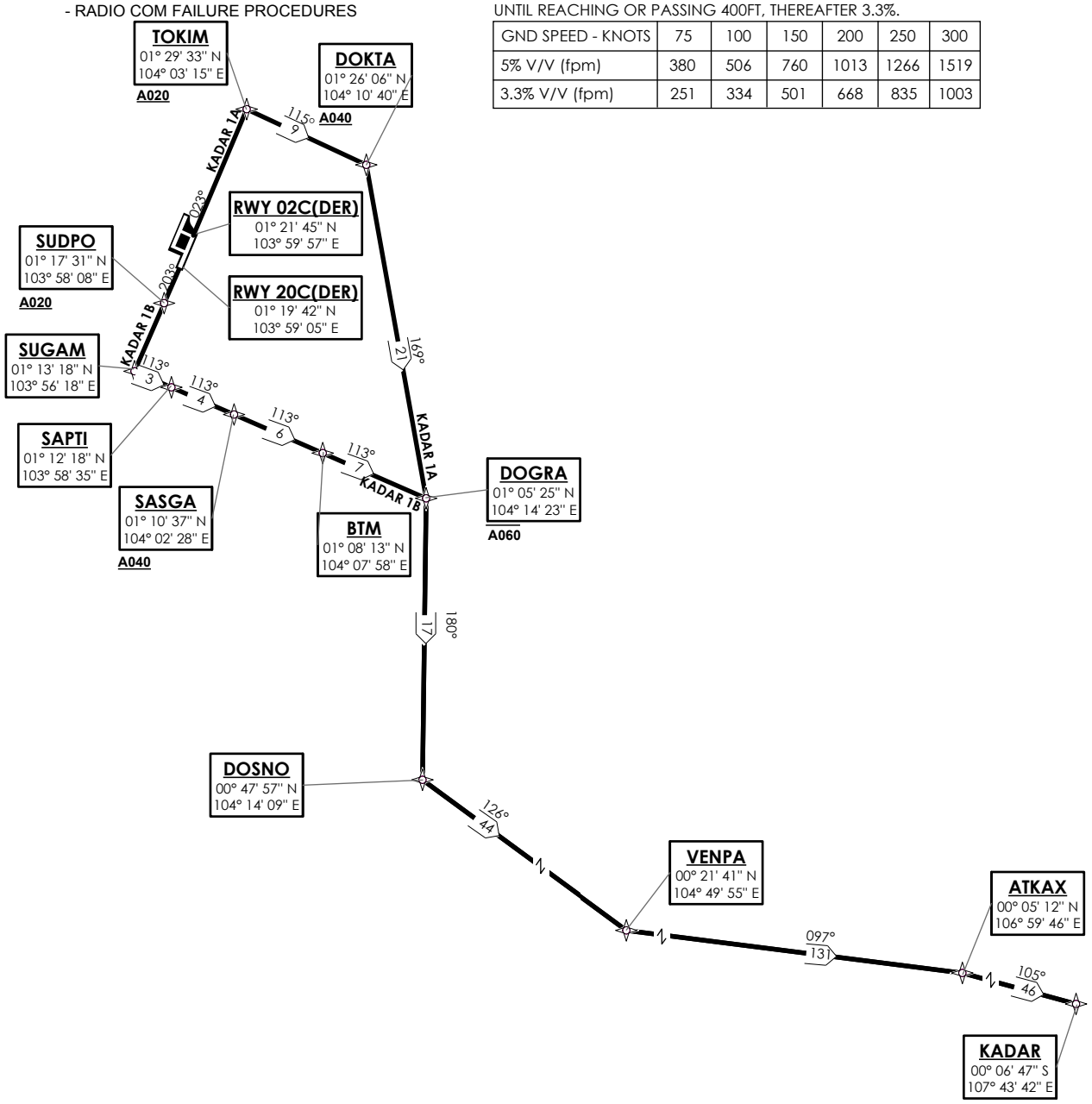
SHALL NOT EXCEED IAS 230KTS UNTIL PASSING 4000FT AMSL AND NOT EXCEED IAS 250KTS UNTIL PASSING 10000FT AMSL.
CRUISING LEVELS WILL BE ISSUED AFTER TAKE-OFF BY SINGAPORE RADAR.
SEE (ENR 1.5-4) FOR MINIMUM CLIMB GRADIENT CRITERIA.

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

CHANGES : New Chart.

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

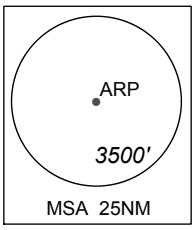
INITIAL CLIMB
3000FT OR AS DIRECTED BY ATC

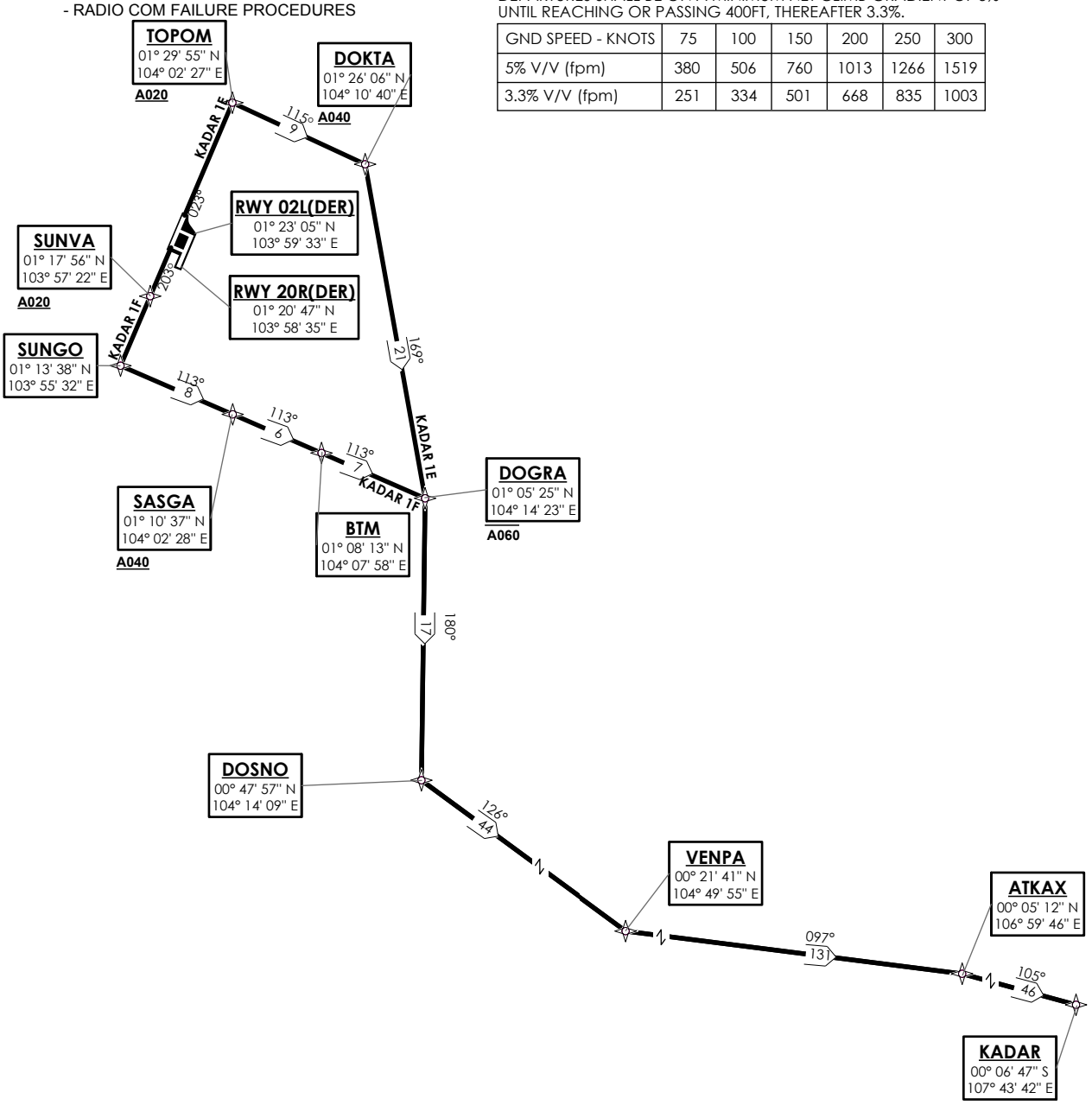
ALL SIDs INCLUDE NOISE PREFERENTIAL ROUTES.

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

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.

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.25
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi RWY 02L/C

ARAMA ONE ALPHA ARRIVAL ARAMA 1A

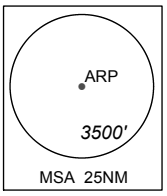
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

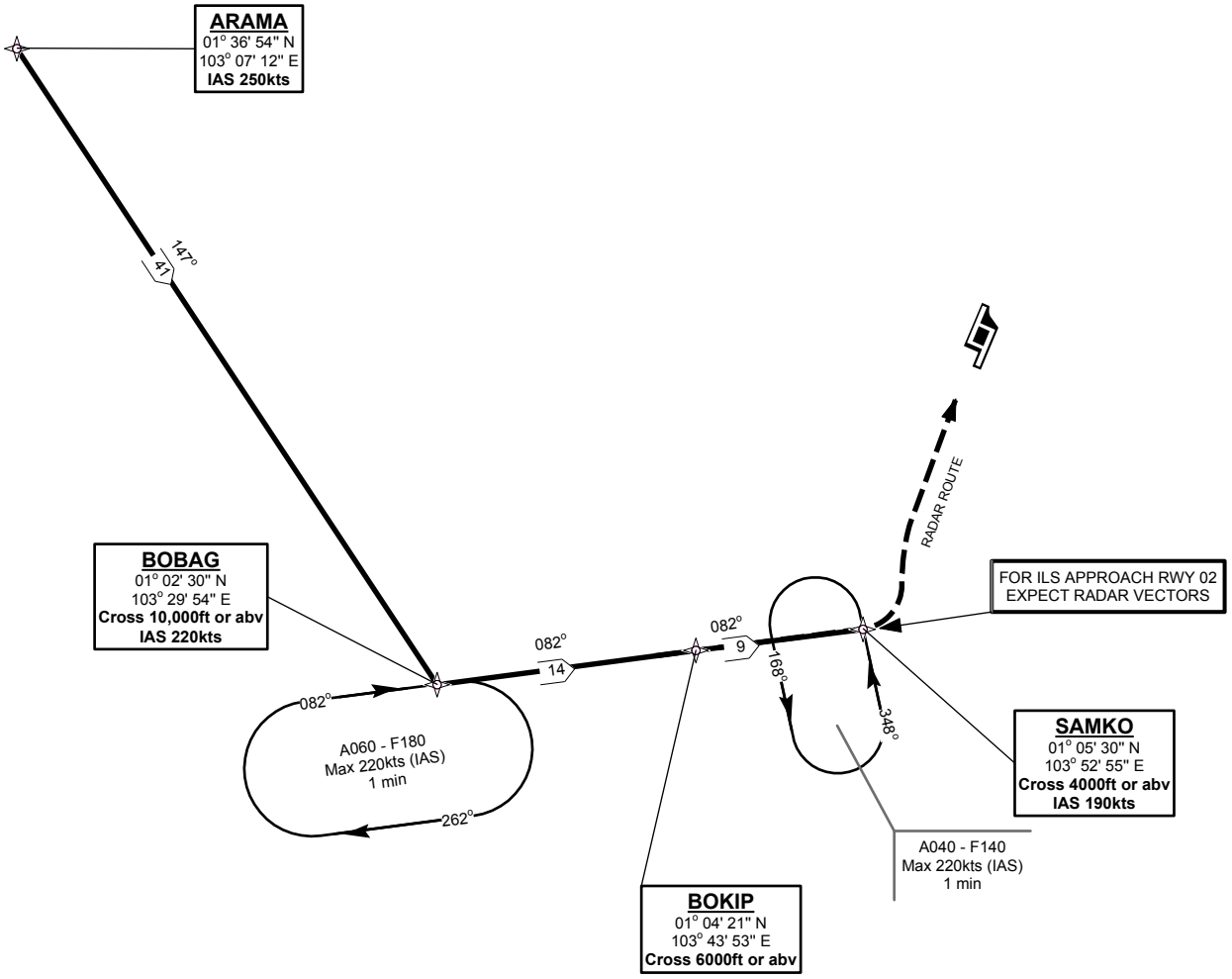
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

ARAMA 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ARAMA, speed 250kts. To BOBAG at or above 10000ft, speed 220kts, turn left. To BOKIP at or above 6000ft. To SAMKO at or above 4000ft, speed 190kts.	ARAMA [K250] - BOBAG [A100+; K220; L] - BOKIP [A060+] - SAMKO [A040+; K190]	IF 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
IF	ARAMA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	147(147.5)	-0.5	L	A100+	K220	RNAV1
TF	BOKIP	-	082(082.5)	-0.5	-	A060+	-	RNAV1
TF	SAMKO	-	082(082.8)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via ARAMA 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on ARAMA 1A to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.25
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi RWY 02L/C

ASUNA ONE ALPHA ARRIVAL ASUNA 1A

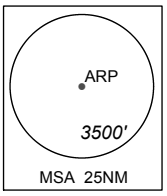
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

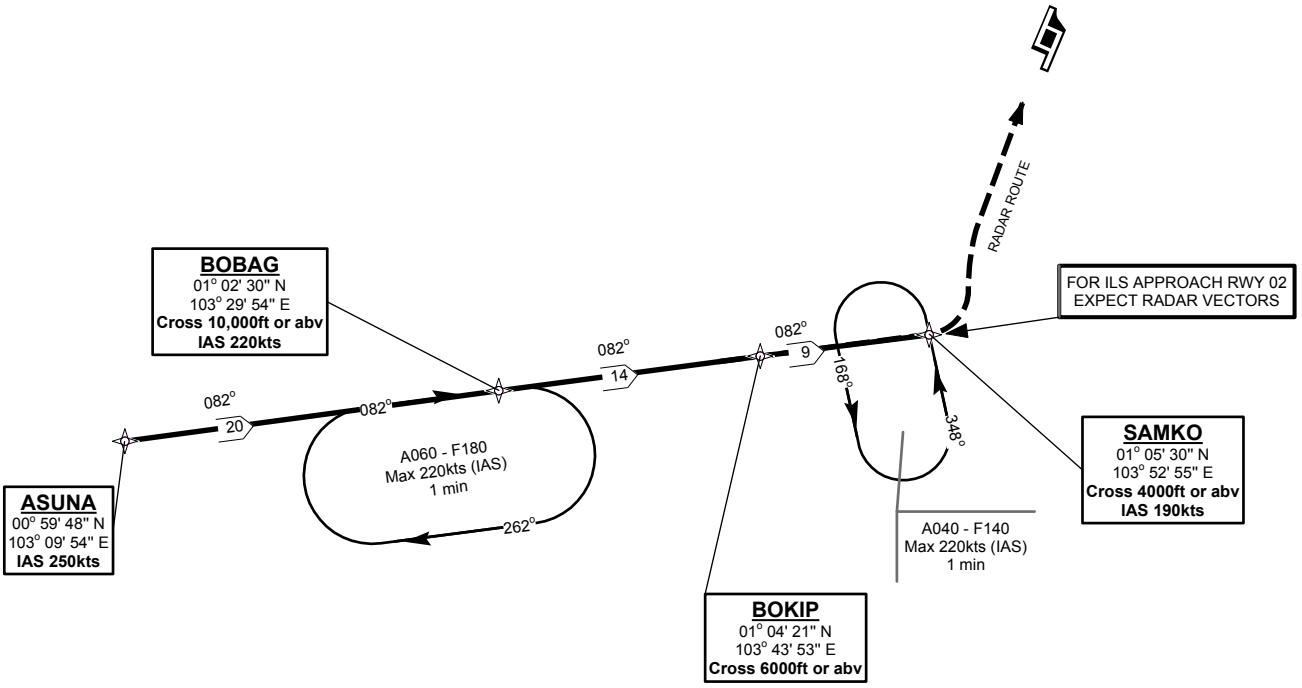
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

ASUNA 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ASUNA, speed 250kts. To BOBAG at or above 10000ft, speed 220kts. To BOKIP at or above 6000ft. To SAMKO at or above 4000ft, speed 190kts.	ASUNA [K250] - BOBAG [A100+; K220] - BOKIP [A060+] - SAMKO [A040+; K190]	IF 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
IF	ASUNA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	082(082.4)	-0.5	-	A100+	K220	RNAV1
TF	BOKIP	-	082(082.5)	-0.5	-	A060+	-	RNAV1
TF	SAMKO	-	082(082.8)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via ASUNA 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on ASUNA 1A to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.25
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi RWY 20R/C

ARAMA ONE BRAVO ARRIVAL ARAMA 1B

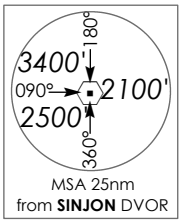
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

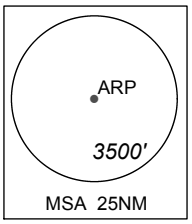
DISTANCES IN NM

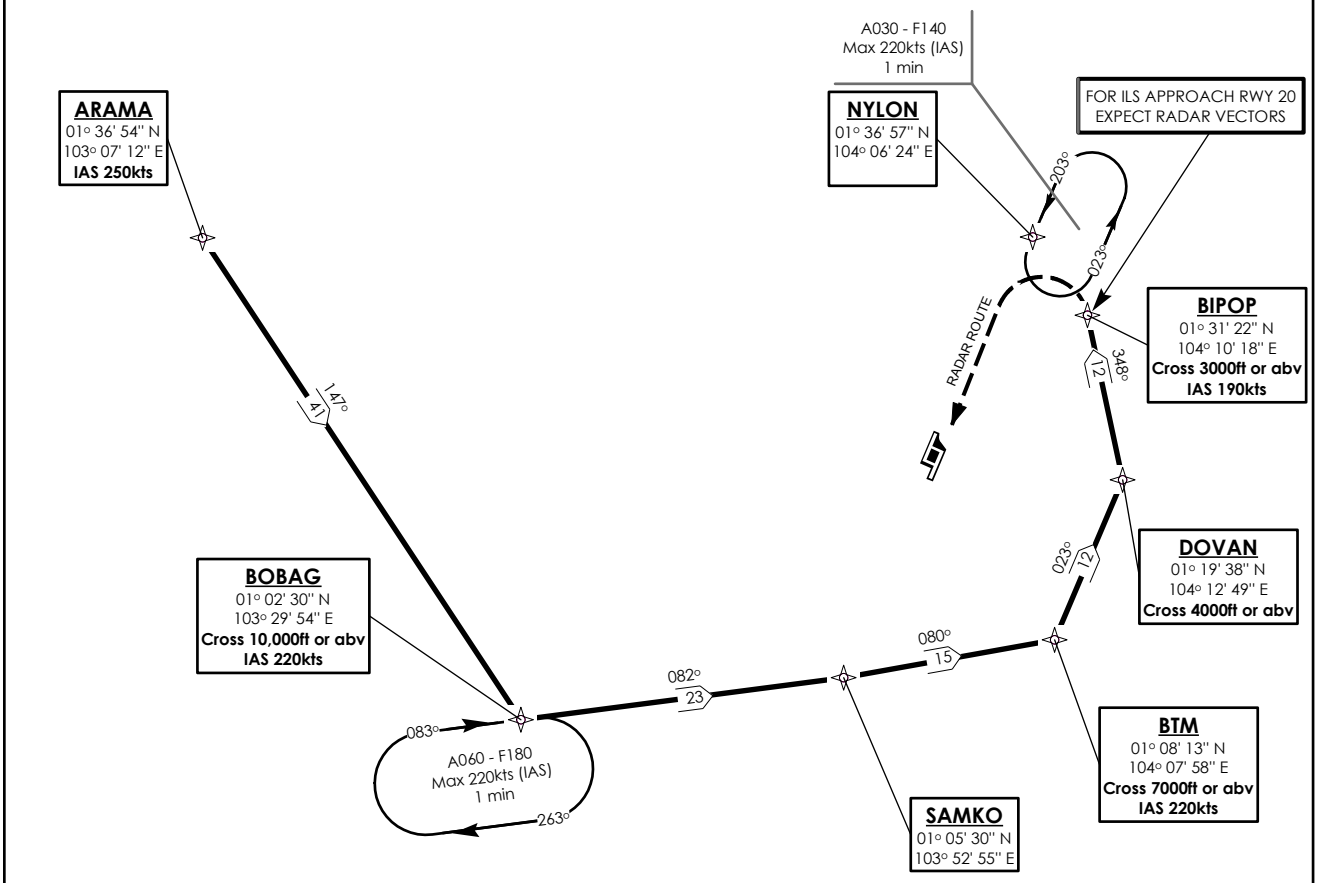
NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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







For flight landing at Singapore Changi Airport, pilots are to request for the STAR from Singapore ATC when the flight is within 120 DME SJ and RWY 20 is in use. Flight shall still remain under the control of WMKK ATC.

NOT TO SCALE

ARAMA 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ARAMA, speed 250kts. To BOBAG at or above 10000ft, speed 220kts, turn left. To SAMKO, turn left. To BTM at or above 7000ft, speed 220kts, turn left. To DOVAN at or above 4000ft, turn left. To BIPOP at or above 3000ft, speed 190kts.	ARAMA [K250] - BOBAG [A100+; K220; L] - SAMKO [L] - BTM [A070+; K220; L] - DOVAN [A040+; L] - BIPOP [A030+; K190]	IF TF TF TF TF TF	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
IF	ARAMA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	147(147.5)	-0.5	L	A100+	K220	RNAV1
TF	SAMKO	-	082(082.6)	-0.5	L	-	-	RNAV1
TF	BTM	-	080(080.5)	-0.5	L	A070+	K220	RNAV1
TF	DOVAN	-	023(023.1)	-0.5	L	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via ARAMA 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on ARAMA 1B to BIPOP, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.25
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi RWY 20R/C
ASUNA ONE BRAVO ARRIVAL ASUNA 1B

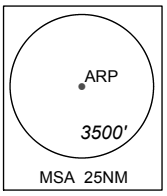
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

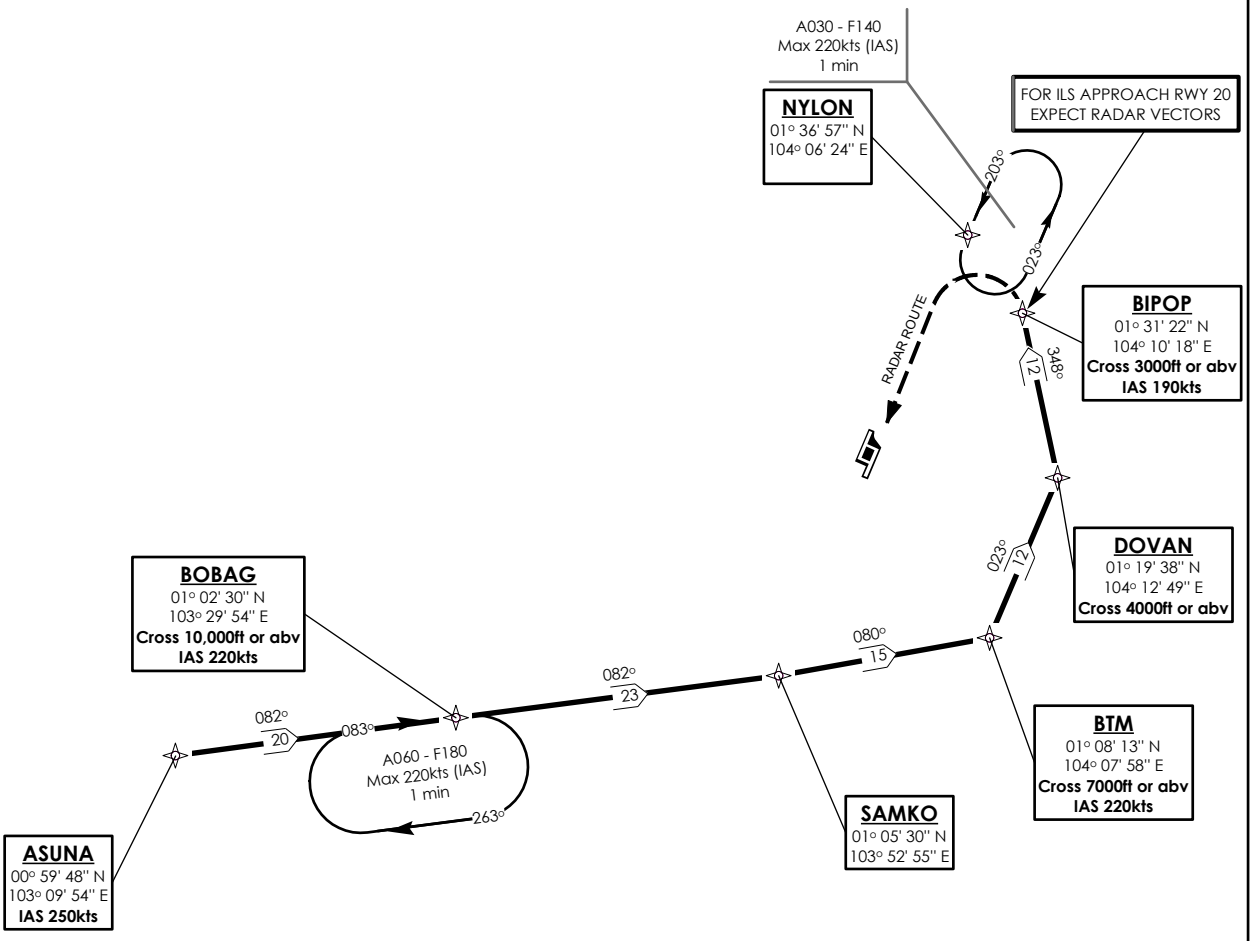
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

CHANGES : New Chart.

ASUNA 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ASUNA, speed 250kts. To BOBAG at or above 10000ft, speed 220kts. To SAMKO, turn left. To BTM at or above 7000ft, speed 220kts, turn left. To DOVAN at or above 4000ft, turn left. To BIPOP at or above 3000ft, speed 190kts.	ASUNA [K250] - BOBAG [A100+; K220] - SAMKO [L] - BTM [A070+; K220; L] - DOVAN [A040+; L] - BIPOP [A030+; K190]	IF TF TF TF TF TF	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
IF	ASUNA	-	-	-0.5	-	-	K250	RNAV1
TF	BOBAG	-	082(082.4)	-0.5	-	A100+	K220	RNAV1
TF	SAMKO	-	082(082.6)	-0.5	L	-	-	RNAV1
TF	BTM	-	080(080.5)	-0.5	L	A070+	K220	RNAV1
TF	DOVAN	-	023(023.1)	-0.5	L	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via ASUNA 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on ASUNA 1B to BIPOP, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.2
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
KARTO ONE ALPHA ARRIVAL
KARTO 1A

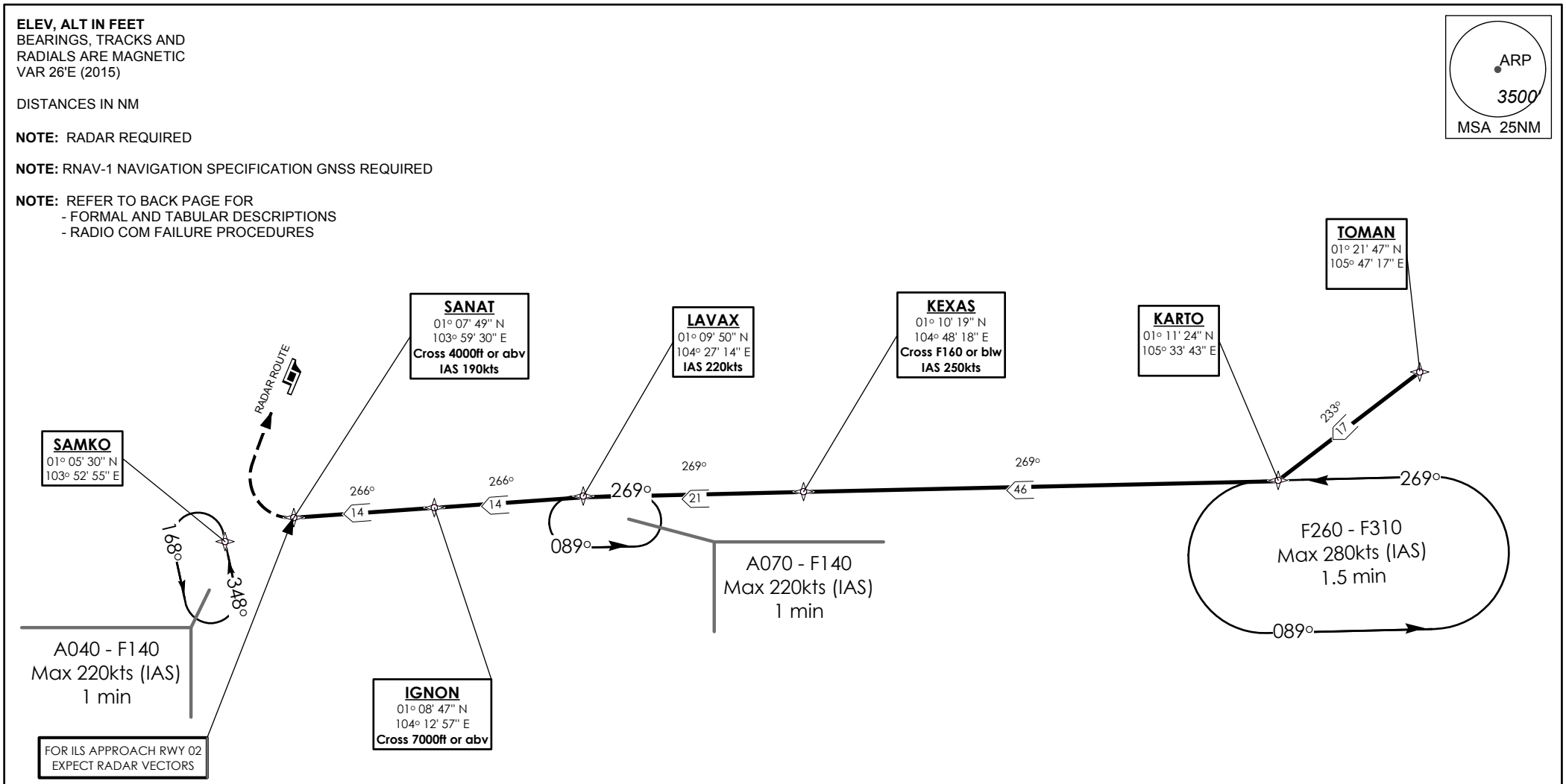
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

CHANGES : New Chart.

KARTO 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From TOMAN. To KARTO, turn right. To KEXAS at or below FL160, speed 250kts. To LAVAX, speed 220kts,turn left.To IGNON at or above 7000ft. To SANAT at or above 4000ft, speed 190kts.	TOMAN - KARTO [R] - KEXAS [FL160-; K250] - LAVAX [K220; L] - IGNON [A070+] - SANAT [A040+; K190]	IF TF TF TF TF TF	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
IF	TOMAN	-	-	-0.5	-	-	-	RNAV1
TF	KARTO	-	233(233.5)	-0.5	R	-	-	RNAV1
TF	KEXAS	-	269(269.5)	-0.5	-	FL160-	K250	RNAV1
TF	LAVAX	-	269(269.5)	-0.5	L	-	K220	RNAV1
TF	IGNON	-	266(266.5)	-0.5	-	A070+	-	RNAV1
TF	SANAT	-	266(266.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via KARTO 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on KARTO 1A to SANAT, then direct to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.4
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
OBDOS ONE ALPHA ARRIVAL
OBDOS 1A

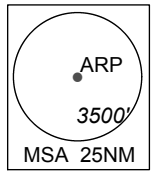
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26'E (2015)

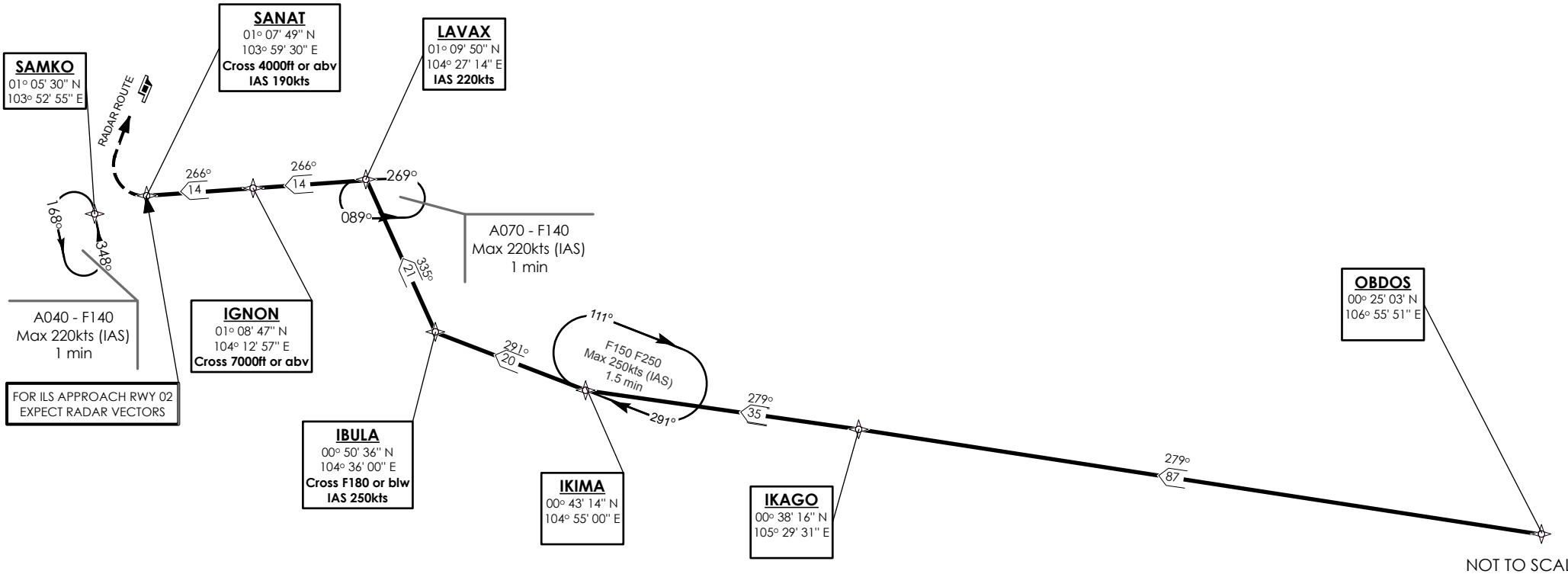
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





CHANGES : New Chart.

OBDOS 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From OBDOS. To IKAGO. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To IGNON at or above 7000ft. To SANAT at or above 4000ft, speed 190kts.	OBDOS - IKAGO - IKIMA [R] - IBULA [FL180-; K250; R] - LAVAX [K220; L] - IGNON [A070+] - SANAT [A040+; K190]	IF 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
IF	OBDOS	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	279(279.5)	-0.5	-	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	IGNON	-	266(266.5)	-0.5	-	A070+	-	RNAV1
TF	SANAT	-	266(266.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via OBDOS 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on OBDOS 1A to SANAT, then direct to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.2
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
KARTO ONE BRAVO ARRIVAL
KARTO 1B

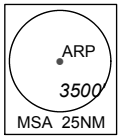
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26'E (2015)

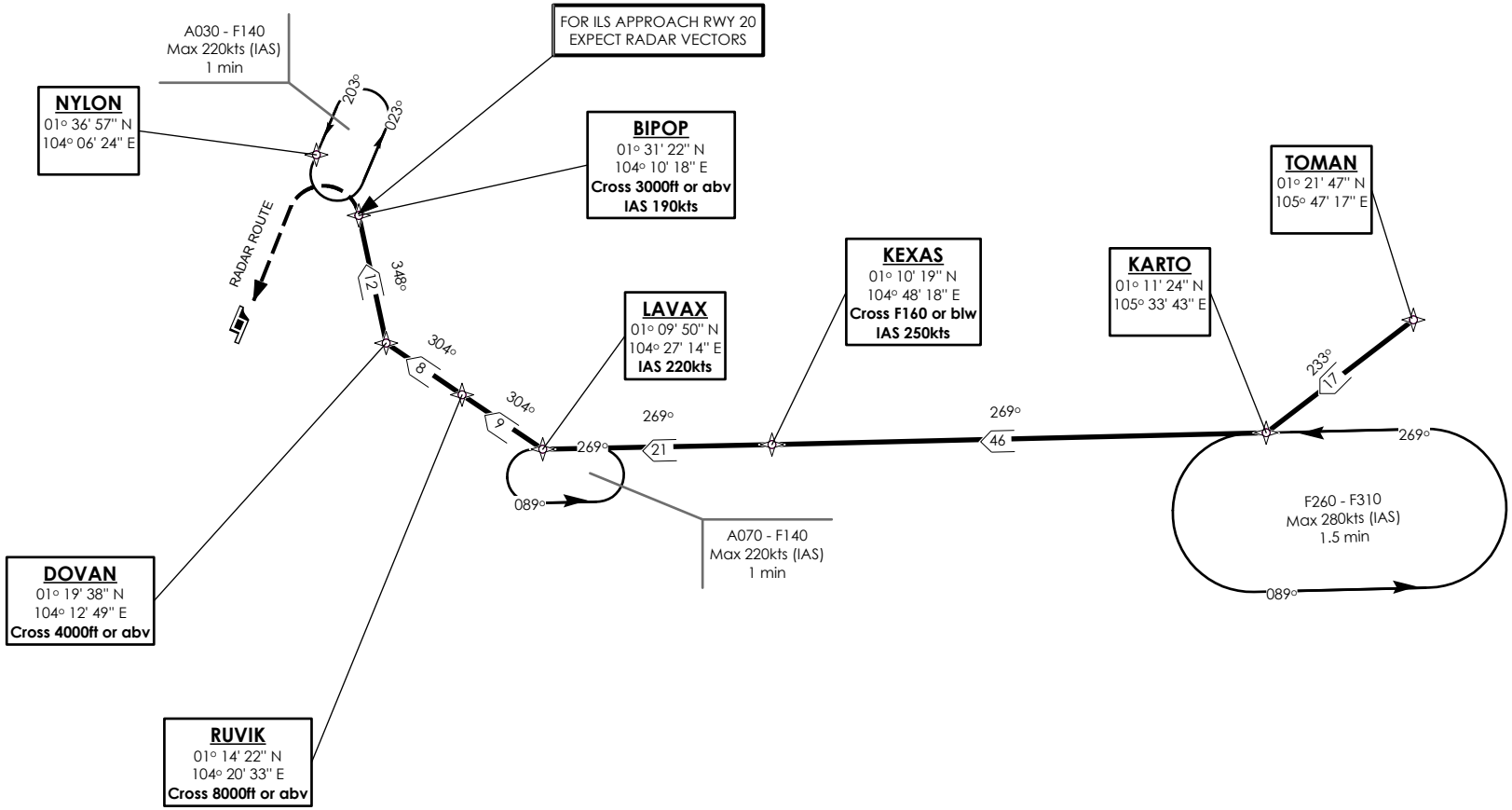
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

CHANGES : New Chart.

KARTO 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From TOMAN. To KARTO, turn right. To KEXAS at or below FL160, speed 250kts. To LAVAX, speed 220kts, turn right. To RUVIK at or above 8000ft. To DOVAN at or above 4000ft, turn right. To BIPOP at or above 3000ft, speed 190kts.	TOMAN - KARTO [R] - KEXAS [FL160-; K250] - LAVAX [K220; R] - RUVIK [A080+] - DOVAN [A040+; R] - BIPOP [A030+; K190]	IF 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
IF	TOMAN	-	-	-0.5	-	-	-	RNAV1
TF	KARTO	-	233(233.5)	-0.5	R	-	-	RNAV1
TF	KEXAS	-	269(269.5)	-0.5	-	FL160-	K250	RNAV1
TF	LAVAX	-	269(269.5)	-0.5	R	-	K220	RNAV1
TF	RUVIK	-	304(304.0)	-0.5	-	A080+	-	RNAV1
TF	DOVAN	-	304(304.1)	-0.5	R	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via KARTO 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on KARTO 1B to BIPOP, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.4
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
OBDOS ONE BRAVO ARRIVAL
OBDOS 1B

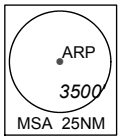
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26'E (2015)

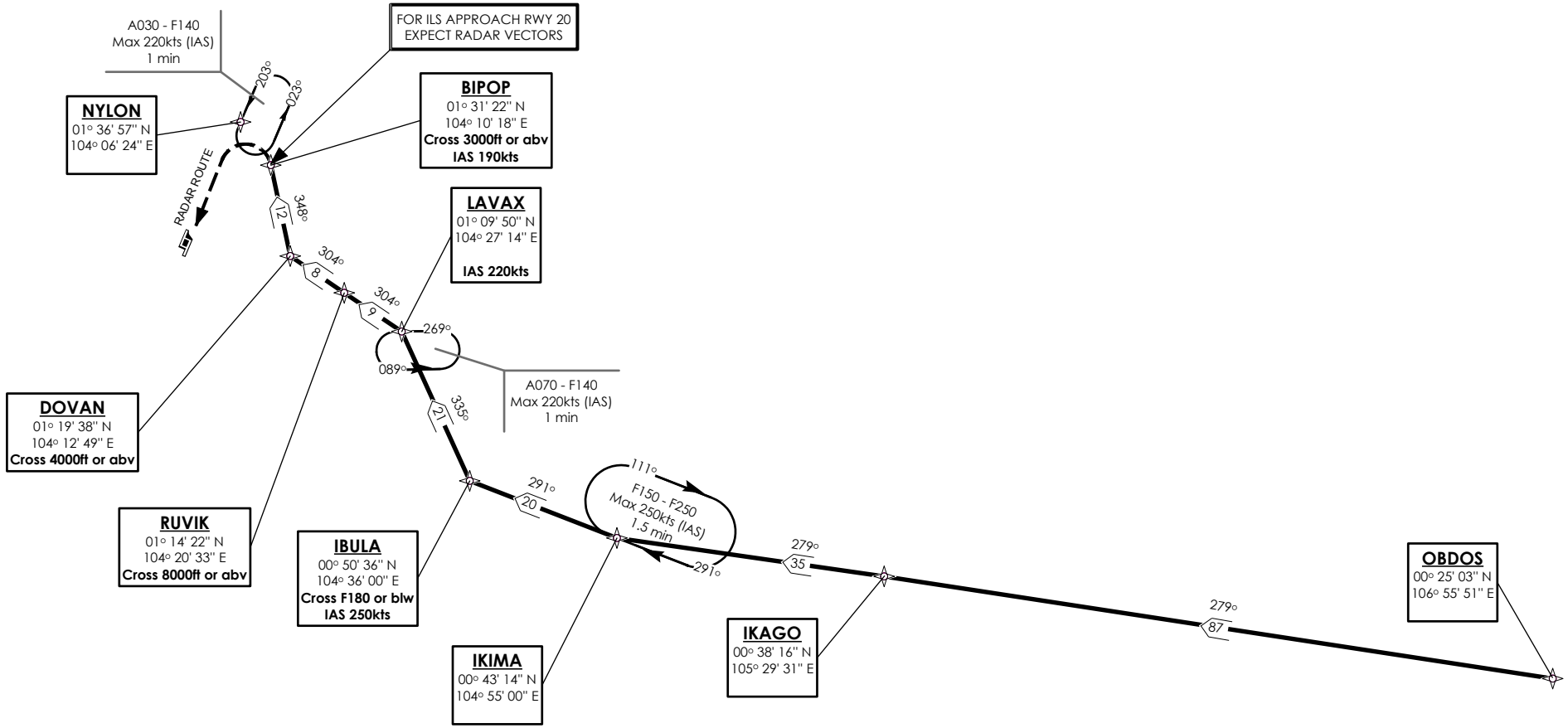
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

CHANGES : New Chart.

OBDOS 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From OBDOS. To IKAGO. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To RUVIK at or above 8000ft. To DOVAN at or above 4000ft, turn right. To BIPOP at or above 3000ft, speed 190kts.	OBDOS - IKAGO - IKIMA [R] - IBULA [FL180-; K250; R] - LAVAX [K220; L] - RUVIK [A080+] - DOVAN [A040+; R] - BIPOP [A030+; K190]	IF 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
IF	OBDOS	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	279(279.5)	-0.5	-	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	RUVIK	-	304(304.0)	-0.5	-	A080+	-	RNAV1
TF	DOVAN	-	304(304.1)	-0.5	R	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via OBDOS 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on OBDOS 1B to BIPOP, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.25
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi RWY 20R/C

LELIB THREE BRAVO ARRIVAL LELIB 3B

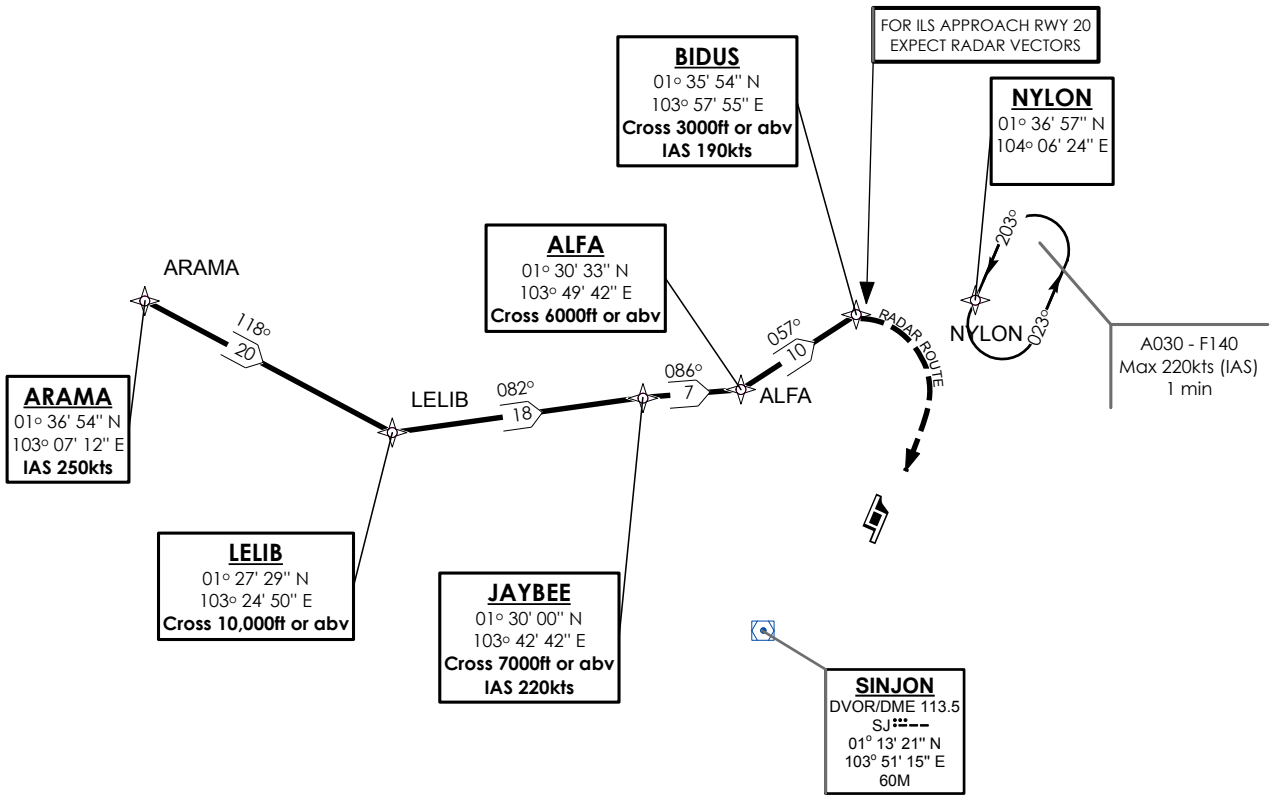
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



For flight landing at Singapore Changi Airport, pilots are to request for the STAR from Singapore ATC when the flight is within 120 DME SJ and RWY 20 is in use. Flight shall still remain under the control of WMKK ATC.

NOT TO SCALE

LELIB 3B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From ARAMA, speed 250kts. To LELIB at or above 10000ft, turn left. To JAYBEE at or above 7000ft, speed 220kts, turn right. To ALFA at or above 6000ft, turn left. To BIDUS at or above 3000ft, speed 190kts.	ARAMA [K250] - LELIB [A100+; L] - JAYBEE [A070+; K220; R] - ALFA [A060+; L] - BIDUS [A030+; K190]	IF 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
IF	ARAMA	-	-	-0.5	-	-	K250	RNAV1
TF	LELIB	-	118(118.5)	-0.5	L	A100+	-	RNAV1
TF	JAYBEE	-	082(082.0)	-0.5	R	A070+	K220	RNAV1
TF	ALFA	-	086(086.5)	-0.5	L	A060+	-	RNAV1
TF	BIDUS	-	057(057.1)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via LELIB 3B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on LELIB 3B to BIDUS, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
BIKTA ONE ALPHA ARRIVAL
BIKTA 1A

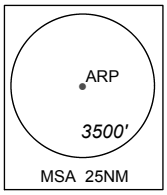
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

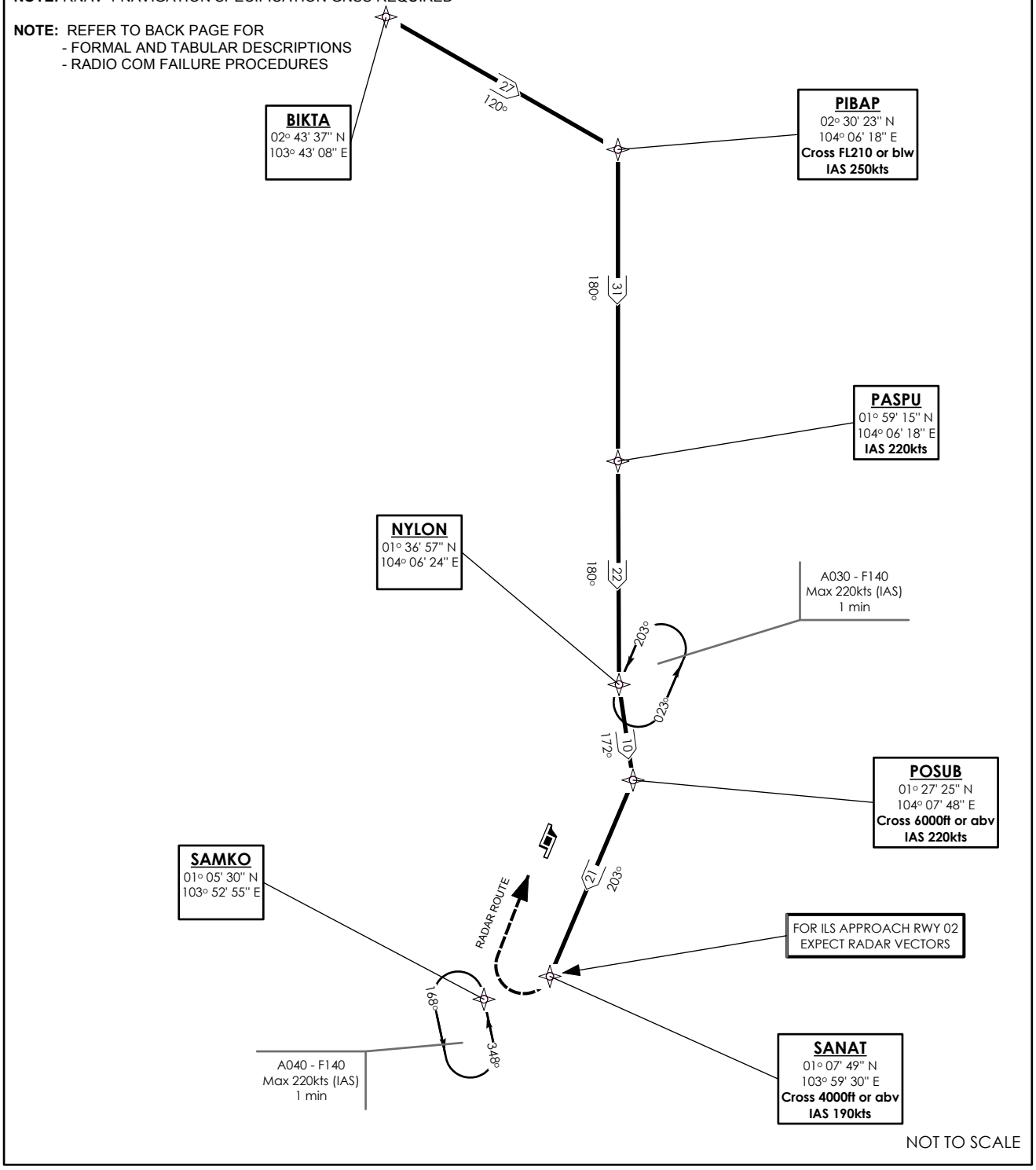
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

CHANGES : New Chart.

BIKTA 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From BIKTA. To PIBAP at or below FL210, speed 250kts, turn right. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts.	BIKTA - PIBAP [FL210-; K250; R] - PASPU [K220] - NYLON [L] - POSUB [A060+; K220; R] - SANAT [A040+; K190]	IF TF TF TF TF TF	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
IF	BIKTA	-	-	-0.5	-	-	-	RNAV1
TF	PIBAP	-	120(120.5)	-0.5	R	FL210-	K250	RNAV1
TF	PASPU	-	180(180.0)	-0.5	-	-	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	L	-	-	RNAV1
TF	POSUB	-	172(172.5)	-0.5	R	A060+	K220	RNAV1
TF	SANAT	-	203(203.1)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via BIKTA 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on BIKTA 1A to SANAT, then direct to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

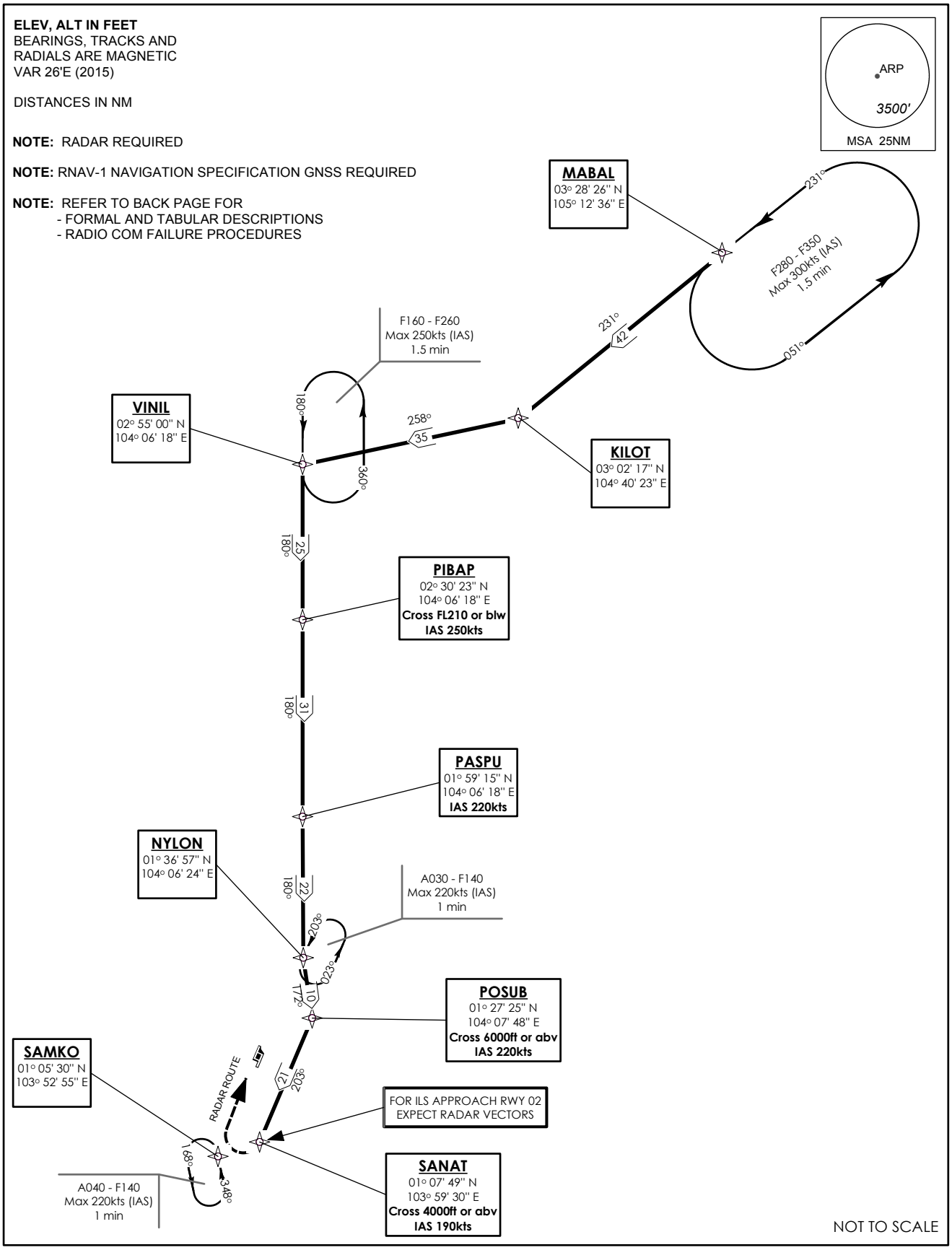
STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
MABAL ONE ALPHA ARRIVAL
MABAL 1A



CHANGES : New Chart.

MABAL 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From MABAL. To KILOT, turn right. To VINIL, turn left. To PIBAP at or below FL210, speed 250kts. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts.	MABAL - KILOT [R] - VINIL [L] - PIBAP [FL210-; K250] - PASPU [K220] - NYLON [L] - POSUB [A060+; K220; R] - SANAT [A040+; K190]	IF 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
IF	MABAL	-	-	-0.5	-	-	-	RNAV1
TF	KILOT	-	231(231.1)	-0.5	R	-	-	RNAV1
TF	VINIL	-	258(258.0)	-0.5	L	-	-	RNAV1
TF	PIBAP	-	180(180.0)	-0.5	-	FL210-	K250	RNAV1
TF	PASPU	-	180(180.0)	-0.5	-	-	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	L	-	-	RNAV1
TF	POSUB	-	172(172.5	-0.5	R	A060+	K220	RNAV1
TF	SANAT	-	203(203.1)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via MABAL 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on MABAL 1A to SANAT, then direct to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
BIKTA ONE BRAVO ARRIVAL
BIKTA 1B

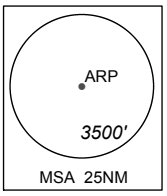
ELEV, ALT IN FEET
BEARINGS, TRACKS AND
RADIALS ARE MAGNETIC
VAR 26'E (2015)

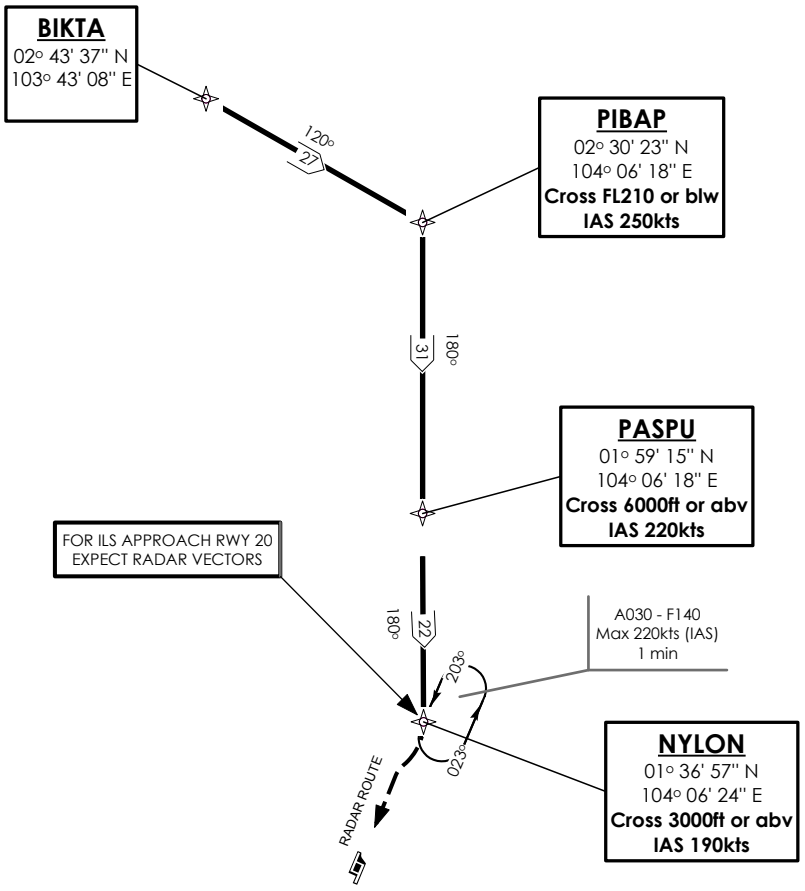
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

BIKTA 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From BIKTA. To PIBAP at or below FL210, speed 250kts, turn right. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts.	BIKTA - PIBAP [FL210-; K250; R] - PASPU [A060+; K220] - NYLON [A030+; K190]	IF 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
IF	BIKTA	-	-	-0.5	-	-	-	RNAV1
TF	PIBAP	-	120(120.5)	-0.5	R	FL210-	K250	RNAV1
TF	PASPU	-	180(180.0)	-0.5	-	A060+	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via BIKTA 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on BIKTA 1B to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
MABAL ONE BRAVO ARRIVAL
MABAL 1B

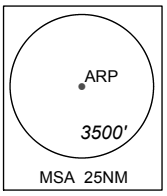
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

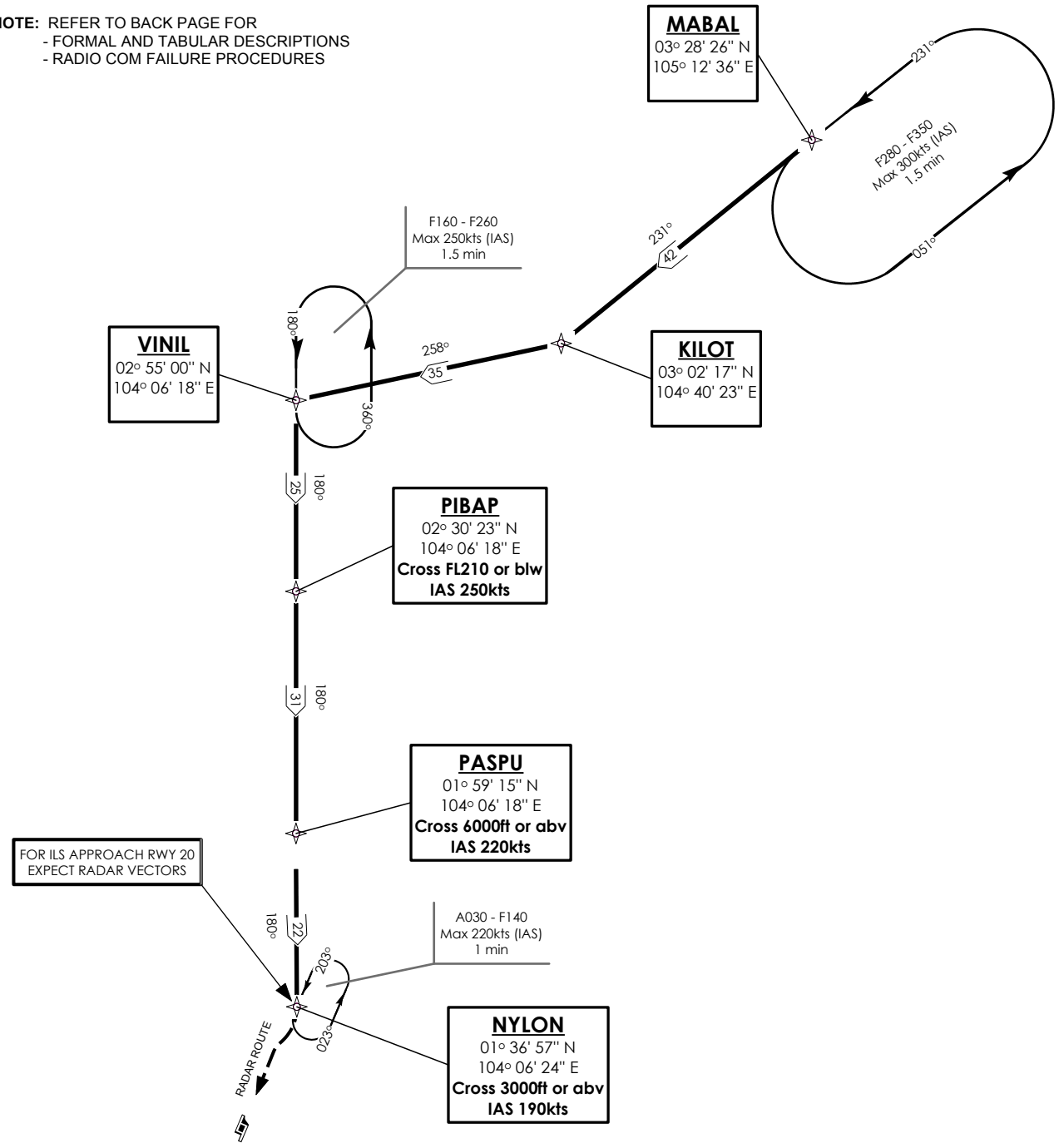
DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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





NOT TO SCALE

MABAL 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From MABAL. To KILOT, turn right. To VINIL, turn left. To PIBAP at or below FL210, speed 250kts. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts.	MABAL - KILOT [R] - VINIL [L] - PIBAP [FL210-; K250] - PASPU [A060+; K220] - NYLON [A030+; K190]	IF 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
IF	MABAL	-	-	-0.5	-	-	-	RNAV1
TF	KILOT	-	231(231.1)	-0.5	R	-	-	RNAV1
TF	VINIL	-	258(258.0)	-0.5	L	-	-	RNAV1
TF	PIBAP	-	180(180.0)	-0.5	-	FL210-	K250	RNAV1
TF	PASPU	-	180(180.0)	-0.5	-	A060+	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via MABAL 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on MABAL 1B to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L
LEBAR TWO ALPHA ARRIVAL
LEBAR 2A

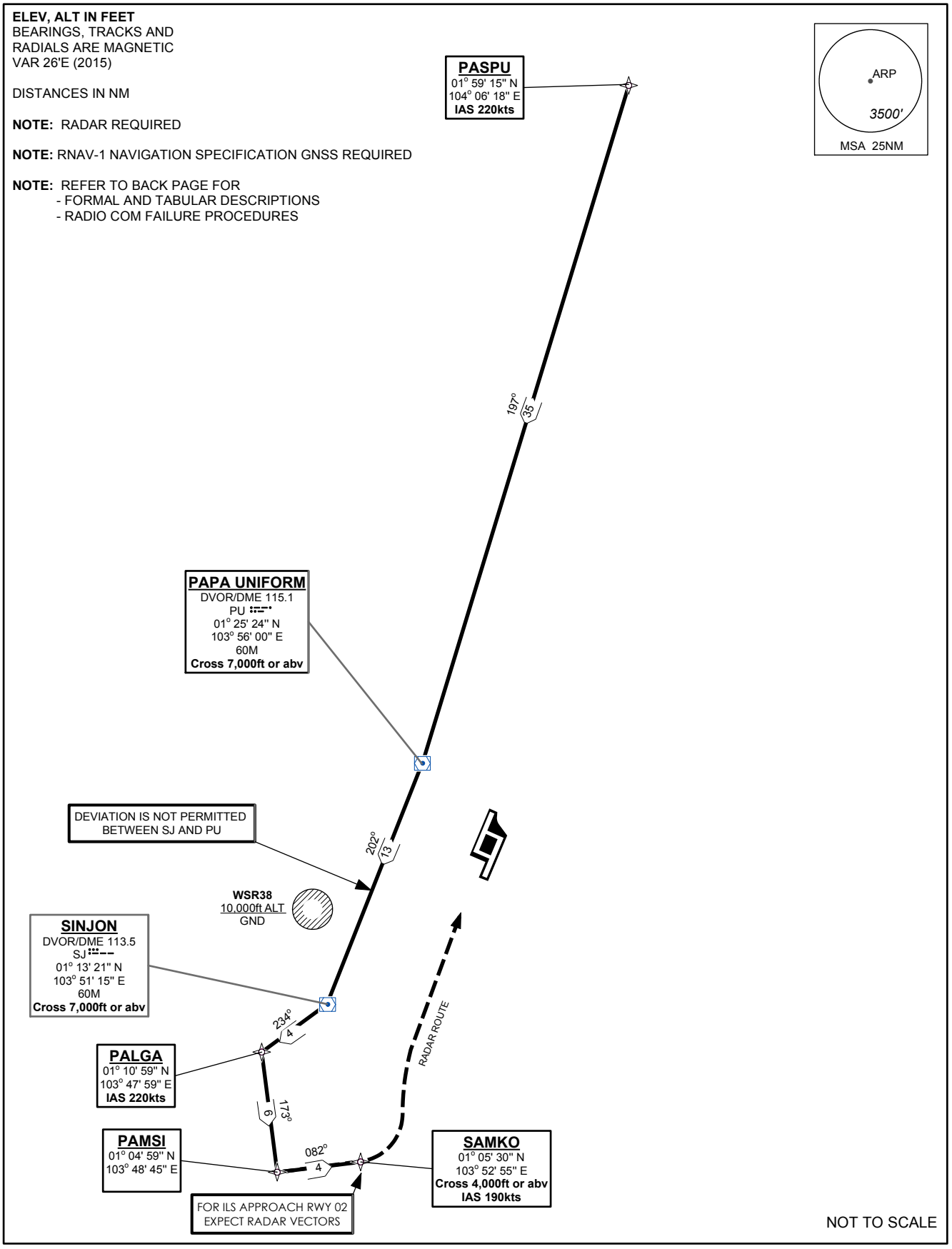
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

CHANGES : New Chart.

LEBAR 2A (STAR) RNAV GNSS RWY 02L - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From PASPU, speed 220kts. To PU at or above 7000ft, turn right. To SJ at or above 7000ft, turn right. To PALGA, speed 220kts, turn left. To PAMSI, turn left. To SAMKO at or above 4000ft, speed 190kts.	PASPU [K220] - PU [A070+; R] - SJ [A070+; R] - PALGA [K220; L] - PAMSI [L] - SAMKO [A040+; K190]	IF TF TF TF TF TF	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
IF	PASPU	-	-	-0.5	-	-	K220	RNAV1
TF	PU	-	197(197.5)	-0.5	R	A070+	-	RNAV1
TF	SJ	-	202(202.5)	-0.5	R	A070+	-	RNAV1
TF	PALGA	-	234(234.5)	-0.5	L	-	K220	RNAV1
TF	PAMSI	-	173(173.5)	-0.5	L	-	-	RNAV1
TF	SAMKO	-	082(082.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via LEBAR 2A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on LEBAR 2A to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02L as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

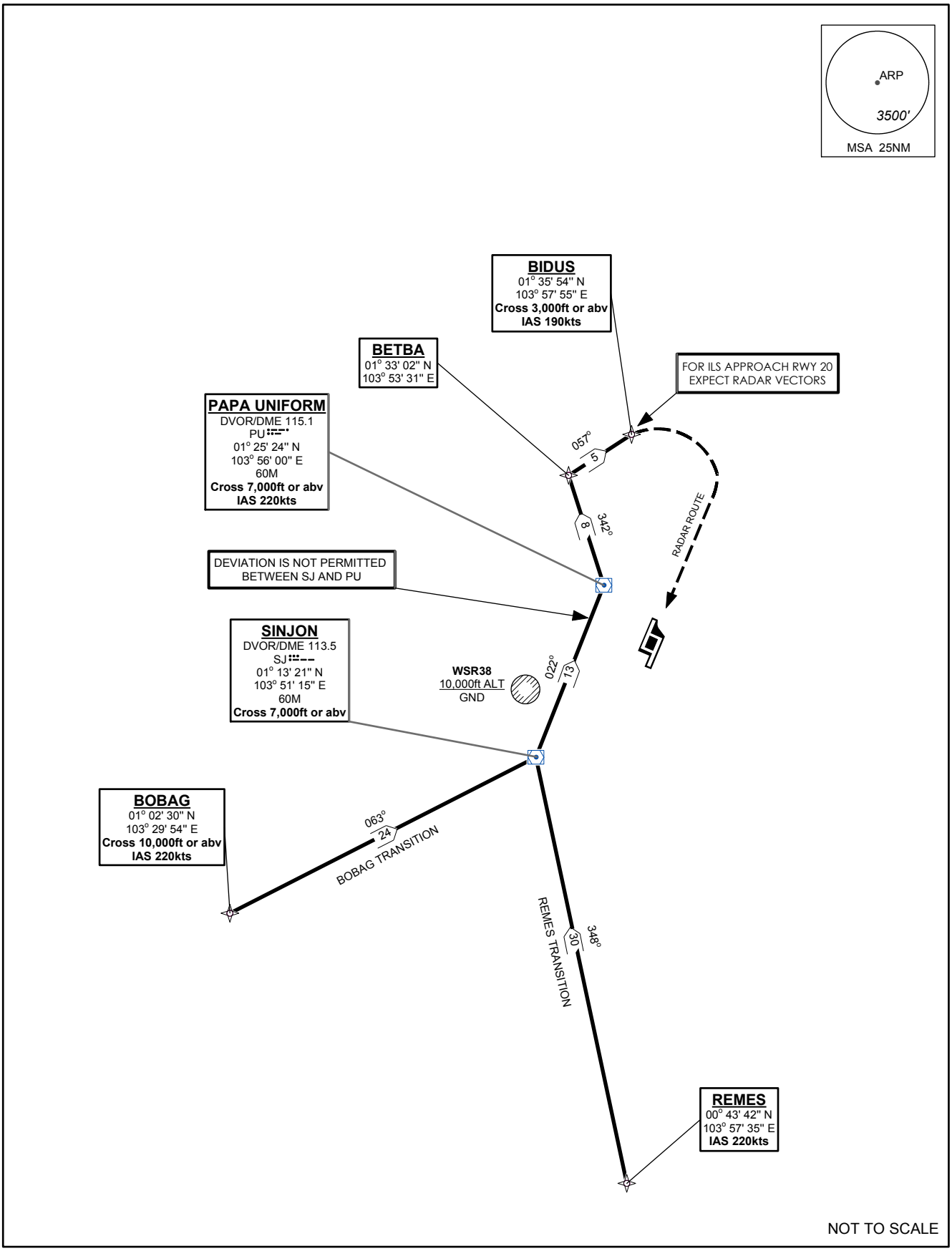
STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.25 / 134.4
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R
LEBAR TWO BRAVO ARRIVAL
LEBAR 2B



CHANGES : New Chart.

LEBAR 2B (STAR) RNAV GNSS RWY 20R - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description (BOBAG Transition)	Abbreviated Description	Path Terminator	Fly-Over required
From BOBAG at or above 10000ft, speed 220kts. To SJ at or above 7000ft, turn left. To PU at or above 7000ft, speed 220kts, turn left. To BETBA, turn right. To BIDUS at or above 3000ft, speed 190kts.	BOBAG [A100+; K220] - SJ [A070+; L] - PU [A070+; K220; L] - BETBA [R] - BIDUS [A030+; K190]	IF TF TF TF TF	N N N N N
Formal Description (REMES Transition)	**Abbreviated Description**	**Path Terminator**	**Fly-Over required**
From REMES, speed 220kts. To SJ at or above 7000ft, turn right. To PU at or above 7000ft, speed 220kts, turn left. To BETBA, turn right. To BIDUS at or above 3000ft, speed 190kts.	REMES [K220] - SJ [A070+; R] - PU [A070+; K220; L] - BETBA [R] - BIDUS [A030+; K190]	IF TF TF TF TF	N N N N N

Tabular Descriptions (BOBAG Transition)

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	BOBAG	-	-	-0.5	-	A100+	K220	RNAV1
TF	SJ	-	063(063.5)	-0.5	L	A070+	-	RNAV1
TF	PU	-	022(022.5)	-0.5	L	A070+	K220	RNAV1
TF	BETBA	-	342(342.5)	-0.5	R	-	-	RNAV1
TF	BIDUS	-	057(057.5)	-0.5	-	A030+	K190	RNAV1

Tabular Descriptions (REMES Transition)

Path Term	Waypoint Name	Fly-Over	Course °M(°T)	Magnetic Variation	Turn Direction	Altitude	Speed Limit	Navigation Spec
IF	REMES	-	-	-0.5	-	-	K220	RNAV1
TF	SJ	-	348(348.5)	-0.5	R	A070+	-	RNAV1
TF	PU	-	022(022.5)	-0.5	L	A070+	K220	RNAV1
TF	BETBA	-	342(342.5)	-0.5	R	-	-	RNAV1
TF	BIDUS	-	057(057.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via LEBAR 2B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on LEBAR 2B to BIDUS, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20R as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.4
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
REPOV ONE ALPHA ARRIVAL
REPOV 1A

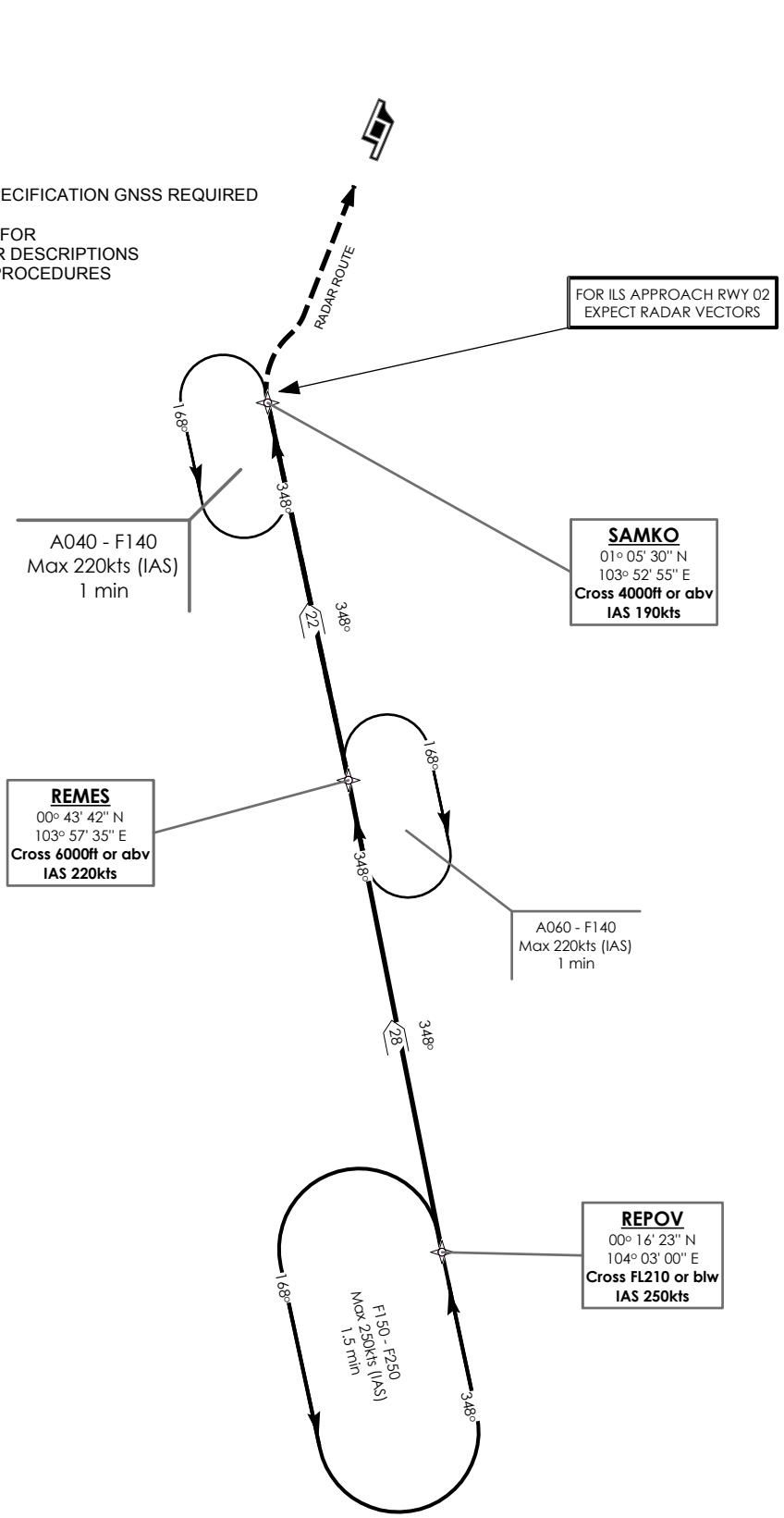
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

CHANGES : New Chart.

REPOV 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From REPOV at or below FL210, speed 250kts. To REMES at or above 6000ft, speed 220kts. To SAMKO at or above 4000ft, speed 190kts.	REPOV [FL210-; K250] - REMES [A060+; K220] - SAMKO [A040+; K190]	IF 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
IF	REPOV	-	-	-0.5	-	FL210-	K250	RNAV1
TF	REMES	-	348(348.7)	-0.5	-	A060+	K220	RNAV1
TF	SAMKO	-	348(348.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via REPOV 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on REPOV 1A to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.4
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
SURGA ONE ALPHA ARRIVAL
SURGA 1A

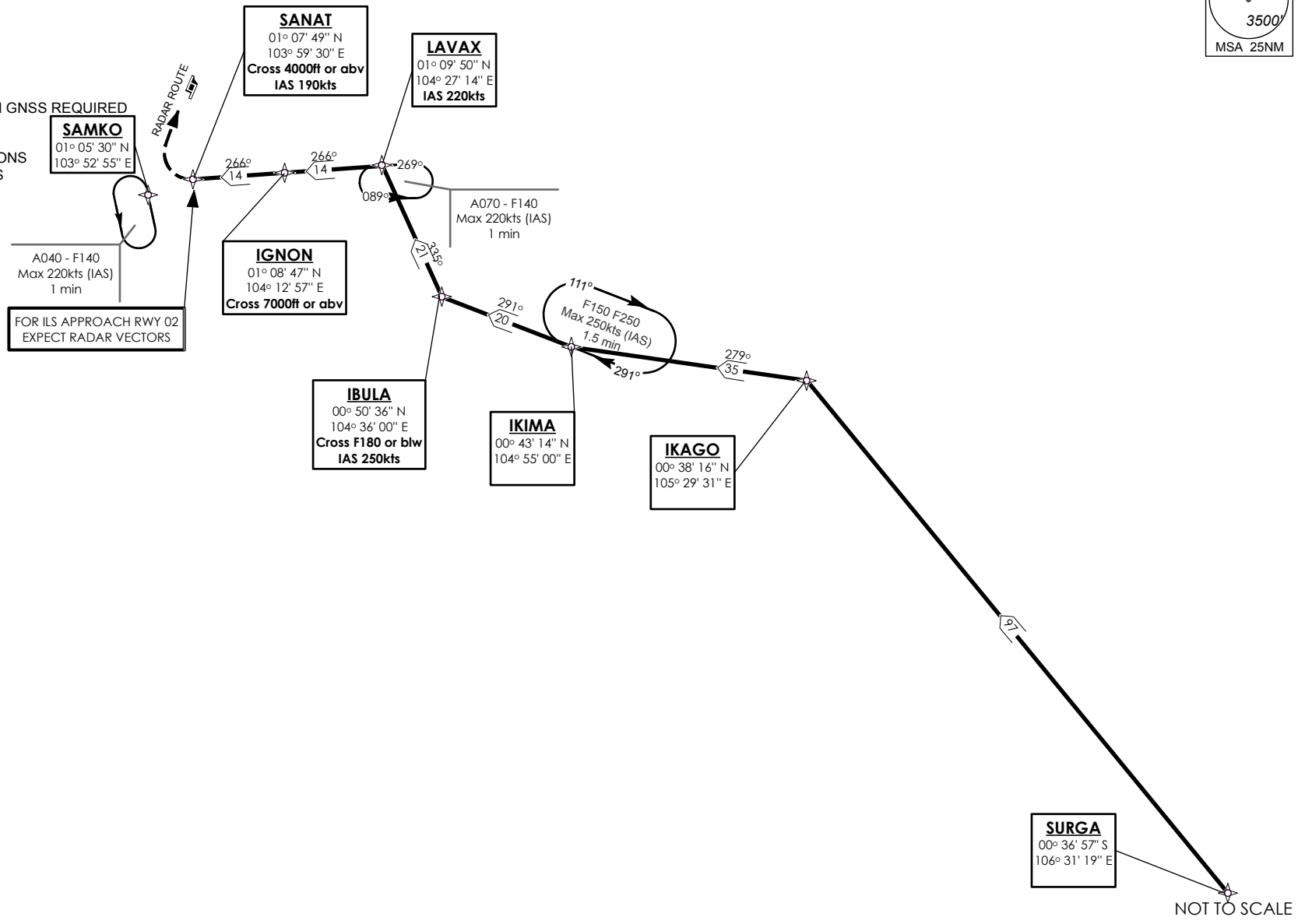
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



CHANGES : New Chart.

SURGA 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From SURGA. To IKAGO, turn left. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To IGNON at or above 7000ft. To SANAT at or above 4000ft, speed 190kts.	SURGA - IKAGO [L] - IKIMA [R] - IBULA [FL180-; K250; R] - LAVAX [K220; L] - IGNON [A070+] - SANAT [A040+; K190]	IF 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
IF	SURGA	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	320(320.4)	-0.5	L	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	IGNON	-	266(266.5)	-0.5	-	A070+	-	RNAV1
TF	SANAT	-	266(266.5)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via SURGA 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on SURGA 1A to SANAT, then direct to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.4
APP 124.6 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
REPOV ONE BRAVO ARRIVAL
REPOV 1B

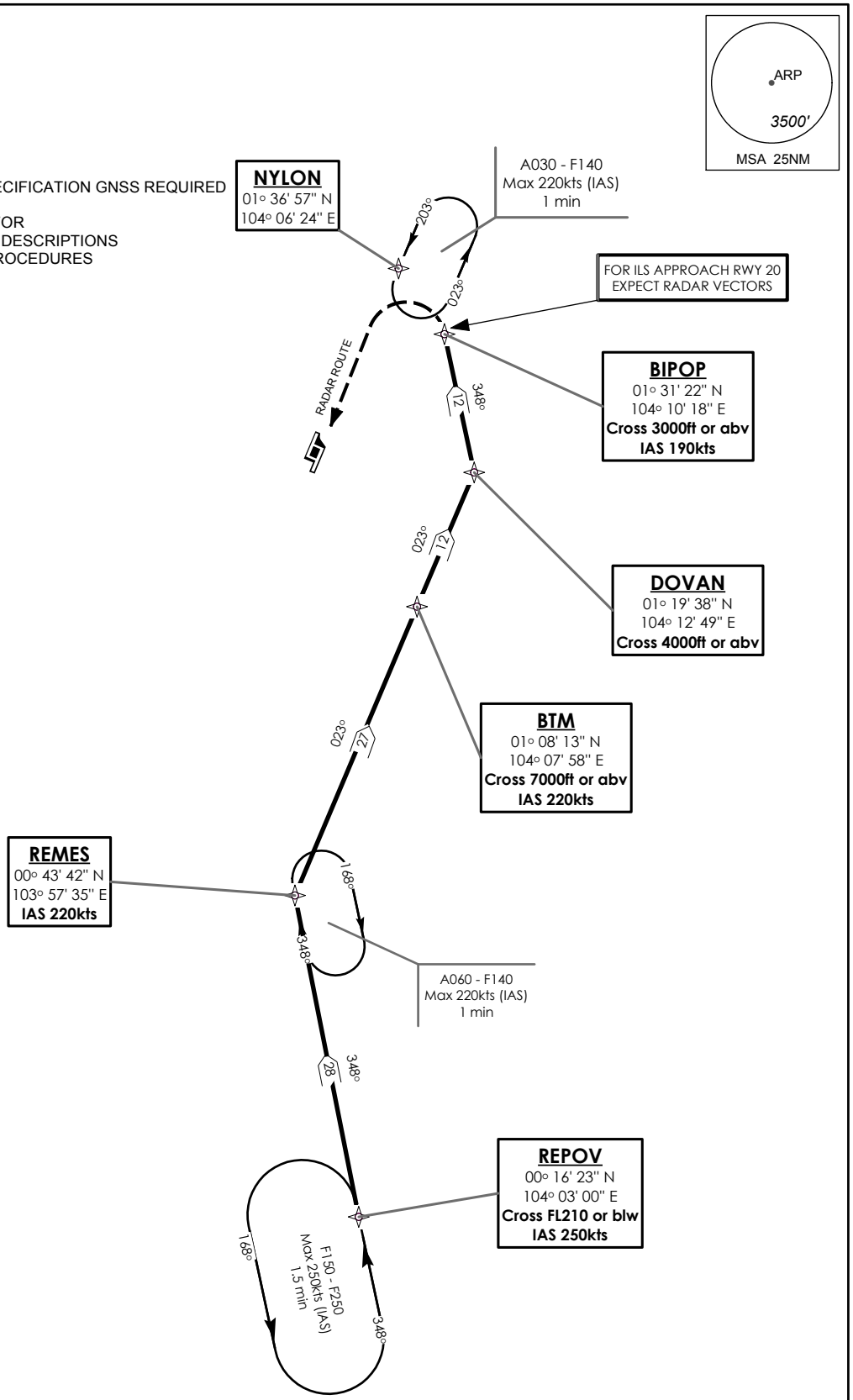
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

CHANGES : New Chart.

REPOV 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From REPOV at or below FL210, speed 250kts. To REMES, speed 220kts, turn right. To BTM at or above 7000ft, speed 220kts. To DOVAN at or above 4000ft, turn left. To BIPOP at or above 3000ft, speed 190kts.	REPOV [FL210-; K250] - REMES [K220; R] - BTM [A070+; K220] - DOVAN [A040+; L] - BIPOP [A030+; K190]	IF 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
IF	REPOV	-	-	-0.5	-	FL210-	K250	RNAV1
TF	REMES	-	348(348.7)	-0.5	R	-	K220	RNAV1
TF	BTM	-	023(023.1)	-0.5	-	A070+	K220	RNAV1
TF	DOVAN	-	023(023.1)	-0.5	L	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via REPOV 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on REPOV 1B to BIPOP, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 134.4
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
SURGA ONE BRAVO ARRIVAL
SURGA 1B

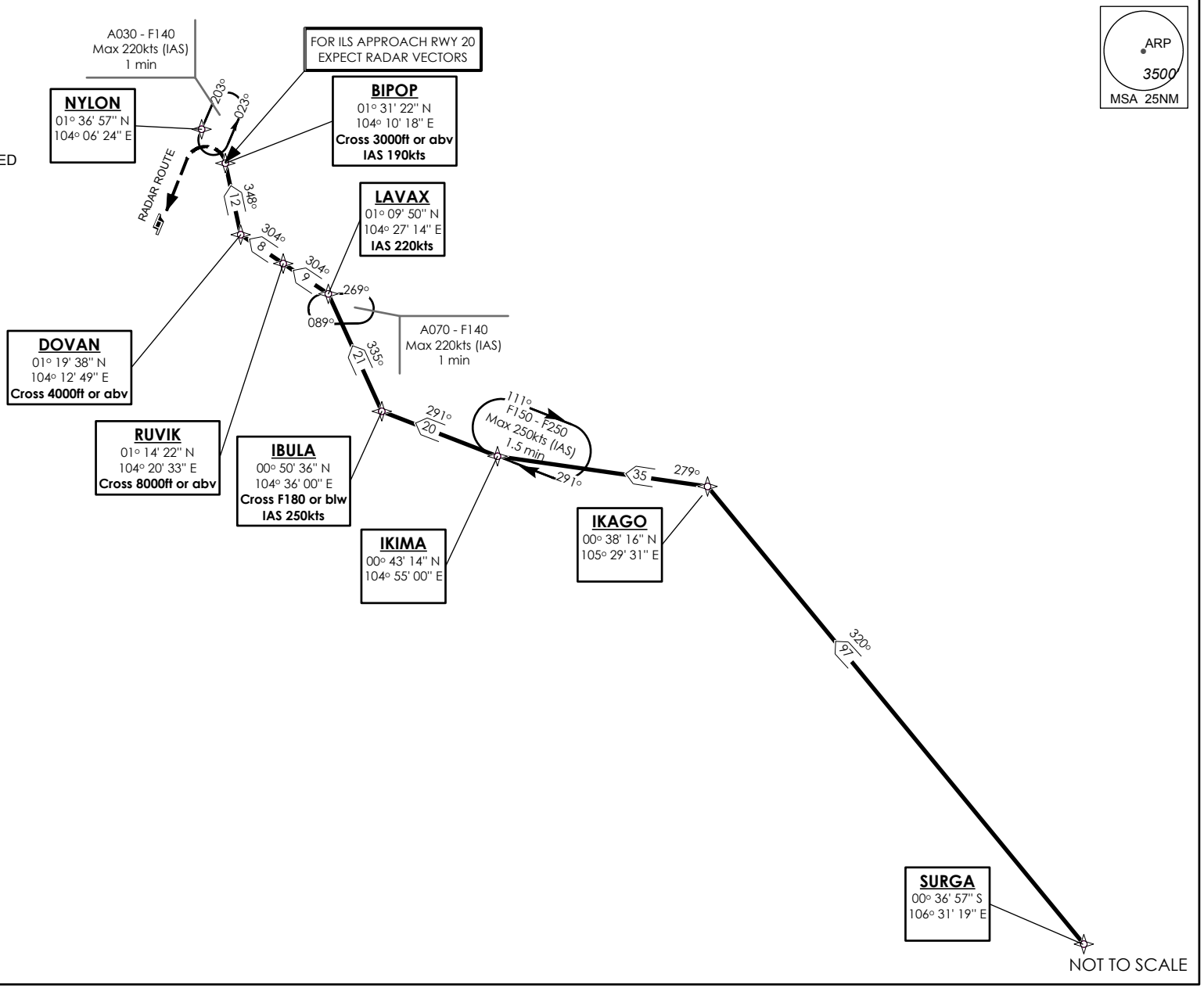
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



CHANGES : New Chart.

SURGA 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From SURGA. To IKAGO, turn left. To IKIMA, turn right. To IBULA at or below FL180, speed 250kts, turn right. To LAVAX, speed 220kts, turn left. To RUVIK at or above 8000ft. To DOVAN at or above 4000ft, turn right. To BIPOP at or above 3000ft, speed 190kts.	SURGA - IKAGO [L] - IKIMA [R] - IBULA [FL180-; K250; R] - LAVAX [K220; L] - RUVIK [A080+] - DOVAN [A040+; R] - BIPOP [A030+; K190]	IF 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
IF	SURGA	-	-	-0.5	-	-	-	RNAV1
TF	IKAGO	-	320(320.4)	-0.5	L	-	-	RNAV1
TF	IKIMA	-	279(279.5)	-0.5	R	-	-	RNAV1
TF	IBULA	-	291(291.1)	-0.5	R	FL180-	K250	RNAV1
TF	LAVAX	-	335(335.4)	-0.5	L	-	K220	RNAV1
TF	RUVIK	-	304(304.0)	-0.5	-	A080+	-	RNAV1
TF	DOVAN	-	304(304.1)	-0.5	R	A040+	-	RNAV1
TF	BIPOP	-	348(348.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via SURGA 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on SURGA 1B to BIPOP, then direct to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 02L/C
VEPLI ONE ALPHA ARRIVAL
VEPLI 1A

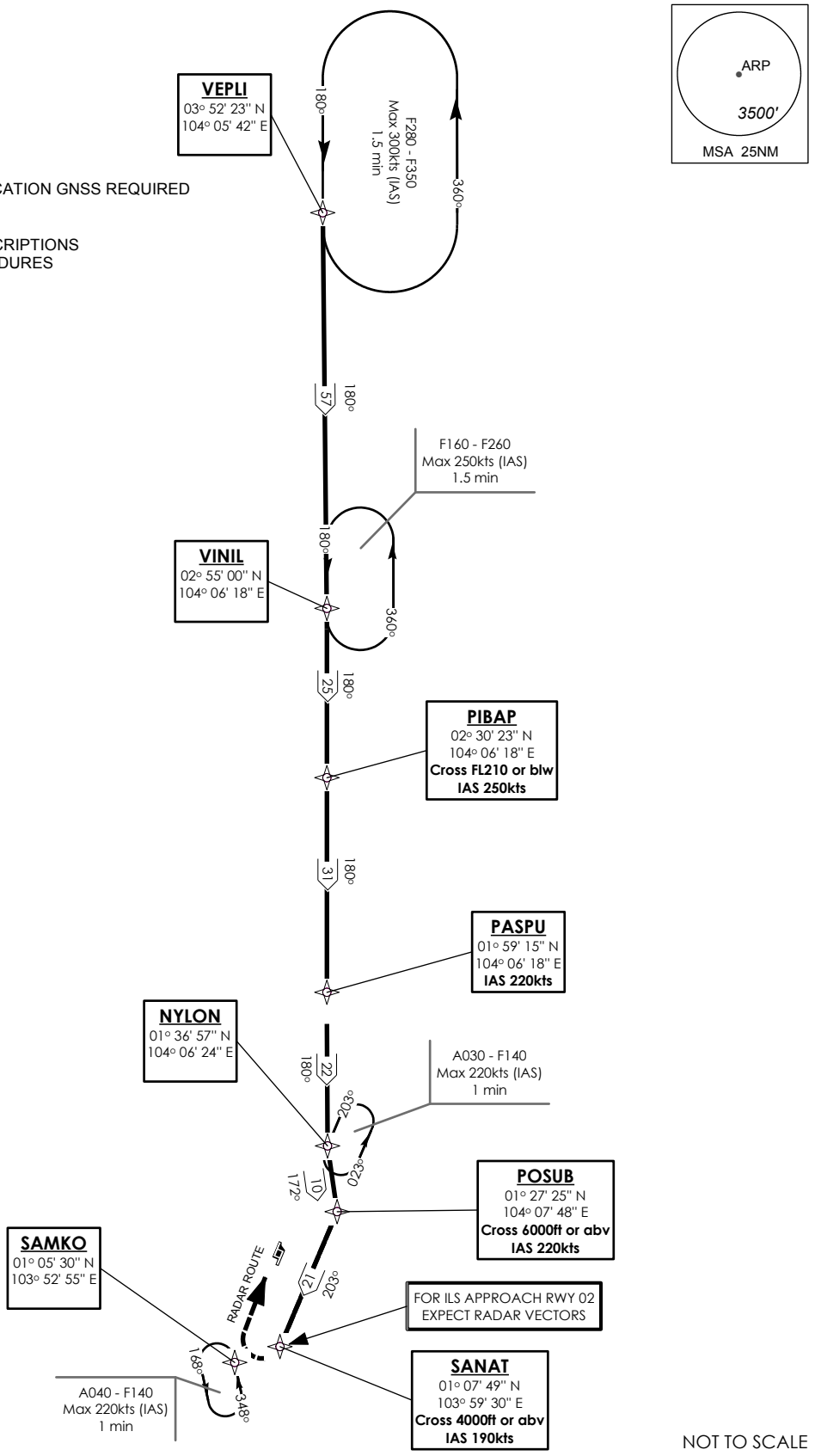
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



CHANGES : New Chart.

VEPLI 1A (STAR) RNAV GNSS RWY 02L/02C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From VEPLI. To VINIL. To PIBAP at or below FL210, speed 250kts. To PASPU, speed 220kts. To NYLON, turn left. To POSUB at or above 6000ft, speed 220kts, turn right. To SANAT at or above 4000ft, speed 190kts.	VEPLI - VINIL - PIBAP [FL210-; K250] - PASPU [K220] - NYLON [L] - POSUB [A060+; K220; R] - SANAT [A040+; K190]	IF 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
IF	VEPLI	-	-	-0.5	-	-	-	RNAV1
TF	VINIL	-	180(180.5)	-0.5	-	-	-	RNAV1
TF	PIBAP	-	180(180.0)	-0.5	-	FL210-	K250	RNAV1
TF	PASPU	-	180(180.0)	-0.5	-	-	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	L	-	-	RNAV1
TF	POSUB	-	172(172.5)	-0.5	R	A060+	K220	RNAV1
TF	SANAT	-	203(203.1)	-0.5	-	A040+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via VEPLI 1A by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on VEPLI 1A to SANAT, then direct to SAMKO **(b)** From SAMKO commence descent and carry out appropriate landing procedure for RWY 02 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

STANDARD ARRIVAL CHART RNAV (GNSS) - INSTRUMENT (STAR)

ACC 133.8
APP 124.05 / 120.3
ARR 119.3
TWR 118.6 / 118.25

TRANSITION ALTITUDE
11 000ft

D-ATIS AP ID-WSSS
128.6

SINGAPORE/Singapore Changi
RWY 20R/C
VEPLI ONE BRAVO ARRIVAL
VEPLI 1B

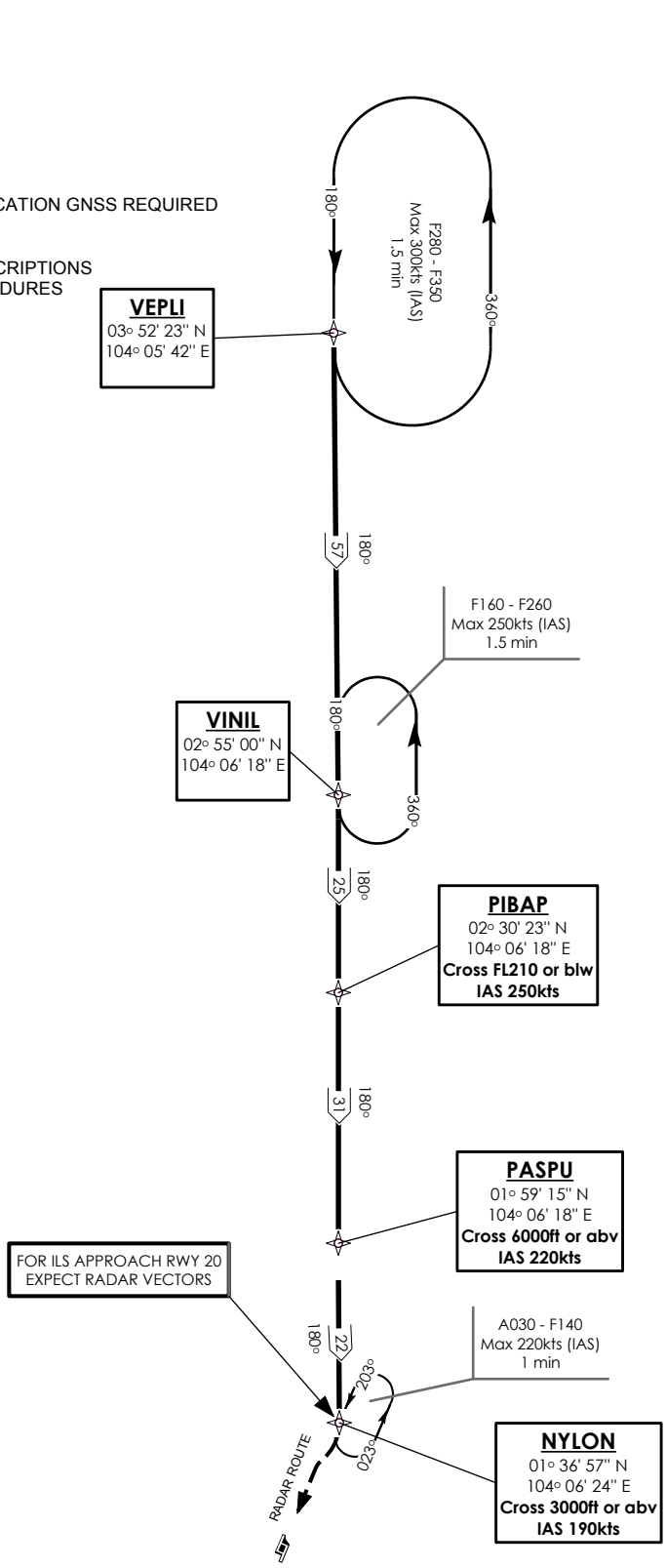
ELEV, ALT IN FEET
BEARINGS, TRACKS AND RADIALS ARE MAGNETIC
VAR 26'E (2015)

DISTANCES IN NM

NOTE: RADAR REQUIRED

NOTE: RNAV-1 NAVIGATION SPECIFICATION GNSS REQUIRED

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



NOT TO SCALE

CHANGES : New Chart.

VEPLI 1B (STAR) RNAV GNSS RWY 20R/20C - DESCRIPTIONS

Formal & Abbreviated Descriptions

Formal Description	Abbreviated Description	Path Terminator	Fly-Over required
From VEPLI. To VINIL. To PIBAP at or below FL210, speed 250kts. To PASPU, at or above 6000ft, speed 220kts. To NYLON at or above 3000ft, speed 190kts.	VEPLI - VINIL - PIBAP [FL210-; K250] - PASPU [A060+; K220] - NYLON [A030+; K190]	IF 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
IF	VEPLI	-	-	-0.5	-	-	-	RNAV1
TF	VINIL	-	180(180.5)	-0.5	-	-	-	RNAV1
TF	PIBAP	-	180(180.0)	-0.5	-	FL210-	K250	RNAV1
TF	PASPU	-	180(180.0)	-0.5	-	A060+	K220	RNAV1
TF	NYLON	-	180(180.5)	-0.5	-	A030+	K190	RNAV1

RADIO COMMUNICATIONS FAILURE PROCEDURE

1	**SET TRANSPONDER TO MODE A/C CODE 7600**
2	**When cleared via VEPLI 1B by Singapore ATC** **(a)** Maintain last assigned flight level or altitude and proceed on VEPLI 1B to NYLON **(b)** From NYLON commence descent and carry out appropriate landing procedure for RWY 20 as close as possible to EAT or ETA **(c)** If unable to effect a landing, refer to Singapore AIP for missed approach procedure
3	**No clearance or instruction received from Singapore ATC** - Refer to Singapore AIP for radio communications failure procedure

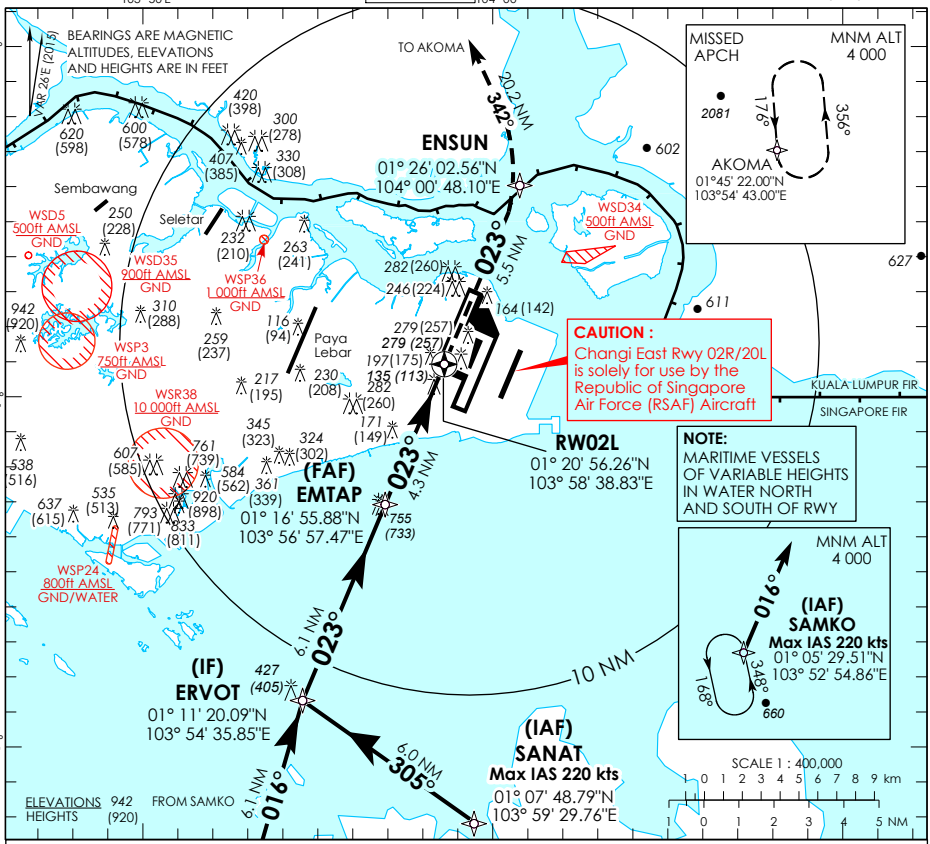
INSTRUMENT APPROACH CHART

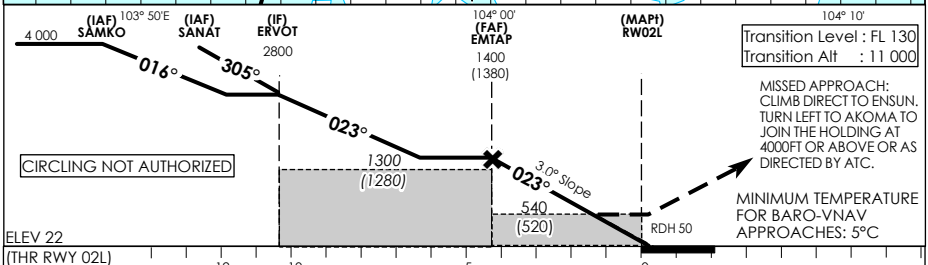
AERODROME ELEV 22ft
HEIGHT RELATED TO THR RWY 02L - ELEV 22ft

3500 MSA
ARP
25 NM

D-ATIS	AP ID WSSS
	128.6
APP	120.3
	119.3
TWR	118.6
	118.25

SINGAPORE/
SINGAPORE CHANGI
RNAV (GNSS) RWY 02L





		NAUTICAL MILES FROM THR RWY 02L			
		OCA (OCH)			
Category of Aircraft		A	B	C	D
LNAV/VNAV	2.5%	**450 (430)**			
LNAV	2.5%	**540 (520)**			

Fix	SAMKO	SANAT	ERVOT	EMTAP	RW02L	ENSUN	AKOMA
Altitude (Height)	**4000 (3978)**	**4000 (3978)**	**2800 (2778)**	**1400 (1378)**	**540 (518)**	**880 (858)**	**4000 (3978)**
Speed	knots	80	100	120	140	160	180
FAF - MAPt 4.3nm	min : s	**3 : 14**	**2 : 35**	**2 : 09**	**1 : 51**	**1 : 37**	**1 : 26**
Rate of descent/GS	ft/min	**424**	**530**	**637**	**743**	**849**	**955**

CHANGES : MSA based on ARP amended to read as 3500ft instead of 3200ft.

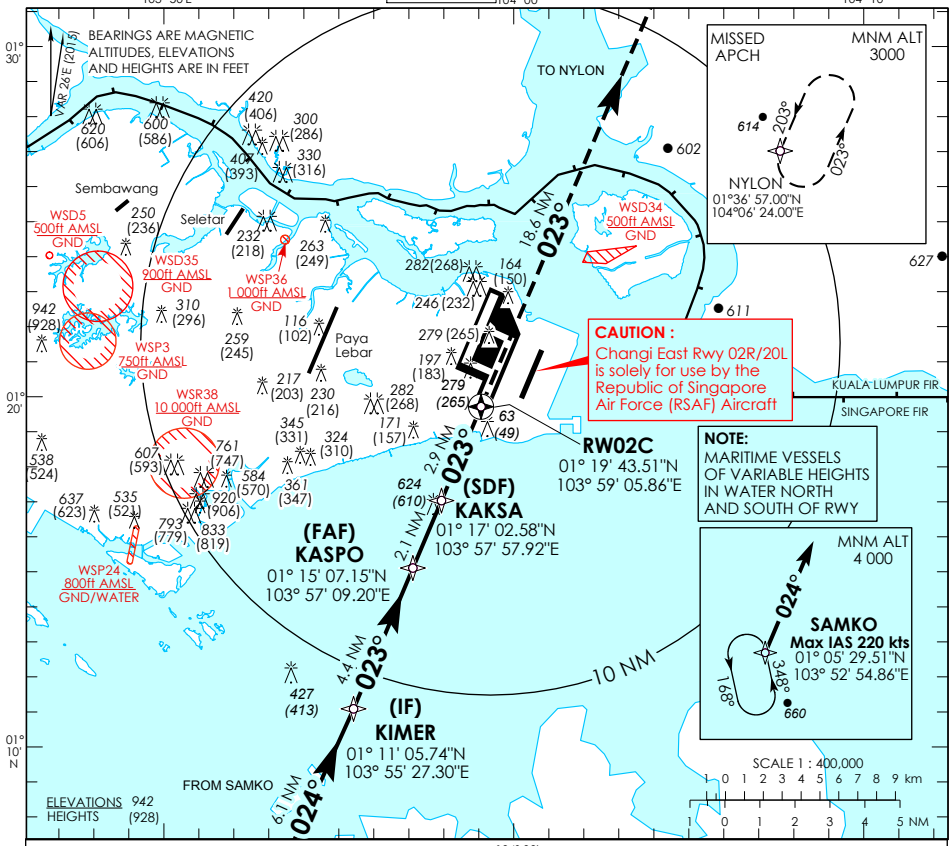
INSTRUMENT APPROACH CHART

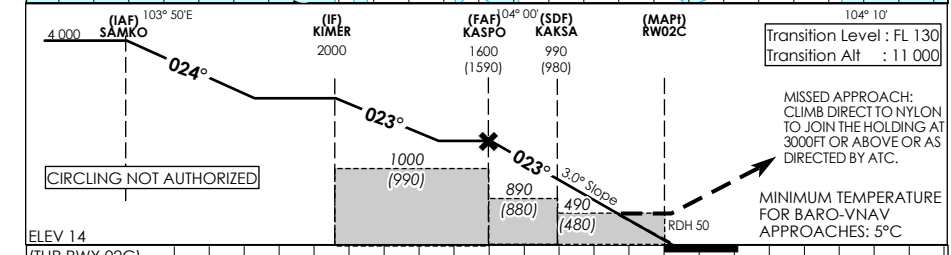
AERODROME ELEV 22ft
HEIGHT RELATED TO
THR RWY 02C - ELEV 14ft

MSA 3500 ARP 25 NM

D-ATIS	AP ID WSSS
	128.6
APP	120.3
	119.3
TWR	118.6
	118.25

SINGAPORE/
SINGAPORE CHANGI
RNAV (GNSS) RWY 02C





NAUTICAL MILES FROM THR RWY 02C					
Category of Aircraft		A	B	C	D
LNAV	2.5%	**490 (480)** OCA (OCH)			
LNAV without SDF	2.5%	**890 (880)** OCA (OCH)			
LNAV/VNAV	2.5%	**360 (350)** OCA (OCH)			

Fix		SAMKO	KIMER	KASPO	KAKSA	RW02C	NYLON
Altitude (Height)		**4000 (3986)**	**2000 (1986)**	**1600 (1586)**	**990 (976)**	**490 (476)**	**3000 (2986)**
Speed	knots	80	100	120	140	160	180
FAF - MAPt 5nm	min : s	**3 : 45**	**3 : 00**	**2 : 30**	**2 : 09**	**1 : 53**	**1 : 40**
Rate of descent/GS	ft/min	**425**	**531**	**637**	**743**	**849**	**955**

CHANGES : MSA based on ARP amended to read as 3500ft instead of 3200ft.

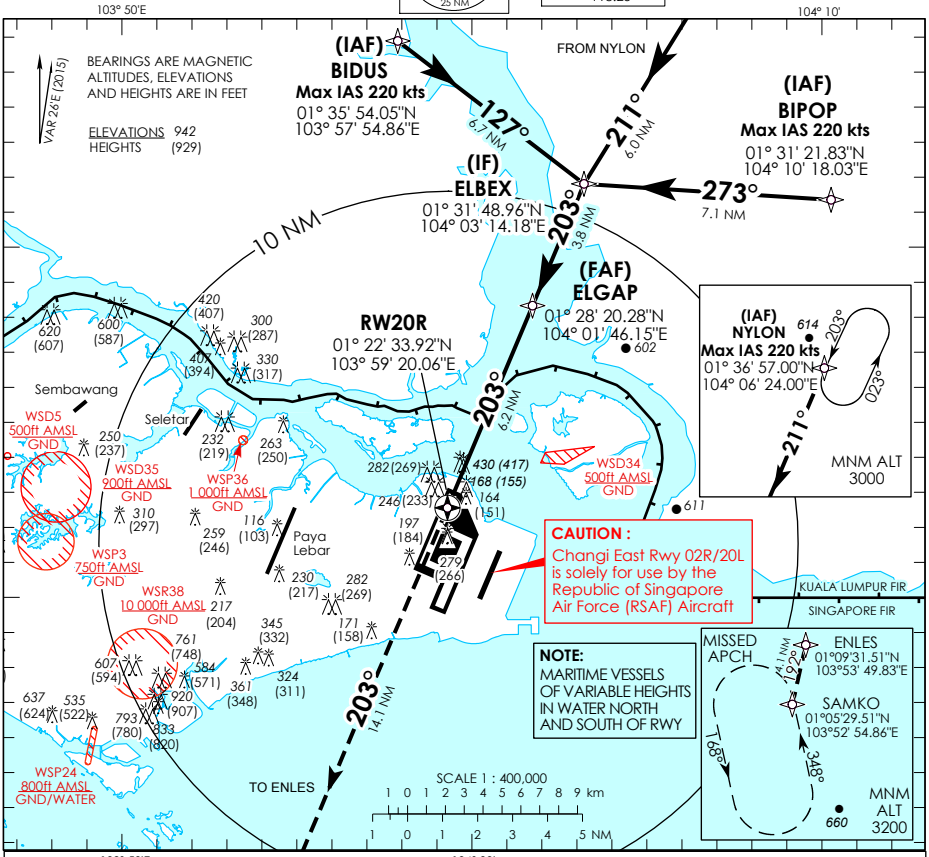
INSTRUMENT APPROACH CHART - ICAO

AERODROME ELEV 22ft
HEIGHT RELATED TO
DTHR RWY 20R - ELEV 13ft

MSA 3500 ARP 25 NM

D-ATIS	AP ID WSSS
	128.6
APP	120.3
	119.3
TWR	118.6
	118.25

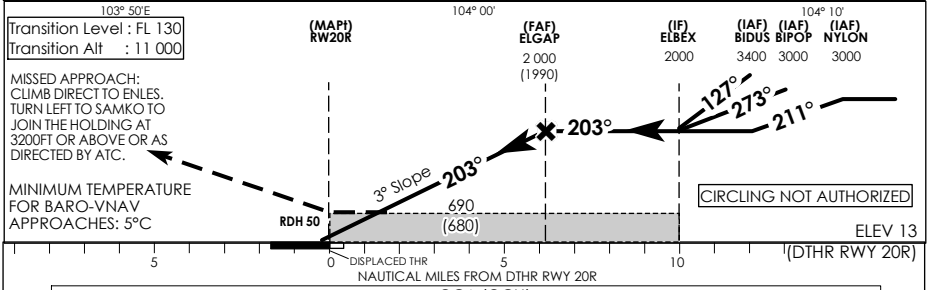
SINGAPORE/
SINGAPORE CHANGI
RNAV (GNSS) RWY 20R



Transition Level : FL 130
Transition Alt : 11 000

MISSED APPROACH:
CLIMB DIRECT TO ENLES.
TURN LEFT TO SAMKO TO JOIN THE HOLDING AT 3200FT OR ABOVE OR AS DIRECTED BY ATC.

MINIMUM TEMPERATURE FOR BARO-VNAV APPROACHES: 5°C



OCA (OCH)					
Category of Aircraft		A	B	C	D
LNAV/VNAV	2.5%	**690 (680)**			
LNAV	2.5%	**690 (680)**			

Fix	BIDUS	NYLON	BIPOP	ELBEX	ELGAP	RW20R	ENLES	SAMKO
Altitude (Height)	**3400 (3387)**	**3000 (2987)**	**3000 (2987)**	**2000 (1987)**	**2000 (1987)**	**690 (680)**	**2180 (2167)**	**3200 (3187)**
Speed	knots	80	100	120	140	160	180	
FAF - MAPt 6.2 nm	min : s	**4 : 39**	**3 : 44**	**3: 06**	**2 : 40**	**2 : 20**	**2 : 04**	
Rate of descent/GS	ft/min	**425**	**531**	**637**	**743**	**849**	**955**	

CHANGES : MSA based on ARP amended to read as 3500ft instead of 3200ft.

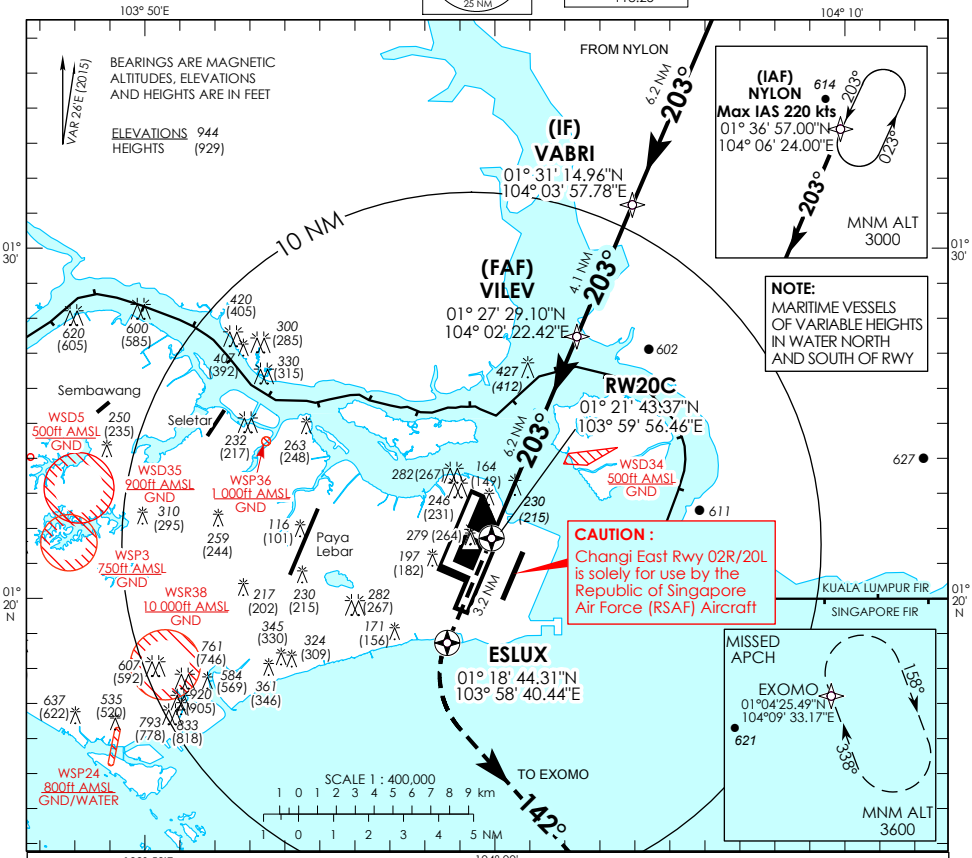
INSTRUMENT APPROACH CHART - ICAO

AERODROME ELEV 22ft
HEIGHT RELATED TO
THR RWY 20C - ELEV 15ft

MSA 3500 ARP 25 NM

D-ATIS	AP ID WSSS
	128.6
APP	120.3
	119.3
TWR	118.6
	118.25

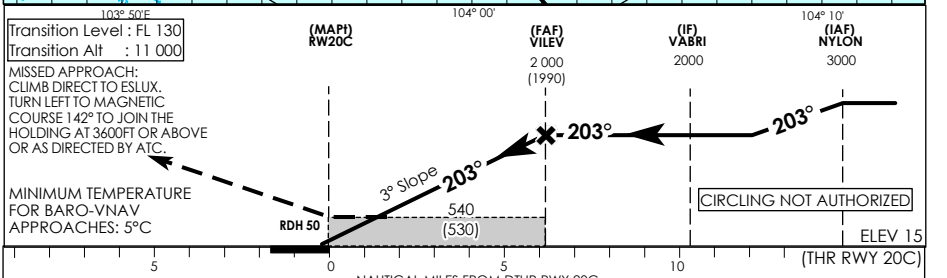
SINGAPORE/
SINGAPORE CHANGI
RNAV (GNSS) RWY 20C



Transition Level : FL 130
Transition Alt : 11 000

MISSED APPROACH:
CLIMB DIRECT TO ESLUX.
TURN LEFT TO MAGNETIC
COURSE 142° TO JOIN THE
HOLDING AT 3600FT OR ABOVE
OR AS DIRECTED BY ATC.

MINIMUM TEMPERATURE
FOR BARO-VNAV
APPROACHES: 5°C



OCA (OCH)					
Category of Aircraft		A	B	C	D
LNAV/VNAV	2.5%	**490 (480)**			
LNAV	2.5%	**540 (530)**			

Fix	NYLON	VABRI	VILEV	RW20C	ESLUX	EXOMO
Altitude (Height)	**3000 (2985)**	**2000 (1985)**	**2000 (1985)**	**540 (525)**	**540 (525)**	**3600 (3585)**
Speed	knots	80	100	120	140	160	180
FAF - MAPt 6.2 nm	min : s	**4 : 39**	**3 : 44**	**3: 06**	**2 : 40**	**2 : 20**	**2 : 04**
Rate of descent/GS	ft/min	**425**	**531**	**637**	**743**	**849**	**955**

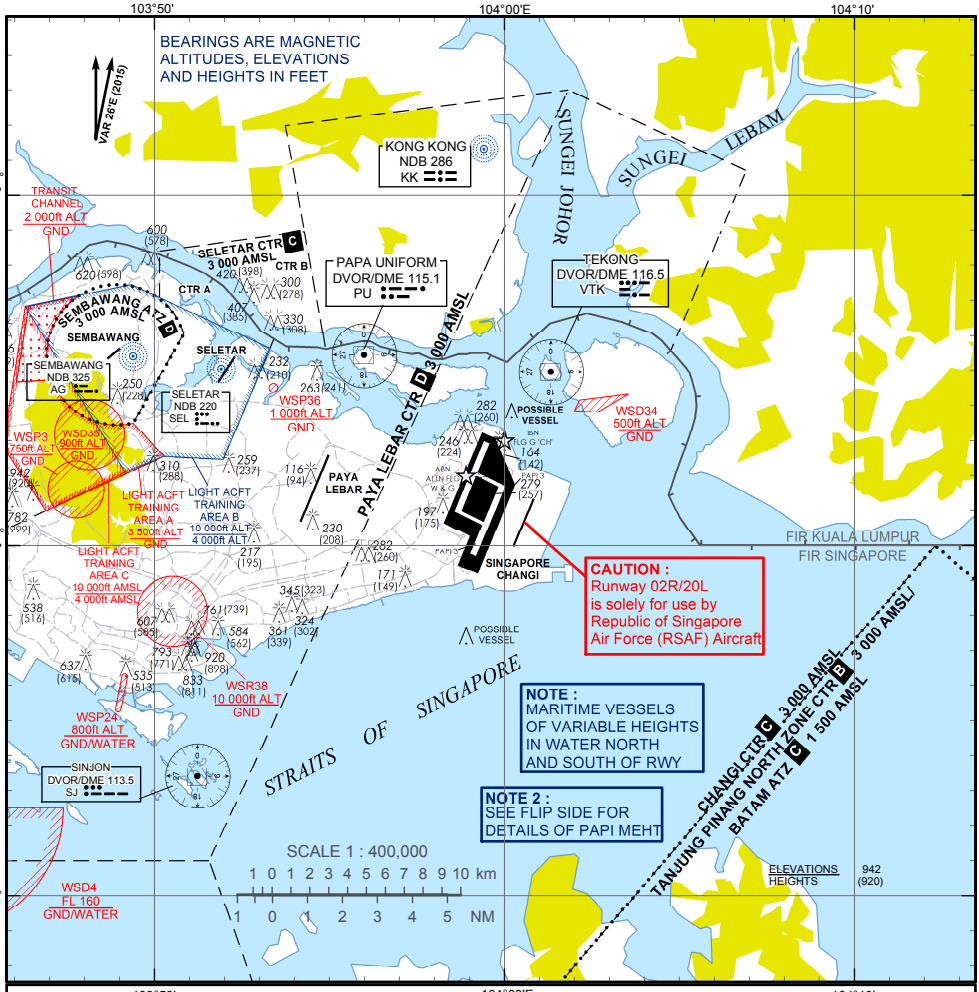
CHANGES : MSA based on ARP amended to read as 3500ft instead of 3200ft .

VISUAL APPROACH CHART - ICAO

AERODROME ELEV 22 ft
HEIGHTS RELATED TO AD ELEV

D-ATIS	AP ID WSSS
	128.6
APP	120.3
	119.3
TWR	118.6
	118.25

SINGAPORE/SINGAPORE CHANGI



VISUAL APPROACH PROCEDURE

1. **An IFR flight operating into Singapore Changi Airport may be cleared for a visual approach subject to the following conditions :-**
   a) **The pilot has the aerodrome in sight and can conduct his approach with visual reference to terrain;**
   b) **The flight will not cause delay to other traffic;**
   c) **There is no conflicting tall vessel movement;**
   d) **The cloud ceiling at the aerodrome is 4,000ft or more for landing on RWY 20C/R and 3,000ft or more for on RWY 02C/L ; and**
   e) **The visibility at the aerodrome is 5km or more.**
2. **Notwithstanding para 1d) and 1e), if the pilot reports that he has the aerodrome in sight and can conduct his approach with visual reference to terrain, the flight may be cleared for a visual approach.**
3. **Pilots may expect radar vectoring for separation and sequencing with other traffic prior to being cleared for a visual approach.**

CHANGES : BED NDB removed.

PAPI 3° (MEHT)*				
Pilot's eye height over the threshold when the following PAPI lights come into view.	**RUNWAY**			
	02L	20R	02C	20C
2 White lights and 2 Red lights	20.6m	20.0m	20.4m	20.4m
3 White lights and 1 Red light	23.1m	22.6m	23.1m	23.1m
4 White lights	25.6m	25.0m	25.5m	25.5m

*MEHT : Minimum Eye Height Over the Threshold

Note : Aircraft with eye-to-wheel height greater than 8 metres are advised to fly with 2 white lights and 2 red lights visible so as to achieve sufficient wheel clearance.